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Understanding Ghanaian sign language(s): history, linguistics, and ideology

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UNDERSTANDING
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UNDERSTANDING GHANAIAN SIGN LANGUAGE(S): HISTORY, LINGUISTICS, AND IDEOLOGY

Proefschrift

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To my family,

especially my late mother Elizabeth Nana Andoah Morrison.

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As I conclude this chapter of my academic voyage, I am reminded that no achievement, no matter how substantial, is accomplished in solitude. I am profoundly grateful for the privilege of pursuing knowledge. I pledge to pay it forward by contributing positively to our collective journey toward a better understanding of the world.

With deepest gratitude,
Timothy Mac Hadjah

1.

INTRODUCTION: SIGNING DIVERSITY IN GHANA

This study delves into the multifaceted landscape of sign languages used by the deaf community in Ghana. The central inquiry motivating this research revolves around the susceptibility of established sign languages to the influence of a new gestural environment.

The national sign language in Ghana, functioning as a school-based sign language, presents a distinctive opportunity to examine the impact of gestural substrate. This is owing to its consideration as a variety of American Sign Language (ASL) used in Ghana or a historically related ASL introduced through formal deaf education. However, to unravel the intricacies of the susceptibility mentioned above, a comprehensive understanding of Ghanaian Sign Language (GSL), encompassing its historical context, linguistic attributes, and underlying ideologies, is imperative.

The linguistic landscape of Ghana boasts numerous spoken and signed languages. Yet, our comprehension of the diversity of sign varieties in Ghana remains relatively underdeveloped. While GSL is commonly acknowledged as the national sign language, its nature, particularly within the broader deaf community, remains unclear. The signing practices within this community exhibit considerable diversity and complexity, raising questions about GSL's nature and its relationship with locally evolved signing and foreign-based signing. The nature of GSL and its connection with locally evolved signs remains unclear. GSL is sometimes associated with ASL and English, while at other times, it is attributed to indigenous languages in Ghana (Abudu, 2019; Nyst, 2008: 238; Oppong, 2007: 21, 2006:18; Oppong & Fobi, 2019:54; Sampana, 2017). This study endeavours to illuminate these complexities and contribute to a nuanced understanding of the dynamic interplay between established sign languages and their gestural environments. It uses the Ghanaian context as an unexplored terrain for linguistic inquiry.

This chapter unfolds as follows: Section 1.1 offers an insight into my understanding of the national sign language (GSL), informed by research questions on historical, linguistic, and language ideology data. Section 1.2 introduces the sign language situation and the deaf community in Ghana. Section 1.3 provides a brief overview of studies on gestural influences on established languages, while Section 1.4 provides an in-depth overview of research on GSL's emergence, linguistic studies, and ideologies in Ghana. Section 1.5 outlines my positionality, revealing my background and inspiration for this research. Section 1.6 focuses on this book's primary data collection site, participants' information and ethical considerations. Finally, in Section 1.7, an outline of this book is presented, offering a preview of the subsequent chapters, each contributing its distinct methodology and insights to enrich our understanding of GSL and the broader sign language landscape in Ghana.

1.1 GSL and the signing landscape in Ghana

The term GSL as a national sign language in Ghana has often been associated with a broad and somewhat oversimplified understanding - that it is the sign language used by deaf individuals in Ghana. However, this interpretation falls short of capturing the rich linguistic complexity that defines signing in urban deaf communities in Ghana.

I have uncovered some intricacies of GSL, highlighting the variations and distinctions within the vibrant signing landscape in Ghana. GSL, in its generic sense, encompasses three distinctive signing varieties, each with unique characteristics and features.

1) ENGLISH[1] (see Figure 148 for an illustration): This signing variety is predominantly shaped by educational influence and exposure to English and ASL. It can be described as a contact variety and often represents a hybrid of ASL signs and approximations of English grammar. The lexicon predominantly derived from ASL is sometimes marked by frequent use of initialisation. ENGLISH is typically acquired through schooling, holds a prominent or superior position among other signing varieties in Ghana, and may sometimes replace or overshadow them. This contact variety, called ENGLISH, is primarily applied in formal settings such as education and religious contexts.

2) LOCAL (see Figure 152 for an illustration): This is a native signing variety that remains largely unaffected by the influence of English or ASL signs. Its lexemes are primarily derived from local natural signs, and its grammar differs from ENGLISH. LOCAL is commonly used in informal settings, such as interactions with family and friends in domestic environments. It is primarily acquired from signers in these everyday situations. However, LOCAL is often associated with lower prestige than the other signing varieties.

3) BROKEN (see Figure 152 for an illustration): This signing variety demonstrates a significant influence of local and ASL signs on its lexemes, coupled with its own grammar different from ENGLISH. BROKEN can be used effectively in both formal and informal situations. It can be acquired at deaf schools, interactions with other signers, and affiliations with deaf groups. BROKEN does not overshadow the prestige ENGLISH holds, but it is respected as a genuine and integral part of the signing landscape in Ghana.

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[1] Throughout this book, I adhere to the convention, of representing sign(s) with a gloss in small capital letters.

GSL, in a generic sense, encompasses these three distinct signing varieties: ENGLISH, LOCAL, and BROKEN. These labels come from the lexicon used by deaf signers in urban contexts of southern Ghana (see section 1.6). Although additional labels are explored in Chapter 6, these three effectively encompass the diverse signing practices under the umbrella term GSL. LOCAL and BROKEN may incorporate regional or local variations, reflecting the richness and diversity within the broader GSL community. In contrast, ENGLISH represents a standardised and relatively stable variety, often featured in GSL dictionaries and recognised for its prestige. Due to its use in a formal context, ENGLISH overshadows the existence of the other signing varieties, leading to the perception that ENGLISH predominantly defines the generic term GSL. Deaf signers in Ghana primarily acquire GSL (ENGLISH, BROKEN, & LOCAL) in the context of deaf boarding schools, where English and ASL-based signing forms the foundation. Educational background also creates a noticeable disparity in GSL competency among three categories of signers: formally educated individuals who have completed at least deaf high school, semi-educated signers who did not complete basic deaf school to enter high school, and non-educated or unschooled signers. Educated signers tend to be more proficient in ENGLISH, while semi-educated and non-educated signers are conversant with BROKEN or LOCAL. However, some signers exhibit versatility, moving fluidly between ENGLISH, BROKEN, and LOCAL. This flexibility can lead to overlap in the use of these signing varieties. In instances where ENGLISH would be expected, the use of LOCAL may occur. In such cases, signers might face criticism, advice to switch, or even ridicule.

In essence, the signing practices among educated, semi-educated, and non-educated signers can differ, reflecting the diverse usages of GSL. Generally, the definition of GSL refers to the signing practices of deaf individuals in Ghana who have received formal education or are integrated into urban deaf communities. Therefore, a typical GSL user is someone educated in a deaf school and actively engaged in interactions with other GSL users. This study recognises GSL as de facto national sign language, encompassing educated, semi-educated, and non-educated users, highlighting the variations in GSL usage across different signer groups. In addition, the sociolinguistic dynamics of GSL, its relation to ASL, and its interactions with locally evolved sign languages have been explored to address questions related to gestural influences in established sign languages like ENGLISH in the GSL landscape. The following sub-questions served as a framework to help establish an understanding of GSL:

1. What is the history of emergence of GSL? (Chapter 2)
2. How does GSL compare lexically to ASL and local Ghanaian SLs, i.e., in terms of basic lexicon? (Chapter 3)

3. How does GSL compare morphophonologically to its gestural environment on the one hand and to ASL and AdaSL as reported in the literature on the other hand, i.e., in terms of Size and Shape Specifiers? (Chapter 4)[2]
4. What are the language ideologies among deaf signers concerning body-based and space-based Size and Shape Specifiers? (Chapter 5)
5. What are the language ideologies among deaf signers concerning sign varieties in Ghana? (Chapter 6)

The tripartite nature of GSL (i.e., ENGLISH, BROKEN, & LOCAL) discovered in the research for this book closely align with Herman Batibo's assertions on language usage in Africa (Batibo, 2005: 16ff). In the following part of this section, I provide a concise overview of Batibo's framework and its application to the spoken language landscape in Ghana.

Batibo's framework, explained below, posits a trifocal language structure prevalent in Africa. This structure involves using Ex-colonial languages (foreign), Dominant indigenous languages, and Minority indigenous languages (Batibo, 2005). Batibo (2005) proposes a triglossic lens for comprehending the language patterns in many African countries. This triglossic structure consists of three distinct languages with complementary roles within the same community (Batibo, 2005: 16). Batibo explains that the Ex-colonial language (e.g., English, French, or Portuguese) functions as a highly developed language for official settings, such as education, judiciary, or government affairs. Designated as the most prestigious and high code ('H'), it occupies the top tier in the structure. The Dominant language, often a widely used medium as a lingua franca in various domains like social service relations, is normally considered 'L' (low prestigious code) in relation to the Ex-colonial language but is regarded as 'H' concerning the Minority language. At the lowest level, the Minority language, considered 'L' in relation to the Dominant language, typically serves for limited communication within speaker communities, confined to ‘speaker’s territories’, “intra-ethnic communication, family interaction and cultural expression” (Batibo, 2005: 17 & 24). Batibo emphasises that minority languages typically have few speakers and are socio-economically marginalised, compelling speakers to use either the dominant or ex-colonial language (Batibo, 2005:17).

With regards to spoken languages in Ghana, some scholars (e.g., Agbozo and ResCue, 2020; Yevudey & Agbozo, 2019) have made mention of the triglossic structure of language use in Ghana using Batibo’s (2005) model. In which they consider English to be the Ex-colonial language; nine selected Ghanaian languages (i.e., Akan, Dagaare, Ga, Dangbe, Dagbani, Ewe, Gonja, Kasem and Nzema) to be

[2] While Size and Shape Specifiers are typically examined from a morphosyntactic perspective, I approach it from a morphophonological standpoint in Chapter 4.

the Dominant indigenous languages; and other Ghanaian spoken languages to be the minority language.

The language policy within the Ghanaian educational system has a historical trajectory. Alternating between a monolingual ideology that emphasizes English as the medium of instruction and, at other stages, a bilingual ideology advocating for the use of both English and a Ghanaian language. (Agbozo and ResCue, 2020). Nevertheless, it is important to highlight that the shifts in language use for education in Ghana predominantly impact the early years (first 3 years) of primary education. In contrast, the subsequent stages of education, ranging from upper primary to secondary and tertiary levels, are predominantly characterized by the dominance of English. (Agbozo & ResCue, 2020; Yevudey & Agbozo, 2019; Reilly et al, 2022; Owu-Ewie, 2006).

Presently, out of the over 70 languages in Ghana, the Government has designated nine languages—Akan, Dagaare, Ga, Dangbe, Dagbani, Ewe, Gonja, Kasem, and Nzema—as the chosen media of instruction, based on the understanding that all the communities in Ghana may use of them. In schools the selected language to use as medium of instruction is based on its geographical relevance and dominance. These languages are employed alongside English in educational settings. (Agbozo & ResCue, 2020; Yevudey & Agbozo, 2019; Reilly et al, 2022; Owu-Ewie, 2006).

Researches on language use in Ghanaian classrooms, including studies by Agbozo and ResCue (2020), Yevudey and Agbozo (2019) Agbozo (2015), Owu-Ewie, and Eshun (2015), as well as Yevudey (2015, 2013), indicate a widespread occurrence of both codeswitching and translanguaging in the teaching and learning process. Considering the plurilingual language situation in Ghana, Agbozo and ResCue, (2020) recognize the importance of translanguaging in education. Yevudey and Agbozo's (2019) study advocates for flexible bilingualism as an optimal language policy in Ghanaian education. They argue that a classroom or school with students who have prior exposure to English and/or Ghanaian languages can effectively use either English, the Ghanaian languages, or a combination of both (Yevudey & Agbozo, 2019:17). Yet, more generally, the ex-colonial language, English, continues to be perceived as a language synonymous with authority, academic excellence, international exposure, and high prestige (Agbozo and ResCue, 2020). Conversely, Ghanaian languages face a diminished prestige, with even some Ghanaians, often overlooking the instrumental value of Ghanaian languages (Agbozo and ResCue, 2020).

In the context of Ghana's spoken language landscape, the interplay between education and historical factors has seemingly shaped a triglossic structure (Agbozo & ResCue, 2020; Yevudey & Agbozo, 2019), which closely parallels the GSL landscape discussed in Chapter 2 and section 6.5.3 of Chapter 6.

1.2 Sign language situation and the deaf community in Ghana

Deaf signers in Ghana reportedly use several sign languages (e.g., GSL, Adamorobe Sign Language (AdaSL) and Nanabin Sign Language (NanaSL)). GSL serves as the national sign language of the deaf community in Ghana. Notable contributions to GSL research have been made by scholars such as Peprah (2021), Edward (2021b), Groen (2021), Abudu (2019), Tagoe (2018), Hadjah (2016), and Akanlig-Pare (2013, 2014). Edward and Akanlig-Pare (2021) describe the sign language situation in Ghana. They distinguish two groups of sign languages in Ghana: 1) Indigenous sign languages and 2) Foreign-based and foreign sign language. According to them, the indigenous sign languages comprise AdaSL, NanaSL and Home sign systems. In contrast, the foreign-based and foreign sign languages comprise GSL and ASL.

While GSL, ASL, and Home signs systems as identified by Edward and Akanlig-Pare (2021) are widespread across the country, AdaSL is rooted in the Adamorobe village in the Eastern Region and NanaSL is in the Nanabin village of the Central Region. AdaSL and NanaSL, reported in the literature, emerged locally in communities with a high incidence of hereditary deafness. AdaSL is relatively well-studied, in four PhD theses (Nyst, 2007; Kusters, 2015; Edward, 2021b; Morgado, 2024), and is documented in various large data sets (see Nyst, 2012). The deaf individuals in Adamorobe could be described as a homogenous group with a shared culture and environment (Kusters, 2015; Nyst, 2007). Okyere and Addo (1994) write that deaf people have been in Adamorobe since 1733. AdaSL is Africa's oldest sign language (Miles, 2004: 536; Frishberg, 1987). Edward (2021b:20) reports that out of the estimated 3000 Adamorobe inhabitants in 2016, 40 were deaf. AdaSL is currently considered endangered due to the dwindling deaf population in Adamorobe and the influence of GSL throughout deaf education (Edward, 2015; Kusters, 2020; Nyst, 2007). However, Kusters (2014a) mentions that the threat GSL poses on AdaSL is comparatively less severe than what is observed in many other communities. Nevertheless, she acknowledges a threat of endangerment due to a declining population of deaf individuals in Adamorobe.

Nanabin village is 145 kilometres away from Adamorobe village. In a recent visit to Nanabin village (11th January 2020), I observed that what could have been previously called a stable family sign language (i.e., NanaSL) has grown into a village sign language used by deaf members in the community. Nanabin has 1,456 inhabitants, as recorded in Ghana's 2010 housing and population census.[3] There are no known records of the number of deaf inhabitants in Nanabin village. However, during my recent visit, I encountered twelve (12) Deaf individuals[4], five (5) of

[3] No update has been given yet in the 2021 recent census.

[4] A native informant I contacted in a friendly conversation, told me there are more deaf people in the village. Upon further interrogation with the informant, he was

whom were members of the deaf family mentioned by Nyst (2010). Of the 12 deaf individuals I encountered, the youngest was five years old, and the oldest was 89. The deaf community in Nanabin seems to have limited contact with GSL. It reveres GSL as an elite/school sign language and views NanaSL as a "gesture language".

Signed English, Signing Exact English and Simultaneous Communication constitute signing systems identified among some signers in Ghana (Kusters, 2015:45 &151; Nyst, 2010: 410; Oppong, 2007:12). Signed English may incorporate signs from GSL within the framework of English word order, intending to convey the precise English meaning of each word. In contrast, Signing Exact English utilizes signs and markers to illustrate the grammatical features of English. Signing Exact English demonstrates heightened precision in representing English grammar and syntax compared to Signed English. The term Simultaneous Communication is occasionally employed to emphasize speech that coincides with the signing systems. It is crucial to note, however, that these signing systems are distinct from sign language.

Home signing is also identified among groups of deaf signers in Ghana (Abudu, 2019; Edward & Akanlig-Pare, 2021). Edward and Akanlig-Pare (2021) only cite sources that describe home signs as being based on gestures and restricted to family use, while Abudu (2019), in her thesis, clearly shows how Home signs are used in deaf schools in Ghana. The account of Abudu (2019) suggests that home signs are not limited to the family domain but could be found among deaf people in the urban community. It is, however, unclear if the signing variant mentioned by Abudu's (2019) thesis and Edward and Akanlig-Pare's (2021) paper as home signs are the same sign variant. What is however certain from these two works (i.e., Abudu, 2019; Edward & Akanlig-Pare, 2021) is that there is a local signing variety which is not limited to the home but found among deaf signers in urban deaf communities. Abudu (2019) explicitly stated that the national sign language comprises elements from ASL, home signs, and Signed English, the latter being referred to as "invented English codes" (Abudu, 2019:92). Nyst (2010) also highlighted the presence of locally evolved signs within GSL. In a 1997 international conference presentation by Mary Addo (a former interpreter and teacher for the deaf), she acknowledged the existence of a local sign language alongside a foreign-based sign language in the country (Addo, 1997). Addo (1997) explained that this local sign language in Ghana likely originated within homes through the influence of gestures and gradually extended to the community.

In the next paragraph, I depend on Reed's (2022) review to clarify my understanding of the term Home signs and other signing variants found among deaf individuals.

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able to name about sixteen (16) deaf members he knows in the community but believes there could be more.

Reed (2022) provides sociodemographic features to describe the various signing systems (e.g., Deaf community sign language, Village sign language, Family sign language, & Home sign). **Deaf community sign language,** characterised by its primary use among deaf individuals, diverse user network, association with education and urban environments, strong cultural identity, and multigenerational usage, serves as a vital means of communication and cultural expression within deaf communities (Reed, 2022:629). According to Reed (2022), Deaf community sign languages are frequently linked with the notions of deaf culture, deaf identity, and deaf social interaction and are commonly designated as national sign languages. On the other hand, **village sign language,** typically found in rural areas with a notable prevalence of deafness, features a predominantly hearing user base, may have limited deaf social integration and identity, and is situated within close-knit, multigenerational communities (Reed, 2022:630). **Family sign language,** another signing system primarily employed within the family unit, is characterised by its use among multiple deaf family members, spanning generations, often found in rural areas. The family sign language may or may not involve contact with other deaf individuals and is typically developed collaboratively by both deaf and hearing family members, with a focus on intergenerational transmission (Reed, 2022:630ff). The **home sign** is closely related to the family sign language, a unique form of communication primarily developed by a solitary deaf individual, often a child in a nuclear family, who lacks contact with other deaf individuals. It is chiefly the creation of the deaf signer, characterised by frequent attempts at communication. Notably, the home sign is not passed down intergenerationally (Reed, 2022:631). Reed also makes a distinction between Home sign in a rural setting and those that can be found in an urban setting with an oralist approach. In such cases, caregivers may deliberately avoid gesturing with the deaf child as they prioritise oral communication (Reed, 2022:632). In an oralist setting, Home sign often emerges in urban areas and is closely associated with caregivers who aim to teach the deaf child lipreading and spoken language. In a rural setting, Home sign is a form of communication commonly associated with children and adults living in rural areas. In such contexts, the deaf user may or may not have contact with other deaf individuals. Rural Home sign typically emerges as a product of collaboration between a deaf person and members of their hearing community. Communication fluency in the Rural Home sign can vary within this form of signing and may even be transmitted intergenerationally. Additionally, with the Rural Home sign there is often a community expectation that the preferred way to communicate with deaf individuals is through gestures. (Reed, 2022:632).

By applying the reviewed categorisation by Reed (2022), I can classify GSL as a deaf community sign language, while NanaSL and AdaSL fall into the village sign languages. The two village sign languages are not mutually intelligible and are distinct from GSL (see chapter 3; Hadjah, forthcoming; Tahoe, 2018; Nyst,

2010). While NanaSL and AdaSL are generally not mutually intelligible, the linguistic distance is relatively low in certain contexts. Recognising occasional linguistic proximity, Nyst (2010) acknowledges cultural influence on the sign languages in Ghana and explains that any lexical similarities may result from shared gestures from the cultural environment.

However, there is a challenge in considering the “Home signs” identified by scholars in the Ghanaian community. Although Edward and Akanlig-Pare (2021:123) acknowledge the existence of these home sign systems, there have not been detailed studies conducted on them in Ghana. Using the sociodemographic criteria outlined by Reed (2022), the term "Home sign" might be a misnomer, as it can be found among deaf individuals within the broader deaf community. Considering the role, it plays in deaf schools as projected by Abudu (2019) I propose that this variant aligns with LOCAL.

According to Edward and Akanlig-Pare, (2021) the sign languages in Ghana are in contact with each other and with Ghanaian spoken languages which may result in code-mixing and linguistic borrowing. They note that, AdaSL’s close contact with GSL has gradually eroded the “purity” of AdaSL due to code-mixing. Edward and Akanlig-Pare, (2021) also mention that while AdaSL grapples with the linguistic influence of GSL, largely stemming from deaf education where GSL is employed, GSL itself is subject to the influence of ASL. It was identified that certain individuals and religious groups are promoting ASL signs in their efforts to teach sign language. Edward and Akanlig-Pare, (2021) acknowledge the dynamic usage of GSL in Ghana and mention that in certain domains, ASL serves as a substitute for GSL due to the availability of ASL learning materials in the country. They conclude that indigenous sign languages in Ghana are endangered and call for linguists to study the sign language situation in Ghana to help maintain Ghanaian indigenous sign languages.

1.2.1 Deaf demography

Recent data from the 2021 Population and Housing Census, conducted by the Ghana Statistical Service (2021a), posit that there are 470,737[5] individuals with "hearing difficulty"[6], which accounts for 1.5% of Ghana's 30,832,019 populace. Precise figures delineating the deaf community remain elusive due to the census's use of hearing impairment for their report. Yet, a 2022 Ghana National Association of the

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[5].Representing people who are five years and older.

[6] “Difficulty in hearing refers to challenges or problems faced by a person in distinguishing or hearing sounds from different sources in one or both ears, even when using hearing aids.” (Ghana Statistical Service, 2021a: 25).

Deaf (GNAD) report[7] resonates with these census figures, estimating nearly 500,000 Deaf individuals in Ghana. GNAD, formed in 1968 by deaf Ghanaians, affiliated with the World Federation of the Deaf (WFD) and the Ghana Federation of Disability Organisations (GFD), is a primarily non-governmental organisation in Ghana devoted to advocating the well-being of the deaf community (Fobi & Doku, 2022)[8].

1.2.2 Sign language legislation

The de facto national sign language (i.e., GSL) has gained recognition in various sectors of Ghanaian society, including television stations, tertiary institutions, and even within the Ghanaian parliament. However, GSL is not officially recognised by law as an official state language. The language does not have legal recognition and does not have an explicitly protected status in deaf education, but it is used as a language of instruction for deaf education throughout the country. During the celebration of the International Day of sign languages on 23rd September 2021, GNAD called for the legal recognition of GSL. Generally, sign language has protective status in certain legal documents such as the Persons with Disability Act, 2006 (Act 715) and the Inclusive Education Policy without referring to any named sign language. For instance, Article 21 of the Persons with Disability Act (715) mandates that

> "…teacher training institutes [which] shall include in their curricula special education, such as 1) **sign language**".

Additionally, in pursuit of education policy, aimed at fostering an inclusive and learner-friendly school environment to enhance the overall quality of education, the strategy acknowledges the importance of sign language without specifying any particular language. It articulates the following:

> "Promote the availability and training of relevant professionals as well as facilities for medical assessment, educational assessment, training in social skills, psychological assessment, occupational therapy, physiotherapy, **sign language**, braille and speech recording, and speech/language assessment." (Ministry of Education, 2013:7).

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[7] https://gnadgh.org/gnad-launch-a-training-of-trainers-program-for-ghanaian-sign-language-instructors-at-kwame-nkrunah-university-of-science-and-technology/

[8] See to Fobi and Doku (2022) for an in–depth history of GNAD.

Among the sign languages in Ghana, GSL was the first to be documented. Highlighting GSL prominence, GNAD published the first GSL dictionary in 2001. Subsequent editions appeared in 2015 and 2022 with the support of Ghana Ministry of Education. In addition to these print editions, GSL dictionaries are also available online and as mobile applications. There are also OpenPose data on GSL (See Fragkiadakis et al. 2021).

1.2.3 GSL education

Currently, the major public universities in Ghana offer GSL teaching. The University of Education, Winneba (UEW), was the first to offer courses in sign language in the late 2000s. Currently, in collaboration with Western Oregon University, UEW occasionally offers interpreter courses in sign languages. In 2017, GNAD, in partnership with the University of Cape Coast, started offering a Diploma course in sign language for interpreters in Ghana. Kwame Nkrumah University of Science and Technology (KNUST) in 2018 also introduced sign language teaching for some select health programs.

The University of Ghana also began focusing on GSL linguistics in 2010. Through initiatives led by key figures like Prof Felix Ameka, Francis Boison, George Akanlig-Pare, Marco Nyarko Stanley, and in collaboration with Ulrike Zeshan from the University of Central Lancashire UK, the University of Ghana introduced a GSL linguistic curriculum at the Department of Linguistics (Edward & Akanlig-Pare 2021:124). This initiative has contributed to the training of sign linguists, including myself. Among the universities in Ghana that provide sign language instruction, the University of Ghana uniquely emphasises the linguistics of GSL.

Beyond GSL education, no documented evidence of formal education is dedicated to other local sign languages in Ghana. Outside of academic contexts, certain individuals (e.g., Mr. Jonathan Amoah)[9] and groups (e.g., churches, Church of Christ & Jehovah's Witnesses) are known for offering sign language instruction.

1.3 Gestural influence and established sign languages

An increasing number of studies on sign language emergence finds that sign languages are susceptible to influences from their gestural environment (de Vos, 2012; Loon et al., 2014; Nyst & Tano, 2018). A pertinent example are the body-base Size and Shape Specifiers that have been documented in Ghana among the users of Adamorobe Sign Language (AdaSL) in the Adamorobe village of the Eastern

[9] Other deaf individuals who are currently deceased were also known for offering sign language instructions (e.g., Mr. Francis K. Boison & Mr. Alexander D. Okyere).

Region (Nyst, 2007). Such body-based Size and Shape Specifiers have not been reported for ASL (Klima & Bellugi, 1979).

While emerging sign languages may assimilate gestures from their linguistic environment, it is unknown to what extent established sign languages are still susceptible to their gestural environment and changes in it. The case of ENGLISH with the cover label GSL provides a seemingly ideal test case for this question, as this language is generally assumed to result from the introduction of ASL in deaf education in Ghana (Runnels, 2020; Ilabor, 2010). Kusters (2014a:153) observed the integration of numerous conventional gestures into AdaSL. Additionally, she posited that "this is not the case with GSL", relying on the assumption that GSL signers attribute higher prestige to ASL-based sign language in comparison to "local sign languages and gestures" (Kusters 2014a:153). If GSL turn out to be using body-based Size and Shape Specifiers, too, like AdaSL, this would suggest that an established language was susceptible to influences from its new gestural environment. Thus, if ENGLISH does not introduce body-based signs in its use of Size and Shape Specifiers, this suggests that established sign languages may not be susceptible to a new gestural environment after emergence.

This seems to be a straightforward hypothesis, but in fact there turn out to be a number of fundamental issues that need to be clarified first. A crucial issue to clarify first is the nature of the relationship between GSL and ASL. Clarifying this issue requires a comprehensive study in terms of history, linguistic properties, and language ideologies.

1.4 Ghanaian Sign Language: emergence, linguistics, and ideologies

1.4.1 Emergence of the GSL

It is often assumed that the GSL community emerged due to the introduction of ASL and Signed English in deaf education by Rev. Foster in tandem with the establishment of deaf education in the country (Nyst 2007:26). However, other studies nuance that idea. While Foster introduced ASL and English-based signs, he also employed a broader range of communication methods, including gestures, fingerspelling, writing, lipreading and speech (Foster, 1975, 1960a; Kiyaga & Moores 2003; Nyst 2010; Okyere & Addo, 1999). Nevertheless, resource constraints led to a heavier reliance on sign language (Runnels, 2020: 169ff; Ilabor, 2010:49).

The formation of a new deaf community in the boarding school in the late 1950s comprised individuals from diverse backgrounds, fostering the emergence of GSL. The school's language environment, influenced by Ghanaian languages, English, home signs, village sign languages, and the introduction of ASL, catalysed GSL's development (Oppong & Fobi, 2019:54; Hadjah, 2016:7; Kusters, 2015:152; Oppong, 2007; Oteng, 1997).

Figure 1 illustrates the circumstances leading to the emergence of GSL. On the figure's left side, individuals from varied linguistic backgrounds converge at a school for the first time. The right side shows ASL and English as dominant instructional languages. Hadjah (2016:7) highlighted that "intense interpersonal contact" among student groups in the school led to the development of GSL. The creation of a boarding school thus became a catalyst for GSL's rise. Given the lively linguistic interactions in the deaf school, Oppong and Fobi (2019: 53) suggested that GSL originated as a "blend of American and Ghanaian signs, which later developed into Ghanaian Sign Language."

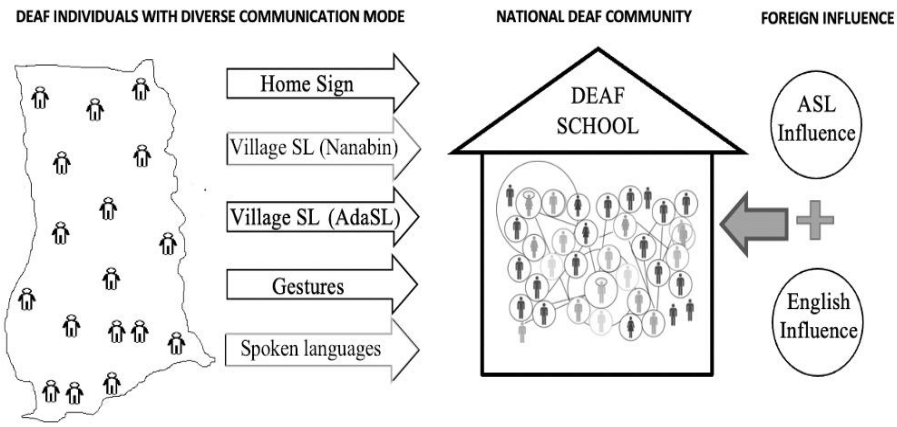

Figure 1: Visual representation of GSL emergence (adopted and modified from Hadjah, 2016:7)

The literature on the history of deaf education in Ghana does not elaborate on the language of instruction employed. Some mention that ASL was used, and others mention that Signed English or speech was introduced (Nyst, 2007; Oppong, 2007). Of course, this has major implications for our understanding of the linguistic starting point of the GSL (see chapter 2 for the history of GSL).

1.4.2 Linguistic studies on GSL

While the field of sign linguistics has seen more extensive research on AdaSL, notable contributions to GSL studies come from researchers like Peprah (2021), Edward (2021b), Groen (2021), Abudu (2019), Tagoe (2018), Hadjah (2018), and Akanlig-Pare (2013, 2014), to name a few. However, despite these valuable insights, vast areas of GSL remain unexplored. Existing research predominantly focuses on GSL lexicon, with a review of its relevance covered in Chapter 3. Studies also address other linguistic aspects, such as iconicity (Edward, 2021b) and number marking in GSL (Hadjah, 2016). Furthermore, the work of Edward (2014) and

Akanlig-Pare (2013, 2014) delves into the phonology and morphosyntax of GSL, establishing its status as a fully developed language.

Nevertheless, numerous topics in GSL need further exploration. For instance, while language ideology studies on AdaSL exist, GSL remains unexplored in this context. Similarly, while there are investigations into Size and Shape Specifiers in AdaSL, GSL awaits such examination (Chapter 4). I will delve into a more detailed discussion of the relevant literature on GSL in each of the upcoming chapters.

1.4.3 Language ideologies regarding sign languages in Ghana

While extensive research has explored the language ideology of deaf signers in Adamorobe (Kusters, 2014a; 2019), there is a need for increased attention to deaf signers in the urban deaf community. This review primarily focuses on the existing literature regarding the perception and attitude towards AdaSL, Akan (a spoken language), GSL, and other signing varieties. To gain more insight into the language ideology of spoken languages in Ghana, see Chapter 6, Section 6.1.1.

Kusters (2014a) conducted a study in Adamorobe and found that hearing participants described AdaSL as "natural" and closely tied to the local gestures and traditions of the Akan people. In contrast, deaf signers considered AdaSL as " HARD," a term viewed positively as a unique aspect of their identity and community. AdaSL signers also referred to GSL as " SOFT," although the precise meaning of "soft" concerning GSL remains unclear. Nonetheless, in the context of SOFT, they consider GSL signers to display a more relaxed and lax manner style of signing, whereas HARD signifies the perception of AdaSL as pleasant and with the understanding that it is better than GSL and Akan (Kusters 2014a:151).

Kusters' (2019) work also highlights how social factors can influence signers' conceptualisation of a language. While the youth prefer to describe AdaSL as "SWEET," the older generation uses the sign for "HARD." In other words, the younger generation associated AdaSL with cultural delight, while the older generation emphasised its "hardness" (Kusters, 2019). Each description carries a positive connotation and reflects their respective motivations to value AdaSL. "The reason for deaf youths and deaf elders' differences in emphases on AdaSL as 'HARD' or 'SWEET' is because AdaSL plays a different role in their respective linguistic repertoires, even though they use it in the same or similar contexts in Adamorobe" (Kusters, 2019:15).

What remains unclear from Kusters' (2014a) report is whether the younger generation, who are bilingual in both GSL and AdaSL, share the same language ideology as the older generation. Kusters demonstrated the presence of shared

ideologies between the generations, [10] but it is uncertain if this represents a holistic perspective. For example, when the older generation describes AdaSL as "hard" and GSL as "soft," would the younger generation have the same understanding? This curiosity arises from the observation in Kusters' (2014a:154) work, where the older generation criticises the younger generation for their inclination towards GSL, while the younger generation also criticises the older generation for their lack of knowledge in GSL. Kusters (2019) addressed the question of the views held by the younger generation, noting that they are more inclined to use GSL but do not value GSL over AdaSL. For instance, in Kusters' (2019:15) work, they describe AdaSL as delightful due to its association with the culture in Adamorobe, while GSL is sometimes associated with initialisation (e.g., using initialisation for days of the week).

As AdaSL signers indicated that their language is "HARD", they do not belittle GSL with this description. Knowledge of GSL is associated with prestige within the community. Deaf signers in Adamorobe consider GSL distinct from AdaSL and do not consider one superior or inferior. Nonetheless, they perceive their language to be more "pleasant" and "expressive" to use compared to GSL (Kusters 2014a:139). As noted by Kusters, GSL is highly appreciated in the deaf community in Adamorobe. Signers in Adamorobe view GSL as a form of Signed English or ASL, introduced into Ghana through Deaf education (ibid). Consequently, they label GSL as "FINGERSPELLING," "ENGLISH," or "AMERICAN." They also perceive GSL as the national sign language used in schools, churches, or anywhere outside their village (Kusters 2014a,b). According to Kusters (2014a:152), their language ideology leads them to prefer using GSL when interacting with visitors or foreigners (ibid:152). Therefore, AdaSL signers consider GSL prestigious beyond the boundaries of Adamorobe.

Within the urban deaf community in Ghana, Gillen et al. (2020) observed the practice of shifting between signing systems among Ghanaian signers, particularly towards a more English-like communication style (Signed English). This shift is driven by the desire for English literacy skills, perceived as crucial for socioeconomic development. Abudu (2019) identified a possible distinction in perceived prestige and indigenous status within the signing community, where signs influenced by ASL or English are often seen as prestigious, while those influenced by iconicity or closely mirroring hearing gestures may be regarded as indigenous and linked to lower status in certain contexts.

Nyst (2010) noted that deaf signers in West Africa sometimes consider locally evolved sign languages as inferior to foreign sign languages, which they view as superior. Schmaling (2003: 307) highlighted a similar phenomenon in Nigeria, where many deaf students underestimate the value of their native sign

[10] For example, they both value the efficient use of AdaSL in the community.

language in favour of foreign signs like ASL. Although Kusters (2014a:152ff) did not extensively study the language ideology of signers outside Adamorobe, she noted, based on her encounters with signers from other regions, that they did not consider AdaSL to be a language, unlike GSL. She observed that "the use of local sign languages … had a low status and was associated with gesturing and illiteracy, … [and] residence in villages." (Kusters, 2014a:153).

Kusters (2014) challenges widely accepted views on the status and prestige of AdaSL within the field of sign languages. Kusters (2014a) explains that many minority languages are often regarded as having low status and prestige, though they can be attributed to positive connotations (e.g., identity). In Adamorobe, Kusters (2014a) discovered that AdaSL despite being a minority language, was not associated with low prestige and status. AdaSL was demonstrated by Kusters to have positive connotations as well as high status and prestige. Moreover, Kusters' research challenges the persistent misconception that sign languages, due to their visual modality, are not considered "real languages" within the hearing community. Significantly, her work asserts that AdaSL in the Adamorobe village is not only recognized as a 'real language' but also holds higher prestige compared to the national sign language (GSL). However, it is important to highlight that in the urban deaf community, AdaSL is not universally regarded as a 'real language', in contrast to how AdaSL users perceive their language and other sign languages in Ghana. This observation suggests that the language ideologies within Ghanaian deaf communities are multifaceted, with no research conducted on how deaf signers in the broader deaf community perceive GSL relationship with ASL and other sign languages in Ghana.

1.5 Positionality

Reflecting on my positionality, I realise how my background, experiences, and interactions have shaped my research on the deaf community in Ghana. As a hearing Ghanaian raised in Koforidua, Eastern Region, I was oriented with GSL, particularly through inclusive education efforts. This experience deeply rooted me within the deaf community. During fieldwork, a deaf colleague often introduced me to members of the deaf community by highlighting my history of attending basic education with deaf students. This shared background immediately established a sense of familiarity and trust among those who knew me, leading to more open and welcoming interactions. Even among those unfamiliar with me, there was a quick recognition of my ability to sign, with compliments about my proficiency. For instance, after the conversation, individuals often said to others nearby, "He's good; he can sign." This shared educational background was instrumental in fostering trust and rapport, which were essential for my research.

My linguistic skills, including fluency in Akan, English, GSL and Ghanaian Pidgin English, also facilitated my role as an interpreter within the deaf community. However, I am mindful of the complexity of my positionality. While I share some cultural bonds, my identity as a researcher, not a deaf signer, impacts communication dynamics, influencing signers' code choices. During my involvement in focus group discussions, I observed instances where participants' language choices differed from what they typically used with me. These moments offered valuable insights into the intricate dynamics of communication within the deaf community. Reflecting on these observations prompted me to assess and adjust my research approach.

Additionally, my position made it easier to work with a deaf assistant for fieldwork and engage with deaf and hearing communities. My position as a Ghanaian, knowledge of GSL, and educational background with signers allowed me to share their spaces and participate in their everyday lives. Spending significant time with the deaf community beyond academia enriched my understanding and fostered genuine connections essential for my research.

My unique background positions me as both an outsider and an insider in certain contexts, providing a critical lens through which I examine the nuances of my research. This perspective, far from justifying my involvement, is about understanding the complexities inherent in my role, and it adds a distinct and valuable dimension to my research.

1.6 Fieldwork and participants

The fieldwork locations highlighted in section 1.6.1 and the participants presented under section 1.6.2 aim to provide background information on the primary data source, addressing the central inquiry on susceptibility that underlies this book. It's crucial to emphasize that the fieldwork locations and participants discussed in this chapter are primarily relevant to the results presented in Chapter 4, 5 and 6. Specific methodologies used in each chapter (2, 3, 4, 5 & 6) are detailed within their respective chapters.

1.6.1 Fieldwork locations

Data for this study were collected from two regions in Ghana: The Greater Accra Region and the Eastern Region. In the Greater Accra Region, the study was conducted in the city of Accra. In the Eastern Region, several localities were visited, including Koforidua (city), Tei Nkwanta (village), Akropong-Akuapem (town), and Apirede (town). These sites were selected for their significant historical landmarks related to deaf history and their historical connection with deaf signers.

The Eastern Region is home to the first and only deaf school, the Mampong-Akwapim Senior High/Technical School, providing secondary-level

education exclusively for deaf citizens. Additionally, the region is proud to have three primary government schools, namely the Demonstration School for the Deaf-Mampong, Koforidua School for the Deaf, and Kibi School for the Deaf, all equipped with boarding facilities. The Eastern Region is also recognised as the location of Adamorobe village, the birthplace of AdaSL, known as the first and oldest natural sign language to emerge in Africa (Miles, 2004). However, the usage of AdaSL remains geographically limited within the village, while deaf signers in the region and beyond use GSL as the national sign language. Therefore, the Eastern Region is a special hub for deaf Ghanaians.

Most of the participants for this study were situated in Koforidua, the capital city of the Eastern Region in New-Juaben Municipal District. Other participants were met and interviewed in the village of Tei Nkwanta and the townships of Akropong-Akuapem and Apirede, all within the Akuapim North Municipal District of the Eastern Region. Tei Nkwanta and Akropong-Akuapem[11] were specifically chosen for hearing participants due to their proximity to Koforidua and the absence of known deaf individuals within the speaking community. Data recording in the Eastern Region took place in participants' homes, the researcher's house, public buildings chosen by participants, and occasionally at participants' workplaces, often located close to roadways.

The Eastern Region is predominantly inhabited by Akans, and their native language is Akan (with Kwuapem Twi being the primary dialect in the Region), which belongs to the Niger-Congo, West Kwa branch. Akan is the most widely spoken language in Ghana and serves as a lingua franca in Ghana[12] due to its large ethnic group, comprising 45.7%[13] of the country's population, as well as a significant number of L2 speakers. Another reason for choosing this location for the study was the researcher's upbringing in this region (Koforidua township), which facilitated easier access to both deaf signers and hearing gesturers in the region.

The Greater Accra Region shares a southern border with the Eastern Region. As the region housing the capital city, Accra, it is one of the most populated

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[11] Note that the town houses a teacher training college known as Presbyterian College of Education, formally as Presbyterian Training College, where services have been made to admit students with special needs (e.g., deaf & blind students)

[12] Ghana has no official national language since its independence from British rule in 1957.

[13] Source: Ghana Statistical Service (2021c). Ghana 2021 Population and Housing Census: General Report. Volume 3: General Report Highlights. Ghana Statistical Service https://census2021.statsghana.gov.gh/gssmain/fileUpload/reportthemelist/Volume%203%20Highlights.pdf

and urbanized among Ghana's sixteen administrative regions. Accra is highly cosmopolitan and served as a unique location to engage deaf participants with international exposure. In Accra, deaf participants were located and interviewed at the premises of GNAD.

Both the Eastern Region and the Greater Accra Region are situated in the southern part of Ghana (see Figure 2). According to the Ghana Statistical Service (2021b), the 2021 Population and Housing Census recorded a population of 2.9 million for the Eastern Region and 5.4 million for the Greater Accra Region, out of the total national population of 30,832,019. The Eastern Region reported 53,240 persons with "hearing difficulty", while the Greater Accra Region had 48,930 (Ghana Statistical Service, 2021a).

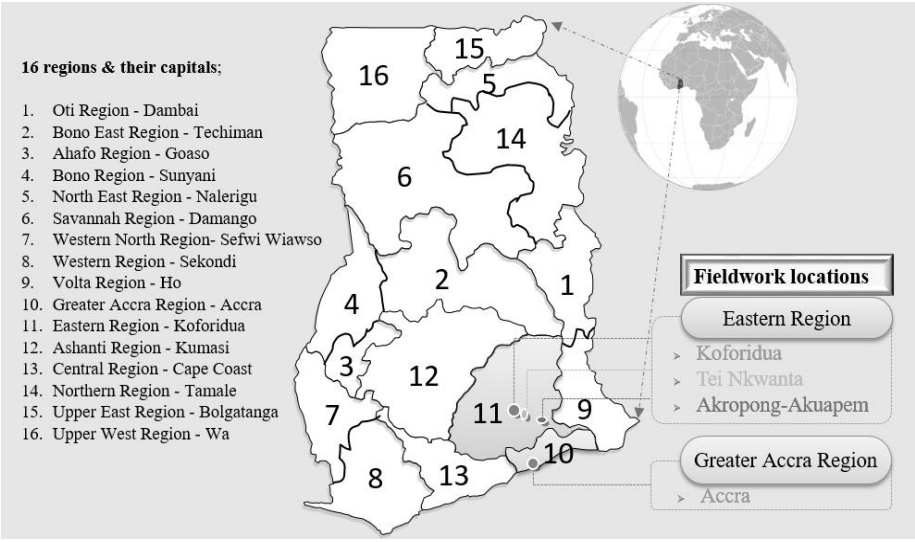

Figure 2: Map of Ghana showing the fieldwork locations in ER & GAR

1.6.2 The participants

Forty (40) participants were sampled for certain tests using a combination of snowballing, convenience/purposive, and quota sampling techniques. According to Napier et al. (2018), these sampling techniques are justified and commonly employed in sign language research. The participants were selected to provide a diverse range of backgrounds regarding age, gender, education, ethnic group, and demographic status relevant to the study. The selection criteria excluded deaf individuals who reported learning sign language at a late stage in life and gesturers below eighteen years.

Twenty of the forty participants were deaf individuals, while the remaining twenty were gesturers. Table 1 provides a summary of the demographic characteristics of the participants relevant to the study.

Table 1: Demographic Characteristics of Ghanaian participants

	DEAF		GESTURERS	
Characteristics and social variables	**Number (n=20)**	**Percentage (%=100)**	**Number (n=20)**	**Percentage (% =100)**
Age				
18 - 20	-	-	3	15%
21 – 30	7	35%	6	30%
31 – 40	5	25%	3	15%
41 – 50	5	25%	-	-
51 – 60	2	10%	2	10%
60 & above	1	5%	6	30%
Gender				
Male	10	50%	10	50%
Female	10	50%	10	50%
Education				
No formal education	2	10%	2	10%
Primary School	1	5%	4	20%
Junior High School	6	30%	1	5%
Senior High School	5	25%	6	30%
Tertiary	6	30%	7	35%
Ethnic Group				
Akans	15	75%	20	100%
Other	5[14]	25%	-	-
Occupation				
Student	3	15%	6	30%
Farmer	2	10%	1	5%
Employee	3	15%	5	25%
Self-Employed	11	55%	5	25%
Freelance	1	5%	-	-
Retired	-	-	1	5%
Unable to work	-	-	2	10%
Handedness				
Right handed.	16	80%	19	95%
Left handed.	3	15%	-	-
Ambidextrous	1	5%	1	5%
Parents' hearing status				
Hearing	19	95%	20	100%
Deaf	1	5%	-	-
Primary means of				

[14] They included 3 Ewe (15%), 1 Talensi (5%) and 1 Mole-Dangbon (5%)

communication at home				
Oral (English/ Akan)	-	-	20	100%
Oral and writing	1	5%	-	-
Oral and sign	1	5%	-	-
Oral and Gesture	2	10%	-	-
Sign language	6	30%	-	-
Sign and gesture	1	5%	-	-
Gestures	7	35%	-	-
Gesture and writing	1	5%	-	-
Writing	1	5%	-	-
Current place of residence				
City (Koforidua & Accra)	18	90%	4	20%
Town (Akropong, Adukrom, Suhum, Tafo & Mampong)	2	10%	14	70%
Village (Tei Nkwanta)	-	-	2	10%

The demographic characteristics presented in Table 1 demonstrate a balanced representation of deaf individuals and gesturers, as well as gender balance. Other social variables, such as education, occupation, and age, also exhibit fair representation. For comparative purposes, two deaf participants with international exposure to western countries (specifically the UK and the US) were also included.

1.6.3 Ethical considerations

Ensuring the ethical treatment of participants in this study was of paramount importance, with particular attention given to the privacy and consent of the participants. Participants were provided with detailed information about the study's objectives, the intended use and storage of data. Prior consent was obtained from participants in various forms, including signed, recorded, or written consent.

In cases where participants' names were mentioned in the chapters, either as informants or participants, additional measures were taken to ensure their informed consent. Specifically, participants were contacted to be provided with detailed information regarding their inclusion. This communication aimed to ensure that participants were fully aware of their involvement and had the opportunity to raise any concerns or provide further consent if needed. By actively involving participants in the decision-making process and seeking their consent for the inclusion of their names, the study upheld their rights to privacy and autonomy.

All participants were informed that their involvement was entirely optional. They were presented with an informed consent document, which was presented in their preferred language (Akan, English, or GSL) to ensure clear comprehension. The information document covered essential aspects of the study, including the

procedures involved, compensation for their participation, the voluntary nature of their involvement, the confidentiality of their information, and the available channels for lodging complaints if they felt that they had been inadequately informed or treated during their participation.

As a token of appreciation for their time and contribution, all participants were compensated monetarily for their participation and any associated expenses, such as transportation costs. This compensation was provided to acknowledge their valuable contributions to the study and to express gratitude for their involvement.

1.7 Outline of the book

This book provides a comprehensive analysis of the GSL, which is significant for sign language linguistics in Ghana. In this introductory chapter (1), the significance of studying GSL in the Ghanaian context was highlighted, setting the stage for the subsequent chapters. The research questions of the book were presented, along with an overview of the book's structure and organisation. Chapter 2 traces the historical development of GSL and its connection to ASL. It explores the factors that contributed to the emergence and evolution of GSL, shedding light on the role played by oralism in the history of the GSL community. The chapter also recognises the contributions of key individuals in developing GSL. Chapter 3 contains a comparison of lexical similarities among different sign languages in Ghana. Apart from the two well-known village sign languages (AdaSL & NanaSL) used in Ghana, the chapter uses two lexical sources from GSL: one influenced by ASL, typically employed in formal contexts, and another unaffected by ASL, commonly used in informal settings.[15] The lexical analysis considered GSL lexical varieties, the two village sign languages and ASL. The chapter offers a phonological comparison of signs found in all the languages to assess the relationship. Chapter 4 provides a detailed description of Size and Shape Specifiers in GSL. It examines the relationship between Size and Shape Specifiers produced by deaf signers and the gestures employed by individuals within the hearing society. The chapter delves into the two types of size depiction (in space and on the body) and shape depiction (handling, tracing, and entity handshape) within GSL. The goal is to identify similarities and influences between GSL and the gestural environment. Chapter 5 examines the language ideologies surrounding Size and Shape Specifiers. Building upon the previous chapter, this chapter investigates the beliefs and attitudes of Ghanaian deaf signers towards body-based and space-based Size and Shape Specifiers. Sociolinguistic profiles and perceptions of Size and Shape Specifiers

[15] Note: At the time of conducting the study in Chapter 3, the triglossic nature of GSL with a doubly overlapping diglossia, as outlined in Chapter 7, was not fully apparent to me. Therefore, in Chapter 3, I perceived GSL as having a formal variety (e.g., ENGLISH) and an informal variety (e.g., LOCAL).

usage are explored, shedding light on the social factors that shape its use and interpretation. Chapter 6 explores the multifaceted aspects of GSL, such as identity, power relations, and language variation, and how they intersect with language ideologies. Chapter 7 summarises and discusses the findings presented throughout the book. This chapter analyses the results and their implications, offering a deeper understanding of the complex relationship between sign languages and their surrounding linguistic contexts.

2.

THE HISTORY OF GSL AND ITS COMMUNITY

This chapter examines the historical interplay between the evolution of GSL, the development of deaf schools, and the dynamic activism within the Ghanaian deaf community. In delving into the history of GSL, the chapter looks at the contributions of Rev. Andrew Foster in establishing the Ghana Mission School for the Deaf (GMSD) and introducing ASL signs. While recognising Foster's impact, the study extends beyond his era to explore the lesser-known evolution of GSL. Unveiling the interconnected threads of GSL's emergence, its roots within the Ghanaian deaf community, and its transformative journey with deaf education.

While scholars have extensively documented the introduction of ASL and English-based signs by Rev. Foster (Kiyaga & Moores, 2003; Nyst, 2010; Runnels, 2020), the post-1965 era, marked by Foster's departure from Ghana, reveals a less-explored and conflicting landscape in the country's deaf education. Notably, Runnels (2020) and Amoako (2019) shed light on sign language and deaf education in Ghana, emphasising the government's efforts to establish nationwide deaf primary schools, emulating Foster's model. Other researchers, such as Edward and Akanlig-Pare (2022:31), have also emphasised the government's continuation of Foster's model after his departure. However, divergent perspectives, as suggested by Nyst (2007), Oppong (2006), and Oppong and Fobi (2019), hint at a potential shift towards oralism in Ghana's deaf education history, an important aspect that has not been focused on much in current narratives.

Runnels (2020) in his Ph.D. thesis, credits some Ghanaians who assisted Foster's mission, including Dr. Seth Ocloo, Florence S. Oteng, Richard Anang, James Anang, Emmanuel Sono-Omari, Musa Nartey, Elizabeth Ocloo, Samuel Agorgli Kwaku Fiaxe, Ludwig Ahmere Bafo, Pastor Thomas Marfo, Pastor Henry Dashinor Cobblah, and Pastor D.A. Konotey-Ahulu. Acknowledging the scarcity of information on their contributions, Runnels encourages further exploration to recognise other significant Ghanaian contributors. Identifying gaps in the understanding of the role of deaf Ghanaians in the evolution of GSL, this chapter poses the following research questions (within the historical context between 1957 – 2007):

1. How did GSL emerge in Ghana and what role did deaf education and deaf activism play in this emergence?
    a. How have deaf schools in Ghana contributed to the development and promotion of GSL?

b. In what ways have deaf activists influenced the evolution of the national sign language, and what factors steered its emergence and maturation?

By addressing these questions, this chapter aspires to present a holistic view of the history and progression of deaf education and sign language in Ghana.

In the following sections, I will provide an overview of Rev. Foster's socio-historical background, as gathered from existing literature. This will contextualise his role in introducing ASL to Ghana (Section 2.1). Additionally, Section 2.2 will offer insights from the literature into the historical origins of deaf education and GSL as a background for this chapter. Moving forward to Section 2.3, I will outline the research methodology employed in this study. In Section 2.4, the research findings will be delineated, with Subsection 2.4.1 presenting findings from the secondary data and Subsection 2.4.2 offering primary data findings. The chapter will then progress to discussions in Section 2.5, where I will address the research questions posed earlier and conclude with Section 2.6, summarising the key insights and findings.

2.1 Andrew Foster: Socio-historical Background

Runnels (2020) in his Ph.D. thesis, extensively explores the life and contributions of Rev. Andrew Foster in Ghana from 1957 to 1965, using archived histories, observation notes, secondary sources, and interviews conducted across the United States, Nigeria, and Ghana between 2015 and 2020. Unlike many, Runnels (2020) reveals Rev. Andrew Foster’s background and demonstrates him as a significant figure in the realm of deaf education, particularly in Africa. Born on June 27, 1925, into an African-American family in Alabama, Foster's early life was shaped by racial segregation in the United States (Runnels, 2020; Stow, 2010). At age eleven he became deaf, a condition he shared with his brother. Despite being deaf, he maintained some ability in speech (Anson-Yevu, 1977:2; David, 1972:62). Foster attended the Alabama School for the Negro Deaf and Blind, an institution that was distinctly separate from its counterpart for white children due to the prevailing racial divides (Stow, 2010). Notably, this school had Black ASL, a unique dialect of American Sign Language, reflecting that era's wider cultural and racial distinctions (McCaskill et al., 2011). It was in that school, Foster was first introduced to sign language. However, it is important to note that during Foster's educational era, the term ASL or Black ASL which reflects social or geographical distinctions, was not in common usage. Instead, a more generic label was applied to the sign language employed in deaf education (Power, 2022).

Upon graduation, Foster, like many African Americans of his generation, moved to the northern industrial cities, a phenomenon documented as the Second

Great Migration in the history of the US. This vast exodus saw over five million African Americans journeying northwards in pursuit of better opportunities (Agboola, 2014). Foster continued his academic pursuits in the North. He earned both a bachelor's and master's degree in education and a degree in Missionary education studies (Oteng, 1988: vi; Stow, 2010). During Foster's educational tenure, segregation persisted in deaf schools, including Gallaudet University[16] (Stow 2010:3; Carroll and Mather 1997:45ff).

Runnels (2020) noted that Foster's vision extended beyond the shores of the United States. Engaging in numerous international missionary efforts, broadening his global perspective before setting foot in Ghana to establish his first deaf school in Africa (Runnels, 2020). At the World Congress for the Deaf in Germany in 1959, Foster met Berta Zuther[17]. The two, bound by shared convictions and aspirations, were wed on January 29, 1961 (Ilabor, 2010: 102). Rev. Foster established the Christian Mission for Deaf Africans (currently, Christian Mission for the Deaf (CMD)) in 1956 before moving to Africa to start his missionary work. As a non-profit organization, CMD mainly served as a backbone for fundraising prior and during Foster's time in Ghana. Foster met his demise on December 3, 1987, as he journeyed to Kenya (Runnels, 2020; Stow, 2010; Lang & Meath-Lang, 1995). His wife, Berta, continued managing CMD[18] as its director until her retirement.[19] Before Foster's demise he traversed more than 13 African nations, directly or indirectly initiating the foundation of 31 deaf schools. Furthermore, in certain nations (e.g., Ethiopia, Liberia, Mali, Niger, Uganda, Zambia, and Zimbabwe), he laid the groundwork for training programs tailored for deaf educators (Fikes, 2018).

From this overview on Rev. Foster, it is evident that he had exposure to Black English[20], Standard American English, hearing gestures, ASL, Black ASL, and other sign languages such as German Sign Language. Given this linguistic exposure, it is reasonable to infer that Foster was an educated leader and an adept multilingual communicator. Notably, during his time in Ghana, he picked up some AdaSL (Kusters 2015: 161). Existing literature, exemplified by works such as Runnels (2020) and Ilabor (2010), indicates that Rev. Andrew Foster introduced ASL signs to the deaf community in Ghana. Yet, contemplating his diverse

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[16] Established in the US in 1864, Gallaudet is the first advanced tertiary education targeted at deaf people.

[17] According to Ilabor (2010:100), she become deaf at the age of 4. We can also speculate that Berta had speech when we consider Ilabor's statement, "It was an exciting experience for Zuther to talk with deaf people from English-speaking countries, using her little English knowledge" (2010 :100).

[18] CMD continues working in other African countries (but not in Ghana).

[19] Berta passed away in 2018.

[20] A variety of American English used by the Black community in US (McCaskill et al., 2011).

linguistic repertoire, I might argue that Foster's arrival not only brought the introduction of ASL signs but also initiated a versatile system of signing comparable to his experiences and deaf education in the United States.

2.2 Genesis of Deaf Education and GSL community

Formal deaf education in Ghana began in 1957. In that pivotal year, Rev. Andrew Foster embarked on a mission to Ghana, propelled by a vision of evangelising the deaf population in Africa through education. The establishment of the first deaf school in Ghana, named the Ghana Mission School for the Deaf (GMSD), was founded on September 10, 1957 (Runnels, 2020; Okyere & Addo, 1999; Ilabor 2010). Rev. Foster's arrival in Ghana on June 10, 1957, coincided with Ghana's independence from British rule. The Ghanaian government, initially indifferent to deaf education, provided Foster administrative backing and later, by 1959, significant financial support (Fiaxe 1964 as cited in Okyere & Addo, 1999:152; Grischow, 2011; Ilabor, 2010).

Rev. Foster commenced the school in a rented classroom in Osu, Accra, scheduling classes after mainstream school hours (Okyere & Addo, 1999: 148; Ilabor, 2010). The initiative was as much about deaf education as it was about fostering a new generation of educators: Foster aimed to train teachers, with vocabulary acquisition being a focal point (Ilabor, 2010; Runnels, 2020; Stow, 2010). The involvement of teachers, both deaf and hearing, underscores Foster's broad approach. However, in the literature, some discrepancies exist regarding the exact count and identities of these initial teachers: Oteng (1988: vii) noted that Foster engaged three deaf Ghanaians as pupil teachers in his initial school without providing their names, while Ilabor (2010: 32&40) noted two teachers: one Deaf (.i.e., Seth Ocloo) and the other hearing (i.e., Henry D. Cobblah). However, images used by Ilabor (2010: 32 & 34) seem to contradict him as it suggests that there was indeed a third staff who was a female (probably Florence Oteng), as also indicated through illustration by Oteng (1997: 33; 1988: vi). Addo and Okyere (1999), who interviewed Foster in 1987, noted two females who worked with Foster. According to them (Addo & Okyere 1999: 149), Foster recalled some of his initial teachers to be in the name of Ms. Florence Oteng, Ms. Grace Tetteh and Mr. George Okae Tetteh. It is therefore possible that the discrepancies could be because of the different timeframe.

High demand led to the school's relocation from Osu, Accra to Mampong-Akwapim[21] in January 1959. Despite the move, classes and church services for deaf adults persisted in Osu, Accra (Okyere & Addo, 1999:149). Reasons for the choice of Mampong remain speculative, but several sources hint at societal stigmas,

[21] The distance from Osu, Accra to Mampong is approximately 45 kilometers.

accommodation and health issues in Accra, and the necessity for farmland (Okyere & Addo, 1999:149; Avoke, 2001: 31; Foster, 1960a:149; 1957; Kwaffo, 1988:3; Ilabor 2010). As detailed in Chapter 1, Subsection 1.4.1, the school's location in Mampong-Akwapim presented a unique opportunity to create a boarding facility. This, in turn, facilitated the formation of the first national deaf community in the country, marking the birthplace of GSL (i.e., ENGLISH, BROKEN & LOCAL). In 1962 the government formally took over the school (GMSD), with Foster continuing as its headmaster (Ilabor 2010; Okyere & Addo, 1999). This was part of a broader move by the government towards supporting 'special schools' (Ametepee & Anastasiou, 2015). From the deaf education initiative 1957, Ghana established several deaf schools across all ten regions. Figure 3 provides a detailed map of Ghana, demarcating its ten formal administrative regions[22] and illustrating the locations and years in which the deaf schools were established. The dates presented in this figure are based on the comprehensive research by Amoako's work (2019:6)[23].

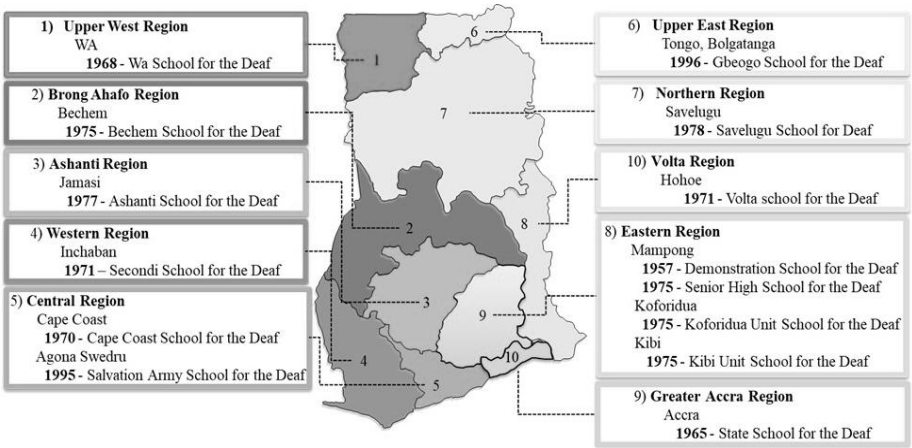

Figure 3: Map showcasing the establishment of deaf schools across Ghana.

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[22] On 27 December 2018, 6 new regions were created through a legislative instrument. They are Savannah, North, North East, Oti, Ahafo, Western and Bono East Regions. See figure 1 for a current regional division in Ghana. Figure 7 here presents the map of Ghana when Deaf schools were established in all the 10 regions.

[23] There are discrepancies with some of the years of establishment of the school. According to Runnels (2020:224), the State School was established in 1966, the Becham School in 1969, and the Demonstration School in 1967, while Gadagbui (1998) noted 1968 for the Demonstration School. However, Amoako (2019:6) indicated without any details that 1964 marks the renaming of the school while 1967 marks a relocation of the school.

In summary, this section has laid the groundwork by outlining the initiation of deaf education, with particular attention to the contributions of key figures. Building on this, the subsequent section 2.3, will delve into the research methodology, offering details about the study's consultants in Section 2.3.1, presenting an overview of the data set in Section 2.3.2, and explaining the data analysis in Section 2.3.3. This method is designed to reveal the evolution of GSL, connecting the past stories from 1957 to the growth of deaf education and activism, culminating in the introduction of GSL in tertiary education.

2.3 Methodology

This chapter employed a broad research design, drawing on secondary and primary data to explore deaf history and sign language in Ghana. The secondary data encompassed published and unpublished documents. These materials included newsletters, archived records, and reports from Andrew Foster and his NGO, the Christian Mission for the Deaf. In contrast, the primary data was gathered through interviews, observations and personal communication with individuals associated with the contemporary and historical deaf community in Ghana.

2.3.1 Consultants

In fostering collaboration for this study, I reached out to deaf colleagues in Ghana, sharing the research goals and seeking guidance on how to reach out to key stakeholders deeply engaged in the development of sign language and deaf education. From such engagement, several names emerged as recommendations, forming the basis for a potential consultant list guided by specific criteria related to their relevant characteristics and experiences. While facing challenges in reaching all initially identified individuals during fieldwork, I adapted by strategically engaging with those accessible. Their assistance proved invaluable as we worked together to identify additional potential consultants, aiming to incorporate a diverse range of personal experiences and insights into the historical evolution of sign language within the context of deaf education in Ghana.

Through the approach used, the study sought to access members of the Ghanaian community who possessed relevant and useful information pertaining to the investigation. This approach helped ensure that consultant selection was not based solely on convenience but rather on the potential richness of the data each consultant could offer. It is important to note that one consultant was serendipitously encountered during the research. While visiting Mampong for an interview with a deaf friend (Marco Nyarko), the research purpose was shared, and this friend mentioned an older man living in Mampong who had worked as a driver at the “Old

School"[24]. This encounter led to booking an appointment with the older man, who shared insights into his experiences working with Foster and the deaf school.

The available literature was a guide in selecting potential consultants whose experiences could help fill gaps in the existing knowledge and address research questions effectively. In addition to deaf individuals, hearing consultants were considered as they reportedly also played a significant role in developing deaf education and sign language in Ghana. The target number for both deaf and hearing consultants was 10, with an equal distribution. All consultants involved in the study were elderly Ghanaians, all retired individuals. Eight consultants [25] were purposively sampled for the interviews, comprising four deaf individuals and four hearing consultants. Their ages ranged from 62 to 83 years, reflecting a wealth of historical knowledge and personal experiences.

Table 2 below presents the demographic background of each consultant, providing key information about their affiliation with deaf history and education. Meanwhile, Figure 4 displays images of the various consultants with their corresponding code names (ID).

Table 2: Consultants demographic information.

ID	Name	Year of birth	Education level	Past association with the deaf community
D1	Mr. Samuel Adjei	1944	[No formal education]	• Former vice president of GNAD • Christian preacher
D2	Mr. Godwin Amenumey	1954	Senior High School Education	• Former president of GNAD • Former student of the Old School[26],

[24] This term was mentioned by some of the consultants in my study. It was also explained to be commonly used in the past to refer to Andrew Foster's school after his official departure from Ghana.

[25] Two weeks after the data collection, my office in Ghana was burgled, and the thieves took away all my data recordings, including a valuable book by Andrew Foster. As a result, I had to redo all my interviews again. Fortunately, the cordial relationships I had established with consultants facilitated easy access for the second round of interviews. This time, the environment was more welcoming and friendly, and participants appeared more relaxed and comfortable. Despite the setback, I was able to gather rich information and obtain new documents. However, due to time constraints, I interviewed 8 consultants in the second round instead of the initial 10, and two consultants were unfortunately eliminated from the study. While recalling details from previous interviews, it seems all the important information was recaptured from the 8 participants.

[26] It is important to note that Foster's school, generally known as Ghana Mission School for the Deaf is popularly known among the elderly members of the deaf

				• Leader for Church of Christ deaf ministry • Former executive member for the Ghana Society for the Deaf • Former member of the Commission on Sign Language of the WFD Scientific Section • GSL teacher
D3	Mr. Jonnathan Amuah	1959	Diploma in Building and construction	• Former vice president of GNAD • Former student of the Old School • Deaf arts & sports promoter • GSL teacher and advocator
D4	Mr. Alexander D. Okyere[27]	1938	Master's degree in special education	• Former vice president of GNAD • Former teacher & vice head at Old School • Former researcher & GSL teacher • Former vice president of the Ghana Federation of the Disabled
H1	Ms. Mary Addo	[Withheld by consultant]		• Former teacher at the State School for the Deaf and the Old School • Interpreter (e.g., news telecast for the Missing Link Programme) • Former researcher & GSL teacher
H2	Mr. E. K. Kwaffo	1941	Bachelor's degree in special education	• Former teacher at the Old school and Cape Coast School for the Deaf • Former headteacher for Sekondi School for the Deaf
H3	Mr.	1942	Bachelor's	• Former oralist and teacher

community as the "Old School" to make specific reference to what Foster started. The term "Old School" was also used by Rev. Foster when he left Ghana (Foster 1987).

[27] Sadly, Mr. Okyere passed away on 7th September 2022.

	Ebenezer Asamoah		degree in special education	at the Special Teachers' Training College • Former headteacher for the Ashanti School for the Deaf • Former GNAD director
H4	Mr. George Diaba	1938	[No formal education]	• Former driver at the Old School

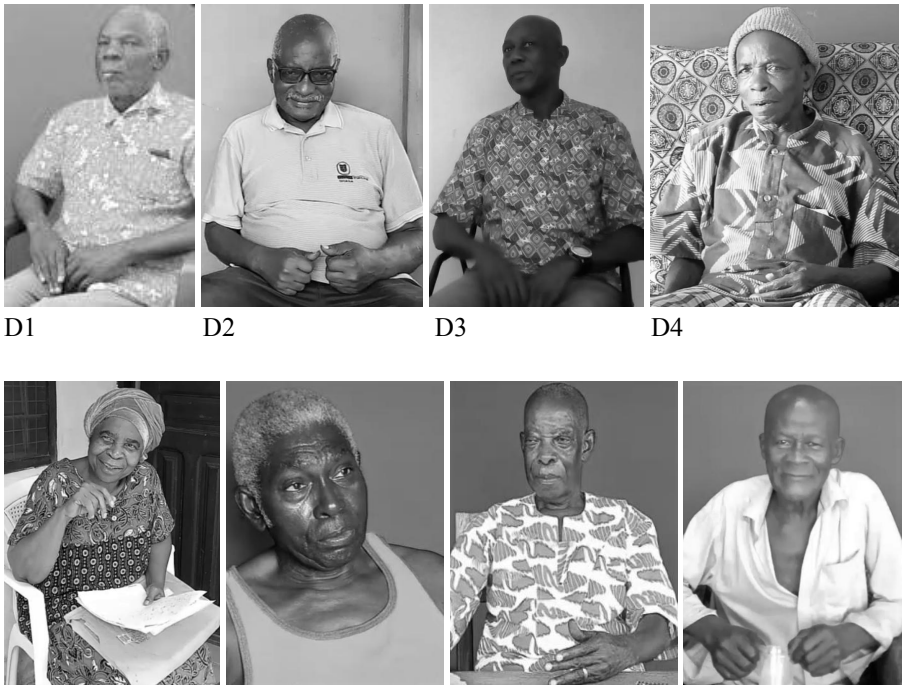

Figure 4: Consultants for this chapter

Photography by the author. Taken and printed with permission

2.3.2 Data sets

Given the scarcity of available literature on the history of sign language in Ghana, I conducted extensive searches for any existing documents, including pictures and write-ups, that could shed light on the development of the national sign language. I began by reaching out to my network of hearing and deaf contacts within the deaf community and education. Through phone calls and messaging, I followed up on all leads and recommendations provided by members of the deaf community who were considered custodians of relevant information. These individuals were crucial primary sources of information for the study.

Additionally, I visited GNAD (which is briefly introduced in section 1.2.1.) with a formal letter seeking access to any available documents. While GNAD was supportive, the information in their office was limited. However, through informal sources, I learned of an abandoned room and shelves that were said to contain archive information related to sign language and Andrew Foster. Unfortunately, my request to access these spaces was denied during this study, and I had to rely on other primary sources of information.

The interviews were designed for free conversation with some guided topics, allowing consultants to discuss their experiences and share their perspectives freely. This approach aimed to capture rich and detailed narratives, even if some information discussed was sensitive or emotive. The interviews were conducted from October to December 2020, with consultants being informed about me, the deaf assistant, and the purpose of the research before the interviews began. To ensure consultants' comfort and privacy, I promised anonymity for any sensitive information shared during the interviews. With the exception of two consultants, I met all other consultants at their homes, so they were in a natural environment for a dialogue. I met one consultant at my home upon his request and the other at the head office of GNAD. While I appreciate all consultants, I am immensely thankful for Mr. Jonnathan Amuah's decision to travel over 7 hours (300 km) to visit and spend two days with me for the interview and research discussion. This visit proved to be incredibly valuable, as it was through him that I became aware of the existence of a low variety of GSL as a distinct variety.

Apart from conducting interviews, majority of the consultants also generously provided me with a variety of relevant materials from their personal collections. With some material also from the deaf community, the following is a summary of the secondary data I gathered during my research: 5 books, 1 government report, 2 newsletters, 5 GNAD pamphlets, 6 lecture/seminar papers and 11 letters. For a detailed list of the titles of all the secondary data, please see Appendix A. These valuable documents significantly enriched my understanding of the history of sign language and deaf education in Ghana.

Ethical considerations were of utmost importance in this research. Consultants provided informed consent before the interviews, indicating their willingness to participate and their understanding of the research's purpose. The consent documents were provided in English, and I also summarised the content in a language that consultants could easily comprehend, such as Akan, sign language, or English.

Consultants were assured of their rights, including the right to withdraw from the study at any time. They were also informed that the recorded interviews would be used solely for academic purposes, such as seminar/workshop presentations, thesis publication, or journal articles. To foster a cordial and trusting relationship, I built strong rapport with consultants through follow-up visits and

informal interactions. At the end of each interview, consultants were compensated for their participation, showing appreciation for their valuable contributions to the research.

2.3.3 Data analysis

For data analysis, a thematic analysis approach was employed, following an inductive approach as outlined by Clarke and Braun (2017). The primary data from the interviews were in video format, with signed information from deaf consultants and voice recordings from hearing consultants. To facilitate analysis, all data was represented in English.

The data was organised into themes (such as Andrew Foster, Oralism, and deaf-led activities) to address the research questions,. Each theme was given a keyword based on a central idea or recurring phrase that summarised the content of that section. This process involved reading the data multiple times, grouping related information, and reorganising themes. Organising the data into themes made it more manageable and allowed for a deeper understanding of the subject under investigation. Themes were categorised according to time period to understand the historical progression of events. Sub-themes were also identified within each theme to capture specific aspects of the data. To aid in identification, colour highlights were used to distinguish data under particular themes. The themes shared among consultants were analysed collectively to identify commonalities and differences in their experiences.

In the write-up, direct quotations from the data were occasionally included. To protect the privacy and anonymity of the consultants, quotes were used in a way that could not be linked to any specific individual. In some cases, permission was sought from consultants before directly quoting significant statements they made. The thematic analysis proved instrumental in this study, and the themes that directly addressed the research questions were presented in the respective sections of this chapter.

2.4 Research Results: Insights from Secondary and Primary Data

The research results section unveils the findings that address the research questions by examining insights obtained from both secondary and primary data sources. Section 2.4.1 presents the outcomes derived from secondary sources, delving into existing literature and documents to illuminate key aspects of the study. Subsequently, Section 2.4.2 delves into the primary data results, showcasing the outcomes of in-depth interviews conducted with key individuals closely associated with the realms of deaf education and the development of GSL.

2.4.1 Secondary Data: Historical Context of GSL Development

The 'Old School' Era: Challenges, Achievements, and Emergence of the Deaf Community

Formal education for hearing children has been available in Ghana since 1529 (Gadagbui, 1998; Pecku, 1977). However, it was not until 1957 that formal education became available for some deaf people. One significant hindrance to deaf education in the past was the superstitious beliefs about deafness held by some family members (Oteng, 1988).

Rev. Andrew Foster (an American) took a pioneering step by establishing the first deaf school, named Ghana Mission School for the Deaf. Upon Rev. Foster arrival in Ghana, he received assistance from various leaders of institutions, including Baptist Church (pastor Henry Dashinor Cobblah), Presbyterian Church (Rev. D. A. Konotey-Ahulu), the director of the Ghana Society for the Blind (Mrs. Semanyo), principal of the Akropong School for the Blind (Mr. Amoah), the Department of Social Welfare (Mr. J. Riby-Williams), and cabinet ministers (Mr. Kojo Botsio, Mr. K.A. Gbedemah, and Mr. C.T. Nylander). (Okyere & Addo, 1999: 148). Pastor Cobblah served as Reverend Foster's initial interpreter during his national outreach mission in Ghana and also part of the Board of Governors for the school (Okyere & Addo, 1999: 148). The Board of Governors, responsible for overseeing the school, comprised representatives from the Ministry of Education, Church leaders, traditional rulers, parents of deaf students, and a student representative. Remarkably, Seth Tetteh Ocloo, a deaf individual who became deaf at 17, played a pivotal role as a deaf student and Board of Governors member, later appointed as a teacher in the school (Okyere & Addo, 1999: 149). According to Okyere and Addo (1999: 149), Seth Tetteh Ocloo is the first deaf Ghanaian to serve as a teacher for deaf students. Ilabor (2010: 32 & 40) further noted that Seth Ocloo and Henry D. Cobblah were the two Ghanaians appointed by Rev. Foster to assist him during the initial phase of the school. Additionally, in Rev. Foster's recollection to Okyere and Addo in 1987, early teachers who assisted him included Ms. Florence Oteng, Ms. Grace Tetteh (later Mrs. Grace Amoah), and Mr. George Okae Tetteh (Okyere & Addo, 1999: 149).

The school initially located in a rented classroom within a Presbyterian public school building in Osu, Accra, began with 13 deaf children and 11 deaf adults (Okyere & Addo, 1999: 148; Ilabor, 2010). Since the school was nonresidential, Rev. Foster conducted classes for one hour each day, and he also trained Ghanaians to assist him with deaf education (Ilabor, 2010: 31; Oteng, 1997: 32ff). One of the main subjects taught was ASL vocabulary acquisition (Ilabor, 2010). Due to the increasing demand for deaf education across Ghana, the school moved to Mampong-Akwapim in January 1959, with government support for a boarding facility (Okyere

& Addo, 1999: 149; Ilabor, 2010). Okyere and Addo (1999: 149) mentioned that despite the school's relocation, classes and church services for deaf adults continued to be organised in Osu. Rev. Foster moved the school to Mampong-Akwapim due to accommodation needs and a health risk in Accra, which was later clarified to be malaria (Kwaffo, 1988: 3). Mampong's location in the Akuapim North District of the Eastern Region provided a more favourable environment for foreigners. Rev. Foster had already planned to move the school to farmland for expansion even before its establishment in Osu (Foster, 1957: 164). The school relocation allowed the acquisition of a sizable piece of farmland to serve academic and sustainable purposes (Ilabor, 2010; Foster, 1960a: 149; 1957). The move to Mampong led to the formation of a deaf community, with individuals from various regions coming together, bringing with them different 'home signs', 'gestures', and 'local Ghanaian signs' (Oteng, 1997; Gadagbui, 1998: 138). In a speech delivered in 1996, Dr. Ocloo lent further credibility to these reports, claiming that Rev. Foster introduced ASL and Signed English. He stated that:

> In the school and wherever possible, Dr. Foster used only Signed English. However, with older deaf adults who did not know English, he used a different form of signs, which I later learned, was American Sign Language. (Ocloo, 1996:1)

Rev. Foster's curriculum initially involved ASL and Signed English (Ocloo, 1996). However, he did not discourage the use of local signs or gestures among the students and acknowledged the need for sign language to reflect the African environment (Ocloo, 1996; Ilabor, 2010: 91). For example, during my research, I found that Dr. Ocloo, a deaf Ghanaian, played a role in inventing signs for local foods such as KENKEY, FUFU, and GARI (Ocloo, 1996:2). Additionally, Ilabor (2010:91) noted that Rev. Foster also occasionally created signs to compensate for ASL's limitations in accurately representing the African environment, including food and place names.

In 1961, the government developed a comprehensive plan to rehabilitate individuals with disabilities, leading to the Ministry of Education taking over the education of people with special needs in 1962, including the deaf school (Anson-Yevu, 1977). Rev. Foster was appointed headteacher with a monthly salary (Ilabor, 2010; Okyere & Addo, 1999). However, it appears that Rev. Foster may not have fully supported the government's takeover, as he expressed his desire to continue managing his school in a report to the government in 1960 (Foster, 1960a, b: 136-160). In his report, Rev. Foster suggested:

> That the school continues to be operated by the Christian Mission for the Deaf Africans under the Education laws of

> Ghana; that this organization [CMDA] should be granted full accreditation as a voluntary organization. (Foster, 1960a)

In the same report, Rev. Foster strongly advised against introducing oralism, emphasising its expensive nature and potential negative impact on academic and social success (Foster, 1960b: 156). Instead, he proposed a "combined system" (TC) that included ASL as a more suitable alternative (Foster, 1960a: 145; 1960b: 136-152). It is worth noting that Rev. Foster typically used generic terms for ASL in his writings, such as 'SL' (sign language) or 'formal SL' or 'language of sign', but in this particular report, he referred to it as "the American language of signs" when suggesting it to the government of Ghana (Foster, 1960a: 151). It is also worth emphasising that the term ASL did not exist before 1960 but gained prominence thereafter. As this term (ASL) emerged in academia, Foster also began incorporating it into his writings. Note that prior to the 1960s, sign language used in the United States was commonly perceived as a universal means of communication for deaf people. This is exemplified by Foster's (1976) recollection of his experiences in West Africa, where he asserted that the deaf individuals he encountered lacked language:

> "Most of the youths were not only deaf, but also illiterate. Deaf since birth or infancy, they had known no language or even words…Conversation was limited to natural gestures. A "language track" for thoughts to travel on was needed…" (Foster, 1976)

This statement above reflects the prevailing notion that, during that era, even if deaf Ghanaians had a locally evolved sign language like AdaSL, it would not have been recognised as such. Since the prevailing view regarded their communication method as a universal deaf language, which he, Rev. Foster, had brought to Ghana.

Despite Rev. Foster's advice, the government took over the school and appointed him the headteacher. Figure 5 depicts Rev. Foster in 1963, along with other staff members and students. Figure 6 shows an apartment that Rev. Foster rented in Mampong.

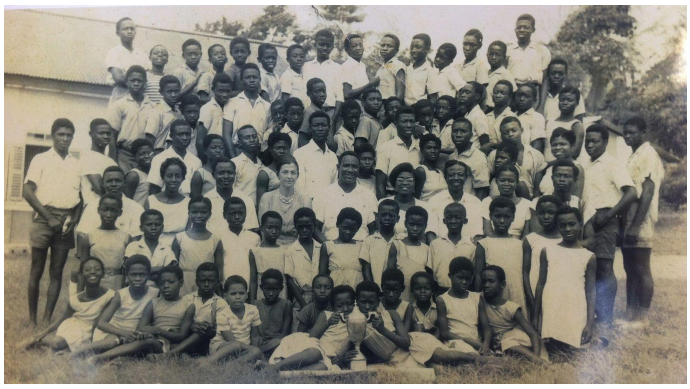

Figure 5: Staff and students at the Old School in November 1963
Photograph from the private collection of Godwin Amenumey
[From the 3rd front row are 9 staff members that include Ms. Grace Amoah, Mr. George Tetteh, Ms. Lewis[28], Rev. Dr. Andrew Foster (middle), Ms. Akrong, Rev. Henry D. Cobblah, Mrs. Elizabeth Tetteh-Ocloo]

Figure 6: The building rented by Rev. Foster as his residential abode at Mampong[29]
Photography by author. Taken and printed with permission

After serving as a government employee for three years, Rev. Foster resigned as headteacher of the Old School in 1965 to continue his missionary work in Nigeria and other African countries (Ilabor, 2010: 41). The Old School's closure is a topic of varying accounts. Gadagbui (1998: 70) noted the school's termination in 1977, while Pecku (1977: 2) mentioned that as of July 1977, the Old School had approximately 101 deaf students, but no new students were being admitted due to its termination.

[28] Ms. Lewis was a teacher from Czechoslovakia who was responsible for assisting students in how to communicate through the oral approach like lipreading. According to our informant, she personally invited herself to assist Rev. Foster with her skills. She was in Ghana because her husband was at that time working as a doctor at Tetteh Quarshie Memorial Hospital (informant D2).
[29] Currently the residence is an abandoned structure.

On the contrary, Fiaxe (1964 cited in Okyere & Addo, 1999: 152) stated that the school was terminated in 1979 out of fear that it might hinder the practice of oralism in the country.

In the next subsection, I highlight the Ghanaians who contributed to deaf education as found in the secondary data gathered.

Ghanaians Involvement in Deaf Education: Impact of Rev. Foster's Legacy

In the realm of deaf education in Ghana, Reverend Andrew Foster received significant support from Ghanaians, particularly from Baptist pastor Henry Dashinor Cobblah, who assisted Foster upon his arrival (Okyere & Addo, 1999: 148). Cobblah also acted as Foster's spokesperson during the initial phase of his work, which involved establishing a deaf school through an outreach program. To manage the school, Foster set up a board of Governors comprising Ghanaians, including Cobblah, Reverend Konotey-Ahulu, Reverend Obeng, and Seth Tetteh Ocloo (Okyere & Addo, 1999: 149).

During Foster's efforts to educate the deaf, many of his associates received scholarship opportunities to study abroad. In 1960, Foster reported that one Ghanaian had been sent to study in England, with plans to send others to America the following year (Foster, 1960b: 160). Other organisations, such as the Commonwealth Society for the Deaf and Gallaudet University, also offered scholarships to Ghanaians. The scholarship beneficiaries were Pastor H. D. Cobblah and David Tettey Kwashie Aryee, who returned as trained audiologists. Seth Tetteh Ocloo and Samael Agorgli Kwaku Fiaxe were recipients of the Gallaudet University scholarship, while George Okae Tetteh and Miss Vincential Diaba received support from the Danish Embassy Scholarship (Okyere & Addo, 1999: 149-150; Kwaffo, 1988).

However, not all Ghanaians who studied abroad returned to contribute to deaf education in Ghana (Okyere & Addo, 1999: 154). Those who did return, such as Mr. Fiaxe, Mr. Tetteh, Mr. Cobbinah, and Ms. Marion Obeng, became educators at the school for the deaf. Figure 7 displays the staff members at the school when Foster left, and Mr. Fiaxe succeeded Foster as the headteacher. Additionally, Figure 8 showcases the first deaf graduates from the Mampong school who completed their education in 1967 under the guidance of Ghanaian educators. Figure 9 displays a classroom section constructed of wood and roofing sheets.

Figure 7: Teaching and non-teaching Staff at Mampong School for the Deaf in 1965
Photograph from the private collection of Alexander D. Okyere

Figure 8: First graduate students[30] in 1967 with their teacher Ms. Obeng (middle)
Photograph from the private collection of Alexander D. Okyere
[In the back roll from left to right is Kpakpo Allotey, Kwabena Asare, Kwadwo Ansah & George Tagoe. In the front, from left to right, is Kwasi, Henry Forson, Ms Obeng, Thomas Marfo & Kofi Twum. Seated on the floor was George].

[30] The nine deaf students participated in the Middle School Leaving Certificate Examination alongside their hearing counterparts in Ghana, administered by the West African Examination Council. Nevertheless, the results revealed that only two deaf students successfully passed the exams (Okyere & Addo, 1999:150).

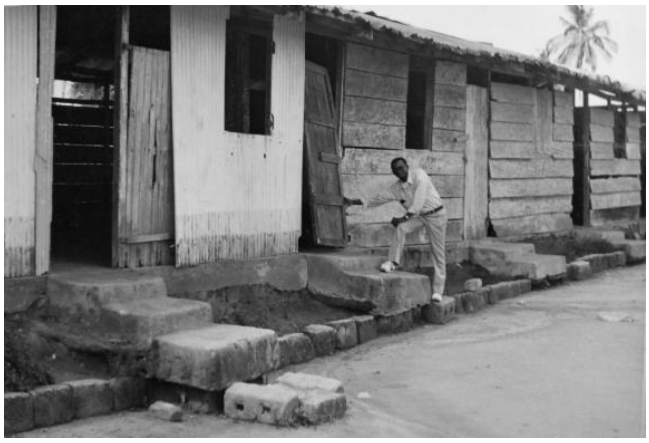

Figure 9: Alexander D. Okyere in Front of the Old School Classroom Structure, Post-1965
Photograph from the private collection of Alexander D. Okyere

In the following section, I explore the medium of instruction used in deaf education in Ghana after Foster's departure.

Medium of Instruction in Deaf Education in Ghana: The Battle between Manualism and Oralism

Within educational policies, Ghana's trajectory in formulating and executing language policies for deaf education has witnessed considerable fluctuations, both in official and unofficial capacities. In a seminal address delivered at a Ghanaian conference in 1972, Markidess (as referenced in Okyere & Addo, 1999:151) revealed Ghana's varied approach to communication modalities for Deaf education. Among the highlighted techniques were the Rochester Method[31], Combined Method[32], Simultaneous Method[33], Danish Method[34], Manual Method[35], and Total

[31] The Rochester Method entailed educating deaf students solely through the use of fingerspelling and oral language.
[32] Combined Method involved using both sign language and oral language for deaf education.
[33] The Simultaneous Method, also known as simultaneous communication or SimCom, involves the practice of concurrently using sign language and spoken language for communication.
[34] The Danish Method encompassed the integration of both hearing and deaf culture, as well as the incorporation of both sign language and spoken language in deaf education.
[35] Manual Method involved the use of sign language and fingerspelling in deaf education.

Communication[36] (Okyere & Addo, 1999:151). The exact mechanisms these methods were deployed remain unclear, probably due to unofficial practices. Despite the diversity of communication modalities acknowledged within the Ghanaian context, deaf schools demonstrated autonomy in the method to adopt. The criteria for such selections, as postulated by Appiah et al. (2016:39), predominantly hinged on the pedagogical background and expertise of the incumbent headteacher. Furthermore, an in-depth analysis by Okyere and Addo, (1999:152) on the method of communication also indicated that the Ministry of Education (at the time of their research) did not decisively select one method of communication to use for deaf education.

Since 1965, there has been an ongoing debate over the medium of instruction in deaf education in Ghana, primarily between the manual system (SL) and oralism (Kwaffo, 1988:3). Oralism was introduced in 1965, leading to controversy as manualists using sign language had already demonstrated pedagogical success (Kwaffo, 1988). The manual system used ASL, while oralism focused on oral communication (i.e., English & local Ghanaian languages) and Ghanaian gestures (ibid). Gadagbui (1998:87 & 105) also noted that oralism encouraged using Ghanaian gestures in the classroom.

During that time, it was commonly believed that any form of communication without speech would stigmatise individuals as less than human (Kwaffo, 1988:68). This echoes Rev. Foster's emotional advice to the Ghanaian government in 1960, strongly advocating against adopting oralism.

> …"Oralist" impose this system upon defenseless deaf children blindly and stubbornly. Is this good for Ghana? ...Ghana should heed this cry in the wilderness. (Foster 19606:155 - 156)

Pecku (1977) explained that in schools, deaf students were trained to adjust to society, supporting the idea behind oralism. Gadagbui (1998) also emphasised that sign language limited deaf individuals' social interaction with the public, leading to a push for the strong use of oralism and a ban on sign language. In 1967, sign language usage as a method of instruction was officially banned (Asamoah, GNAD Newsletter 2008a:5).

In 1992, authorities from all deaf schools in Ghana convened for a conference and decided to adopt Total Communication (TC) as the medium of

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[36] Total Communication (TC) is an educational philosophy in deaf education that embraces a comprehensive approach to communication, encompassing the use of sign language, gestures, fingerspelling, body language, listening, lipreading, and speech.

instruction (Gadagbui 1998: 105). However, in 1999, the government reversed its stance and instructed all deaf schools to use only sign language as the medium of instruction (Deku & Kumedzro 2009:19; Appiah et al. 2016:36). This decision came after discussions in the 1990s involving stakeholders like Alexander D. Okyere, Edward Baiden, George Tetteh, Mary Addo, and Godfred (GES letter to stakeholders of GSL [1996, 9th August] [37]). The shift to sign language was attributed to concerns about students' poor academic performance and the perception that they were being forced/maltreated to use speech (Oppong, 2003 as cited in Appiah et al., 2016:40).

Additionally, the decline of oralism was also influenced by the lack of available equipment (e.g., Screening audiometer, Diagnostic audiometer, Speech training unit, Auditory training unit & Otoscopes) and qualified personnel (e.g., audiologists & speech therapists) to support the oral method (e.g., Appiah et al. 2016; Deku & Kumedzro 2009; Gadagbui 2005, 1998). Figure 10 illustrate a classroom environment showcasing oral approach practices and assessments in 1988 at Sekondi School for the Deaf (Kwaffo, 1988).

Figure 10: Oral Approach Practices and Assessments at Sekondi School for the Deaf in 1988
Photograph from the private collection of Edmund Kwasi Kwaffo

[37] GES Special Education Division. (1996, 9th August). Seminar on Deaf Education. Letter to stakeholders in Deaf education. Retrieved from J Amuah personal archive. Note: 2 of our informants (H1 & D4) were also personally invited to this workshop as their names appeared on the invitation letter. Other informants were also at the workshop, but they were there as GNAD representatives.

Pioneering Initiatives and Key Factors: Fostering the Development of GSL

The development of a national sign language can be attributed to the emergence of the deaf community's need for education and the initiatives undertaken by GNAD. In this section, I shed light on pioneers and actions that have played a crucial role in propelling the growth of a national sign language. The following subsections focus on the following aspects: 1) Sign language trainings; 2) the pivotal role of deaf associations and clubs; 3) the former involvement of the government and the national sign language learning materials (currently unavailable and out of print); and finally, 4) the significant impact of the national sign language broadcasting on national television.

Sign Language Trainings and influential Figures: A Catalyst for National Sign Language Development

In 1996, Ocloo (1996:1) estimated that approximately 90% of teachers lacked proficiency in signing (mostly hearing teachers), leading to several calls by GNAD for sign language training (GNAD Newsletter, 2010:22; 2009:7; 2008a,b:2). From 2003 to 2013, GNAD conducted a series of sign language teaching and interpretation training workshops in both northern (Upper West, Upper East & Northern Region) and southern parts of the country (GNAD Newsletter, 2009b:3; 2003:4-5). Sign language literacy skills were also provided to deaf individuals who had not attended deaf school (GFD Newsletter, 2005:5). GNAD even organised training for the hearing community, such as a two-week workshop in 2009 that trained 18 interpreters at the Akrofi-Christaller Institute in the Eastern Region.

> "The interpreters training was the first of its kind with facilitators; Mr. Philemon Akach, a renowned sign language interpreter's Lecturer and the Head of Afro-Asiatic Studies on sign language and Language Practice of Free State University-South Africa, and Ghana's own- Mr. Marco Nyarko, an undergraduate student at the University of Winneba who had undergone 2-month[s] training in sign language in England. (GNAD Newsletter, 2009b: 2)

One significant achievement of the interpreter's workshop was the establishment of the Ghana Association of Sign Language Interpreters[38], with Mr. Francis Atsu

[38] Over the years the association became inactive, and it is not known when and why. Currently, however, due to the covid-19 crises in 2020 and the need to disseminate

Agbenya as President and other elected members (GNAD Newsletter, 2009b). Figure 11 depicts the interpreters who underwent training, whereas Table 3 lists the members elected to oversee the association. Another notable interpreters' training occurred in 2012, where 18 interpreters from various regions received sign language training (GNAD Newsletter, 2012:7).

Table 3: First members of the Ghana Association of Sign Language Interpreters (GNAD Newsletter 2009b)

Vice President	Mr. John Jonas Kwame Dosoo
Public Relation Officer	Mr. Frank Owusu
Secretary	Mr. George Pinto
Treasurer	Ms. Lydia Boison
GNAD Representative	Mr. Johnson Mahama

Figure 11: Participants and Facilitators at the Interpreters Training Workshop **(GNAD Newsletter, 2009b)**
[The individual members involved Johnson Mahama (GNAD secretary), Pinto George, Stephen Akuba, Tom Gweru, Edem Doste, Lydia Boison, Ebenezer Asamoah (GNAD Director), Frank Owusu, Annang Boye, Daniel Amoah, Joyce Nyarko, E. Addo, Marco Nyarko (Facilitator), Dosu Jones, Phelimon Akach (Facilitator), Stephen Dadzie, Frimpong Mansu, Aaron Davis Ato, Haruna, M. I., Gideon Nii Kotey Quartey, Agbenya Francis, Matthew Dumah]

In the national sign language history annals, a pivotal moment occurred with the involvement of Philemon Akach, a consultant on deaf education and professor of

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information, a GSL interpreters association came on the scene. The new association is known by the name National Association of Sign Language Interpreters Ghana and claims to have been formed in 2018 in the Western Region. (https://www.naslig.org).

sign language linguistics at Wits University in South Africa. His visit to Ghana in 1996 was supported by the Swedish Deaf Association, The World Federation of the Deaf (WFD) and the United Nations Educational, Scientific and Cultural Organization (UNESCO). Back in 1992, the Ghanaian Ministry of Employment and Social Welfare collaborated with other ministries and NGOs to launch a community-based rehabilitation program (CBR) aimed at promoting the rights of people with disabilities in the country (WHO 2002b:7). As part of this initiative, several deaf individuals were integrated into mainstream schools, but communication became a significant challenge. Recognising the need for a local dictionary and learning materials for deaf education, the government established a national sign language committee in 1994 (UNESCO[39] 2001:31). Figure 12 displays a deaf member highlighting the benefits the deaf community accrued from CBR between 1992 and 1997. These benefits included the organisation of workshops, support in establishing GNAD branches, and the development of Sign Language.

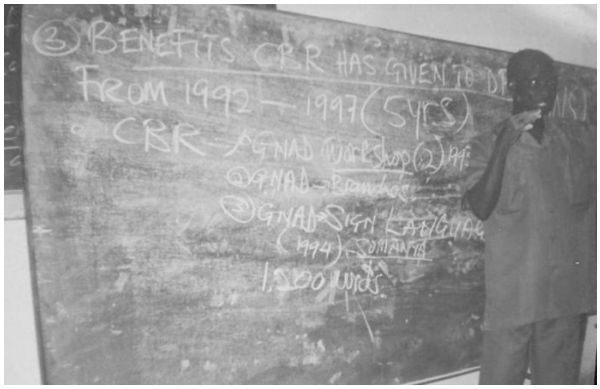

Figure 12: Presentation to Deaf Members on the Benefits GNAD Gained from CBR
Photograph from the private collection of Alexander D. Okyere

Responding to the government's call, UNESCO embarked on the Deaf Education Project Ghana from 1998 to 2000. Under this project, efforts were made to document GSL and develop teaching materials, including the GNAD (2001) dictionary[40]. Additionally, sign language teaching and interpreter training were key components of the program. Dr. Akach, as a consultant for the project, facilitated a series of workshops (UNESCO 2001:32). These workshops catered to deaf adults for sign language documentation and development, interpreters for sign language interpretation, and teachers for sign language structure and pedagogy (ibid). These workshops were held nationally, engaging participants from various regions in

[39] United Nations Educational, Scientific and Cultural Organization.
[40] The book itself did not provide a publication date, but based on my general knowledge, it can be inferred that it was published in 2001.

Ghana, which ultimately contributed to the transformation of a national sign language for deaf education (ibid).

The outcomes of the Deaf Education Project were momentous. A 6-member team of proficient national sign language signers was formed after the workshops. This team played a crucial role in disseminating their profound understanding of the national sign language to all deaf schools across the country (ibid:33). Linguistically, one of the major achievements was the identification of 76 handshapes, which resulted in around 2,500 national sign language signs specifically designed for teaching purposes (ibid).

Moreover, the influence of deaf churches was another significant factor in the propagation of a national sign language. As early as 1987, notable deaf-led churches emerged in various locations, including Mampong, Adamorobe, Koforidua, Tema, Tamale, Cape Coast, Sekondi, Takoradi, and Kumasi, largely under the guidance of Reverend Andrew Foster (Foster, 1987; 1976; 1965). Foster's January-March newsletter reported that these church gatherings nationwide amassed about 600 deaf members (Foster, 1987).

Philemon Akach's involvement and support from deaf groups have left indelible marks on the national sign language development and spread in Ghana. These efforts have significantly contributed to enhancing the education and empowerment of the deaf community in the country.

Empowering the Deaf Community in Ghana: The Role of Deaf Associations and Clubs

GNAD, the sole existing deaf-led association in Ghana, was founded by Dr. Seth Tetteh Ocloo (GNAD n.d.:15). Although it was formed in 1968, it officially obtained association registration in 1975 (Phillips 2002:20). With an initial membership of 25 individuals, predominantly male, GNAD's primary objective, according to Gadagbui (1998:137), was to bring together deaf graduates to exchange ideas and perspectives on their development. In 1976, GNAD became a member of the World Federation of the Deaf (Gadagbui 1998:138).

In the Northern region of Ghana, the Action on Disability and Development (ADD) [41], a benevolent non-governmental organisation (NGO), established a deaf club centre to serve as a social and talent showcase hub for the deaf community. Subsequently, in 1995, ADD set up an independent deaf association in the Upper East Region. However, it was only in 1997, with the intervention of the late Mr.

[41] ADD is a British NGO which started operating in Ghana since 1994.

Francis Boison, GNAD harmonised its relationship with the Northern deaf association established by ADD (GNAD Newsletter 1998:8).

Notably, GNAD was not the first deaf association in Ghana. The Ghana Society for the Deaf holds that distinction. The exact founding date is a subject of debate, with Grischow (2011) stating it was created in August 1962 as a lobby group for deaf Ghanaians under the control of the Convention People's Party (CPP) led by Nkrumah (Grischow 2011:196). In contrast, Oppong (2006:19) asserts that the Ghana Society for the Deaf was established in 1965. A tribute by GNAD (Newsletter 2004:8) to the late Edward Atta Gyan Baiden (deaf person) indicates that the Ghana Society for the Deaf was previously known as the Osu Mission Center. Limited information is available about the Ghana Society for the Deaf's leadership. However, records from 2003 suggest that a retired High Court judge named Mr. K. E. Boison headed the association during that period. Ghana Society for the Deaf also provided deaf education using sign language. The tribute to Baiden, for example, indicated he learned sign language from the Ghana Society for the Deaf (GNAD Newsletter 2004:8). Figure 13 illustrates a group of deaf adults participating in educational training at the Ghana Society for the Deaf office.

Figure 13: Francis Boison (in front) and other deaf individuals receiving training at the office of the Ghana Society for the Deaf
Photograph from the private collection of Alexander D. Okyere

In 1995, the Ghana Society for the Deaf, in collaboration with a religious organisation and facilitators from the University of Kansas in America, organised a workshop to train and certify Ghanaians as professional interpreters (UNESCO 2001:31). Similarly, a report by UNESCO (2001) and the WHO (2002a,b) also mentioned several sign language proficiency trainings were organised for deaf members in collaboration with the government (via CBR) and a deaf association.

However, it was unclear whether the association they referred to was GNAD or Ghana Society for the Deaf.

During the early 1990s, GNAD and the Ghana Society for the Deaf collaborated on various activities to foster unity within the deaf community. Noteworthy events included the Deaf Festival of Art and Culture in 1991, the Deaf Workers Durbar in 1992, and the Deaf tourist tour in 1994 (GNAD Newsletter 2004:8). Additionally, several sports (see Figure 14) and drama activities were organised, leading to the formation of the Ghana Deaf Sports Federation in 1994 to promote deaf sports in the country (Anonymous, 2006:22). It should be noted that the federation was established by Mr. Jonathan Amuah, a consultant featured in this chapter. Before the official registration of the federation in 1994, the federation organised several annual National Deaf festivals. These festivals took place in Takoradi in 1979, Kumasi in 1980, Cape Coast in 1981, and Tarkwa in 1984, as reported by Graphic Sports on 16 July 2004.

Figure 14: Ghanaian deaf football team celebrating their victory against Nigeria in 2004.[42] **(**Photograph from **GNAD Newsletter, 2004)**

The establishment of the two associations and joint efforts have significantly contributed to the empowerment and advancement of the deaf community in Ghana, fostering a sense of belonging and progress among its members.

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[42] The following are the individual deaf members who were in the team: Alfred Deko, Isaac Eshun, Bernard Kwateng, Eric Sarkodie, Jonny Oti Agyei, Samuel Apprey, Awudu Anyass, Samuel Opuni, Kwame Asante, Godfred Baffoe, Yahaya Grushie, Prince Buronya and Alex Okyere (i.e., My deaf research assistant, Alex, was a member of the football team. In the photograph, he can be identified as the second individual from the right in the front row)

Government's Role in Developing the National Sign Language

In September 1996, the Ghana Education Service (GES) took a significant step towards national sign language development by organising a five-day workshop at the University of Education, Winneba. This workshop aimed to seek stakeholder input for the appropriate methodology in the national sign language documentation, as GES was about to begin this crucial undertaking (GES letter to stakeholders of GSL [1996, 14th August] [43]). During the workshop, Dr. Ocloo, in a written speech where he identified himself as the right-hand man of Rev. Andrew Foster, emphasised the need of expanding the national sign language vocabulary to include Ghanaian cultural concepts, festivals, and chieftaincy (Ocloo, 1996:1). On the issue of developing the national sign language, Ocloo (1996:2) noted that the "English signs" (i.e., Signed English with ASL vocabulary) already introduced into Ghana *need not* be changed, but rather the vocabulary needs to be increased to capture other concepts in our cultural environment.

GNAD played a pivotal role in pursuing the national sign language development by documenting it. Some members aimed to show how distinct it was from ASL (F. Boison, P.C, 26th Sept. 2015). Gadagbui (1998:55) also noted that GSL was being "formulated" by a team of experts. According to Gadagbui (2005; 1998) and Kudogo et al. (2001 as cited in Gadagbui 2005), GSL was being "developed" through the creation of a GSL dictionary. UNESCO's Deaf Education Project Ghana (1998-2000) also contributed significantly to GSL documentation and teaching material, culminating in identifying 76 handshapes capable of producing approximately 2,500 GSL signs for teaching purposes (UNESCO 2001:32).

In 2007, GES, in collaboration with GNAD and other stakeholders, established a committee dedicated to standardising "GSL" for deaf education. The committee included representatives from various organisations and institutions, aiming to enhance "GSL" materials for deaf students at different academic levels (Committee Report [2007, 27th November]) [44]. Table 4 presents the members of the committee.

Table 4: Committee members of GSL standardisation

Committee members	Affiliation
Mr. Ebenezer Asamoah (hearing)	GNAD

[43] Ghana Education Service, Special Education Division. (1996, 14th August). Workshop on the Development of Sign Language. Letter to stakeholders of GSL. Retrieved from J. Amuah personal archive.

[44] Ghana Education Service Special Education Division. (2007, 27th November). Committee report on Common sign language usage in Special Schools for the Deaf in Ghana. Retrieved from J Amuah personal archive.

Mr. Jonathan Amoah (deaf)	GNAD
Mr. Francis Kwame Boison (deaf)	GNAD
Mr. Emmanuel Ofosu-Boachie (hearing)	Koforidua School for the Deaf
Mr. A.M. Oppong (hearing)	University of Education, Winneba (UEW)
Mr. Owusu Sekeyre Frank (hearing)	UEW
Mrs. Victoria Donkor (hearing)	Special Education Division (SpED)-GES
Mr. Robert H. Akyea (hearing)	SpED- GES
Mr. Kobina Baidoo (hearing)	SpED- GES
Mr. Godfred K. Tay (hearing)	SpED- GES
Mr. A.K. Quansah (hearing)	SpED- GES
Mrs. Dinah Kwadade (hearing)	Africa Action, Ghana
Ms. Layla Zulekha Isam (hearing)	Voluntary Service Overseas (VSO)
Ms. Patience Gamado (hearing)	VSO
Mr. Michael Cudjoe (hearing)	State School for the Deaf

As of 27th November 2007, the committee in their report acknowledged the existence of GNAD (2001) and Oppong's (2007) dictionaries and some GSL books by Mrs. Dinah Kwadade and Non-Formal Education Division, respectively. However, the report noted that due to the absence of linguistic advice, the available GSL books "lacked certain ingredients" as such were not adequate for deaf education in the country (Committee Report [2007, 27th November]:2). In the report, it was planned that the creation of a new GSL material would build on previous GSL books by capturing regional variations as well as creating various materials (both in print & video) to meet the need of deaf students at different academic heights under GES (Committee Report [2007, 27th November]). It was noted that GES successfully developed the GSL materials for deaf education (J. Amuah. Personal communication. 22, December 2020). However, the researcher could not get hold of some copies since they were out of the system.

Subsequently, in 2009, Mrs. Dinah Kwadade (past acting Director of Special Education Division) launched three GSL books titled "My First Book Sign," "Sign with me – My Books of Fruits and Vegetables," and "Bibo, My Friend" to aid sign language learning for deaf children and the public (GNAD Newsletter 2010:4). Additionally, Dr. Philemon Akach launched sign language Story Books in Ghana further to enrich sign language resources (GNAD Newsletter 2010:4). Attempts also to get copies of these books were not successful. There is also a handbook by GNAD that introduces GSL to its readers (GNAD, n.d.). This time I got a copy of this book. It was titled "Deaf Awareness Handbook". The handbook is an earlier

book that teaches signs and describes GSL syntax (GNAD n.d.:8). GSL parameters and non-manual markers are also illustrated. GSL was also demonstrated to have a different syntactic structure from English. However, the book is out of print, and I do not know how popular it became during its production.

Furthermore, GNAD published a valuable resource called the "Deaf Awareness Handbook," introducing GSL to its readers by illustrating GSL parameters, non-manual markers, and syntax (GNAD n.d.:8). Unfortunately, the handbook is currently out of print, but I managed to get a copy.

Overall, the efforts made by various organisations and stakeholders have been crucial in documenting and standardising GSL, enriching the educational experience and cultural awareness for the Ghanaian deaf community.

Empowering GSL through Television Broadcasting

In 1992, a groundbreaking sign language educational program called "The Missing Link" was introduced.[45] This 30-minute TV program aired every Saturday at 1:00 p.m., making it accessible to a wide audience (Nuviadenu, 2005). "The Missing Link" played a significant role in creating deaf awareness and promoting necessary support for the "official acceptance of Sign Language in the country" (Daily Graphic, 6th August 2007, p. 4; Martey-Markwei, 1989:5). Mr. Martey-Markwei was the producer of "The Missing Link". See Figure 15 for a depiction of "The Missing Link" in action during a broadcast.

A: Introducing the program[46] B: Presenting the news in GSL[47] C: Teaching GSL

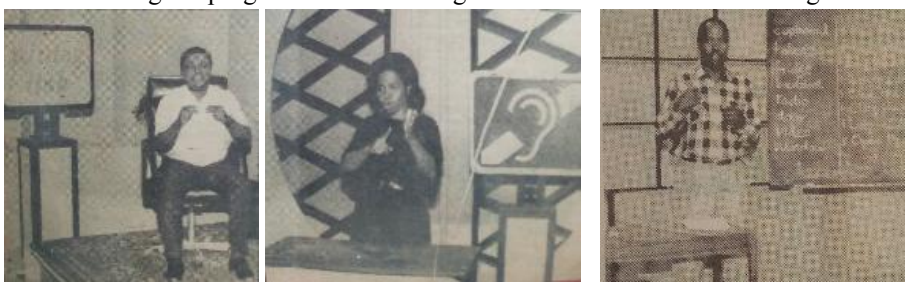

Figure 15: The Missing Link: A TV program for the Deaf Community in Ghana (Photographs from a newsletter. Kind Courtesy of Martey-Markwei, 1989)

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[45] The termination date of "The Missing Link" as a TV program is not documented in secondary data sources. See section 2.4.2.5, where Jonathan Amoah's information indicates that the program halted around the year 2000, citing a lack of support as a contributing factor.

[46] By Mr. Felix Ansah.

[47] By Ms Mary J. Addo (a participant in this chapter).

One of the remarkable aspects of "The Missing Link" was its ability to pave the way for various advertisements to be delivered using sign language (GNAD Newsletter, 2009b; 2003:3; GNAD, 2018:4). This provided an inclusive platform for advertisers and businesses to reach the deaf community in Ghana.

Several individuals actively contributed to the success of "The Missing Link," including Mr. Felix Ansah, Mr. Francis Boison, Ms. Mary Addo, Mr. Francis Agbenya, and Mr. Alexander D. Okyere (GNAD Newsletter, 2004:8; Martey-Markwei, 1989). These individuals played instrumental roles in ensuring that the program effectively promoted the national sign language and fostered greater understanding of the deaf community's needs and aspirations.

"The Missing Link" stands as a significant milestone in GSL history, and its impact continues to be felt in raising awareness, promoting sign language acceptance, and providing an inclusive platform for communication and advertisement. The efforts of the dedicated team behind the program have been essential in advancing the recognition and use of a national sign language across Ghana.

2.4.2 Primary source: Perspectives from Deaf Education and Activism

The 'Old School' Era: Challenges, Achievements, and Emergence of the Deaf Community

According to information gathered from Mr. Asamoah, the Ghana Mission School for the Deaf, established by Rev. Andrew Foster and later moved to Mampong-Akwapim, gained stability with the appointment of Mrs. Fathia Nkrumah[48] as its patron appointed by Dei Anan, a close associate of Kwame Nkrumah[49] (Mr. Asamoah's interview). This connection sparked Kwame Nkrumah's interest in Deaf education in Ghana, prompting the government to seek assistance from the Commonwealth Society for the Deaf in London. This led to the invitation of Ms. Anne Hewitt from the United Kingdom[50] (Massachusetts University), who became the first principal of the newly formed Special Training Teachers' College (STTC) at Mampong-Akwapim in 1965. STTC introduced oralism by training teachers as oralists to manage deaf education in the country.

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[48] The first lady of Ghana/wife of the first president of Ghana.

[49] The first prime minister and subsequently president (in 1960) after the independence of Ghana in 1957. Nkrumah's government ended on 24 February 1966 with a coup d'état.

[50] Since Ghana gained independence from the British, it was not surprising that an expert from the United Kingdom was called on instead of America, where Rev. Foster came from. At that time oralism was also being practised in deaf education in the United Kingdom.

Table 5 lists the heads who managed STTC before it was eventually upgraded into a special education college and moved to the University of Education, Winneba (UEW). As the inaugural head, Ms. Hewitt successfully trained over 30 teachers during her tenure, leaving a lasting impact on the college before her departure in 1970. Dr. Carlin assumed the position briefly for less than a year, after which Dr. Andreas Markides took over and served as the college's head for four years. As recounted by Mr. Asamoah, Dr. Markides was critical of Ms. Hewitt's approach, suggesting that she had not adhered to a strictly oral method. Before Dr. Markides's tenure as head of college, the school had employed the Rochester method—a combination of fingerspelling with oral techniques. However, Dr. Markides took a more stringent stance on oralism and ceased the application of the Rochester method. Notably, fingerspelling was previously used for names and terms that were challenging to lip-read, but Dr. Markides insisted on a pure oral approach, asserting, "If it is oral, it is oral," as captured in Mr. Asamoah's interview. Following Dr. Markides' departure, Mr. David Aryee made history as the first Ghanaian to lead the college. Under his leadership, the college underwent amalgamation with other special colleges responsible for training teachers for special needs students. Then eventually got relocated to the University of Education, Winneba (UEW), continuing its vital role in shaping the future of deaf education in Ghana (Mr. Asamoah's interview).

Table 5: Heads of the Special Training Teachers' College (1965 – 1986)

College Head	Country of Origin	Period
Ms. Hewitt	United Kingdom	1965 - 1970
Dr. T.W. Carlin	United State of America	1971
Dr. Andreas Markides	Greece (or the United Kingdom)[51]	1971 - 1975
Mr. David Aryee	Ghana	1975 - 1986

According to Mr. Asamoah, during Ann Hewitt's leadership, newly enrolled deaf children at the Ghana Mission School for the Deaf were segregated from those already introduced to sign language. Ms. Hewitt adopted the oral approach for the new students. She rented a nearby premise to facilitate this approach and established the Demonstration School for the Deaf in 1968. The Demonstration School for the Deaf was situated approximately one kilometer from

[51] He was a Greek but naturalized as a British.

the Old School in Mampong-Akuapem, in close proximity to the Special Training Teachers' College. Trained teachers were assigned to practice the oral method at the Demonstration School for the Deaf. However, Mr. Amuah (interview) revealed that some deaf students at the Demonstration School secretly visited the Old School to learn sign language. Over time, the Old School faced a decline in new admissions due to the focus on the oral approach, which eventually led to the decision to transform it into a Secondary/Technical School for the Deaf in 1975 (Ms. Addo & Mr. Asamoah's interviews). Currently, it is the sole second-cycle institution for the deaf in Ghana. The Special Training Teachers' College played a crucial role in providing teacher training for deaf education, with the first cohort of 12 trainee teachers (8 males & 4 females) completing their program in 1967, and the second cohort of 16 male trainees[52] arriving in September 1967 (Mr. Asamoah interview).

In 1970, the thirteenth meeting of the International Congress on Education of the Deaf took place in Stockholm, Sweden. Following Ghana's participation in this congress, the country committed to supporting African teachers in pursuing Deaf Education. As a significant step in this direction, in 1975, the Special Teachers' Training College (STTC) started admitting aspiring teachers from Nigeria, Sierra Leone, Tanzania, Swaziland, Kenya, Gambia, Botswana, and Seychelles (as indicated by Mr. Diaba; Gadagbui 1998:116).

Locally in Ghana, the establishment of STTC had a profound impact, acting as a catalyst for creating various deaf schools across the country, as shared by Mr. Asamoah. This initiative played a crucial role in expanding educational opportunities for deaf students and fostering a supportive environment for the deaf community in Ghana.

The Pioneers: How Deaf Schools Spread Across Ghana

Mr. Asamoah provided valuable insight into the spread of deaf schools nationwide. Interestingly, the information presented in this section was largely consistent with Gadagbui's (1998) and Pecku (1977) findings. However, there are a few contradictions that I address in the section.

According to Mr. Asamoah, after the graduation of the first trained oralists from STTC, eight teachers were sent to the Old School and three to the Demonstration school[53]. This dedicated group of teachers began advocating for establishing more schools. As these trained oralists hailed from different parts of Ghana, some chose to return to their regions and set up deaf schools, receiving strong support from the government. Table 6) below provides names of those responsible for initiating various deaf schools nationwide.

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[52] Informant H3 happens to be among the second cohort of the 16 students.
[53] Note: One of the female students decided to leave special education.

Table 6: Deaf Schools in Ghana, their pioneers and initial medium of instruction[54]

Deaf Schools	Year of establishment	City & Region	Initiators	Initial method of instruction
Demonstration School for the Deaf	1968[55]	Mampong, Eastern Region	Ann Hewitt (British)	Oralism
State School for the Deaf	1965[56]	Accra, Greater Accra Region	Dr. Seth Ocloo	TC
Wa School for the Deaf	1968	Wa, Upper West Region	Mr. Bod Miller	Oralism
Cape Coast School for the Deaf	1970	Cape Coast, Central Region	Mr. I.K. Nkum	Oralism
Sekondi School for the Deaf	1971	Inchaban, Western Region	Ms. Theresa Rule	Oralism

[54] Currently there is no existing deaf school in Adamorobe village. However, historical accounts vary regarding its establishment and closure. According to Gadagbui (1998:78), Rev. Foster organized the Adamorobe School for the Deaf in the village between 1963 and 1975. Subsequently, Mr. Ofori, a trained oralist from STTC, supervised the deaf school from 1974 to 1980 (Gadagbui (1998:78). Contradictory information arises from Kusters (2015:154), stating that the school closed in 1980 due to conflicts between deaf students and their teacher. Kusters (2015:153) adds that the school originated in 1974 as a unit school initiated by the Ghanaian government, during a period when Foster was no longer in the country. Nyst (2007:26ff), however, provides a different perspective, noting that the school began in 1987 by the initiative of Rev. Foster and Mr. Adu. Despite the variance in timelines, Kusters (2015), Nyst (2007) and Gadagbui (1998) offer more detailed insights into the complex history of the deaf school in Adamorobe.

[55] This date is different from what was presented in figure 3 this was because in both my secondary data (Gadagbui, 1998) and interview, 1968 was what was given. Other literature (e.g., Okyere & Addo, 1999; Pecku, 1977) noted 1964, which I find hard to believe because the school cannot have preceded STTC which was in 1965. In figure 3 the year was taken from Amoako (2019), I also believe that Amoako mistakenly considered the Demonstration School as a continuation of Old School which was established in 1957.

[56] In 1965, the Mission Centre for the Deaf was established, and it was through this center that the school began as a private entity. Some (e.g., Runnels 2020 & Pecku, 1977) however use the year 1966 as the time teaching began at the centre.

Volta School for the Deaf	1971	Hohoe, Volta Region	Ms. Mary Adziimah (Mrs. Seneya)	Oralism
Bechem School for the Deaf	1975[57]	Bechem, Brong Ahafo Region	Mr. G. O. Tetteh	Total Communication (SimCom[58])
Kibi Unit School for the Deaf	1975	Kibi, Eastern Region	Mrs. E. Obeng & Mr. S.Y. Appiah[59]	Oralism
Koforidua Unit School for the Deaf	1975	Koforidua, Eastern Region	Mrs. E. Obeng & Mr. E. A. Odameh[60]	Oralism
Salvation Army School for the Deaf	1995	Agona Swedru, Centra Region	Mr. I.K. Nkum	Oralism
Secondary/Technical School for the Deaf	1975	Mampong, Eastern Region	Ghanaian government	Total Communication (SL+ Oralism)
Ashanti School for the Deaf	1977	Jamasi, Ashanti Region	Ms. Agnes Opoku	Oralism
Savelugu	1978	Savelugu,	Mr. I.K.	Oralism

[57] 1968 and 1969 was what I came across from the findings. But Amoako (2019) claimed it was 1975 which I doubt because, as early as the late 1960s, the initiator of the school Mr. G.O. Tetteh, had returned from his training in Denmark.

[58] In other words, Simultaneous Communication, or sign-supported speech (see section 1.2). It is a way of signing and speaking at the same time during communication. Linguists do not consider the technique of using SimCom as sign language since the signs are made to follow the grammatical structure of the spoken language being articulated.

[59] Mr. Odameh was the trained oralist sent to head the unit school, but Mrs. Obeng initiated the call for the unit.

[60] Mr. Appiah was the trained oralist sent to head the unit school, but Mrs. Obeng initiated the call for the unit.

School for the Deaf		Northern Region	Nkum	
Gbeogo School for the Deaf	1996	Tongo Bolgatanga, Upper East Region	Mr. Baiden & Mr. B. Kosusum	SL + Oralism

As could be observed in Table 6, several inspiring individuals played pivotal roles in starting deaf schools across different regions of Ghana. Let's explore some of these remarkable stories (Mr. Asamoah's interview):

1. Ms. Theresa Rhule from the Western Region initiated a deaf school, in Sekondi. She established the school in an abandoned technical school structure[61]. With her training in the oralist approach, oralism became the primary medium of instruction at the school.
2. Ms. Mary Adzimah, from the Volta Region, returned to her hometown and took the initiative to start the Volta School for the Deaf. She began the school in her uncle's (big) house in Gboxome until the government constructed a permanent building for it.
3. Mr. R. K. Nkum, originally from the Central Region began the Cape Coast School for the Deaf. Due to the lack of a student dormitory, the school adopted a foster system. This system was a situation where nearby families are paid to provide accommodation and feeding for the deaf students as their surrogate parent. Later Mr. Nkum was transferred by GES to the Northern Region to start the Savelugu School for the Deaf.
4. Assisted by the Catholic Church, Mr. Bod Miller initiated the Wa School for the Deaf. Interestingly, the literature (i.e., Gadagbui 1998) notes that Dagaare[62] was the school's predominant language. This is not surprising given that Mr. Miller was trained as an oralist. In different regions, languages like Ewe, Twi, and Ga were employed (Okyere & Addo, 1999:150 & 151).
5. The literature (Gadagbui 1998) mentions that Mr. Bawa Kosusum Sam (but the name pronounced by Mr. Asamoah in our interview sounded as KOSUSANYI) and an unknown NGO started the Gbeogo School for the Deaf in the Upper East Region. However, one consultant (Mr. Asamoah) clarified that a deaf man named Edward Baiden was the true initiator of the school. Although Mr. Baiden lacked the required teaching qualifications,

[61] The school was abandoned due to its proximity to the sea and the fear that the building would collapse after some few years.
[62] A language used in Ghana and Burkina Faso belonging to the Moore-Gurma language family.

Kosusum, trained at STTC, stepped in as the headteacher. This claim was supported by information gathered from another secondary source. Edward Baiden, fondly known in the deaf community as EB, was recognised for his achievement by GNAD in a tribute:

> In 1995, "EB" worked tirelessly in pursuit of the establishment of a school for the Deaf in the Upper East Region, which was the only region without such a deaf school. There he made contacts with the Bolga Na-Ba (Chief of Bolga) District Assembly, Bongo, and Bawku and pressed for establishing such a school. Through his effort, there is now a school for the Deaf at Tongo-Gbeogo in the Bolga District. (GNAD Newsletter, 2004:8)

On the other hand, there are deaf schools that were not established by locally trained oralists. Two such examples are the Becham School for the Deaf and the State (Adjei Kojo) School for the Deaf.

The State School in Osu, founded by Dr. Seth Ocloo in 1965, began as a private entity called Osu Mission Centre, aided by a government grant (Ocloo 2014; Gadagbui 1998:70). Dr. Ocloo secured a grant from the National Trust Fund to address the issue of overpopulation in the Old School and establish a new deaf school in Accra (Ocloo 2014). The school's history saw it relocated from Osu to Teshei in 1969[63], and later, it settled in its current location in Adjei Kojo.

The Becham School for the Deaf was initiated by Mr. G.O. Tetteh, who underwent training in Denmark after working with Foster. Mr. Tetteh utilized SimCom in his deaf education approach and received support from Ms. Agnes Opoku, a trained oralist. However, since Ms. Opoku hailed from the Ashanti Region, she decided to return there after working with Mr. Tetteh for two years to establish a deaf school.

In the case of the Kibi and Koforidua schools for the Deaf, Mr. Asamoah attributes their beginnings to Mrs. [Eudocia] Obeng, who formerly served as a headteacher at the Demonstration School in Mampong. Subsequently, Mrs. Obeng took on the role of the then called first "peripatetic teacher"[64]. Her responsibilities involved locating several deaf children in Koforidua and Kibi, leading to the initiation of Unit Schools for the Deaf in these locations. The concept of unit schools was influenced by British practices to promote oralism by integrating deaf students

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[63] The school was taken over by the government this year (1969) and was renamed as the State School for the Deaf.

[64] According to the participants, peripatetic teachers were responsible for the early identification of children with disability for appropriate care.

into mainstream schools. Both schools have transitioned away from the integrated system/unit[65] and are recognised as Kibi School for the Deaf and Koforidua School for the Deaf, respectively.

Battle between Oralism and Sign Language in Deaf Education

In the late 1960s, Mr. Okyere, was hired as a deaf teacher at the Old School. He was post lingually deaf and first introduced to signing in the school. According to him, at that time, the school had two factions of teachers, one advocating for oralism and the other for sign language. Sadly, Mr. Okyere experienced a hurtful situation when a colleague teacher derogatorily called him an "animal" because of his preference for sign language. Recounting the incident, Mr. Okyere emotionally expressed his anguish during a big meeting, where the hurtful term was used. He highlighted that the teacher believed the deaf people should only sign like "people" and not like "animals.". Mr. Okyere, noted the following in the interview.

> The first time he called me [animal], we had a big meeting [conference] and he called me animal. I wept. I wept in the presence of the people."…. "he said that, I don't want the deaf to talk, I want the deaf to sign. When they sign like animal, they become animal, when they sign like people, they try to become like people. (Mr. Okyere's, Interview, November 2020)

This ridicule appeared to be an attempt to suppress Mr. Okyere from advocating for sign language to deaf students. Between 1965 and 1992, the government predominantly favored oralism as the acceptable medium of instruction. During this period, deaf students faced punishment for using sign language on campus, and authorities even chastised (i.e., rebuked & reprimanded) teachers for employing sign language (Mr. Kwaffo & Ms. Addo's interview). The misconception that sign language threatened oralism in Ghana led to banning sign language in the Old School (Mr. Asamoah & Mr. Amenumey's interview).

Despite the opposition to sign language by oralist teachers, they still used gestures, facial expressions, and lipreading as part of their teaching strategies for the deaf (Mr. Kwaffo & Mr. Asamoah's interview). However, in 1988, the Ministry of Education recommended that deaf schools adhere to Total Communication (Mr. Kwaffo's interview). Although Total Communication was officially recognised as the medium of instruction, sign language gradually gained prominence due to the costly nature of specialised equipment to practice oralism (Mr. Kwaffo's interview).

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[65] Both authors experience the unit system in Koforidua as students

As a result, sign language began to dominate the educational approach in deaf schools in Ghana.

Evolution of a National Sign Language: From ASL and Signed English to Unification Efforts

Before the label GSL came into use in Ghana, the prevalent signing systems in deaf schools were ASL and Signed English, according to Mr. Amenumey, Mr. Amuah, Mr. Okyere, Ms. Addo, Mr. Kwaffo, and Mr. Asamoah. They also confirmed using a specific ASL dictionary called "Joy of Signing" by Riekehof (1978) at the Old School. From 1979 to 1983, Mr. Okyere had the opportunity to study in the United States (e.g., Gallaudet University, Western Maryland College), where he experienced SimCom and Signed English, which he noted were similar to what they used in Ghana. Upon returning to Ghana, Mr. Okyere continued as a teacher for the deaf at the Old School.

Mr. Adjei, who learned sign language outside of school, also noted that he was introduced to Signed English through interactions with deaf adults he met at Osu deaf church meetings, indicating that signing was not confined to the school domain.

Regarding naming the sign language used in the past, Mr. Asamoah referred to it in spoken English as "one-handed American Signs," while Mr. Kwaffo mentioned "American Conventional SL." Mr. Kwaffo further explained that during his time as a teacher at the Old School (from 1971), the specific name for the sign language they used was irrelevant to them, and they simply referred to it as sign language in spoken English.

When asked about the origin of the label “GSL”, Mr. Amuah stated that around 1992 - 1994, Mr. Okyere suggested it, with strong support from Mr. Francis Boison. However, when Mr. Okyere was asked the same question, he did not comment and expressed surprise that the national sign language was officially acknowledged as GSL. Mr. Asamoah and Ms. Addo also acknowledged the role of Mr. Francis Boison, Mr. Okyere, and some GNAD members in advocating for the GSL label, although they initially faced challenges. During this time, the GSL dictionary (GNAD, 2001) was produced, which contributed to the adoption of the GSL label. Mr. Asamoah and Mr. Amenumey confirmed that the label GSL gained prominence following the compilation of the GSL dictionary by GNAD. Below is a statement from Mr. Asamoah on the subject matter.

> At a point, the deaf community started to see whether we can have GSL, but I can say the time I was leaving [GNAD] we were not successful; we came out with a booklet [i.e., GNAD,

> 2001], and there was just a little difference between the GSL and ASL. (Mr. Asamoah's interview, December 2020).

One informant (Mr. Asamoah) emphasized that some people advocated for Ghana to abandon ASL and solely adopt local signs from the already existing sign language, such as AdaSL, for deaf education. However, contrary to this idea, informant Mr. Okyere, a committee member involved in the GSL dictionary's development, noted that their aim was to unify GSL due to existing variations.

The following subsections highlight two significant areas that, according to the informants, played key roles in the development of GSL, emphasizing the contributions of deaf-led associations and national advocacy and training on GSL.

Emergence and Growth of GSL: Influential Figures, Religious Contributions and Media Impact

According to Mr. Amuah, Dr. Akach from Kenya as consultant on Deaf Education played a significant role in developing GSL by introducing sign language linguistics and advocating for recognising deaf indigenous signs over ASL and Signed English. His visitation to Ghana marked a pivotal moment in the history of GSL. Akach's lecture served as a wake-up call, addressing the prevalent use of Signed English (i.e., english).

In response to this awakening, a national outreach program was initiated to educate deaf individuals and teachers on sign language in all deaf schools. This outreach was a collaborative effort with the Ghana Education Service (GES) and involved dedicated team members such as Mrs. Dinah Kwadade, Mr. George Tay, Mr. Francis Agbenya, Mr. Godwin Amenumey, Mr. Francis Boison, and Mr. Jonathan Amoah. The success of this project can be seen in the increased awareness and acceptance of GSL in deaf education across the country, leading to a gradual decline of oralism in the 1990s, as reported by Mr. Amuah and Mr. Okyere.

Religious institutions also played a crucial role in spreading sign language. Many church groups relied on various sign language dictionaries to teach their members, and deaf churches actively contributed to disseminating GSL among the deaf community, as mentioned by Ms. Addo, Mr. Adjei, and Mr. Amenumey. In some cases, older deaf members of the church took on the responsibility of teaching sign language to interested individuals.

Moreover, electronic media, specifically the television program "The Missing Link," was another effective medium for teaching GSL during the 1990s. At that time, there was a lack of awareness regarding sign language due to the prevalence of support for oralism in Ghana. "The Missing Link" was designed to raise awareness about sign language as a vital means of communication for the deaf,

as highlighted by Ms. Addo and Mr. Amuah. Ms. Addo noted the following in our interview.

> When we had the Missing Link, before then, we realised that many people didn't know the deaf have a language, and they could use sign language to get information (Mary Addo, Interview. November 2020).

Unfortunately, financial constraints led to the discontinuation of "The Missing Link" program around 2000, as mentioned by Mr. Amuah..

Deaf-led Clubs and Organizations in Ghana: Contributing to the Deaf and sign language Development

According to Mr. Amuah, local clubs were established by associates of the Old School and some deaf adults across various regions in Ghana. Figure 16 showcases the founding of deaf clubs in different areas, such as the Ashanti Region by Florence Oteng in 1970/71, the Western and Central Regions by Jonathan Amuah in 1979 and 1981, the Eastern Region by Samuel Bempong in 1980, the Volta Region by Mawunyo Awumee in 1990, and the Brong Ahafo Region by William Amankwah (date unknown) (Mr. Amuah's interview).

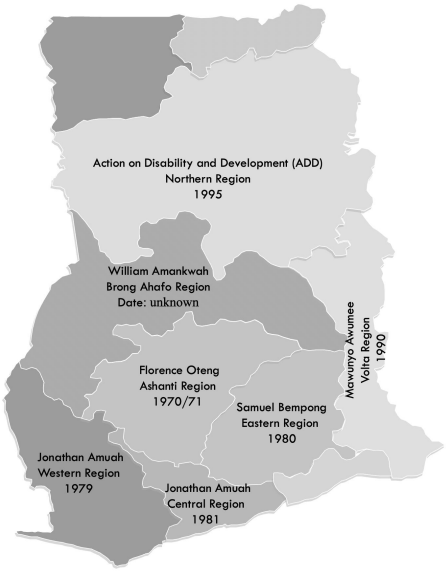

Figure 16: Establishment of regional deaf-led clubs

Furthermore, Mr. Asamoah mentioned that the Danish Deaf Association and Voluntary Service Overseas (VSO) played crucial roles in assisting the GNAD through their outreach program. Kasper Bergman served as the Danish Deaf Association's country coordinator in Ghana, contributing to GNAD's activities. A list of prominent deaf leaders, including Mr. Boison, a former board member for the World Federation of the Deaf, also features in Table 6: Deaf Schools in Ghana, their pioneers and initial medium of instruction, highlighting their contributions to deaf and sign language development.

Table 7: GNAD presidents and their tenure in office

Name		Time in office
President	**Vice President**	
Seth Ocloo	Emmanuel Dadzie	1968 – 1977
Daniel Atiemo	Andrew Nortey	1977 – 1978
Andrew Nortey	Samuel Adjei	1978 – 1979
Samuel Adjei	Nortey?	1979 – 1983
Godwin Amenumey	E. Baiden & Alexander D. Okyere	1983 – 1990
Francis Boison	Alexander D. Okyere	1990 – 2000
Paul Baarfi	Samuel Bempong	2000 – 2003
Samuel Asare	Jonathan Amuah	2003 – 2010
Emmanuel K. Sackey	Patricia Baffoe & Monica Dowuta	2010 – 2018
Matthew Kubachua	Monica Dowuta	2018 – to date

The Osu Mission Centre, alternatively known as Ghana Mission Christian for the Deaf or Ghana Centre for the Deaf, later became known as the Ghana Society of the Deaf, as stated by Mr. Amuah. Other informants corroborated the location change from Osu to Kokomlemle. Notable Ghanaians, such as Ben Kumah, Rev. Cobblah, George O. Tetteh, and Grace Amoah, headed the association, serving as role models within the deaf community.

Mr. Adjei, while not well-versed in Ghana Society for the Deaf's history, recalled a man named COBENA (C-handshape on the chin) who operated it. The site eventually transformed into a residential home for elderly deaf individuals after his retirement. Ghana Society for the Deaf provided valuable vocational skills training, including carpentry and tailoring, and adult education for the deaf, including those from Adamorobe. The association's collaboration with GNAD addressed various needs of the deaf community, further promoting their well-being and empowerment.

In 1988, GNAD became conscious of the importance of sign language teaching. This realisation occurred during their 20th-anniversary celebration, where

Mr. Wilkson, the vice president of the World Federation of the Deaf, visited Ghana and joined the festivities. During this occasion, Mr. Wilkson passionately pleaded with Ghana to prioritise the development of sign language and advocated for its teaching in schools (Mr. Amenumey's interview).

According to Mr. Amenumey, Wilkson's speech served as a wake-up call for GNAD, as before that moment, the association had been primarily focused on the socio-economic development of deaf Ghanaians, with little emphasis on sign language development for its members. His words prompted a shift in the organisation's priorities, leading them to recognise the crucial role of sign language in empowering and fostering communication among the deaf community in Ghana. This pivotal event marked the beginning of GNAD's active involvement in promoting and advocating for the recognition and teaching of sign language in the country.

2.5 Discussion

The chapter has shed light on the lesser-known aspects of Ghana's deaf history and the development of a national sign language in Ghana. Through a combination of secondary data and interviews with consultants, including deaf individuals and educators, a narrative of deaf history and its impact on sign language in Ghana has been presented. The following addresses the research questions and discusses some key findings in the study.

Research Question 1: How have deaf schools in Ghana contributed to the development and promotion of GSL?

Early deaf education in Ghana was characterised by the establishment of deaf schools nationwide, led mainly by locally trained oralists who graduated from the Special Teachers Training College. These oralists played a significant role in shaping educational approaches as they advocated for establishing more schools and promoted oralism as the predominant medium of instruction from 1967 to 1988. Oralism emphasised speech and lipreading as the primary means of communication for deaf students, which led to limited recognition and use of sign language.

The impact of oralism on GSL was profound, as it marginalised and suppressed the use of the school based sign language during this period. Deaf students and teachers faced challenges using sign language, and those who advocated for sign language were often ridiculed and stigmatised. However, it is worth noting that some oralist teachers still used gestures, facial expressions, and lipreading to communicate with their deaf students, indicating some accommodation to the deaf community's needs.

Ghana's contact with its colonial masters, the United Kingdom, led to the introduction of oralism in 1965. This was also shortly after Ghana gained

independence as a republic state. The government's emphasis on self-sufficiency and autonomy might have influenced their decision to disregard Rev. Foster's proposal to manage the deaf school according to his model. This apparent dismissal could also be seen as indicative of audism, especially when considering the lack of hesitation in calling in hearing foreigners from the UK. Such actions raise questions about inclusivity and whether decisions were made with a genuine understanding of the deaf community's needs and perspectives. Unfortunately, the government's decision led to Rev. Foster's departure from Ghana. The establishment of the Special Teachers Training College in 1965 further promoted oralism and became a hub for teaching teachers from other African countries in the oral approach. Consequently, oralism had some impact across the African continent.

Contrary to Runnels' report (2020:282) suggesting that Foster's in-service teacher training became Special Teachers Training College, my findings reveal that the College marked the end of Foster's education model. Rev. Foster had foreseen this development as early as 1960 and had warned the government against the introduction of oralism. Unfortunately, his warnings went unheard, and the government proceeded with its plans.

Subsequently, the use of sign language introduced in 1957 was gradually banned, leading to the closure of the Old School. Different sources, including Pecku (1977) and Gadagbui (1998), have provided varying dates for the termination of the Old School. While some claim it happened in 1979, others assert it occurred in 1977 due to concerns that it might hinder the practice of oralism at the Demonstration School, which was established a kilometre away. This fear was substantiated as students from the Old School actively sought to learn sign language from the Deaf spaces. Based on the primary data, the year 1977, as mentioned by Pecku (1977) and Gadagbui (1998), marked the end of admitting new students into the Old School. Nevertheless, the school did not shut down entirely. Instead, after a period of dormancy, it underwent a transformation into a second-cycle institution for deaf education. By 1979, no deaf children attended the Old School for their primary education.

Deaf signers faced challenges during the period of oralism as sign language was banned, and oralism dominated deaf education for the next 21 years. Contrary to popular belief, I propose that the controversy between the oral approach and sign language was more than just about using the hands versus the mouth. Society rejected anything foreign, including ASL, which did not fit the existing communication strategy. This aversion to foreign influences prompted the adoption of oralism to avoid incorporating ASL. Under the philosophy of oralism in Ghana, local languages where introduced (e.g., Dagaare, Ewe, Akan, Ga) and local gestures were allowed.

The conversion of the Old School into a secondary institution played a pivotal role in the development of GSL, serving as the sole deaf secondary school in

the country. Upon completing their first-cycle education in deaf schools across various regions, deaf students converged at the Old School for further education. This gathering at the Old School brought into contact regional signs and variants and as well contributed to the establishment of a nationwide network of deaf elites. The interaction among deaf teenagers from different regions, each bringing their newly emerged signing variety from initial schools, transformed the Old School into a nurturing ground for the evolving GSL.[66]

The deaf education history draws parallels with the development of ASL in North America, where Laurent Clerc introduced French Sign Language in 1816, akin to Rev. Foster's introduction of ASL in Ghana. An intriguing aspect is that Clerc and Foster acquired sign language after age 11. It can, therefore, be argued that this late age of acquisition challenges the classification of their signing as intergenerational transmission, given that they did not acquire the language as children (Power, 2022). Furthermore, it is worth noting that most of their students were not little children; many were at least above the age of 8. Power (2022) uses these arguments to demonstrate that ASL cannot be considered a direct linguistic descendant of French Sign Language, considering Clerc's age of acquisition and the age of his American students. It is fascinating how similar arguments parallel the Ghanaian situation.

Unlike the American story, where ASL diversified from the 19th-century variety French Sign Language, the Ghanaian narrative suggests that ASL continued as a lexifier language through linguistic borrowing. Currently, the labels america (ASL) or ghana (GSL) are used interchangeably in the Ghanaian deaf community to refer to the signing variety found in Ghana. Deaf schools in Ghana have been instrumental in transmitting sign languages, contributing to the development of GSL. The interaction between first-cycle deaf schools across the country and the second-cycle deaf school in Mampong influences the cross-regional development of GSL.

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[66] Anecdotal Report: During a friendly discussion with three matured deaf members at a Christian conference on 23-24 December 2023, where I served as an interpreter, it was noted—primarily from one member's perspective—that secondary schools might not be the best environment for learning GSL. The rationale stemmed from the observed overuse of variant signs, notably due to initialization. When asked about the preferred GSL learning environment, the consensus was that schools were not ideal; instead, the most effective learning occurred within deaf groups in specific regions. Despite acknowledging potential regional variations within these groups, they unanimously asserted that local group gatherings were the optimal settings for learning GSL. In my view, this assertion arises from the observation that local group gatherings exhibit less influence from English and ASL signs during communication. This stands in contrast to the school environment, where influences may be prevalent to address lexical gaps for formal educational purposes. In a nutshell, there is a clear difference between the signing used by students and that used by deaf members in the urban deaf community.

Students, with their "school-lect" (referring to specific sign language varieties transmitted within deaf schools, actively serve as linguistic contributors to the evolution of GSL in the second-cycle deaf school. Graduates from the second-cycle deaf school often return to their communities or pursue advanced education to eventually become educators in first-cycle deaf schools, contributing to the dissemination of GSL within deaf education, similar to the dynamics observed in other countries (Okombo & Akach, 1997; Power & Meier, 2023).

It must be noted that, the arrival of the Old School marked a turning point for the deaf community in Ghana. Before its establishment, deaf individuals were scattered across the country, but with the Old School, a sense of unity and cohesion was fostered among them. The mixed enrollment of children and adults when Rev. Foster initiated the school further solidified this communal bond. The findings reveal that some adults from the initial cohort eventually became teachers in the school. This scenario likely had a significant impact on the signing environment, as adults were instrumental in maintaining a stable social network or serve as linguistic role models for the children. In this context, adults provided consistent linguistic input, ensuring continuity and stability within the signing community. Simultaneously, the children, akin to the observed case of Nicaraguan Sign Language, played a crucial role in expanding the grammar and intricacies of the emerging GSL (Power & Meier, 2023:304). After receiving formal education, a significant number of deaf individuals continued to contribute to the deaf community or become active members of GNAD. This highlights the enduring impact of the Old School not only during students' educational years but also in their ongoing participation within the broader deaf community in Ghana.

In summary, the findings on deaf education discovered the impact of oralism on the emergence of GSL. The government's advocacy for oralism prompted the establishment of deaf schools across the country. The ban on signing during the period of oralism led to the development of school-lect, influenced by local gestures and home signs. This became feasible because, despite the prohibition of ASL signing, the use of local Ghanaian gestures was actively encouraged. The reintroduction of Signed English based on ASL signs (i.e., ENGLISH) after the oralism era resulted in a contact situation, leading to a mixture of local signing (i.e., LOCAL) and ENGLISH, resulting into a signing variety identified as BROKEN. This historical narrative underscores the crucial role that deaf schools in Ghana have played in shaping, promoting, and preserving GSL.

Research Question 2: In what ways have deaf activists influenced the evolution of the national sign language, and what factors steered its emergence and maturation?

Beyond the influence of Rev. Dr. Andrew Foster, several deaf and hearing Ghanaians were pivotal in developing a national sign language in Ghana. Deaf individuals, associates of the Old School, and deaf adults played a crucial role in

establishing local clubs in various regions of the country for social interaction and activities. These clubs and deaf leaders provided platforms for deaf individuals to come together, share experiences, and foster sign language awareness.

Deaf associations and clubs, including GNAD, Ghana Society for the Deaf and Ghana's community-based rehabilitation program have played pivotal roles in fostering the growth of the GSL landscape. These organisations remained resilient in promoting signing despite the dominance of oralism in educational institutions, making significant contributions to the preservation of sign language varieties within Ghana. Tertiary institutions (e.g., University of Education, Winneba) and religious groups also played a key role in empowering deaf people and advocating for sign language development. After Rev. Andrew Foster departed from Ghana, he maintained connections with deaf-led centres, enabling adult signers to socialise and interact. Reports also indicate that deaf associations were key custodians of ASL materials such as dictionaries (Riekehof, 1978) and actively engaged with international conferences alongside Foster in Nigeria. The ban on sign language in deaf schools resulted in increased social gatherings among deaf adults, including religious events and sports. International organisations like the Danish Deaf Association, the World Federation of the Deaf (WFD), United Nations Educational, Scientific and Cultural Organization (UNESCO), the Action on Disability and Development (ADD), and Voluntary Service Overseas (VSO) have contributed to the development of the GSL community. International organisations supported in creating deaf spaces, outreach programs and awareness raising which then contributed to the evolution of GSL. It is important to note that the role of international organisations primarily also promoted local signing, as previous gatherings of deaf associations and clubs may have still relied on ENGLISH due to Foster's influence. The dynamic contributions of international organisations likely played a role in valuing LOCAL and may have fostered fluid communication in deaf spaces. This accounts for including LOCAL signs in the early days of dictionary documentation (as observed in the GNAD, 2001).

Factors that contributed to the emergence and evolution of GSL include the persistence and determination of the deaf community to advocate for their indigenous signs and embrace sign language as their preferred means of communication. Establishing local deaf clubs and outreach programs helped create awareness and acceptance of sign language among deaf Ghanaians. Additionally, the gradual decline of oralism in the 1990s contributed to the development of GSL as a recognised and valued language in deaf education. The advocacy efforts of deaf activists like Mr. Francis Boison and the compilation of a GSL dictionary by GNAD further solidified the recognition of GSL as a national sign language in Ghana.

The development of ENGLISH (under GSL) was influenced by contact with ASL and English through deaf education, resulting in lexical borrowing and

influences like fingerspelling and initialisation[67] (Abudu 2019). As reported in this chapter, adopting practices such as the Rochester Method might have also fostered the use of fingerspelling and initialisation. ASL dictionaries are still being used in deaf schools, as reported by study consultants. Deaf Ghanaians such as Dr. Seth Ocloo and Alexander Okyere, who studied at Gallaudet University, significantly contributed to the propagation of ASL in Ghana. Their return to Ghana to support deaf education likely strengthened the presence of ASL in the country.

The deaf church and deaf-led associations in addition to the establishment of the secondary school in Mampong played essential roles in fostering a strong sense of community among the deaf throughout the country. Regarding establishing the Ghana Society for the Deaf, discrepancies exist between sources. Fobi and Doku (2022) claim that the establishment of GNAD marked a new beginning, leading to the change in the name "Ghana Society of the Deaf" (Fobi & Doku, 2022:43). Contrarily, this research finds that the government-led Ghana Society of the Deaf and the deaf-led GNAD were two distinct entities that existed concurrently, each operating from different offices. Regarding year of establishment of Ghana Society of the Deaf, Grischow (2011) states 1962, while Oppong (2006) notes 1965. This study's findings link Ghana Society for the Deaf to the Osu Mission Centre, established in 1965 with the assistance of Dr. Ocloo. It is noteworthy that in September 1957, Rev. Foster commenced his deaf education initiative with 13 children and 11 adults in a rented classroom within a Presbyterian public school building in Osu, Accra. By January 1959, the school for deaf children relocated to a new site in Mampong-Akwapim, under the name Ghana Mission School for the Deaf. Although the children moved, church services and the school for deaf adults continued in Osu, Accra, under Rev. Foster's management. In 1965, a spacious house was rented in Osu, serving as a Christian centre for the deaf and gaining popularity as the Osu Mission Centre (Okyere & Addo, 1999). Church services and the school for deaf adults persisted at this Osu Mission Centre. The large rented apartment housed the Ghana Society for the Deaf and the State School for the Deaf (currently at Teshie), initially beginning as a day school for deaf children in Accra. Given the multifaceted activities at this rented large house and its connection with the initial adult school and church service initiated by Rev. Foster, discrepancies often arise in pinpointing specific dates for events that transpired at the Osu Mission Centre.

Deaf-led associations played a crucial role in spreading GSL nationwide. Their meetings and activities served as natural converging points for GSL, fostering mutual intelligibility despite regional lexical variations. The media, including broadcasting and print, promoted GSL acceptance and development. GSL

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[67] Initialization involves using the fingerspelled letter that corresponds to the initial letter of an English word as the handshape for a sign.

dictionaries and early television broadcasting also contributed to the convergence of GSL as a national language.

I observed from the findings that during the reign of ASL signs in deaf education, local signs, gestures, and village sign languages were not discouraged despite the heavy influence of ASL. Rev. Foster embraced and accommodated these forms of communication from deaf students to the school. However, I hypothesise that Foster's embracing of local signs might have occurred after the 1960s when it became known that the sign language used in deaf education was not a universal deaf language as previously conceived and referred to as "formal sign language". Based on such misconception, he referred to the deaf he encountered in Africa as languageless (Foster, 1976).

Foster reportedly also invented signs to fill lexical gaps and reflect the African environment (see section 2.4.1.1). However, there are conflicting accounts, as some informants dispute the claim that Rev. Foster created signs, suggesting instead that he relied on Ghanaian coinage. Moreover, he is said to have used ASL, Signed English, and speech in his interactions. This makes me wonder about the linguistic implications. In addition, the description of a diglossia situation in GSL, as mentioned by Mr. Jonnathan Amuah during our interview, makes the exact definition of GSL complex. It could be interpreted as ASL given a new name because of its use in Ghana, or it might involve using ASL signs with English syntax, incorporating local signs to address lexical gaps. Additionally, it is essential to understand how members of the deaf community in Ghana perceive the national sign language and the names they prefer to use for it. This book aims to explore these linguistic and ideological aspects further. It emphasises the need for more research in lexical studies and an understanding of ideological influences. This study contributes to the deaf history and education in Ghana, urging further exploration of the intricacies of the sign language landscape.

In sum, early deaf education in Ghana from 1967 - 1999 was characterised by the influence of locally trained oralists who promoted oralism as the dominant approach, impacting the recognition and use of sign languages. However, beyond the influence of Rev. Andrew Foster, deaf individuals, deaf clubs, and international organisations contributed to the evolution of GSL in Ghana. Factors like advocacy, awareness campaigns, and the decline of oralism played significant roles in the emergence and evolution of a national sign language, shaping the landscape of deaf education in the country.

2.6 Conclusion

Historically, ASL signing was introduced in 1957 but was banned (10 years later) in 1967 when oralism was implemented. The oral approach dominated deaf education for 21 years, from 1967 to 1988. During this period, deaf students were exposed and

allowed to use Ghanaian gestures but no signing. Positively, oralism facilitated the development of GSL, setting it apart from the ASL which was introduced. However, on the negative side, oralism impeded the academic achievements of deaf students. In 1988, a mixed approach combining the oral method with ASL was allowed in deaf education for 11 years (1988-1999). However, in 1999, the government mandated that deaf education exclusively use sign language and began supporting its development due to advocacies made by educators and deaf groups. Following proposals by some deaf leaders (i.e., Mr. Francis Boison & Mr. Alexander D.Okyere) the ASL introduced in Ghana in 1957, was renamed GSL in the 1990s to emphasise its nativisation and the importance of developing a unique language for the deaf community, influenced by educational inputs from experts like Dr. Akach and advice from WFD. Before 2001, the term ASL was commonly used to refer to the national sign language in Ghana. After 2008, tertiary institutions began incorporating sign language into their curriculum and adopted the label GSL. Currently, the label GSL is widely recognised and used for the national sign language in Ghana.

The exploration of deaf history and education in Ghana beyond Rev. Dr. Andrew Foster has unraveled a complex and inspiring unfolding of events leading to and coinciding with the development of GSL. It is evident that GSL did not emerge in isolation but was shaped by deaf education and by the efforts and determination of the deaf community and their allies. Ironically, the event of oralism in deaf education in Ghana appears to have had an unexpected impact on the emergence of GSL in two ways. Firstly, it led to the proliferation of deaf schools nationwide through increased advocacy and the involvement of locally trained oralists in initiating the establishment of these schools. Secondly, the era of oralism banned ASL signing but permitted the use of local gestures and enabling the emergence of school-based varieties of signing (school-lect).

In conclusion, the emergence of GSL stands as a testament to the interplay between deaf education and the activism of the deaf community in Ghana. From the introduction and subsequent ban of ASL during the era of oralism to the pivotal government mandate in 1999, GSL's evolution reflects the resilience of deaf individuals and their advocates. The establishment of local deaf clubs and the outreach programs organised by local and international organisations demonstrate the collective efforts to foster social inclusion, awareness, and acceptance of a national sign language in various regions of Ghana. Deaf education, despite facing challenges, became a catalyst for GSL development through the encouragement of local gestures and the establishment of deaf schools. The renaming of ASL to GSL, coupled with the dedicated efforts of educators and deaf leaders, emphasizes GSL's nativization and unique identity. This collective journey demonstrates how the collaborative forces of deaf education and activism have not only shaped GSL but have also empowered the deaf community in Ghana.

3.

SIGNED LANGUAGES USED IN GHANA: LEXICOSTATISTICS AND COMPARISON OF LEXICAL SIMILARITIES

In this chapter, I explore the relationship between ENGLISH and BROKEN signs on one hand and ASL sign on the other. While ENGLISH and BROKEN represent distinct signing systems, their shared lexicon leads me to treat them as a single entity in this chapter (i.e., formal GSL), due to its focus on the lexicon. It's crucial to highlight that, during the study for this chapter, the triglossic situation of GSL was not initially clear to me. I was only cognizant of the diglossic scenario, prompting me to employ the terms formal and informal GSL to represent the situation. In this context, informal GSL primarily represented LOCAL, while formal GSL encompassed signs from ENGLISH and BROKEN. Formal GSL is well known to share a historical and genetic connection with ASL, but the extent of their present lexical similarities remains unknown. My main focus is measuring these lexical similarities, shedding light on the degree of linguistic affinity between the lexicon of formal GSL and ASL on the one hand, and of GSL (formal & informal) and village sign languages (i.e., AdaSL & NanaSL) on the other hand.

Notably, ASL signs have evolved in Ghana, incorporating new signs, and are now recognised as 'GSL' by the local deaf community (see chapter 2). While historical ties between sign languages suggest potential similarities, genetically related sign languages may not exhibit a high lexical similarity rate at a given moment (Ebling et al., 2015). The main motivation for this chapter is therefore to understand how the Ghanaian forms of signing compare to each other and to ASL.

Over half a century since the introduction of ASL signs to Ghana, it is reasonable to anticipate both significant differences and remarkable similarities (Nyst, 2010). Despite claims of mutual intelligibility between GSL and ASL based on historical links, the linguistic evidence supporting this assertion remains limited (Edward, 2021a). Anecdotal reports have relied on historical contact and language influence, but empirical evidence still needs to be provided. Moreover, the broader lexical relationship between ASL and other signed languages used in Ghana, such as AdaSL and NanaSL, has yet to be thoroughly explored.

Little attention has been given to a lesser-known variety of GSL (i.e., informal GSL) used among deaf individuals in Ghana. However, it has been acknowledged in some selected works (Edward & Akanlig-Pare, 2021; Edward, 2021b; Abudu, 2019; Nyst, 2010). As all signed languages in Ghana are understudied, and extensive comparisons among them are lacking, I take this opportunity to explore the lexical similarities using comparative linguistics tools.

In the following section, I first provide a lexical variation study conducted on the sign language diversity in Ghana (Section 3.1). I then describe the research

methods employed in this study (Section 3.2). Two distinct comparison approaches for examining lexical similarity are presented: Woodward's (2000) approach using the modified Swadesh list for analysis between GSL and ASL elicited items (Subsection 3.2.1), and Parks' (2011) approach using the Levenshtein distance for analysis (Subsection 3.2.2). Detailed descriptions of data acquisition are provided for each approach, including the challenges faced while collecting the informal variety of GSL on a large scale through formal interviews (Subsection 3.2.2.1.1). I also acknowledge the limitations of each approach in subsections 3.2.1.2 and 3.2.2.3, respectively. Finally, the results obtained from both approaches are presented in Section 3.3, followed by a discussion and conclusion of my findings in Section 3.4. Through this investigation, the chapter aims to contribute to understanding the intricate relationship between GSL, ASL, and other signed languages in Ghana.

3.1 Lexical studies on GSL and their Contributions

Previous linguistic research on sign languages in Ghana is relatively scarce, leading to a limited number of lexical studies in the country. Furthermore, most of the existing research remains unpublished. Among the few known studies, only five have attempted lexical comparisons on sign languages in Ghana, and notably, all of these studies are yet to be published. Among these studies, Tagoe (2018) conducted her research as part of her undergraduate thesis, while Peprah (2021), Abudu (2019), and Oppong (1998) pursued their investigations at the master's (thesis) level. The fifth study, presented as a conference paper by Hadjah (2018), further contributes to this emerging body of work. Notably, three of these studies, specifically those conducted by Abudu (2019), Hadjah (2018), and Peprah (2021), have focused on investigating lexical variation within GSL. In contrast, Tagoe's (2018) research encompassed a broader scope, examining Ghana's three known sign languages: GSL, NanaSL, and AdaSL. Fragkiadakis' (2022), work from a Data Science background using an automated procedure, compared lexical sign in ASL and GSL. Lastly, Oppong's (1998) study stands out as one of the earliest comparative studies that delved into the lexical signs of GSL and ASL.

Unfortunately, Oppong's (1998) work is currently unavailable, and access to the full research has proven challenging.[68] The researcher (Oppong,1998) used primary data from GSL, which was obtained with the assistance of GNAD. The limited information suggests that his study indicated that ASL and GSL are distinct languages. However, without full access to the work, the framework and interpretation of the results remain unclear. If Crowley's (1992) interpretation of cognate reading (see Section 3.2.1 of this Chapter) were applied, GSL and ASL might be considered languages belonging to the same family. Nonetheless, the lack

[68] Throughout my research, I was only able to obtain the abstract of the work from the author in 2020.

of complete access to Oppong's study precludes a complete understanding of his findings.

Tagoe's (2018) work compared ten kinship terms in three sign languages in Ghana: GSL, AdaSL, and Nanabin SL. The kinship terms examined included MOTHER, FATHER, BROTHER, SISTER, UNCLE, AUNTY, GRANDFATHER, GRANDMOTHER, SON, and DAUGHTER. While the methodology analysis approach Tagoe (2018) used is not explicitly stated in the study, she illustrated how the elicited signs were articulated in each language. Her findings revealed that while the three sign languages in Ghana are distinct languages, AdaSL and NanaSL shared some common phonological features. For instance, signs for MOTHER, FATHER, BROTHER, SISTER, UNCLE, and GRANDFATHER exhibited similar phonological parameters. However, no "true friends" were identified among the signs compared.

Hadjah (2018) conducted an investigation using a combination of primary and secondary data sources that represented signers from diverse regions across Ghana. The primary focus of the study was to analyse 17 selected signs representing various animals69 in GSL. Hadjah (2018) revealed regional variations within GSL through primary data analysis. These regional variations indicated distinctive patterns of phonological variations in specific lexical items, which remained mutually intelligible. The study identified 33 groups of phonologically related variants, with the following distribution of difference found: location accounted for 39%, handshape for 36%, orientation for 12%, handedness for 6%, and movement for 6%. Notably, the most prominent variations were observed in location, followed closely by handshape. The primary hypothesis posited in the study was that the phonological relatedness among variants could be attributed to two key factors: 1) iconicity and shared gestural repertoires, and 2) the language contact situation, which might have contributed to language leveling and a culture of mocking certain variants within the deaf school environment.

Furthermore, Hadjah's investigation also incorporated secondary data from dictionaries, specifically those of GNAD (n.d. [around 2001]) and McGuire and Deutsch (n.d. [around 2017]). This secondary data confirmed the presence of lexical variations in GSL lexemes. It was determined that the signs exhibited a high degree of mutual intelligibility, with most variants being phonologically related. Within this context, handshape emerged as the aspect of sign phonology most susceptible to variation.

Abudu's (2019) research centered on lexical variations within GSL using primary data. Her study focused on pre-Senior High School (SHS) students enrolled

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[69] (i.e., BIRD, CHICKEN, COW, CRAB, CROCODILE, DOG, ELEPHANT, FISH, FROG, HORSE, LION, MONKEY, MOSQUITO, MOUSE, SHEEP, SNAIL, TIGER).

at the Mampong School for the Deaf[70] in the Eastern Region of Ghana. She conducted her study with a sample of 30 participants and analysed responses related to seven distinct concepts (namely, PREGNANT, DON'T KNOW, PAGE, DEVIL, AFTER, STEW & WITCHCRAFT) to inform her conclusions.

Within the school setting, Abudu identified significant variations in GSL usage among the students, attributing these variations to two primary factors: regional differences and family backgrounds. Notably, regional variation emerged as the predominant form of GSL variation, closely linked to locally evolved signs, which she termed "home signs." Her analysis also delved into the influence of family backgrounds, revealing that signers from educated and economically stable families tended to employ a foreign-based signing style, which she termed the "formal way." Furthermore, Abudu's findings suggested that although variant signs were transparent in meaning for student interaction, over time, as these pre-SHS students continued their education within the school environment, a process of language levelling occurs. This dynamic phenomenon underscored the ongoing evolution and adaptation of GSL in deaf education and among the student population.

Fragkiadakis' (2022) study was a pioneering attempt to evaluate an automated tool's ability to quantify variations in movement and location within sign languages, using ASL and GSL as case studies. The tool, which employed the Dynamic Time Warping (DTW) algorithm to analyse wrist trajectories from the dominant hand, allowed for an automated comparison of lexical variation. This approach eliminated the need for manual transcription, paving the way for a more efficient analysis of lexical differences. However, it is important to acknowledge the study's limitations. For instance, the tool struggled to recognise cognates with multiple repetitions of movement, and it was primarily designed for analysing single signs performed by signers in an upright position. Additionally, slight variations in handshapes, like laxness, could lead the program to consider two signs as distinct. Consequently, Fragkiadakis (2022) recommended that automated procedures undergo validation through manually transcribed data.

Fragkiadakis' (2022) comparison between ASL and GSL signs revealed that the lowest distances were observed within the lexical fields of time (e.g., morning, night, Saturday) and food (e.g., apple, banana, carrot). In contrast, the highest distances were found in categories such as adjectives (e.g., bad, beautiful), occupation (e.g., doctor, policeman), and emotions (e.g., angry, love). Notably, it's crucial to emphasise that Fragkiadakis (2022) based this comparison not on the movement and locations of the hands but the wrists. Another intriguing finding in his work was that, in most ASL signs, the wrist location tended to be upward, while

[70] The school is the sole institution in Ghana dedicated to offering secondary-level education exclusively for individuals who are deaf.

in GSL, the wrist location was predominantly downward compared to ASL signs. This offers insights into the linguistic distinctions between these sign languages.

Peprah's (2021) research on lexical variation in GSL explored a spectrum of lexical variants encompassing kinship terms, place names, numerical expressions, food items, and body parts. Her investigation engaged 20 participants. Notably, the research highlighted that the semantic category of food items exhibited a higher degree of lexical variation compared to other conceptual domains. Following closely in terms of variability were cardinal numbers. Region and age were identified as factors contributing significantly to the observed variations within GSL. Peprah's (2021) study also discerned tangible evidence of language change manifesting within GSL based on the use of cardinal numbers (i.e., 11 – 20). This observation offers insights into the evolving linguistic landscape of GSL, shedding light on how sociolinguistic factors like age influence its lexical repertoire.

Despite the scarcity of prior research on lexical variation in GSL, the studies conducted by Tagoe (2018), Hadjah (2018), Abudu (2019), and Peprah (2021) have significantly enriched our understanding of GSL's lexical landscape.

Tagoe's comparative analysis of kinship terms in GSL, AdaSL, and NanaSL demonstrated these sign languages' distinctiveness while uncovering intriguing phonological similarities, shedding light on the complex interplay of linguistic variation and shared features. Hadjah's investigation unearthed regional variations within GSL, offering insights into the phonological nuances and the influence of language contact situations. He informs us on the role of iconicity and shared gestural repertoires in shaping GSL's lexicon, highlighting the dynamic nature of sign language evolution within the deaf school environment. Abudu's research underscored the impact of regional differences and family backgrounds on sign language usage. Her findings hinted at the ongoing language levelling and adaptation process within GSL, reflecting the complex sociolinguistic dynamics at play. Peprah's study, further deepens our understanding of GSL's lexicon. Notably, her research unveiled the influence of sociolinguistic factors such as region and age on lexical variation and even pointed towards evidence of language change within GSL landscape.

Peprah's (2021) study generally influenced by prestige, led signers to potentially use formal GSL, resulting in reduced variation. However, in the context of food items, ASL lexical influence on English is limited due to lexical gap. This gap leads to increased variability, as these signs used in various regions are not based on ASL. This interpretation similarly applies to Fragkiadakis' (2022) work, where it is evident that food items are distinct from the lexical signs present in ASL.

Furthermore, there is an additional reason to believe that both Peprah's (2021) and Fragkiadakis' (2022) data were influenced by English. This is evident in their data acquisition methods, with Fragkiadakis (2022) using a dictionary and Peprah (2021) instructing participants to use their school-based variants. These

domains primarily involve English. This underscores the idea that the method of data elicitation can significantly impact our understanding of the GSL landscape. The subsequent section outlines the methodology employed in this chapter.

3.2 Method

In this chapter I conducted two studies, using the approaches of Woodward (2000) and Parks (2011) to investigate lexical comparison of sign languages. Woodward's system determined genetic relatedness between GSL and ASL by identifying "true friends" (i.e., signs that are the same in form and meaning). On the other hand, Parks' approach was applied to investigate lexical similarities among formal GSL and informal GSL, ASL, AdaSL, and NanaSL by identifying resemblances between their signs.

I employ these methods (i.e., Woodward, 2000 & Parks, 2011) to enhance the analysis (especially for GSL & ASL), combining different data sources and analytical techniques. For the investigation of lexical resemblances, I heavily relied on primary data and secondary data. By adopting these approaches, I aimed to enhance my findings' credibility and validity and gain deeper insights into the relationships between local sign languages used in Ghana and ASL (Hastings, 2010; Patton, 1999). The study involved the manual coding of comparable phonological features, while a computer software algorithm was used for automatic form and meaning matching of signs and their statistics.

I will introduce and explain each approach used in this study to measure lexical similarity in the following subsections. Section 3.2.1 will define my use of Woodward's approach, while section 3.2.2 will focus on Parks' approach. Finally, I will provide some observable limitations for using each approach: Subsection 3.2.1.1 will address the limitations of using Woodward's approach, and 3.2.2.2 will discuss the limitations of using Parks' approach.

3.2.1 Using Woodward's (2000) Approach: Lexicostatistics

Given the limited documentation and linguistic research on GSL, I used the lexicostatistic method as a comparative tool to establish a potential relationship between GSL and other sign languages. Lexicostatistics has been widely employed to hypothesise language relationships by identifying cognates (Woodward, 1996; Crowley, 1992).[71] In this study I use their method to identify "true friends[72]" in my study. In sign languages, "true friends" can be identified based on the parameters of the sign, such as handshape, location, movement, and palm orientation (Al-Fityani & Padden, 2008).

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[71] However, critiques of lexicostatistics as a method for assessing familial relatedness have surfaced in specific contexts (see Palfreyman, 2015, Chapter 2).
[72] Signs that are the same in form and meaning.

Lexicostatistics is a standard method for hypothesizing language relationships, especially for under-described languages like GSL (Lehmann, 1992; Crowley, 1992). While the 200-word Swadesh list proposed by Morris Swadesh in 1964 is well-known for lexicostatistic studies in spoken languages, sign language studies typically prefer a modified version (Crowley, 1992; Woodward, 2000). Crowley (1992: 170) provides specific labels for languages under lexicostatistic study based on the percentage of cognates they share:

1. "Dialect of the same language" if they exhibit a cognate rate ranging from 82% to 100%.
2. "Languages of a family" if they show a cognate rate between 37% and 81%.
3. "Family of a stock" if they share a cognate rate from 13% to 36%.
4. "Stocks of a microphylum" if they have a cognate rate between 5% and 12%.
5. "Microphyla of a mesophylum" if they share a cognate rate from 2% to 4%.
6. "Mesophyla of a macrophylum" if they have a shared cognate rate below 2%.

Crowley (1992) explains that these percentage thresholds for classifying language relationships are derived from the analysis of 1,000 years of records from historical linguistic studies involving 13 languages.

I implemented Woodward's approach in this study, using the modified Swadesh list (see

Table 8: Woodward's Modified Swadesh list for sign language comparison) to compare sign languages. The modified list consists of 100 words tailored to specifically sign language research. However, the Swadesh list tradition is not without criticism. Hoijer (1956) pointed out that the Swadesh list may not be entirely universal and culture-neutral, as it contains some words specific to European culture and language. Despite this limitation, the modified Swadesh list remains a valuable tool for suggesting potential lexical relationships between languages (Yu et al., 2018; McKee & Kennedy, 2000), making it suitable for adoption in this present study.

Table 8: Woodward's Modified Swadesh list for sign language comparison

1. all	26. grass	51. other	76. warm
2. animal	27. green	52. person	77. water
3. bad	28. heavy	53. play	78. wet
4. because	29. how	54. rain	79. what
5. bird	30. hunt	55. red	80. when
6. black	31.husband	56. right	81. where
7. blood	32. ice	57. river	82. white
8. child	33. if	58. rope	83. who
9. count	34. kill	59. salt	84. wide
10. day	35. laugh	60. sea	85. wife
11. die	36. leaf	61. sharp	86. wind
12. dirty	37. lie	62. short	87. with
13. dog	38. live	63. sing	88. woman
14. dry	39. long	64. sit	89. wood
15. dull	40. louse	65. smooth	90. worm
16. dust	41. man	66. snake	91. year
17. earth	42. meat	67. snow	92. yellow
18. egg	43. mother	68. stand	93. full
19. fat/grease	44. mountain	69. star	94. moon
20. father	45. name	70. stone	95. brother
21. feather	46. narrow	71. sun	96. cat
22. fire	47. new	72. tail	97. dance
23. fish	48. night	73. thin	98. pig
24. flower	49. not	74. tree	99. sister
25. good	50. old	75. vomit	100. work

This study compared pairs of signs with the same meaning based on their articulatory properties, including handedness, handshape (with handshape changes), location, palm orientation, movement, compound element/sign, and the presence of a based hand. However, for determining "true friends," the focus was on the four major phonemic features: handshape, location, movement, and palm orientation, following Al-Fityani (2010) and McKee and Kennedy (2000). A specific description of these phonemic features was primarily based on Valli et al. (2011), considering various elements such as specific parts for sign location (e.g., lower lip, below the chin, on the nose), manner and direction of movement, palm orientation (e.g., palm-up, -in, -out, -down), and the number and posture of selected fingers with thumb position.

Following previous research (Ebling et al., 2015; Al-Fityani, 2010; McKee & Kennedy, 2000), the pairs of analysed signs were categorised as follows:

Category I: Signs that are identical in all four main phonological parameters (i.e., handshape, location, movement, palm orientation)

Category II: for signs that are similar but differ in one of the following features:

1. handedness (i.e., one-handed vs. two-handed),
2. one handshape of a 2-handed sign,
3. the presence of the base hand
4. handshape change
5. compound signs
6. internal movement
7. change in location or orientation.

Category III: Similar signs with three phonological parameters out of the four main ones.

Category IV: Similar signs with two phonological parameters out of the four main ones.

Category V: Similar signs in 1 or none of the four phonological parameters.

Examples of GSL and ASL signs were provided to illustrate each of these five categories. For instance, HAVE (Figure 17) falls under Category I since it shows the same handshape, location, movement, and palm orientation in GSL and ASL.

a. GSL sign (GSL App).

b. ASL sign (Riekehof, 1978: 291)

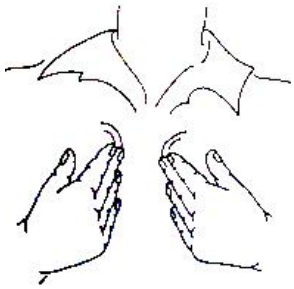

Figure 17: HAVE

Category II looks out for the minor phonological difference. For example, on the surface, the sign for HOW in both GSL and ASL has the same handshape, location, movement, and palm orientation. However, the articulation is slightly different. Based on location, the sign is articulated in neutral space; however, in the ASL sign (Figure 18b), the tip of the figures was in contact. In the case of GSL (see Figure 18a), the palm of the left hand was initially used as the base hand. As indicated, pairs of signs that differ in base hand, handedness, handshape change,

compounding, internal movement and change in location or orientation are all placed under category II.

Category II, which accounts for minor phonological differences, was exemplified by HOW (Figure 18), where both GSL and ASL signs appear similar but differ in specific details, such as using a base hand or the location of articulation.

Similarly, HEAVY (Figure 19) represents Category III, with the handshape being the only differing phonological parameter, while other parameters remain the same in both GSL and ASL.

Category IV includes pairs of signs that differ in two phonological parameters, as seen in KILL (Figure 20), where the handshape and palm orientation vary between GSL and ASL. For instance, GSL uses a K-handshape, whereas ASL uses the index-handshape.

Lastly, Category V involves pairs of signs where only one parameter is the same or none of the parameters matches, as shown in THIN (Figure 21) for both GSL and ASL. The handshape, location and movement are differently articulated in both languages.

a. GSL sign (GSL App)

b. ASL sign (Riekehof, 1978:30)

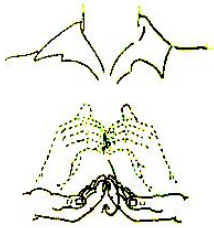

Figure 18: HOW

a. GSL sign (GSL App).

b. ASL sign (Riekehof, 1978:175)

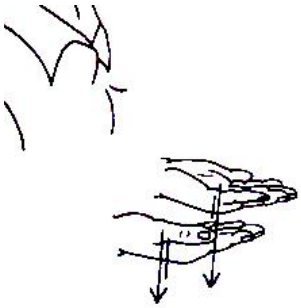

Figure 19: HEAVY

a. GSL sign (GSL App).

b. ASL sign (Riekehof, 1978:148)

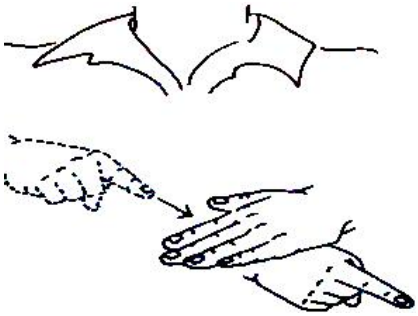

Figure 20: KILL

a. GSL sign (GSL App).

b. ASL sign (Riekehof, 1978:235)

Figure 21: THIN

Based on the five categories, “true friends” were identified by aggregating signs classified under "Category I", "Category II", and "Category III". This approach of identifying “true friends” is consistent with previous lexicostatistic studies of sign languages (e.g., Fragkiadakis’ (2022 Parks 2011), enhancing the accuracy and reliability of the findings in this study.

Compiling Datasets for Woodward’s approach

In selecting data for Woodward's approach, the study conducted two separate analyses to compare GSL with ASL. A third comparative study was also piloted, examining GSL signs from two timelines (2001 vs. 2020).

For the first analysis, GSL signs were obtained from a newly developed GSL-Dictionary App[73], while the ASL signs were collected from Riekehof's (1978)

[73] https://play.google.com/store/apps/details?id=com.ljsharp.gsldictionary

dictionary. The GSL App, a video dictionary, was launched in 2020. Featuring over 1,300 signs from GSL alongside their English equivalents. Spearheaded by the HANDS! Lab at Leiden University, this initiative represents a collaborative effort led by deaf Ghanaians, both in content creation and app development. On the other hand, Riekehof's dictionary (1978) also contains a collection of over 1,300 drawn ASL signs. The decision to use Riekehof's dictionary was based on a claim received from an eyewitness account, stating that the dictionary was being used in deaf schools in Ghana during Foster's time and continued to be used at the GNAD[74] office in the 1970s (G. Amenumey, Personal communication, September 26, 2015). During fieldwork in Ghana, several reports confirmed that Riekehof's (1978) dictionary was used in Deaf schools even after Rev. Foster left Ghana.

The second study involved data from the same GSL-App dictionary, but the ASL data was obtained from an online source, specifically ASL Signbank[75]. This second study compared current data from two sources that used video data instead of still images.

In the third study, the same cohort of signs from the 2020 GSL-App dictionary was used, but this time, it was compared with an older GSL dictionary produced by GNAD in approximately 2001. Using the modified Swadesh list, the study compared 52 matches in both dictionaries (i.e., GNAD, 2001 & GSL-App, 2020).

The data for analysis under Woodward's approach can be summarized as follows:

Analysis 1:
- Comparison of GSL signs from the GSL-App (2020) with ASL signs sourced from Riekehof (1978) dictionary.

Analysis 2:
- Comparison of GSL signs from the GSL-App (2020) with ASL signs sourced from ASL Signbank (2020) online dictionary.

Analysis 3:
- Comparison of GSL signs from the GSL-App (2020) with signs from an older GSL dictionary (GNAD, 2001).

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[74] Ghana National Association of the Deaf
[75] https://aslsignbank.haskins.yale.edu/about/conditions/ An online dictionary. Accessed 13 August 2019

By conducting these three separate analyses with different data sources and timelines, the study aimed to understand the lexical relationship between GSL and ASL.

Limitation of Using Woodward's Approach in Comparative Study of GSL and ASL

In this study, certain limitations need to be acknowledged. Firstly, the use of secondary data sources introduced potential issues regarding representativeness. It was unclear how well the signs in the dictionaries represented the overall signing community. Despite this limitation, using different secondary data sources was essential for a comparison between GSL and ASL. Other studies in sign language lexicostatistics analysis, such as Yu et al. (2018) and McKee and Kennedy (2000), also relied on secondary data, while Woodward (1996; 1978) adopted a combined method of both primary and secondary data. However, it is crucial to recognise that dictionaries may have biases and idiosyncrasies. The Deaf Association in Ghana created the GNAD (2001) dictionary without the involvement of lexicographers or linguists. For instance, some committee members involved in the dictionary's creation expressed concerns about representing GSL signs distinct from ASL, which could potentially have influenced the dictionary's content.

Another limitation of this study was the exclusion of non-manual marking (e.g., facial expressions) in the analysis. This exclusion was due to data of still images from dictionaries, which is not suitable for non-manual marking analysis. It is essential to note that manual articulations (with the hands) in sign languages are often associated with lexical signs. While non-manual marking could provide insights into the linguistic features of GSL and ASL, its exclusion in this study does not undermine the significance of the lexical comparison undertaken. However, it is essential to interpret the findings in light of the mentioned limitations and recognise their potential impact on the results.

3.2.2 Using Parks' (2011) Approach: Levenshtein Distance Algorithm

In the second approach, the analysis followed Parks' (2011) proposed methodology, which proved user-friendly, time-saving, and suitable for working with large datasets. Parks' approach builds on previous lexical comparisons and his research to develop a coding and scoring methodology.

Parks' approach uses the Levenshtein distance algorithm, also known as the edit distance, originally introduced by Levenshtein (1966) as a string metric for comparing and editing two sequences. In Parks' work, this system is applied to measure the similarities and differences in lexical signs. The Levenshtein distance algorithm calculates the number of steps or edits (e.g., insertions, deletions) required to make pairs of words identical, thus measuring their similarity. A significant

advantage of this system is its automation, as it can be implemented through computer-based programs, enabling efficient similarity judgments (Parks, 2011).

In the calculation of the Levenshtein distance for signed or spoken languages, words are paired based on their phonological forms, and the measurement of differences is achieved by counting the necessary steps or edits (e.g., insertions, deletions) to achieve identity between the pairs of words. The number of steps or edits is normalised to ensure accuracy in the results by averaging the Levenshtein distance (sum of edits). Normalisation is important to avoid inaccuracies from longer phonological forms or multiple sign variants for a particular concept. Parks (2011: 35) explains that the Levenshtein distance between two languages or varieties is obtained by calculating the average distance for each word list item.

Illustrating the application of the Levenshtein distance, Table 9 below shows how the distance can be measured between two variants of the name Abinaa (a female born on Tuesday) in the non-coastal dialects of Akan. According to Boadi (1984:443), two distinct forms can be identified: one with the nasal alveolar 'n' in the root (i.e., abinaa), and the other with 'l' or 'r' taking the place of 'n' (i.e., abiraa or abilaa). The table demonstrates the edits or steps required to transform the Akan name [abinaa] into [abiraa].

Table 9: Levenshtein Distance Calculation between two variants of the Akan word for soup

Initial form of one variant	**Edit**	**Final form of another variant**
abinaa	Delete “n”	abiaa
	Insert “ r ”	abiraa
# of steps or edit/ Levenshtein distance (non-normalised) = 2		
Levenshtein distance (normalized) = 2/4 = 0.5		

In sign languages, phonological parameters are coded and measured based on edits, but it is essential to note that the nature of these edits differs from those in spoken languages. Parks (2011: 36) highlights that while spoken languages may involve various types of edits, such as insertion, deletion, and others, in sign languages, edits mainly occur through substitutions of the phonological form. I illustrate the application of the Levenshtein distance with sign languages; examples from two GSL dictionaries (GNAD, 2010 & GSL App) will be provided.

Figure 22 below showcases the sign for SUN in GSL. When comparing the two sign variants (Figure 22a & b), the phonological parameters of handshape, location, and orientation appear to be the same, except for movement. As the only difference lies in the movement parameter, one edit will need to transform one variant into the other. In Table 10, I will capture this difference and demonstrate how the Levenshtein distance will be calculated for these sign variants.

a. GSL sign (GNAD, 2010:86) b. GSL sign (ASL App)

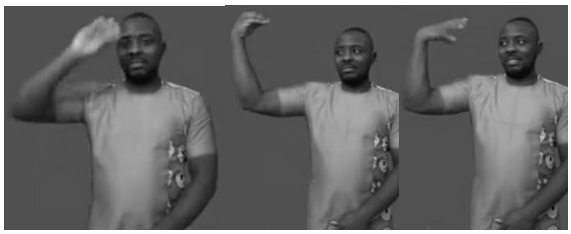

Figure 22: SUN

Table 10: Levenshtein Distance Calculation between the GSL signs for SUN

	1a: SUN	**1b: SUN**	**Value difference**	**Edit**
Handshape[76]	J10	J10	No	0
Location	space to side of the upper head	space to side of upper head	No	0
Orientation	Palm down	Palm down	No	0
Movement	Straight	Spiral	Yes	1
# of steps or edit/ Levenshtein distance (non-normalised) = 1				
Levenshtein distance (normalized) = 1/4 = 0.25				

The Levenshtein distance, in this case, was calculated as 1, which means the number of edits required to transform the sign variants was divided by 4, representing the number of parameters used. As a result, the normalised Levenshtein distance was determined to be 0.25, as illustrated in the seventh row of Table 10 above.

With the Levenshtein distance analysis, I have also adopted Parks' (2011) proposed phonological parameters for the coding system for this study. Parks acknowledges that signs in sign languages can be either simultaneous or sequential. Therefore, it is necessary to identify the handshape and location feature twice: once for the initial position and once for the final position of the sign. I will now illustrate Parks' approach using the sign for ELEPHANT (in Figure 23 and Table 11) below.

In Table 11, I present Parks' (2011) four phonological parameters for the sign ELEPHANT (i.e., initial handshape, final handshape, initial location, and final location) and how each phonological feature can be coded for the sign as shown in Figure 23.

[76] See Appendix B for a handshape chat.

Figure 23: GSL sign for ELEPHANT.

Table 11: Phonological Parameters and Coding for the GSL Sign ELEPHANT

#	Parameters	Value
1	Initial Handshape	(D11)
2	Final Handshape	(D11)
3	Initial Location	Infront Face (SFFace)
4	Final Location	Neutral space (SN)

Parks (2011) emphasises the importance of handshape and location as the primary parameters in wordlist analysis, a view that has been widely acknowledged. He further notes that certain movements in signs can be attributed to reaching for a specific location or handshape; in some cases, they involve changes in both handshape and location.

For the location inventory, I followed Parks' (2011) guidelines. However, regarding the handshape inventory, I decided to create my own to ensure consistency with the coding used in other chapters of this book. While Parks' (2011) location and handshape inventories are user-friendly, I found them somewhat limited for accurately coding the sign languages used in Ghana and possibly Africa. In my data, I encountered signs with unique location values (e.g., teeth, tongue, buttocks) absent in Parks' (2011) inventories.

The data were manually coded, and I used ELAN to ensure accurate capturing of handshape and location. The coded parameters were then compiled into an Excel spreadsheet and subsequently exported to an Algorithm software developed by Manolis Fragkiadakis[77]. This Algorithm software was employed to calculate the Levenshtein distance for each pair of signs in the wordlist selected. The software's output provided the normalised Levenshtein distance in a spreadsheet, allowing for efficient comparison of signs with all other signs in the wordlist.

[77] Special appreciation to Manolis Fragkiadakis for his invaluable contribution in this study. His exceptional software was utilized to calculate the Levenshtein distance for each sign pair, enhancing the accuracy and reliability of my research. Without his remarkable support, this chapter would not have been complete.

Compiling Datasets for Parks' Approach

In the following sections, I outline the process of selecting data for the five language varieties studied in this chapter: formal GSL, informal GSL, ASL, AdaSL & NanaSL. The documentation of informal GSL [78] on a large scale proved to be both exciting and challenging, an exploration detailed in the subsequent Subsection 3.2.2.1.1. It is worth noting that obtaining data for informal GSL was particularly demanding compared to other varieties. Moreover, the following subsections provide an overview of the methodology for collecting thefor NanaSL (Subsection 3.2.2.1.2), AdaSL (Subsection 3.2.2.1.3), and ASL (Subsection 3.2.2.1.4).

Formal and informal GSL Data Gathering

To collect informal GSL data for this study, my deaf research assistant and I aimed to engage around 20 deaf adults. We initially planned to recruit participants, focusing on signers with no formal education, as we believed they would be monolingual in informal GSL and have limited exposure to formal GSL signs. Our initial point of contact was Mr. Marco Nyarko, a deaf linguist among the deaf community in Ghana. He led us to meet a deaf preacher in Akuapem Mampong, who had connections with several semi-educated and unschooled deaf individuals in the Eastern Region.

The preacher then arranged a time and led us to a small town called Apirede[79], a 52-kilometre (1 & half-hour drive) north of the capital of Ghana, Accra. In Apirede, we contacted eight deaf adults (five females & three males) and acquainted ourselves with them. After leaving Apirede, we continued our journey to other communities to meet more semi-educated and unschooled deaf individuals. Our first stop was at Adukrom, located 3 km south of Apirede, where we had the opportunity to meet two deaf sisters and get acquainted with them. From Adukrom, we proceeded to Abiriw[80], which is 7.3 km south of Adukrom. In Abiriw, we had the pleasure of meeting two deaf adults, a man and a woman.

Before our subsequent data collection sessions in Apirede, Adukrom, and Abiriw, we arranged to meet a group of educated deaf individuals the following day for an interview related to our research topic. This group consisted of married deaf couples from Apirede, Mr. Nyarko, the deaf preacher in Akuapem Mampong, and

[78] The pursuit of the informal variant of GSL was initiated based on information provided by Jonathan Amoah, a former vice president of GNAD, during the fieldwork. This motivated the study to explore and uncover the distinct informal variant of GSL used by the deaf community in Ghana.
[79] Sometimes spelt Apiredi.
[80] Sometimes spelt Abirew.

his deaf wife. It was anticipated that these educated deaf individuals might possess knowledge encompassing both the formal and informal lexical varieties of GSL. The primary objective of this initial meeting was to elicit informal GSL signs from this group and facilitate a focus group discussion regarding the existence of informal GSL. We opted to commence with the focus group discussion concerning informal GSL, and the outcomes of this discussion are detailed in Chapter 6.

During the focus group discussion, several informal GSL signs were used by the participants, which, as the moderator of the discussion, I could not fully comprehend. Thus, I had to ask for their meanings. The focus group discussion successfully observed their use of informal GSL signs; however, the same success could not be achieved with individual members during a picture elicitation task. The participants provided me with formal GSL signs, except for one individual who seemed influenced by his knowledge of AdaSL and provided some signs from that language instead. Our attempts to elicit informal GSL from this group using the picture task of the wordlist, as adopted from Parks (2011) and Parks and Parks (2008), were unsuccessful. The lack of success in eliciting informal GSL from this group could be attributed to two main reasons. Firstly, some participants did not fully understand what we meant by informal GSL during the elicitation task.[81] Secondly, most of them perceived me as a foreigner (i.e., non-Ghanaian) who had come to study GSL, which might have influenced their responses to use formal GSL. Despite our best efforts, the outcome did not align with our initial expectations.

Undeterred, we returned to Apirede the following day and met with the available deaf individuals (three females & two males).[82] However, they also struggled to understand the picture-naming task. We managed to engage them by physically showing them objects related to the pictures, but their vocabulary was limited, making it challenging to collect meaningful data. Ultimately, we decided not to rely on their data for my lexical study due to their limited vocabulary and social interaction with deaf members in the urban deaf community. From Apirede, based on availability, we met one semi-educated deaf individual at Abiriw township. He demonstrated knowledge of formal and informal GSL.

Continuing our quest for informal GSL, we journeyed to Koforidua, a larger city with a more socially active deaf community. In Koforidua, we contacted seven deaf individuals (three women & four men), a mix of educated, semi-educated, and uneducated/unschooled participants. Although Koforidua appeared promising

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[81] Note that during this time, it was unclear how singers refer to the informal GSL variant identified during the study in Chapters 5 & 6.

[82] Their age ranged from 25, 32, 45 and 59. Participants were mainly involved in farming and domestic work. During the data collection process, one male participant had to drop out due to a defect with the eyesight that hindered his ability to engage in the picture task adequately. As a result, he was unable to continue with the study, and his data could not be included in the final analysis.

for gathering informal GSL data, we faced the observer's paradox, as the informal variant of GSL had low social prestige, and some participants may not have wanted to be associated with it. Ultimately, we interviewed 16 deaf adults, but only two participants (one in Koforidua & the other in Abiriw) demonstrated fluency with informal GSL in the data collected. It was challenging to elicit the informal variants, as many participants defaulted to providing formal GSL signs. Despite this, the two consultants demonstrated ample knowledge of formal and informal GSL and provided the informal variants. Our consultant from Koforidua shared that he acquired informal GSL through interactions with unschooled or semi-educated deaf individual he met in church or as pedestrian. The consultant in Koforidua is a trader primarily involved in hawking. His frequent encounters with unschooled deaf individuals on the streets likely contributed to his proficiency in informal GSL, as he regularly interacts with members of the deaf community who predominantly use this form of sign language. Similarly, our consultant from Abiriw learned informal GSL at home and through social interactions in the deaf school at Mampong. While our initial goal was to gather data from 20 participants, the difficulty in eliciting informal GSL variants limited us to using data from the two participants who demonstrated competence in providing informal GSL signs. Their valuable contributions enabled us to gain insight into the informal GSL lexicon and language attitudes, and we explore this further in Chapter 6.

NanaSL Data Gathering

On 29th April 2021, we travelled to Akumfi Nanabin village, located 107 km from Ghana's capital, Accra, to collect NanaSL data. This visit marked my second time in the community, making finding our participants easier and spending a night there. Upon arrival, we engaged in social interactions and scheduled interviews for the following day. The interviews took place at the Okanto family house, known for being a multi-generational deaf family in the village, as represented by Nyst (2010:425).

During our interaction with the Okanto family, we learned they were instrumental in the emergence of NanaSL by creating a deaf space. Mrs. Okanto, who married into the family, shared that there were other deaf individuals in the community before, but they had limited interaction. Her marriage to Mr. Okanto, a deaf individual, and their subsequent deaf children created an environment conducive to the emergence of NanaSL. The Okanto children also learned NanaSL from their mother, emphasising the family's role in preserving sign language.

For our research, we conducted interviews with members of the Okanto family using the picture elicitation task. Due to technical challenges with our camera, we could only interview two family members – one educated and the other

unschooled. The educated participant demonstrated bilingual proficiency and knowledge in GSL and NanaSL. On the other hand, the unschooled participant was predominantly using NanaSL but had some fragmented knowledge of GSL due to language contact.

Despite the technical challenge, we successfully gathered NanaSL data from the Okanto family, and the situation allowed us to have the rest of the time to discuss their language and background in-depth. We also seized the opportunity to discuss language contact situations with the family, noting their questions about our research work and the significance of multiple visitations.

AdaSL Data Gathering

Through consultations, we identified an educated deaf woman in Adamorobe village, located 28 km from Accra, to participate in our study. She was a former pupil of Mr. Marco Nyarko and I also knew her from a linguistic summer school for Deaf Africans in Ghana.[83] We (my research assistant & I) visited Adamorobe village on the 10th of April 2021 for the data collection, having contacted our participant and scheduled an appointment in advance. Accompanied by Mr. Marco Nyarko, who was familiar with the village and its deaf community members, we located the home of our participant. This trip was not my initial visit to Adamorobe; I first visited the community for academic purposes in 2011.

During the interview at our participant's home, we were unexpectedly visited by a hearing onlooker who expressed concern about our visit. The onlooker questioned why we had not involved family members or a community leader in our engagement. Fortunately, my knowledge of the community as a Ghanaian and my familiarity with the participant, who was an adult, allowed us to address the concern appropriately. The onlooker shared an incident where a researcher had misrepresented the entire village as composed of deaf individuals due to not involving community members in their study. This encounter served as valuable advice for future researchers visiting Adamorobe.

ASL Data Gathering

I had to rely on secondary data for ASL, the only instance in this study where I used a secondary data source. Originally, the plan was to collect primary data for ASL,

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[83] See <https://deafstudies.weblog.leidenuniv.nl/asds-ghana-2019/> for more information on the summer school which was held in Ghana at the Linguistic Department, University of Ghana, 2019.

but unfortunately, my visit to the US was hindered due to the outbreak of COVID-19 and the resulting restrictions.

However, ASL is a sign language that has received significant research attention, and numerous online resources are available. To find an appropriate open-source lexical database for ASL, I sought advice from an American sign linguist, who recommended the ASL "Signbank." This lexical database was created by a team of linguists and is designed to support empirical linguistic research (ASL Signbank, 2020) [84]. The ASL "Signbank" proved to be an appropriate and reliable data source for my study, allowing me to gather valuable information on ASL signs for comparison.

Participants

For the primary data collection, I selected seven participants to represent different sign languages in the study. Among them, we had one participant for AdaSL and two participants each for NanaSL, informal GSL, and formal GSL. While GSL data was collected from approximately 16 participants initially, only the data from four participants (D, E, F, & G) were deemed suitable for this study.

When recruiting participants, one of my primary considerations was to ensure that they were active members of the deaf community. This criterion ensured we could obtain authentic and representative data for our analysis. Below (Table 12) is a summary of the demographic background of each participant (A – G):

Table 12: Participants' demographic background

Target language	Gender	Age	Locality	Education	Deaf family member	Deaf history
A AdaSL	Female	27	Adamorobe (Eastern Region)	Semi-educated	Yes (mother)	Born deaf
B NanaSL	Male	58	Ekumfi Nanabin	Educated	Yes (parent & siblings)	Born deaf
C NanaSL	Male	51	Ekumfi Nanabin	Un-schooled	Yes (parent & siblings)	Born deaf
D Informal GSL	Male	39	Abiriw (Eastern Region)	Semi-educated	No	Born deaf
E	Male	51	Koforidua	Educated	Yes	Born

[84] https://aslsignbank.haskins.yale.edu/about/conditions/\

Informal GSL			(Eastern Region)		(wife)	deaf
F Formal GSL	Male	62	Mampong Akuapem (Eastern Region)	Educated	Yes (wife)	Born deaf
G Formal GSL	Female	58	Mampong Akuapem (Eastern Region)	Semi-educated	Yes (husband)	Born deaf

These participants were crucial in providing valuable data for the study, allowing me to compare the different sign languages comprehensively.

Limitations of using Parks' Approach in Sign Language Lexical Analysis

Park's (2011) approach for calculating the Levenshtein distance metric in sign language research has limitations. While the Levenshtein distance is useful in comparing phonological forms, it may not accurately capture certain phylogenetic changes that could occur in a language, such as metathesis, reduplication, or fossilisation (Greenhill 2011). For instance, in comparing the sign for DEAF in formal GSL and ASL, the observed difference was a movement metathesis. However, Parks' approach would interpret this as a change in location. Furthermore, Parks' (2011) approach primarily focuses on synchronic analysis, identifying surface similarities among signs, and does not claim to identify loan signs.

A general limitation not related directly to Park's approach is that non-manual features, as an essential component of sign languages, were not considered in this study, as also observed in Subsection 3.2.1.2. Some signs were purely non-manual, and environmental factors (e.g., setting for data collection) could have influenced the non-manual expression of signers. Additionally, my presence as an educated hearing investigator (behind the camera) during data collection could have influenced the signers' behaviour, leading to variations in non-manual features, especially in the quest for informal GSL.

Finally, the sampling method used, which relied on my social network, introduces a potential bias in participant selection. The limited sample size and the specific demographics of the participants may affect the representativeness of the entire deaf community, limiting the generalizability of the findings.

3.3 Results

In this section, I present the result for the two comparison approaches, Woodward's and Park's, as outlined in the methodology (Section 3.2). The findings for applying Woodward's (2000) approach are presented in Section 3.3.1, featuring three analytical studies on GSL; Analysis 1: Lexicostatistical Contrasting a Contemporary

GSL Dictionary with a Historical ASL Dictionary Used in Ghanaian Deaf Education (section 3.3.1.1); Analysis 2: Lexicostatistical Examination of Contemporary Online Dictionaries: ASL vs. GSL (section 3.3.1.2); Analysis 3: Comparing Lexical Landscapes: The Premier GSL Dictionary (GNAD, 2010) vs. Contemporary GSL Dictionary (Online App) (section 3.3.1.3). This is followed by a summary of the major findings using Woodward's (2000) approach (Section 3.3.1.4). Section 3.3.2, on the other hand, presents the results obtained through Park's (2011) approach, focusing on a comparative analysis of the sign languages used in Ghana. The section also concludes with a summary of the key findings using Park's (2011) approach (Section 3.3.2.3).

3.3.1 Lexical Similarities and Relatedness between GSL and ASL

In this subsection, I present the findings of the lexicostatistic comparison conducted between ASL and GSL. This study aimed to explore the lexical similarities and differences between these two sign languages. By applying Woodward's (2000) approach, we gained insights into the degree of resemblance between both languages.

The results of the analysis demonstrate a remarkable closeness between the two languages. Several striking similarities were observed during the study. In the subsequent subsections, accompanied by relevant tables and examples, I present the outcomes of the lexical comparisons featuring three analytical studies on GSL:

Analysis 1: Lexicostatistical Contrast of a Contemporary GSL Dictionary with a Historical ASL Dictionary Used in Ghanaian Deaf Education (Section 3.3.1.1)

Analysis 2: Lexicostatistical Examination of Contemporary Online Dictionaries: ASL vs. GSL (Section 3.3.1.2)

Analysis 3: Comparative Lexical Landscapes: The Premier GSL Dictionary vs. Contemporary GSL Dictionary (Section 3.3.1.3)

Lexicostatistics: Contrasting a Contemporary GSL Dictionary with a Historical ASL Dictionary

This study yielded 88 pairs of signs identified in the GSL online App and the ASL dictionary by Riekehof (1978). These pairs were categorised as follows: 48 signs fell under Category I, 8 signs under Category II, 17 signs under Category III, six signs under Category IV, and 9 signs under Category V. Additionally, there were 12 missing signs[85], accounting for 12% of the word lists. See Appendix C for a table

[85] From GSL: DUST, FEATHER, HUNT, LOUSE, NARROW, ROPE, SHARP, SNOW, TAIL, WIDE, SMOOTH
From ASL: DUST, FEATHER, HUNT, LOUSE, LEAF

that provides a list of the identified “true friends” as well as the words that were missing in both dictionaries.

The presence of missing signs is notable, as it could influence the study's results. The absence of certain signs in the dictionaries may suggest that the Swadesh list might not encompass concepts highly frequent in the Ghanaian or African context. For instance, the absence of the sign for "snow" in the GSL dictionary is not surprising, considering snow is not a common phenomenon in Ghana. Alternatively it could also be argued that the missing signs may be the result of limited number of signs documented in the dictionaries (i.e., GSL App & Riekehof, 1978). As observed in other studies, these missing signs were excluded from the calculation for the percentage of “true friends” to ensure an accurate account of the “true friends” rate.

Based on the 88 available signs, the study revealed an 83% "true friends" rate between GSL and ASL signs. This percentage encompasses signs that are identical in all four parameters (Category I), similar signs with one differing feature (Category II), and signs similar in three out of the four parameters (Category III). Specifically, signs under Category I constituted 55%, those under Category II constituted 9%, and those under Category III constituted 19%. Table 13 provides a breakdown of the sign categorization and their respective frequencies. In applying Crowley's (1992) lexicostatistic model for interpretation, 83% is notably high and suggests that GSL and ASL can be considered dialects of the same language.

Table 13: Categorization of tokens of wordlist for GSL [GSL App] & ASL [Riekehof, 1978]

Categories	Frequency	Percentage
Category I: Signs identical in all 4 parameters	48	55%
Category II: signs similar but have 1 differing feature.	8	9%
Category III: signs similar in 3 out of the 4 parameters.	17	19%
Category IV: signs similar in 2 out of the 4 parameters.	6	7%
Category V: signs similar in only 1 or none of the parameters.	9	10%
Total	88	
Missing signs	12	

Table 14: Differences found in “true friends” signs.

Articulation properties	**Number of instances**	**Percentage (%)**
Handshape	25	23.3
Orientation	21	19.6
Movement	20	18.6

Location	11	10.2
Handedness	9	8.4
Base hand	9	8.4
Handshape Change	6	5.6
Compound	6	5.6

Table 14 above presents the results of the differences found in the tokens of articulatory properties. Handshape emerged as the most significant contributor to the distinction between the two languages concerning “true friends”, accounting for 23.3% of the differences. Orientation closely followed with 19.6%, and phonological movement contributed to 18.6% of the differences. Location difference, handedness, based hand, handshape change, and compounding differences were also observed.

The initial lexicostatistic comparison indicates a close resemblance between GSL and ASL, with a high “true friends” rate of 83%. However, certain differences distinguish the two languages regarding “true friends,” particularly in handshape.

Lexicostatistical Examination of Contemporary Online Dictionaries: ASL vs. GSL

In the second analysis, I conducted a comparison of lexical signs from two contemporary dictionaries to assess the lexical relations between ASL and GSL. The GSL data used in this analysis is identical to that used in the first analysis (i.e., Section 3.3.1.1). However, while the first analysis involved an old ASL dictionary (Riekehof, 1978), the ASL data in this second analysis was sourced from a contemporary online dictionary. Consequently, the "true friends" rate in this second analysis decreased from 83% to 79%, accompanied by an increase in the number of missing signs from 12 to 14. In simpler terms, the lexicostatistical examination of contemporary online dictionaries between ASL and GSL yielded a "true friends" rate of 79%. The study identified 47% of signs under Category I, 10% under Category II, 22% under Category III, 12% under Category IV, and 9% under Category V, based on the available 86 pairs of signs (see Table 15).

Table 15: Categorization of tokens of wordlist for GSL [GSL App] & ASL [Signbank]

Categories	Frequency	Percentage
Category I: Signs identical in all 4 parameters	40	47%
Category II: signs similar but have 1 differing feature.	9	10%
Category III: signs similar in 3 out of the 4 parameters.	19	22%

Category IV: signs similar in 2 out of the 4 parameters.	10	12%
Category V: signs similar in only 1 or none of the parameters.	8	9
Total	86	
Missing signs	14[86]	

Table 16: Differences found in "true friends" signs.

Articulation properties	Number of instances	Percentage (%)
Handshape	35	29.9%
Orientation	25	21.3%
Movement	19	16.2%
Location	11	9.4%
Handedness	10	8.5%
Base hand	8	6.8%
Handshape Change	6	5.1%
Compound	3	2.5%

Although slightly lower than the first study's result, the 79% "true friends" rate between GSL and ASL in this second study still indicates that the two languages are related and dialects of the same language. Once again, this interpretation is based on Crowley's (1992) lexicostatistic classificational definition of cognate percentages (see Section 3.2.1 of this Chapter).

As in the first study, the second study reports on percentages of articulatory differences among signs grouped under categories II and III. Interestingly, the results show a similar hierarchical rate of articulatory properties but with different values (see

Table 16 above). In the second analysis, handshape emerged again as the highest contributing factor to the observed differences. Furthermore, the order of differences in the articulation properties remained remarkably identical across both the first and second analyses.

In this second analysis, handshape contributed 29.9%, followed by orientation 21.3%, movement 16.2%, location 9.4%, handedness 8.5%, based hand 6.8%, handshape change 5.1%, and compounding 2.5%.

Comparing Lexical Landscapes: The Premier GSL Dictionary (GNAD, 2001) vs. Contemporary GSL Dictionary (Online App)

[86] See Appendix D for a table that provides a list of the identified "true friends" as well as the words that were missing in both dictionaries.

Analysis 3 contrasts GSL data from a premier dictionary with that from a contemporary dictionary. Using the modified Swadesh list, I identified 53 signs in both GSL data sources (GNAD, 2001 & GSL App). The results showed that 33 signs fell under Category I, 3 under Category II, 14 under Category III, 1 under Category IV, and 2 under Category V. The comparison of these available 53 signs revealed that GSL has remained consistent over decades, with 94.2% "true friends" still present. However, some phonological variations were observed among the identified "true friends." Table 17 below illustrates the result of the "true friends" comparison.

Table 17: Categorization of token of wordlist for GSL [GNAD (2001) & online App]

Categories	Frequency	Percentage
Category I: Signs identical in all 4 parameters	33	**62.2%**
Category II: signs similar but have 1 differing feature.	3[87]	**5.6%**
Category III: signs similar in 3 out of the 4 parameters.	14[88]	**26.4%**
Category IV: signs similar in 2 out of the 4 parameters.	1[89]	1.8%
Category V: signs similar in only 1 or none of the parameters.	2[90]	3.7%
TOTAL	53	
Missing sign	47	

Table 18: Differences found in "true friends" signs.

Articulation properties	**Number of instances**	**Percentage (%)**
Handshape	6	31.5%
Handedness	5	26.3%
Movement	4	21%
Orientation	2	10.5%
Location	1	5.2%
Compound[91]	1	5.2%
Handshape change	0	0%
Base hand	0	0%

[87] DAY, FISH, NIGHT

[88] ANIMAL, BECAUSE, COUNT, DOG, DIE, EGG, GRASS, LONG, LIVE, MEAT, PIG, SNAKE, SUN, VOMIT

[89] RAIN

[90] BIRD and FAT

[91] Where there was compound in one language and the other has dropped one of the morphemes the difference in the phonological features of the different morpheme was not considered in the table

In addition to identifying “true friends”, this study (3) reports on percentages of articulatory differences among signs. Recognising the difference becomes necessary since the signs grouped under categories II and III are all classified as “true friends” but may bear slight phonological differences between the target pair of signs.

Table 18 above illustrates, with percentages, some of the differences found among “true friends”.

As seen in

Table 18, handshape appeared to be the most significant phonological property, with the highest percentage rate (31.5%), contributing to the differences found among “true friends”. It was followed by handedness (26.3%), movement as a phonological property contributed to 21% of the differences, orientation with 10.5%, and location and compounding contributed 5.2%. Handshape change and base hand did not significantly affect the gaps identified among “true friends”. Note that the sequence of phonological properties influencing the differences observed among "true friends" in the preceding two studies (Section 3.3.1.1 & 3.3.1.2), which compared GSL with ASL, differs from the findings in this third study. In this section, where GSL signs from two distinct sources were compared, instances of phonological differences were constrained. In addition, except for handshape, the order of differences in articulation properties diverged from what was observed in Section 3.3.1.1 and Section 3.3.1.2

Summary of major findings

In Analyses 1, a high percentage of 83% “true friends” was found between GSL and ASL signs, indicating that the two languages are dialects of the same language. In Analyses 2, the “true friends” rate slightly decreased to 79%, suggesting that GSL and ASL are dialects of the same language, as interpreted using Crowley's (1992) lexicostatistic model. Across both Analyses 1 and 2, it became evident that handshape was the primary phonological feature contributing to the distinction between the two languages regarding “true friends”. This finding underscores the significance of handshape in understanding lexical similarities between GSL and ASL.

In Analyses 3, I compared the GSL data source used in Analyses 1 with the GSL data source used in Analyses 2, resulting in an impressive 94.2% “true friends” rate. Considering Crowley's interpretation, this high percentage further strengthens the conclusion that the two data sources represent the same language. Additioinally, in this comparison of the same language from two different data sources (Analyses 3), handshape emerged as a major phonological feature influencing the distinctions found in “true friends” between the two datasets. This result reaffirms the importance of handshape as a significant linguistic characteristic in GSL.

3.3.2 Sign Language Diversity and Relatedness: A Comparative Analysis of the sign languages used in Ghana.

In this section, by employing the Levenshtein Distance Matrix, I investigate the relationships between GSL and ASL and their connections to other sign languages used in Ghana. The study encompasses five language varieties: formal GSL, informal GSL, ASL, AdaSL, and NanaSL.

By using the Levenshtein Distance Matrix, I aimed to unveil the extent of differences and similarities among these sign languages. The subsequent subsections will present the results of this comparative analysis, shedding light on the linguistic connections and divergences between the languages under study.

Assessing lexical similarity using Levenshtein Distance

The Levenshtein Distance (LD) results for lexical similarity among the five language varieties (formal GSL, informal GSL, ASL, AdaSL, & NanaSL) are presented in Table 19 and Table 20. This analysis follows the methodologies of previous studies (e.g., Börstell et al., 2020; Parks, 2011).

Table 19 displays the language pairs, the number of concept matches found between each pair, and the corresponding Levenshtein Distance identified. In Table 20, I provide a similar report, but this time, I made sure the concept matches were equal (i.e., 124) across all language pairs to ensure transparency across all pairs. Additionally, I include the percentage for each paired comparison. Notably, employing an equal concept matches (i.e., 124) in Table 20 did not yield substantial differences in the Levenshtein Distance values presented in Table 19. The subsequent figures depict the outcomes, with Figure 24 illustrating the results of unequal concept matches and Figure 25 showing the calculation with equal concept matches.

Table 19: Levenshtein distance similarity groupings based on four parameters.

Pair	**Concept Matches**	**Median**	**Levenshtein Distance**	**LD %**
ASL vs Formal GSL	140	0.5	0.610707558	61 %
AdaSL vs NanaSL	154	0.375	0.401898734	40 %
Informal GSL vs NanaSL	152	0.375	0.380952381	38 %
AdaSL vs Informal GSL	151	0.25	0.336645223	34 %
Formal GSL vs NanaSL	154	0.25	0.266950847	27 %

Formal GSL vs Informal GSL	151	0.25	0.26198655	26 %
AdaSL vs Formal GSL	154	0.25	0.24123758	24 %
ASL vs Informal GSL	137	0.25	0.236677717	24 %
ASL vs NanaSL	139	0.125	0.223262032	22 %
AdaSL vs ASL	136	0.25	0.214625899	21 %

Table 20: Levenshtein distance similarity groupings based on four parameters with equal concept matches

Pair	**Concept Matches**	**Median**	**Levenshtein Distance**	**LD %**
ASL vs formal GSL	124	0.5	0.61201	61 %
AdaSL vs NanaSL	124	0.375	0.409448819	41 %
Informal GSL vs NanaSL	124	0.375	0.388625592	39 %
AdaSL vs Informal GSL	124	0.375	0.356050769	36 %
Formal GSL vs Informal GSL	124	0.25	0.271984397	27 %
Formal GSL vs NanaSL	124	0.25	0.26408662	26 %
ASL vs Informal GSL	124	0.25	0.240050877	24 %
AdaSL vs Formal GSL	124	0.25	0.234816279	23 %
ASL vs NanaSL	124	0.125	0.219852941	22 %
AdaSL vs ASL	124	0.25	0.211283465	21 %

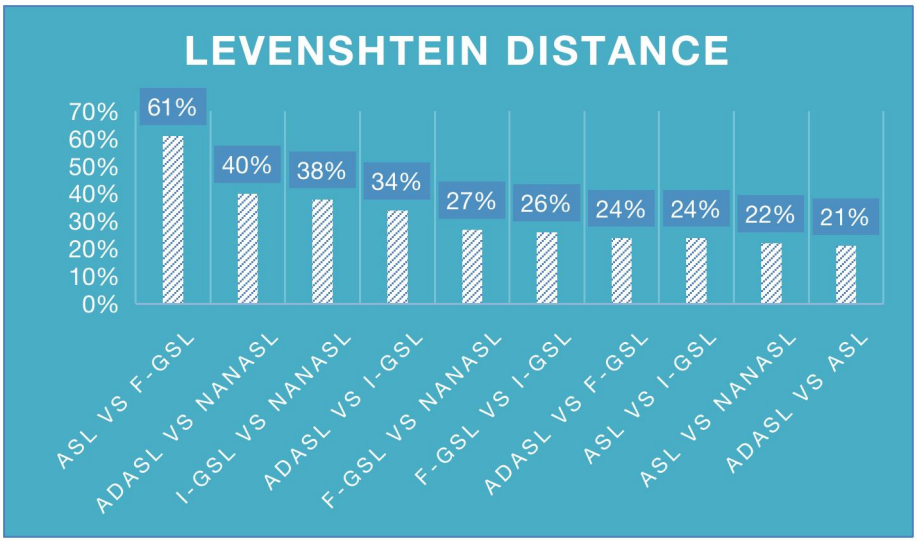


Figure 24: Distribution of Levenshtein Distance Scores with an unequal concept matches

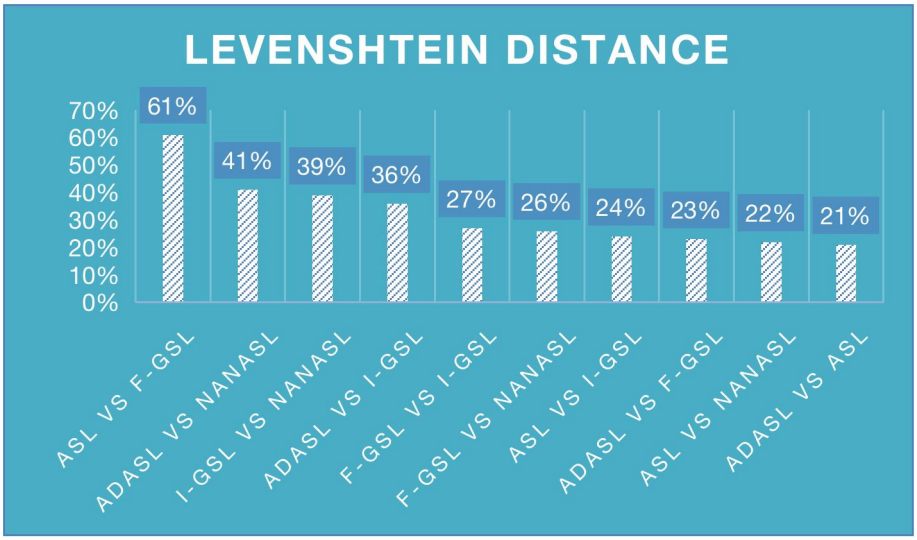


Figure 25: Distribution of Levenshtein Distance Scores with equal concept matches

Based on the percentage of the Levenshtein Distance in Figure 25, the lexical sign distance between AdaSL and ASL was 21%, ASL and NanaSL 22%, AdaSL and formal GSL 23%, ASL and informal GSL 24%, formal GSL and NanaSL 26%, formal GSL and informal GSL 27%, AdaSL and informal GSL 36%, informal GSL and NanaSL 39%, AdaSL and NanaSL 41%, and finally, ASL and formal GSL showed a distance of 61%.

The report indicates that apart from formal GSL, ASL exhibits a significant distance from the other sign languages used in Ghana, with an average of 22%. However, ASL is relatively closer to formal GSL, with a distance of 61%. Moreover, the comparison report highlights some variations in distance between formal GSL and the other sign language varieties in Ghana. Unlike ASL, the report shows that formal GSL signs are more distant from AdaSL with a 23% distance, while the distance is 27% for informal GSL and 26% for NanaSL.

Furthermore, the report underscores that the native sign language varieties (i.e., informal GSL, AdaSL, & NanaSL) are closer to each other than they are to ASL and formal GSL. Within the native sign language varieties, AdaSL and NanaSL exhibit more closeness to each other (41% distance) compared to informal GSL (36% distance). At the same time, NanaSL and informal GSL share a distance of 39%. The result is perhaps not surprising that sign languages that originate in the same area could share more similarities than a foreign language like ASL. Therefore, it is expected for ASL to be far distant from informal GSL, AdaSL, and NanaSL while showing relative proximity to formal GSL due to their historical link.

Overview of Phonological Features: A Focus on Handshapes and Location

Having described the lexical similarity using the Levenshtein Distance, in this section I now compared phonological features across the five different sign language varieties in my annotated dataset to establish shared phonological features. The parameters with a frequency of 6% and above are presented in Table 21 and Table 22. Table 21 focuses on handshapes, while Table 22 examines the location as a phonological feature.

Table 21: Handshape Parameter Frequency

Formal GSL		**ASL**		Informal GSL		**NanaSL**		**AdaSL**	
HS	**(%)**	**HS**	**(%)**	**HS**	**(%)**	**HS**	**(%)**	**HS**	**(%)**
	11		9		13		14		24
	6		9		10		12		13
	6		9		9		10		11
	5		6		8		7		6
	5		6		6		6		4
	4		6		4		5		4

The analysis of handshapes across the five sign languages did not reveal any consistent cross-linguistic pattern. However, two handshapes, C5 [ ] and C6 [ ], stood out with varying frequencies across the languages. C5 [ ] represents a non-spread flat hand with fingers extended, while C6 represents a spread flat hand with fingers extended.

C5 [ ]emerged as the most frequent handshape in formal GSL and NanaSL, while C6 [ ] dominated AdaSL. Nyst (2007:61) also discovered that these handshapes [&] are among the most frequent in AdaSL and in other sign languages. Specifically, the occurrence percentages of C5 [ ] were 11% in informal GSL, 9% in ASL, 10% in formal GSL, 14% in NanaSL, and 6% in AdaSL. For C6 [ ], the percentages were 6% in informal GSL, 9% in ASL, 6% in formal GSL, 12% in NanaSL, and 24% in AdaSL.

ASL showed high frequencies for C5 [ ] and B2 [ ], the latter representing using the index finger. Additionally, informal GSL displayed a noteworthy frequency (13%) for the lax handshape K6 [ ], a bent finger spread handshape. This lax K6 [ ] handshape occurred in all the languages but had varying percentages: 7% in NanaSL, 3% in formal GSL and AdaSL, and only 1% in ASL.

Interestingly, all other sign languages predominantly exhibited signs with lax handshapes except for ASL. AdaSL had the highest number of signs (21) using a lax handshape, followed by NanaSL (17 signs), informal GSL (4 signs), and formal GSL (4 signs).

Lexical variation was also observed in the dataset, where some variants found in formal GSL were also present in ASL, while other variants were unique to each language. Handshape differences often accounted for these variations, with changes occurring in either the initial or final handshape or both.

Some of the variants in formal GSL were phonologically similar, differing mainly in thumb positioning [e.g., vs] or the spreading of the fingers [vs]. Moreover, several signs in both ASL and formal GSL were initialised, including signs like TO LIVE, WATER, BLUE, DOCTOR, FAMILY, CHURCH,

MONDAY, TUESDAY, WEDNESDAY, FRIDAY, and SATURDAY. However, there were cases where initialisation differed between ASL and formal GSL signs. For instance, formal GSL initialised signs such as BLACK, GRASS, RED, ROCK, TO COOK, TO KILL, TO PAY, WIND, WOOD, GREEN, LEAF, RIVER, and ROCK, while ASL did not initialise them.

Table 22: Frequency of the location parameter values.

Formal GSL		**ASL**		Informal GSL		**NanaSL**		**AdaSL**	
Loc	%	Loc	%	Loc	%	Loc	%	Loc	%
SN	39	SN	34	SN	58	SN	63	SN	54
Palm	10	Cheek	10	Chest	5	Chest	5	Space in front of face (SFFace)	7
Cheek	7	Palm	10	Cheek	5	Palm	5	SFFace	7
SF-Face	7	Chest	6	Palm	5	SFFace	5	Cheek	6
Finger	5	Finger	6	Lips	4	Cheek	3	Chin	4
Chest	5	Forehead	5	Finger	3	Finger	3	Chest	3
Forehead	5	SFFace	5	Space in front of & above forehead SFAHead	3	Lips	3	Palm	3
Back of hand (Bhand)	3	Chin	4	SFFace	3	Chin	2	Lips	3
Chin	3	Lips	3	Chin	2	SFA-Head	2	Space to side of lower check/ head SLoCheek	3
Lips	3	Bhand	2	Forehead	2			SFAHead	2
SLo-Cheek	3	SLoCheek	2					Finger	2
SFA-Head	3	SFAHead	2						
Ribs	2	Side of hand (Shand)	2						

The data in Table 22 reveals that the neutral space is the most prevalent articulatory feature across all five sign language varieties. However, a striking observation is that the three native sign language varieties in Ghana heavily favour using neutral space. NanaSL, AdaSL, and informal GSL together accounted for over 50% of the usage of neutral space. Specifically, NanaSL used neutral space in 63% of signs, AdaSL in 54%, and informal GSL in 58%. In contrast, the other phonological locations combined contributed to less than 7% of the data in these native sign languages.

On the other hand, formal GSL and ASL did not show such a predominant use of neutral space, each contributing less than 50% to their signs. In formal GSL, the usage of neutral space was 39%, while in ASL, it was 34%. Based on these findings, we can hypothesise that school based sign languages (e.g., ASL & formal GSL), rely less on neutral space. Conversely, the two village sign languages (AdaSL & NanaSL) and informal GSL rely more heavily on neutral space in their linguistic expression. This report aligns with Nyst's (2007:67) findings on the use of location in AdaSL, wherein she noted that neutral space stands out as the most frequently employed location.

The data also revealed unconventional locations used as articulatory features in the native sign languages. Signs were identified on the buttocks, armpit, tongue, teeth, proximal to the feet, and even on the interlocutor's body as identified already for AdaSL by Nyst (2007). One noteworthy example included the sign for RED in NanaSL located on the tongue and signs like WHITE, DOG in AdaSL, which had locations on the teeth. Moreover, a single sign, SHOE, was located proximal to the feet and was used in AdaSL, informal GSL, and NanaSL.

Summary of major findings

This study revealed several interesting patterns and relationships among the five signing varieties used in Ghana (i.e., formal GSL, informal GSL, ASL, AdaSL, & NanaSL).

1. Similarity between ASL and formal GSL:
ASL and formal GSL showed a high similarity coefficient index, indicating significant lexical similarities. The Levenshtein Distance of 61% using 4 parameters suggests a relatively close relationship between these two sign languages. However, ASL exhibited a considerable distance from the other sign languages used in Ghana, with a distance of 22%.

2. Native Sign Language Varieties:
The native sign language varieties, namely informal GSL, AdaSL, and NanaSL, were found to be closer to each other than they were to ASL and formal GSL. Informal GSL showed higher proximity to the other native sign languages in

Ghana. AdaSL was closer to NanaSL than to informal GSL, while informal GSL showed a more intimate relationship with NanaSL than AdaSL.

3. Articulatory Features:
The analysis of articulatory features revealed distinct preferences among the sign languages. The native sign languages (i.e., informal GSL, AdaSL, & NanaSL) in Ghana demonstrated a greater inclination towards specific phonological features than formal GSL and ASL. Notably, using a lax handshape, neutral space, and unconventional locations was more prominent in the native sign languages, indicating potential linguistic uniqueness and creativity (cf. Nyst 2007).

3.4 Discussion and Conclusion

This study aimed to explore lexical similarities among sign languages used in Ghana, with a particular focus on ASL and GSL. To achieve this, I employed two approaches widely used to measure the lexical distance between signed languages. The first approach, inspired by Woodward's (2000) lexicostatistic methods, was aimed at comparing “true friends” between GSL and ASL, leveraging their relationship as a basis for analysis. On the other hand, the second approach, inspired by Parks' (2011) methodology, focused on comparing other sign languages in Ghana with ASL without relying on “true friends”, acknowledging the absence of historical records to establish language relationships in modern times.

The detailed findings from this study shows the linguistic relationships and distinct characteristics of the sign languages used in Ghana. This result draws meaningful conclusions regarding the similarities and differences among these sign languages. Combining these diverse approaches gives us a better understanding of the intricate linguistic landscape within the Ghanaian signing community. The results shed light on the potential historical connections between ASL and GSL and the linguistic uniqueness of other Ghanaian sign languages. These findings enrich our knowledge of sign language evolution and contribute to a broader understanding of language relationships and diversity in the context of sign languages in Ghana.

3.4.1 Influence of Handshape and handedness on “True Friends” Distinction

The findings of this study consistently highlight the crucial role of handshape as a major contributing factor to the distinction between GSL and ASL “true friends”. Handshape is a significant determinant in the sign language lexicon, playing a pivotal role in sign formation and contributing to the differentiation between related sign languages. The consistent significance of handshape in the results underscores its importance in shaping the linguistic structure of these sign languages. It indicates

its potential as a key criterion for further sign language comparison and classification.

An interesting example from study 3 (section 3.3.1.3) illustrates the impact of handshape on the "true friends" distinction. The sign for RAIN, as seen in Figure 3.11, was categorised under category IV and was the only pair of signs in this category. A notable difference was observed between the old dictionary (Figure 26a) and the new dictionary (Figure 26b) using a compound sign. The old dictionary's RAIN sign combined the WATER and the signs: FALLING, while the new dictionary did not use a compound sign. However, some phonological features from the old dictionary's sign were retained in the new dictionary's version. For instance, the initialised W-handshape [ ] for WATER in the compound sign RAIN was maintained.

a. GSL sign (GNAD, 2001:85).

b. GSL sign (GSL App)

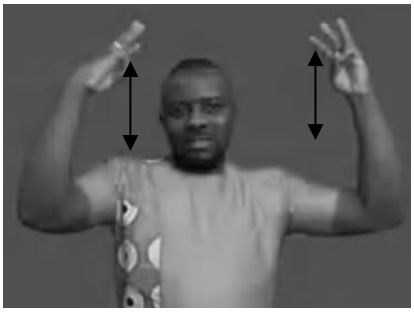
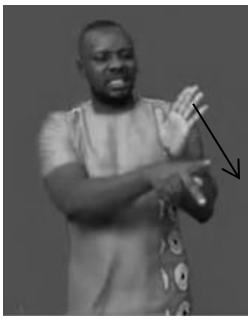


Figure 26: RAIN

A noteworthy feature that emerged in comparing GSL data with ASL data and comparing the two GSL dictionaries was initialisation and, intriguingly, finalisation. Initialisation involves using the English alphabetical handshape representing the first letter of the target English word within a sign. In contrast, finalisation uses the handshape corresponding to the last letter of the target English word when fingerspelled. In this study, nine "true friends" were identified to have linguistic initialisations. An example of initialisation in GSL for the sign KILL is found in Figure 20 repeated here as Figure 27 below. However, in ASL, as shown in Figure 27b, initialisation is not used for the sign KILL.[92] Similarly, one sign (i.e., IF) in the data employed finalisation, as seen in Figure 28. It is interesting to note that finalisation has also been reported in ASL by Mirus et al. (2012).

[92] I am, however, cognizant that ASL signs such as KILL, RED, PAY, and GREEN may frequently incorporate initialisation, potentially reflecting the influence of signed systems for English (E. Maroney, personal communication, April 22, 2024).

a. GSL sign (GSL App)



b. ASL sign (Riekehof, 1978:148)

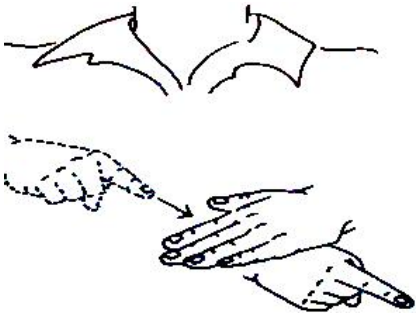


Figure 27: KILL

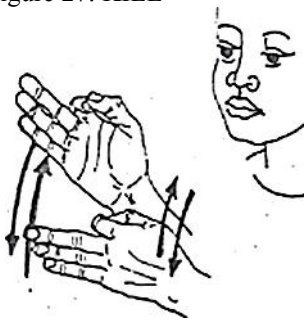


Figure 28: IF (GNAD 2001: 75)

In addition to initialisation and finalisation, some "true friends" were also identified as iconic and local signs. For example, signs for TREE, VOMIT, CAT, DOG, EGG, FIRE, RIVER, SEA, and SNAKE were deemed iconic, showcasing their representation of entities, movements, and natural gestures. Handshape differences among "true friends" pairs were observed in close handshape vs. spread handshape, thumb extended vs. thumb unflexed, iconicity vs. alphabetic handshape, and two selected fingers vs. five selected fingers. The prominence of handshapes in driving phonological differences in a lexicostatistic study aligns with findings from other signed languages (McKee and Kennedy, 2000).

Nonetheless, existing literature (Ormel et al., 2017; Battison et al., 1975) suggests that certain signs' thumb position can be influenced by neighbouring signs, or the phonological parameters of the target sign itself. This claim may extend to other unselected fingers in a target sign (Ormel et al., 2017), which may explain the extension of unselected fingers in some GSL signs, such as COUNT and ANIMAL.

The second phonological feature contributing to differences among "true friends" was handedness, particularly the preference for one-handed vs. two-handed signs. Four out of the five signs used one-handed signs in the old GSL dictionary (GNAD, 2001), while in the new dictionary (GSL App), these signs were articulated as two-handed signs. An example can be observed in Figure 29. The variation in the

number of hands used in signs may indicate language reconstruction or linguistic variation in GSL.

a. GSL sign (GNAD, 2001:29 b. GSL sign (GSL App)

Figure 29: FISH

In conclusion, handshape is a significant factor in distinguishing GSL and ASL "true friends" in this study. The use of initialisation and finalisation in certain signs and the presence of iconic and local signs further contribute to the differentiation among sign languages. The variation in handedness preference adds another layer of complexity to the linguistic structure of these languages. The findings highlight sign language's dynamic and multifaceted nature and emphasise the importance of handshape as a key criterion for future sign language research and classification.

3.4.2 Comparison of GSL Data Sources

In order to gain further insights into the development of GSL; the study (see Subsection 3.3.1.3) also compared "true friends" in GSL by analysing data from two different dictionaries (i.e., 2001 vs. 2020). The resulting "true friends" rate of 94.2% is remarkably high, suggesting that not much has changed in the language over the 19 years between the publication of the two dictionaries. However, Edward (2021b: 30) raises the possibility that some signs in the dictionary used in the study may have changed, such as modifications in articulatory parameters and a reduction in the use of initialised signs due to GNAD influence. The exact role of GNAD in these changes and modifications is not entirely clear. Yet, the observed variations in different phonological features of signs in GSL may indicate a certain linguistic variation rather than a definitive language change. This notion is supported by the concept of idiosyncrasy in sign languages and the lack of extensive linguistic research conducted nationally before compiling these dictionaries.

Another possible interpretation of the observed variations in GSL could be the ongoing process of phonological reconstruction within the language (Kusters, 2019: 7-8). Nyst (2010: 413), for instance, noted that the articulation of GSL tends

to be more lax than standard ASL, particularly in the handshape parameter. Additionally, Edward (2021b) pointed out that the modifications introduced by GNAD have resulted in reduced initialisation. However, the findings of this study indicate that initialisation is still favoured by GSL signers, as evident in both the primary and secondary data analysed.

Despite the potential influence of external factors and variations, the high "true friends" percentage from the comparison of GSL data sources (i.e., dictionaries) underscores the continuity and stability of the language over time. This outcome may also be attributed to codification, whereby the existence of a dictionary freezes the lexicon to some extent. It is also essential to recognise that sign languages, like spoken languages, are dynamic and can undergo changes and adaptations as they evolve in different social and linguistic contexts.

3.4.3 Similarity Index and Language Proximity

The similarity coefficient index between ASL and formal GSL indicates a close linguistic relationship, with formal GSL being more closely related to ASL (Levenshtein Distance of 61%) than the other sign languages used in Ghana. This finding is consistent with the earlier observations of high "true friends" percentages between these two languages, further reinforcing that they may be dialects of the same language.

The distance between lexical items was examined in the second approach to establish the relationship between formal GSL and ASL using the Levenshtein distance. The 61% distance score can be considered relatively high, especially considering a similarity percentage above 50% is often considered significant in linguistic similarity judgments for spoken languages (Blair, 1990: 33; McElhannon, 1967: 8).

The comparison results revealed that informal GSL exhibits closer linguistic proximity to the local sign languages in Ghana than ASL. This fact aligns with Nyst's (2010: 413) findings in the literature, who observed that handshape in GSL is more similar to AdaSL as both languages are "more lax than standard ASL." The distance scores between informal GSL and the local sign languages support this conclusion, with informal GSL showing a closer similarity to AdaSL (23%), NanaSL (26%), and informal GSL (27%) compared to its distance from ASL (22%).

The influence of formal GSL on the local sign languages in Ghana is evident, especially considering the shared ambient spoken language and culture between formal GSL and the local languages. The presence of bilingual deaf signers, familiar with formal GSL and ASL due to formal education, further contributes to the influence of formal GSL on AdaSL and NanaSL. Anecdotal reports and some studies also support the observation that formal GSL influences the local sign

languages in Ghana through language contact situations (Abudu, 2019; Edward, 2021b; Kusters, 2019; Nyst, 2007).

Additionally, this study identified that informal GSL is closer to AdaSL and NanaSL. These three indigenous sign languages exhibit certain similarities in articulatory features, lexicon, lexical strategies, and the use of space. Tagoe's (2018) work and Nyst's (2010: 425) observations also support these findings, revealing similarities between AdaSL and NanaSL regarding handshape and lexical items. Shared (Akan) culture and limited lexical borrowing between NanaSL and AdaSL may contribute to these similarities.

Furthermore, anecdotal reports of ASL users effectively engaging with formal GSL users with relative ease may also encourage the borrowing of lexical items and features from ASL by GSL community members. Such international exchange experiences can facilitate lexical similarities between formal GSL and ASL, as supported by the results of this study.

The similarity index and language proximity analysis provide insights into the relationships between the sign languages used in Ghana. The close relationship between ASL and formal GSL and the proximity of informal GSL, AdaSL, and NanaSL showcase the dynamic nature of sign languages and the influence of language contact situations. These findings contribute to the broader understanding of the linguistic characteristics and relationships among the sign languages used in Ghana while also highlighting the need for continued research to explore the dynamic linguistic landscape of these unique and vibrant languages.

3.4.4 Concluding remarks

In conclusion, this chapter encompassed four distinct studies using both Park's (2011) and Woodward's (2000) approaches to explore the relationships among the sign languages used in Ghana. Under Woodward's approach, three studies were conducted. Study one, compared GSL signs from a dictionary with ASL signs from a historical dictionary. The findings highlighted a substantial "true friends" rate of 83%, affirming the notion that formal GSL and ASL are dialects of the same language. The prominence of handshape as a primary distinguishing feature further underscored the significance of this phonological aspect in understanding lexical similarities between GSL and ASL. The second study compared the same GSL signs with ASL signs from a contemporary dictionary. The "true friends" rate slightly diminished to 79%, reinforcing the interpretation that GSL and ASL are dialects of the same language. The persistence of handshape as a key phonological feature in differentiating "true friends" maintained its significance across analyses. The third study compared the GSL signs with signs from an older GSL dictionary. This third analysis yielded 94.2% "true friends" rate, underscoring the effect of language codification in standardizing formal GSL over time, strengthening the conclusion

that the two data sources represent the same language. The persistent influence of handshape in GSL further validated its linguistic importance in the third study.

The fourth study used primary data except for ASL signs. This last study employed Park's approach, delving into the lexical similarity among formal GSL, informal GSL, ASL, AdaSL, and NanaSL. The analysis revealed distinct patterns and relationships among these signing varieties, emphasizing the close similarity between ASL and formal GSL, as well as unique preferences in articulatory features within the locally evolved sign languages of Ghana (i.e., informal GSL, AdaSL, and NanaSL). The study during it data collection for the fourth study revealed the influence of language ideologies on GSL usage, particularly in formal and informal settings. The language attitude of signers, especially during data collection, can influence the nature and formality of GSL in various contexts. The presence of informal GSL and variations in signs within the native sign languages may be attributed to the idiosyncratic preferences of users and the influence of external factors.

Future research in this area should adopt a sociolinguistic perspective to explore further the historical development of GSL and its ongoing relationship with ASL. Additionally, investigating the phonology, morphology, syntax, and semantics of the native sign languages in Ghana would provide deeper insights into their linguistic structures and characteristics. This study contributes to understanding the linguistic connections among sign languages used in Ghana and their relationship with ASL. The insights gained from this research can inform language planning, deaf education, and the development of GSL in Ghana. By recognising the linguistic diversity and heritage of the Ghanaian signing community, we can promote and preserve these valuable languages for future generations.

4.

A DESCRIPTIVE ANALYSIS OF SASS USAGE AMONG (GSL) SIGNERS AND (GHANAIAN) GESTURERS

This chapter examines the expression of size and shape specifiers (henceforth SASS) in GSL and their comparable gestures used by Akan[93] speakers in Ghana. Among the approximately 70 languages in Ghana, Akan is a prominent lingua franca and a widely spoken language, contributing to about 45.7% of the country's population of 30.8 million,[94] according to the 2021 Housing and Population Census.

Expressions related to size and shape are prevalent in various sign languages but exhibit diverse forms (Kyuseva, 2020; Lu & Goldin-Meadow, 2018; Nyst, 2016a; Nyst & Tano, 2018). The existence of such expressions in sign languages is not surprising, given that our world is replete with diverse geometric shapes, and vision is our primary sense. However, the question arises whether size and shape expressions in sign languages differ from their equivalent gestures produced by hearing speakers. Some studies in sign languages (Nyst, 2016a; Tano & Nyst, 2018) have suggested that certain size and shape expressions may have originated in the gestural environment; thus, gestures contribute to sign language's linguistic structure or lexicon. Yet, the timing of this influence of gesture on sign language structure remains uncertain. We do not know if this effect occurs only during the emergence of a new sign language or if an already established sign language can also be influenced by its gestural environment.

The cases of AdaSL and Bouakako Sign Language (emerging sign language of Côte d'Ivoire) demonstrate some resemblance in their SASS expression with what is used by gesturers in their respective environments (Nyst, 2007; Nyst & Tano, 2018). However, they cannot provide insights into the timing of this influence, lacking intermediate steps of argumentation. Even though one is established and the other emerging, no conclusion can be drawn as both sign languages emerged within the same gestural environment where they share SASS. In contrast, ENGLISH was introduced in Ghana in 1957 as an already established sign language, providing a unique opportunity to explore if a new gestural environment can also influence an established sign language. The history of sign language landscape in Ghana adds an intriguing dimension to this investigation. SASS and their associated gestures play a significant role in daily communication; however, there are limited studies on this type of linguistic communication, particularly among users of spoken languages. For

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[93] The term Akan can refer to the language or the ethnic group.

[94](https://statsghana.gov.gh/gssmain/storage/img/infobank/Volume%203%20Highlights.pdf)

instance, Nyst (2007:126) observed that Akan gesturers in Ghana produce SASS gestures resembling those in AdaSL but without providing any detailed account on gestures.

Within the body of literature concerning sign languages, disparity emerges between the prevalence of independent space-based SASS and the distinct existence of body-based SASS in AdaSL and Bouakako Sign Language, both located within their respective gestural environments, as noted by Nyst in her works from 2007 and 2019. Research undertaken by Nyst in 2007 and 2019, along with the collaborative efforts of Nyst and Tano in 2018, delves into SASS gestures in Ghana. However, this research involves a relatively small number of speakers. Their collective findings underline a significant correlation between the use of body-based SASS in sign language and gestures within the same environment, coinciding with observed restrictions on handshapes and a limited application of space-based SASS. Drawing from Nyst (2018, 2019), one can infer that culture-specific patterns within the gestural environment hold the potential to shape cross-linguistic disparities in SASS morphology and handshape phonology, thereby offering an explanation for both the similarities and distinctions found in sign languages, beyond the influence of shared linguistic heritage, language contact, and iconicity.

AdaSL and Bouakako Sign Language, village sign languages featured in Nyst's work from 2007, 2019, and Nyst and Tano's research in 2018, shed light on the existence of these linguistic phenomena within a specific context. This raises the question of how urban deaf signers in Ghana navigate the realm of SASS. Is there a comparable correlation between signers and gestures in this urban setting? This chapter aims to explore these correlations and to address the notable gap in gesture data related to SASS by providing a morphophonological in-depth analysis of SASS in GSL and by Ghanaian gesturers. Consequently, this chapter discusses the findings on SASS signs and gestures to assess and validate the conclusions established in prior literature (e.g., Nyst, 2007, 2019; Nyst and Tano, 2018).

In the following sections, I first provide a review of SASS to situate this study (Section 4.1). This is followed by a methodology for this chapter (Section 4.2). Under the methodology section, I overview the data source used, and the tokens of data gathered. The data are presented for analysis in Section 4.3. In Subsection 4.3.1, shape for shape depiction is described under the subsections; entity handshape (Section 4.3.1.1), tracing hand shape (Section4.3.1.2) and handling hand (Section 4.3.1.3). I then provide a summary of section 4.3.1 in the subsection 4.3.1.4. In section 4.3.2, distance for size depiction with two main subsections. Size depiction in space (Section 4.3.2.1) and size depiction on the body (Section 4.3.2.2). Under Section 4.3.2.1, I describe distance delimited between two hands (Subsection 4.3.2.1.1), distance delimited hand-internally (Section 4.3.2.1.2), and distance delimited between hand and ground (Subsection 4.3.2.1.3) and distance delimited between hand and body (Subsection 4.3.2.1.4).

Under Section 4.3.2.2, I describe size denoted hand-internally (Subsection 4.3.2.2.1), size indicated with two hands on the body (Subsection 4.3.2.2.2) and size indicated with one hand on the body (Subsection 4.3.2.2.3). Finally, the chapter ends in Section 4.4 with a discussion and Section 4.5 with a conclusion.

4.1 The Complexity of Size and Shape Specifiers (SASS) in Sign Languages

Size and Shape Specifiers (SASS) have captured the attention of linguists for their unique role in sign languages, providing insights into how signers convey the dimensions and forms of various entities. While the discussion of SASS has grown, it has given rise to varying perspectives and terminologies, making it an intriguing area of study in sign linguistics.

A subset of the academic community, including scholars such as Taub (2001), Supalla (1986, 1982), Galea (2006), and Nyst (2016a), perceives SASS as a distinctive classifier within sign languages designed to portray the contours or magnitudes of an entity. However, this view is not universally accepted. Some, like Tkachman and Sandler (2013) and Sandler et al. (2011), refrain from categorising SASS as a classifier. This divergence in perspective can be attributed to the ongoing exploration of classifiers in sign languages (Zwitserlood, 2003; 2012).

Supalla (1982) delineated SASS as a classifier system intricately linked to motion and location verbs. Extending on this, Nyst (2007) opined that those signs reflecting the size and/or shape of an entity, either in fully or partially, can be categorised as SASS. This categorisation also extends to signs or sub-lexical entities that encapsulate the dimensions and form of an object. Taking a phonological stance, Wallin (2000) depicted SASS as primarily reliant on movement and articulator components, either solely through handshapes or in conjunction with orientation. This perspective is augmented by Safar and Chan (2020), who suggested that SASS might not always mimic an object's exact dimensions or form but might denote the broader category to which the object belongs.

A recurring theme in the discourse on SASS is their iconicity, as Nyst (2016a) and Galea (2006) noted. This iconic nature lends transparency, allowing easy comprehension by interlocutors (Nyst & Tano, 2018). However, challenges arise in the inconsistent usage of the term 'SASS', leading to ambiguities. For instance, a sign might employ elements hinting at dimensions and form but not semantically align with these concepts. Differentiating between these intricate nuances—whether SASS elements are embedded within lexical signs or operate as standalone entities—is a task that has puzzled many, including Nyst and Tano (2018).

Take, for instance, the GSL sign for HOUSE (as illustrated in Figure 30). While the sign may represent a dwelling at first glance, elements hinting at size and shape become evident upon closer inspection. On a lexical level, the primary

significance of this sign does not necessarily concern size or shape. Still, it subtly conveys or alludes to such elements (particularly the shape of a house). Contrastingly, SASS can also manifest as independent signs, solely representing size and shape (as illustrated in Figure 31), free from the confines of lexical embedding or any affixation. Nyst and Tano (2018) highlight that differentiating between lexical signs with embedded size and shape elements (e.g., Figure 30) and standalone SASS/productive SASS (e.g., Figure 31) can be challenging, given that both types of signs might appear the same in form.

This complexity is underscored when we consider that, visually, both sign types (embedded SASS elements & productive SASS) might bear striking resemblances. Let us revisit the GSL sign in Figure 30 for a clearer depiction. While primarily associated with another concept (i.e., house), this sign could simultaneously describe a triangular-shaped object.

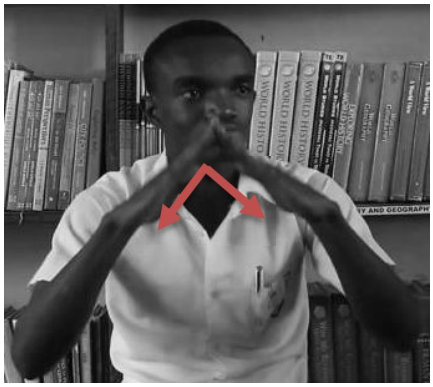

Figure 30: HOUSE (Hadjah 2016:83)

Figure 31: Size of a snake

Kuyseva (2020:261) offers a more delineated perspective, defining SASS as signs that depict an object's size and/or shape but without indicating the object's spatial location or movement. Nyst and Tano (2018), therefore, assert that the key differentiation for such signs lies in their semantic specialisation towards a specific type of referent. However, it is pertinent to note the inconsistency in using SASS in the literature, particularly regarding their distinction as independent lexical signs or sub-lexical elements within a sign. Considering these discussions and for this book, the emphasis will predominantly be on SASS as standalone signs specifically designed to express size and/or shape.

Versatility and Variability Roles of SASS

SASS is an instrumental tool within various sign languages, delineating clarity and ensuring reduced ambiguity in compound-like structures (Safar & Chan, 2020; Tkachman & Sandler, 2013). Their primary function is to specify the size or shape of the referent in question. In AdaSL, for instance, the application of SASS varies based on the object's size relative to the signer's upper limb; this variance manifests either in measuring (stick) signs or tracing signs (Nyst, 2007).

Broadening the geographical scope, Kuyseva (2020) delved into Russian Sign Languages (RSL), aiming to discern SASS's unique properties, structural elements, and semantics. Her findings suggest that the positioning of SASS, whether in a neutral space or on the body, can influence the meanings and representations they encapsulate.

Italian Sign Language (LIS) also offers insights into SASS's multifaceted nature, as Fornasiero (2020) explored. Her research identifies SASS as a vital tool for articulating LIS's diminutive and augmentative distinctions, categorising them as extension and surface classifiers. However, she underscores the complexity inherent in their classification, challenging their description as mere classifiers or bound morphemes.

The positioning flexibility of SASS is apparent across various sign languages. They can stand alone, occur in conjunction with a head sign in a compound-like construction, and appear in multiple positions within a sign, be it final, middle, or initial (Meir et al., 2010; Safar & Chan, 2020; Tkachman & Sandler, 2013). Safar and Chan (2020) argue for the necessity of SASS in some lexical contexts, underlining their potential mandatory use or their application for schematic classification.

The potential of SASS to function as a nominal marker has gained significant attention in the literature (Haviland, 2013; Safar & Chan, 2020; Safar, 2020; Tkachman & Sandler, 2013). For instance, SASS has been identified as a strategy to distinguish nouns from verbs in Israeli Sign Language (ISL) and Al-Sayyid Bedouin Sign Language (ABSL) (Tkachman & Sandler, 2013). However, it is noteworthy that its use as a nominal marker is not obligatory across all sign

languages. Moreover, YMSL and ISL employ other strategies, such as patterned iconicity and manner of movement, to indicate nominal marking.

Diving deeper, Schick (1987) posits SASS as a predicate adjective in ASL, emphasising ASL's proclivity towards SASS usage, even when a simple lexeme might suffice. Furthermore, contrasting perspectives abound regarding the nature of SASS. While Meir et al. (2010) view SASS as bound morphemes, Zwitserlood (2003) discerns a distinction, deeming Tracing SASS as free morphemes and Static SASS as bound. This disparity in understanding could be attributed to varying research aims or differences in the languages studied. For instance, while Meir et al. (2010) concentrated on compounding, Zwitserlood's (2003) focus was on hand configurations in the Sign Language of the Netherlands (NGT).

Furthermore, the role of SASS as a compound constituent is not universal. While its usage is prominent in languages like ASL (Vercellotti & Mortensen, 2012; Aronoff et al., 2003; Newport & Bellugi, 1979), others, such as Ethiopia SL, display minimal use in compounding (Kidane, 2013). Some researchers, like Bergman and Wallin (2001), working on Swedish SL, even challenge the established notion of SASS and nouns forming a compound unit, suggesting that SASS could function as a separate unit based on their analyses.

SASS is a versatile linguistic tool across various sign languages, playing critical roles in clarity, size and shape depiction, and even noun-verb differentiation. However, its classification and usage vary widely, underscoring sign language's global richness and complexity.

4.1.1 Static and Tracing SASS: Classification and Function

Research in sign languages worldwide has led to the classification of SASS into two prominent categories: Static SASS and Tracing SASS.

Static SASS:

These signs, often devoid of movement, emphasise the size of a referent while providing minimal information regarding its shape. While these signs were originally termed by Supalla (1982, 1986), subsequent research by Kuyseva (2020) and Fornasiero (2020) has reframed and expanded upon these initial definitions.

Generally, they serve as adjectival predicates in sentences, emphasising a referent's size or general shape. However, they can have limitations in terms of the diversity of shapes they depict due to restricted hand configurations. Typically, they spotlight certain defining features of the entities they represent instead of detailing the complete shape (Zwitserlood, 2003).

Tracing SASS:

As illuminated by Kuyseva (2020), these signs involve tracing the contours of an object through movement, delivering specifics about both its size and shape. Morphologically, they exhibit semantically charged movement and have the versatility to function as nouns, adjectives, or predicates.

The movement intrinsic to Tracing SASS is essential for detailing an entity's referent (Zwitserlood, 2003). These movements might depict extension distance for size and are distinctive from other classifiers where movement might have different semantic roles. Zwitserlood (2003) indicated that Tracing SASS is not typically employed with motion verbs[95] but can be associated with location verbs[96]. Conversely, Zwitserlood (2003: 158) asserts that Static SASS can be applied with motion and location verbs.

Fornasiero's Study (2020) on Italian Sign Language (LIS) and Kuyseva's Dissertation (2020) resonate in their adoption of the classification above. Kuyseva's work further elucidates what signs fall under the SASS umbrella, expanding on Zwitserlood's (2003) preliminary analysis.

Nyst's analysis (2007, 2016a) on AdaSL provided a detailed structure for Tracing SASS. She identified four types:

- Tracing an outline in neutral space (Figure 32).
- Tracing close to the body (Figure 34).
- Tracing a one-dimensional line on the body (Figure 33).
- Representing an entity with the hand while creating a trace to indicate its extent in space (Figure 35).

The four distinct subcategories are illustrated below. It should be noted that AdaSL is not the exclusive sign language on which Tracing SASS reported on the body has been documented. For example, Galea (2006) has also reported instances of the phenomenon in Maltese Sign Language.

[95] Verbs that indicate the path of its referent
[96] Verbs that indicate the location of its referent

Figure 32: KIOSK (Nyst, 2007: 131)

Figure 33: NORTHERNER (Nyst, 2007: 131)

Figure 34: SATISFIED (Nyst, 2007: 131)

Figure 35:STICK (Nyst, 2007: 129)

Tracing SASS's movement plays a pivotal role in delineating the reference of an entity (Zwitserlood 2003: 155). Nyst (2016a) suggests that tracing can represent both extension and distance in size. This distinct function of movement in SASS sets it apart from other classifiers where movement may indicate aspects other than size or shape. In a comparative study between ASL and NGT, Nyst (2016a) noted that AdaSL employs a distinct handshape for depicting entities, especially cylindrical ones. Whereas ASL and NGT predominantly use finger and thumb opposition (e.g.,) for representing cylindrical objects, AdaSL favours articulation with cylindrical body parts like a chosen finger, fist, or forearm.

Supalla (1986) posits that both the forearm and hand, including the fingers, serve as articulators for SASS, with each articulatory unit, such as fingers, having its distinct meaning. In his 1982 thesis, Supalla categorised shapes in SASS into two primary groups: straight (as shown in Figure 36a) and round (as depicted in Figure 36b). Figure 36 illustrates these SASS groups, demonstrating how fingers can be positioned to represent the width or depth of an entity. In elaborating on this, Supalla (1982:36) specified that the forearm can indicate length for straight entities. In contrast, for round entities, the aperture between the hands denotes size, ranging from compact to large.

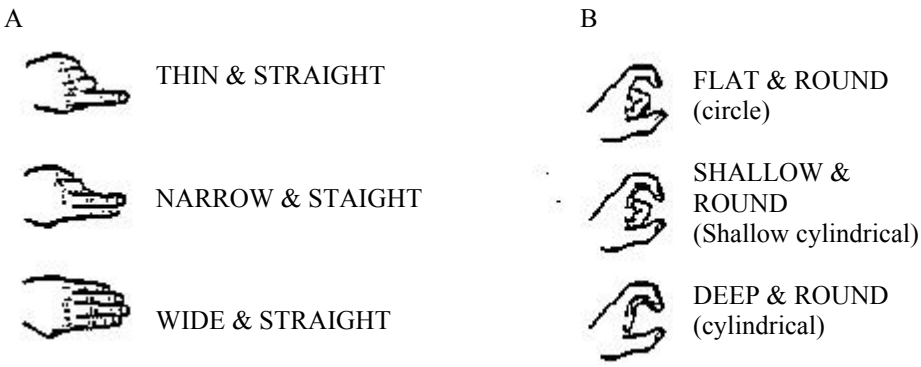

Figure 36: Some examples of SASS handshapes (Supalla, 1982:38)

Other linguists (e.g., Kuyseva, 2020; Wallin, 2000; Zwitserlood, 2003) have correlated hand configuration with the dimension of the referent, emphasising that the choice of handshape, orientation, and the number of articulators is influenced by the size and shape concept to be expressed. While Static and Tracing SASS may appear universally across different sign languages, the way they are employed and differences in their use can be unique to each language. These distinctions and similarities have been highlighted by numerous studies, from Tkachman and Sandler's (2013) exploration of ISL and ABSL to Safar and Chan's (2020) insights into YMSLs.

In the literature, nonmanual markers, encompassing facial expressions, mouth movements, and other bodily actions, are crucial in enhancing the expressivity of SASS in sign languages. Wallin (2000), Nyst (2007), and Sutton-Spence and Woll (1999) have emphasised the role of these markers in sign languages. For instance, in AdaSL, Nyst (2007) identifies fixed mouthing associated with signs like BIG or SMALL, possibly influenced by local spoken languages. In British and Swedish Sign Languages, nonmanual markers, such as puffed cheeks or focused eye gaze, emphasise, and provide context to SASS (Bergman & Wallin, 2001; Sutton-Spence & Woll, 1999). Kuyseva's (2020) study on Russian Sign Language further underscores the importance of mouth articulation in SASS, suggesting its role is not merely mimetic but can shape conversation context. While SASS is instrumental in sign languages, its effectiveness and clarity are often enhanced by accompanying nonmanual markers. Understanding SASS in sign languages worldwide remains an exciting avenue for linguistic inquiry.

4.1.2 Exhaustive model for SASS Classification

Many linguists have explored the vast realm of SASS extensively, with Nyst's exhaustive model (2016a) serving as a pivotal touchstone in the literature for

African-based SLs. This section endeavours to shed light on the classification and structuring of SASS by surveying key contributions.

Nyst's Model based on AdaSL Data

Nyst (2016a) furnished a detailed model for SASS classification, leveraging AdaSL data. Her model is categorised into 1) Shape for Shape Depiction and 2) Distance for Size Depiction:

1) Shape for Shape Depiction:
   a. Entity handshape: Represents the size and shape of an entity.
   b. Tracing handshape: Indicates size and shape by tracing an imaginary entity.
   c. Depiction of hand: Either handles an entity or shows interaction with the entity.
      This includes:
      I. Handling hand: Movement depicts the extent.
      II. Non-handling hand: Movement may indicate actions (e.g. swimming or pushing).

Nyst (2016a) classification builds on Taub (2001) model which offers a distinct perspective on categorising size and shape depiction. In contrast to Nyst's proposals, Taub (2001:7) emphasises the iconic role of movement in shaping depiction. Specifically, Taub presents three principal categories for representing size and shape:

1. **Path for Shape:** Here, the articulator's path movement reflects the visual image's shape.
2. **Shape for Shape Depiction:** In this category, the form of the articulator mirrors the image's shape.
3. **Size for Size Depiction:** The size of the articulation corresponds directly to the size of the image.

Nyst's model underlines the possibility of overlap between the classifications, reminiscent of Galea's (2006) observation on Maltese Sign Language—for instance, the ambiguity surrounding categorising a container as a handling handshape or an entity handshape. Nyst also broaches the consideration of space between opposing thumb and fingers for distance-for-size depiction in specific handshapes.

2) Distance for Size Depiction:
   a. On the Body: Can be hand-internal or involve both hands.
   b. In Space: Covers two hands, hand-internal, hand-and-ground, and hand-and-body categories.

The intricacies of movement (either path or hand-internal) play a pivotal role, potentially contributing to size or shape specification. A graphical representation of classifications can be found in Figure 37 and Figure 38 illustration Nyst model.

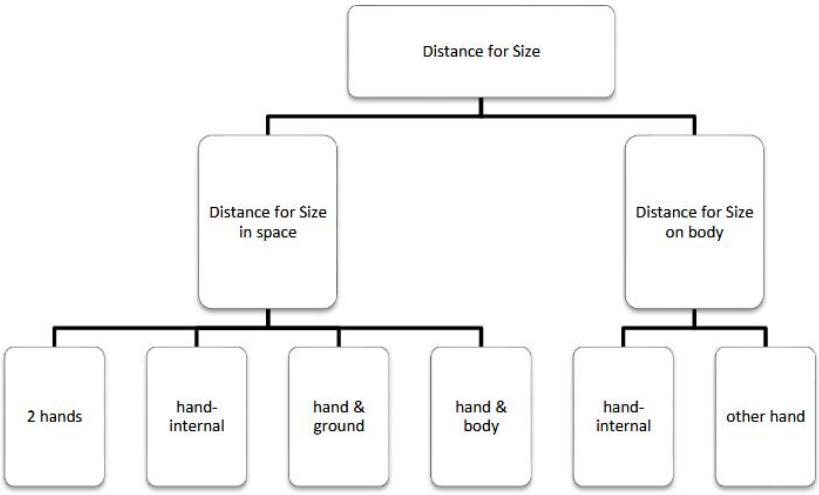

Figure 37: Model for size depiction (Nyst, 2016a as cited in Nyst, 2018:358)

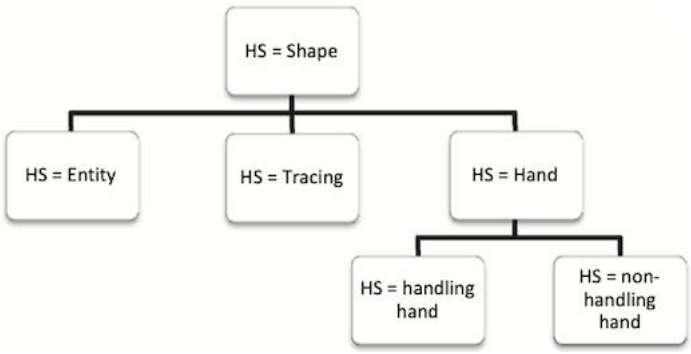

Figure 38: Model for shape depiction (Nyst, 2016a:82)
[NB: HS refers to Handshape]

Articulatory movements in sign languages often convey diverse meanings, especially concerning referenced objects (e.g., classifiers). A closer look at the literature provides varied insights into how these movements are structured and what they imply. One fundamental observation comes from Nyst (2018), who notes that articulatory movement, be it path or hand-internal, plays a significant role in denoting size or extent. This is not an isolated view. Newport and Bellugi's (1979: 238ff) study on ASL made similar observations. They posited that the size and shape of a SASS may not always directly represent the actual size and shape of the object it refers to. Illustrating this, they highlighted how a single Static SASS (e.g.,

) could symbolise various round entities such as cookies, melon seeds, coins, and grapes, regardless of their physical disparities (Newport & Bellugi, 1979).

However, Schick (1987) brought forth an alternative perspective on ASL. While acknowledging that a handshape might remain constant, Schick stressed that the aperture between the fingers or the hands could differ, signifying the variance in the size of the referenced object.

Swedish Sign Language (Swedish SL) also mirrors this phenomenon. Wallin (2000) observed that in Swedish SL, the extent of path movement directly corresponds to the size of the referenced object. This relationship extends further, with Wallin (2000) elucidating a specific rule in Swedish SL regarding the phonological movement of two-handed SASS. He describes that a rounded object or an oblong entity would require a single stroke of movement. In contrast, an object with three sides, like a triangle, demands two strokes, while a four-sided object, such as a rectangle, requires three strokes of movement. This rule pertains predominantly to two-handed SASS with distinct path movements of the hands. However, Wallin (2000) also alludes to the existence of one-handed tracing SASS and two-handed SASS in which only one hand is active. Regrettably, he did not elaborate on these forms in his work. Additionally, Schick (1987) delves into the categorisation of SASS, introducing concepts of single and complex SASS. While a single SASS is a straightforward construction representing one entity, a complex SASS denotes two or more entities, reflecting a more intricate construction.

Body-based-SASS in AdaSL and Cross-linguistic Observations

Nyst's (2007) exploration into AdaSL greatly enhanced our language comprehension, particularly in the 'internal modification' domain. This method, which uses the body to depict size and shape by manipulating or pulling a body part, showcases the intricate ways AdaSL communicates shades of size and shape. The discovery of realistic and unrealistic pulls enriches our understanding of the depth of SASS in AdaSL.

Newport and Bellugi (1979) and Schick (1987) emphasise that SASS is not always a literal representation of physical size and shape. Instead, a combination of approximation and iconicity ensures effective communication. Such insights illuminate the flexibility embedded in sign languages.

A notable instance of body-based SASS in AdaSL, as identified by Nyst (2007), involves a part of the body, such as the ear or nose, being held and pulled. This act can be portrayed realistically, as shown in Figure 39 or more abstractly, as in Figure 40. Nyst (2016a) elaborated that such 'internal modifications' could be seen as a handling hand performing realistic or unrealistic pulls.

Figure 39: Ears of a wild animal (Nyst, 2007:152)

Figure 40: LONG-NOSE (of turkey) (Nyst, 2007:152)

Concerning body-based SASS, Nyst (2007) sheds light on 'measure signs', which predominantly express the size of an entity. These signs are of two main types: 'growth-line' and 'measuring stick'. The 'growth line' represents an abstract vertical line, while the 'measuring stick' could involve one or both hands, dependent on the referent. Specifically, the one-hand variants cater to smaller objects, primarily using the thumb and index finger for articulation. However, Nyst (2016a) posits that these might lean more towards being lexical signs than productive constructions due to their limited number and fixed form.

Nyst and Tano (2018) delve deeper into the various forms SASS adopt. For AdaSL, the hands play a significant role in size and shape depiction, with distinct hand parts and shapes employed. One-handed or two-handed signs can be used, with an active hand often performing the task of delimitation or pointing. Notably, body-based SASS in AdaSL and Bouakako Sign Language (Bouakako SL) share several similarities, such as using fingertips, fingers, the entire hand, or arm parts. However, a marked distinction arises in using the upper leg in Bouakako SL, which is an intriguing deviation from the norm.

In recent literature, the presence of body-based SASS in RSL has been highlighted by Kyuseva (2020). However, it is essential to differentiate this from the body-based SASS identified by Nyst and Tano in West African sign languages. In RSL, the referent for the body-based SASS must consistently pertain to or be a part

of the body (e.g., a moustache). In contrast, the body-based SASS highlighted by Nyst (2007) and later by Nyst and Tano (2018) does not necessarily relate to parts of the body. However, the chosen body part for articulation typically mirrors the shape or size of the intended referent iconically.

Kyuseva's study on RSL emphasises the location of SASS—whether produced in the neutral space in front of the signer or directly on the signer's body. According to Kyuseva (2020), the distinction between these two locations may be attributed primarily to the potent iconicity inherent to bodily representations. Building on this, Kyuseva (2020) recognises and references Nyst and Tano's (2018) findings, which show that body-based SASS in AdaSL and Bouakako SL, prevalent in West Africa, are markedly iconic. In these languages, the passive hand often symbolises the object, while the active hand conveys the object's size.

It is rare cross-linguistically for signs to be articulated below the groin, making Bouakako SL's thigh-based signs, as used by neighbouring Anyi speakers, an interesting study point. Nyst and Tano (2018) speculate that this might be due to Bouakako being a younger village sign language and that these signs may evolve with time. AdaSL, with its richer history, has already ingrained size and shape depiction into its grammar.

With AdaSL and its comparison to Bouakako SL, Nyst and Tano (2018) provided a comprehensive comparison between AdaSL and other sign languages, with a pronounced emphasis on Bouakako SL. This comparison showcased different strategies adopted by sign languages in using body parts for SASS, which could be influenced by attributes such as the language's age, the size of its user population, and interactions with other languages. Compelling evidence suggests that the body-based SASS in AdaSL and Bouakako sign language may have originated from gestures prevalent in their respective environments. Nonetheless, given AdaSL's longer linguistic history, it appears to have evolved and refined some of its signs in contrast to Bouakako sign language (Nyst & Tano, 2018).

4.1.3 Evidence Suggesting Culture-Specificity in SASS

Nyst's (2019) cross-linguistic study provides significant insights into how culture influence SASS. By examining sign languages from Africa (AdaSL, Malian SL, Bouakako SL), Australia (Australian SL), and Europe (NGT & French SL), she discovered variations in size depictions across languages. Specifically, West African sign languages preferred body-based delimitation, while non-African sign languages favoured space-based delimitation. This difference is evident in the data, with non-African sign languages showing a 21% preference for space-based depiction compared to 6% in African SLs. Sociolinguistic variables like community size and language age exist, but cultural interaction, especially the close gestural contact observed in West Africa, greatly influences signing preferences (Nyst, 2019).

Tkachman and Sandler's (2013) study on ABSL and ISL shows differences in SASS distribution, with ABSL's SASS being more lexically driven and ISL's being signer driven. However, individual signer idiosyncrasies also affect SASS use, as Safar and Chan (2020) further explored, SASS use can be influenced by "interactional groups," suggesting that SASS might be the outcome of cultural conventions.

Interestingly, some SASS elements, such as those termed "measuring stick and growth line" by Nyst (2007), are predominant in West African gestures and sign languages but less common elsewhere. Studies like Padden et al. (2015) and Safar and Chan (2020) further highlight similarities between gestures and signs in different communities, suggesting a shared repertoire of iconic gestures/signs. For instance, similarities exist between gestures in Yucatec Maya and the SASS in YMSLs and between Anyi speakers' gestures and Bouakako Sign Language in Côte d'Ivoire (Nyst & Tano, 2018). The concept that SASS in YMSLs may have evolved from conventional gestures is further supported by Safar and Chan (2020).

Nyst's (2016b) work emphasises that size and shape depictions in gestures and sign languages are culturally embedded. Her studies on AdaSL signers and Akan gesturers in Ghana reflect this cultural influence, with frequent usage of body-based/part size and shape depictions. Nyst (2016b) theorised that signers might have incorporated gestures from their surrounding environment into their language.

Moreover, other linguistic studies (e.g., Padden et al. 2013) suggest that sign languages often borrow from iconic gestures. This lends credence to the notion that SASS is culture specific. However, more empirical research is essential to establish this definitively.

4.1.4 Concluding remarks on SASS

This literature review delved into SASS within signed languages. By exploring how languages articulate this phenomenon via the visual-manual modality, this review offers a foundational background for this chapter.

The existing corpus of empirical research on SASS, notably cross-linguistic studies, still needs to be expanded. Nonetheless, the current literature recognises SASS as languages' visual manifestation of actual objects, often aligning them with geometric shapes, size descriptors, measures, or stages of maturity.

Nyst's (2016a) comprehensive model for SASS analysis, while seemingly encompassing all facets of the SASS component found in the literature, awaits broader empirical validation. Interestingly, the literature suggests distinct strategies in SASS across regions. Western European sign languages typically employ space delineation for size representation (e.g., Fornasiero, 2020; Kuyseva, 2020; Nyst, 2019), whereas West African sign languages lean towards body-part delimitation (Nyst, 2019). Given this and considering my focus on an African sign language

variety, Nyst's model framework (2016a, 2019) is an appropriate foundation for my inquiries.

4.2 Methodology

In order to collect and compare SASS in signs and gestures, several methods were employed, which included: 1) Spontaneous description discourse on farm produce (e.g., food, fruit, & crops), 2) a picture naming task, 3) a cartoon retelling task, 4) a matching haptic task, and 5) an animal encounter narrative. Due to time constraints, the chapter primarily focuses on the last two elicitation methods: An experimental haptic task and a personal narrative of an animal encounter. Detailed information about these two methods can be found in the following sections 4.2.1. The chapter proceeds with an in-depth examination of the data collection procedures (Subsection 4.2.2), followed by the transcription and annotation processes (Subsection 4.2.3).

From these two elicitation methods, a total of 226 tokens of gestures were compared to 820 tokens of SASS in the GSL, which were similar to the gestures produced by Akan speakers. The signs and gestures elicited were categorised using Nyst's (2016a) model, as elaborated in the literature review on SASS (Section 4.1). This categorisation offers shows the extent to which environmental gestures specific to Ghanaians have been incorporated into GSL.

4.2.1 Instruments for data collection

Matching haptic tasks

The matching task employed in this study involved a set of plastic 2D and 3D printed objects to elicit SASS data from both signers and gesturers. During the task, an addresser instructed an addressee to arrange the objects in specific patterns. These objects, developed specifically for this study, served as visual stimuli to elicit SASS responses. In this subsection, I provide a theoretical background that underlies the design of these newly developed materials for eliciting SASS.

Our physical environment consists of many objects that can be described based on their shape and size characteristics (Dryden & Mardia, 2016; Eysenck & Keane, 2015). Size and shape can be defined as “the geometric information that remains when [factors such as] location and rotational effects are removed from an object” (Dryden & Mardia, 2016:2).

Various disciplines, including biology, chemistry, astronomy, medicine, image analysis, archaeology, bioinformatics, geology, genetics, geography, law, pharmacy, and physiotherapy, have shown interest in analysing size and shape for different purposes (Dryden & Mardia, 2016). In sign language linguistics, size and shape analysis is equally important, and this study aims to investigate this concept

from a linguistic perspective. Thus, developing a set of stimulus objects was essential to collect data for the judicious use of SASS in communication.

In 1987, Biederman proposed the recognition-by-components theory, which explains how objects in our environment are recognised. According to Biederman (1987), objects are composed of distinctive parts or components, known as geons (e.g., cylinder, cone, block). The theory suggests that approximately 36 geons can account for all objects in the world. Biederman (1987) supported this theory by drawing an analogy with spoken language linguistics, stating that "we only need about 44 phonemes to code all the words in English, 15 in Hawaiian, and 55 to represent virtually all the words in all the languages spoken around the world" (p. 115). Just as a linguist can describe a language with a limited set of known phonemes, objects can be described and perceived with a limited set of geons. Interestingly, studies have shown that children as young as four months old can recognize geons and their structure cognitively, similar to phoneme acquisition occurring at an early stage of child development (Haaf et al., 2003). However, Koch and Abbey (1999) found that "perceptual strategies available for object recognition increase as children mature" (p. 990) when using the geons theory in experimental research.

For the purpose of stimulus development in this study, geon stimuli were identified as suitable. According to Eysenck and Keane (2015), "the identification of any given visual object is determined by whichever stored representation fits best with the component- or-geon-based information obtained from the visual object" (p. 92). They also noted that the recognition-by-components theory provides an answer to the puzzle of how we identify objects despite substantial differences in shape, size, and orientation among members of a category (Eysenck & Keane, 2015:94ff).

However, Biederman's recognition-by-components theory is not without its critics (see Eysenck & Keane 2015:95). Despite criticisms, the underlying concept of the geons theory has proven effective for certain objectives, and similar theories have been proposed by Dickinson et al. (1997; 1992), and Wu and Levine (1993).

Biederman (1987) proposed four properties to distinguish the 36 set of geons: Edge (curved or straight), Axis (curved or straight), Size (constant, expand, or expand-and-contract), and Symmetry (asymmetrical, reflection, or rotation-and-reflection). Figure 41 below presents a clear diagram of Biederman's (1987:122) illustration of the properties of a geon, specifically a cylinder, taken from Wu and Levine (1993). Figure 42 depicts an image illustrating all 36 geons.

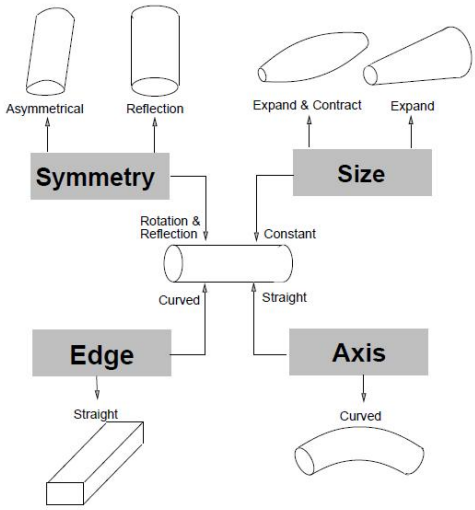

Figure 41: Wu and Levine (1993: 4)

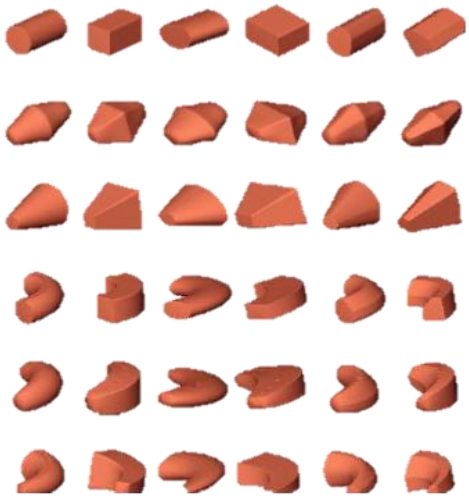

Figure 42: Zhou and Kambhamettu (2002:15)

However, Wu and Levine (1993, 1995) expanded on Biederman's essential properties and proposed a simplified set of seven basic geons, known as parametric geons. This simplification was motivated by the economy of representation, taking into account the tendencies of human cognitive perception (Wu and Levine, 1993).). Reducing the number of geons to seven makes the representation more efficient and easier to work with. The simplification is possible because, as Wu and Levine (1993) highlighted, some of these parametric geons can be combined or compounded to

yield some of Biederman's original set of 36 geons. This means that the seven parametric geons encompass the essential properties needed to describe a wide range of objects while maintaining flexibility and adaptability.

These parametric geons have been widely used in research and have demonstrated their effectiveness in various domains related to object perception and analysis. Figure 43 visually illustrates the seven parametric geons proposed by Wu and Levine (1993, 1995), showcasing their simplified and distinctive shapes.

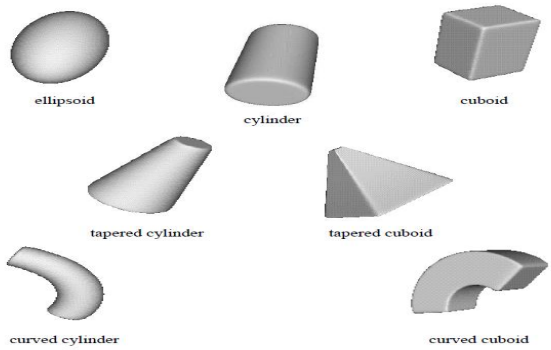

Figure 43: The seven parametric geons (Wu and Levine 1993: 9)

In order to elicit SASS that accurately depicts real-life objects, the study employed the theory of the seven parametric geons to design the elicitation materials for gesture and sign language linguistic studies. This selection was based on the fact that the geons proposed by Wu and Levine (1993) represent simplified and commonly encountered geometric objects such as pyramids, cuboids, cylinders, cones, and ellipsoids. The validity of geons for object description has been established through psychological experiments, making them suitable for this study (Biederman & Cooper, 1991; Biederman & Gerhardstein, 1993; Wu & Levine, 1993).

Cognitive research has revealed that familiarity with object size and effective interaction can significantly influence the depiction of object size (Eysenck & Keane, 2015). Size depiction is crucial in object identification as it is cognitively stored and can be reproduced independently of visual stimulation (Haber & Levin, 2001; Bolles & Bailey, 1956). Moreover, perceived environmental visual cues related to size are essential for accurate size depiction, particularly when there are variations in sensory cues (Haber & Levin, 2001). Considering these cognitive findings, the study modified the seven parametric geons by creating a diverse range of objects in 2D, 3D, and 3D-like organic shapes for stimulus development. Additionally, the study generated multiple sizes of tokens representing the 3D parametric geons. This decision aligns with the understanding that size is a fundamental criterion for classifying objects in our world and a key aspect of perceiving and understanding them (Bolles & Bailey, 1956: 225). As a result, tokens

of different sizes were created for the cuboid and ellipsoid. To introduce variety, some objects such as the cylinder and pyramid were duplicated in a hollow form.

Using a diverse set of object stimuli, the study aimed to identify how participants depicted different token objects based on their appearance, encompassing size and shape variations. For a comprehensive view of the complete set of twenty-two haptic task objects developed for the study, please see Appendix E.

Personal Narrative: Animal Encounter

The data collection method employed in this study involved capturing personal narratives from participants. Specifically, participants were asked to spontaneously narrate their encounters with animal attacks or exciting animal encounters. This genre of storytelling was selected for several reasons. Firstly, it was considered a neutral topic that did not raise any ethical concerns associated with the narration process. Secondly, this genre allowed participants to emotionally engage with the story they were recounting, thereby minimising the potential influence of the observer's paradox.

By focusing on personal narratives, the study aimed to capture individual experiences within a culture-specific context, using the participant's own language. This approach facilitated a deeper understanding of how SASS were employed within the participant's linguistic and cultural framework.

During the narration of these personal stories, an addressee, who was present during the storytelling session, had the opportunity to interrupt and ask critical questions. These questions were designed to prompt participants to use SASS while describing the encountered animal or the incident. By incorporating these interruptions and inquiries, the study aimed to elicit more detailed and precise descriptions of the animals involved, enhancing the richness and accuracy of the collected data.

4.2.2 Data Collection Procedures

The results of this study were primarily based on primary data collected during fieldwork conducted over a period of six months, from September to December in 2018, with subsequent follow-up studies conducted in the following years. Approximately ten hours[97] of confirmed data were obtained from both signers and gesturers. Before the fieldwork visitation, a pilot testing of the method and

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[97] Animal Encounter videos = 3 hours 36min (107.2 min for signers & 94.27 min for gesturers)
Haptic Task videos = 6 hours 22min (172.28 min for signers & 201.2 min for gesturers)

associated instruments was conducted with volunteers in Leiden, Holland. The pilot testing validated the adequacy of the instruments for eliciting SASS.

Data collection was carried out separately for deaf participants and gesturers, with data collection from the deaf participants preceding the engagement of gesturers. The timeframe for each task varied among participants, as none of the tasks were time-bound. The sequence of data collection, however, was based on availability. Before the elicitation tasks began, selected participants were introduced to the study and provided with research information forms and informed consent forms. Sufficient time was given to participants to read the documents, ask questions for clarity, and provide their informed consent by endorsing the consent form with their signature. The endorsed consent forms were collected, while the research information forms were left with the participants for reference.

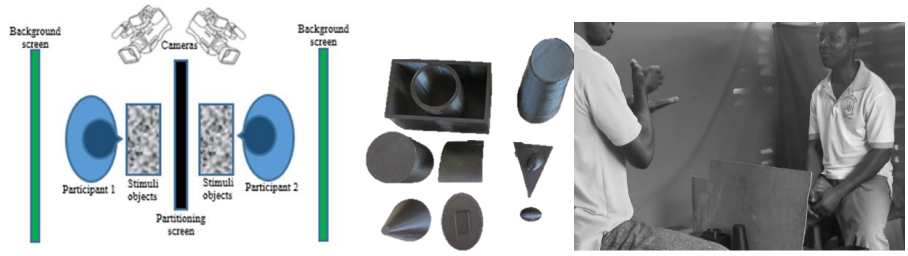
The consent session was followed by a survey on participants' demographic background information, which was conducted using questionnaires. Two questionnaires were designed for demographic information collection, one for the signers and the other for gesturers. The questions focused on personal information, family, education, and occupation. The main difference between the questionnaires was the inclusion of questions about language acquisition in the personal information section. Participants had the option to fill out the questionnaires themselves or request assistance. Some participants preferred an interview-style approach, where they could articulate their responses through speech or sign language, while my research assistants aided in data collection. During these situations, I carefully observed the interaction. Research assistants received training from me prior to their engagement with participants. Where hearing participants were involved, I collected the demographic information myself and acted as an interlocutor.

After collecting consent and demographic information from participants on the first day, the remaining elicitation tasks took place randomly. The selection of the next task was generally based on the setting and availability of participants throughout the day. Some participants completed all tasks in one day, while others required multiple sessions due to other appointments or fatigue. Additionally, tasks that required participants to be paired served as a control for determining the order of tasks, as they could only be undertaken when two participants were available. Pairing was based on participants' familiarity with each other, such as siblings or couples. Participants often suggested and came with their preferred co-partner to participate in the study. Matching tasks specifically required all participants to be paired.

Before each task, participants received a brief explanation, intermittently provided before the task began with the recording. Video recordings played a crucial role in this sign language and gesture study, as they allowed for the systematic study of visual modality in communication. During fieldwork, I used two HD cameras, a

laptop, a writing notepad, and two 2TB hard drives for data backup. One camera was used to record all the data elicitation tasks, while during the matching task, two cameras were involved to capture focused footage of each participant during the interaction.

In the 3D matching task, paired participants engaged in a spatial interaction experiment where one participant instructed the other to arrange a set of objects in a particular pattern. The task acquired the name "matching task" due to the activity of creating an identical pattern with the 3D objects. Figure 44 below illustrates a pattern object and interaction phrase used in the 3D matching task.



Blueprint of setup Stimuli objects Sample of actual setup

Figure 44: Matching task setting

While efforts were made to ensure ideal conditions, some challenges were encountered during the tasks. For instance, the seating arrangements were not always perfect since the tasks were not conducted in a prearranged laboratory room. In some cases, participants stood instead of sitting, and the green background screen used to cover the entire background of the signers was not always fixed correctly. The open space nature of the venue made it difficult to find a secure clutch for the screen, and some participants expressed discomfort when attempts were made to fix it. To alleviate their discomfort, the background screen was occasionally ignored.

Participants instructed each other to arrange objects in a specific pattern for the matching task. The task was introduced as a competitive game to encourage teamwork and engagement. The participants were seated and ready at the prescribed location for the task, and the objects were arranged in front of the lead participant to prevent them from seeing the pattern beforehand.

The personal narrative task focused on participants recounting a personal story of an animal attack, particularly a snake story. If participants had difficulty recalling a story, the addressee would inquire if they knew a similar story involving a friend or neighbour. The addressee could also share their own animal attack story to inspire participants. Key questions were introduced during the narration to incite the use of SASS, such as asking about the animal's size.

In conclusion, the data collection procedures employed encompassed a range of techniques and tasks that complemented each other to elicit and capture the

desired information effectively. Dialogue and monologue tasks provided diverse opportunities for participants to express themselves and showcase their language abilities. The tasks were designed to stimulate natural language production and encourage detailed communication. Video recordings were invaluable in reviewing and validating the transcriptions, enhancing the overall data quality. By employing these data collection procedures, this study sought to capture a rich and nuanced understanding of the participants' use of languages.

4.2.3 Transcription and Annotation

In this section, I discuss the process of transcribing and annotating the data collected for this study. As mentioned earlier, most of the data was in video format, which required translation and annotation using ELAN software (source: http://tla.mpi.nl/tools/tla-tools/elan/). ELAN (multimedia linguistic annotation software) was developed at the Max Planck Institute for Psycholinguistics in the Netherlands and is widely recognised in sign language research.

ELAN proved to be a suitable tool for analysing signed languages, spoken languages, and gesture data, making it an ideal choice for this study. The video data was translated and annotated using ELAN, allowing for detailed analysis and identification of all the SASS present in the data. See Figure 45 below, which provides a screenshot of the annotation process with ELAN software. The annotations included coding for various features, such as gloss, handedness, handshape, handshape change, location, size, shape, iconic movement, movement direction, movement shape, repeated movement, mouth movements, eye gaze, and oral words.

Figure 45: Screenshot of annotation done with ELAN.

When identifying SASS, the focus was on productive rather than lexical signs. However, iconic lexical signs depicting size and shape were coded separately but not considered SASS. Productive signs conveying size and/or shape through movement were considered SASS for coding. For size depiction, two definable points (one point potentially being a natural boundary) were used to indicate measurement. Size could be denoted in space or on the body, with different categories assigned to each (see Table 23 below). Similarly, handshapes were coded to represent an entity, handling an object, tracing an object, or the hand without handling an object.

Table 23: Sample of coding used for SASS annotation.
Sample of coding used for SASS annotation.

CODING FOR SIZE: SPACE-BASED

S2 Size is denoted with two hands
SI Size is denoted hand internal
SG Size is denoted with hand and ground
SB Size is denoted with hand and body

CODING FOR SIZE: BODY-BASED

BS Size is denoted with two hands
B1 Size is denoted hand internal
BN Size is denoted with one hand and an inherent delimitation
NS No size denotation

CODING FOR SHAPE

E Hand denote entity
H Hand denote Handling
T Hand denote tracing
N Hand denotes non-handling

While a large collection of the Akan speech was also transcribed, the presence of environmental noise hindered the use of automated speech recognition software for transcription. Due to time restrictions, only a minor part of the Akan dataset could be transcribed. However, this limitation did not affect the identification and annotation of all the gestures depicting size and shape. Transcribing the Akan data involved the collaboration of Miracle Oppong Peprah[98], and the glosses for GSL were done in collaboration with my deaf assistant, Alexander Okyere.

[98] A native speaker of Akan and a graduate student at the University of Ghana, Department of Linguistics, at the time of the study.

In summary, the transcription and annotation process involved the use of ELAN software for translating and annotating the video data. The coding system for SASS annotation allowed for detailed analysis of various linguistic features. Despite the challenges in transcribing the Akan speech, the identification and annotation of gestures representing size and shape were successfully accomplished. The collaboration with domain experts and research assistants contributed to the accuracy and quality of the transcriptions and annotations.

4.3 Comparison of Size and Shape Gestures and SASS Productions

In this findings section, I analyse size and shape gestures and signs in two distinct tasks: the animal encounter and haptic tasks. By examining the data, I explore how these expressive forms are used by gesturers and signers and the relationship between them. The results reveal that both groups employed comparable strategies for size and shape within their linguistic repertoire, with signers exhibiting more consistent parameters than gesturers. Disparities emerged in the frequency and distribution of these gestures and signs, as gesturers used fewer gestures for size and shape compared to signers. Subsequent subsections reveal the frequency and structure of size and shape gestures, as well as SASS usage among the participants during the animal encounter and haptic tasks.

As shown in Table 24, the number of size and shape gestures and SASS productions were compared between the animal encounter and haptic tasks. During the animal encounter, 79 size and shape gestures were identified from the 20 gesturers in 94 minutes of recording, while the 20 signers produced 285 SASS in 107.2 minutes. While, during the haptic task, 147 size and shape gestures were identified from the 20 gesturers within approximately 201.2 minutes of recording, and the signers produced 535 SASS in 172 minutes of recording.

Table 24: Summary of size and shape gestures and signs productions in animal encounter and haptic tasks.

Task	Size & Shape markers identified	Participants	Recording Duration(minutes)
Animal Encounter	79 gestures	20 Gesturers	94.27
	285 signs	20 Signers	107.2
Haptic Task	147 gestures	20 Gesturers	201.2
	535 signs	20 Signers	172

In the following subsections, I present a detailed exploration of the size and shape gestures and SASS data, categorising them based on their forms and the language users involved. By closely examining each aspect separately, I aim to unravel nuanced insights into these expressions' distinctive patterns and

characteristics. Through this systematic approach, I seek to uncover the similarities of how gesturers and signers in the Ghanaian context use these communicative forms. Consequently, it offers a comparative understanding of their communicative strategies and preferences.

4.3.1 Signs and gestures for shape depiction

This section presents the signs and gestures in which the articulation depicts the shape (of a referent). Three main types of SASS are known to fall under this category. They are entity hand shape (Subsection 4.3.1.1), tracing (Subsection 4.3.1.2) and handling hand (Subsection 4.3.1.3). These shape depictions usually employ movement to depict the extension of the shape. In a situation where the movement was for other purposes, they are identified in the section. Movement may seem mandatory for tracing hands but not always for categories like entity hand shape. In the following, I describe the linguistic parameters of the data gathered under each categorisation.

Handshape depicts a non-hand entity: Entity Handshape

This type of SASS involves using hand(s) to represent the shape of an entity. The following subheadings provide the result of the various entity handshapes found in the data.

Sign: Entity Handshape Signs in the Animal Encounter Narrative and Haptic Task

Table 25 below reveals that the data from the animal encounter narrative comprised only seven entity SASS. These SASSes served as (non-hand) entity handshapes for various objects encountered during the narratives. One index finger was used in space to represent a rod (see Figure 46), while a double articulation of the index on the foreheads to depicted cow horns. Additionally, another double articulation of the index finger in space was employed to convey the presence of a chameleon (see Figure 47). Furthermore, the data included a double articulation of the bent index on the mouth, symbolising the teeth of a snake (see Figure 48), and a craw handshape placed on the mouth representing the teeth of a crocodile (see Figure 49). Moreover, a combination of the bent index and middle finger portrayed a fishing hook and a fist in space to describe an orange. Among the seven entities SASS identified, Figures 46 and 49 (out of the seven) incorporated movement, specifically to depict extension.

Table 25: Entity handshape signs in the animal encounter narrative with illustration of phonology and depicted referent.

Categorization of hand	Type	Loc.	Freq.	Depicted entity
1. Index finger 2. Double articulation of index 3. Double articulation of index		Space Space Forehead	3	Rod Chameleon Horns of a cow
4. Double articulation of bent index		Mouth	1	Teeth of a snake
5. A claw handshape		Mouth	1	Teeth of a crocodile
6. Bent index and middle finger		Space	1	Fishing hook
7. A fist		Space	1	Orange

Figure 46: Handshape for rod

Figure 47: Handshape for chameleon.

Figure 48: Handshape for snake's teeth

Figure 49: Handshape for crocodile teeth

In the context of the haptic task, a total of 69 tokens of entity handshape signs were elicited, using eight different handshapes, including fingertips (n=1), flat hand (n=1), fist (n=1), index (n=1), pyramid hand (n=2) and curved hand (n=2). Table 26 overviews these handshapes/signs and their corresponding frequencies and referents. Notably, 37 SASS tokens observed during the haptic task incorporated movements, each serving different functions.

The identified movements served various purposes within the haptic task. Some movements were employed to extend the shape (e.g., as seen in Figure 50A), while others were used for focus marking (e.g., as depicted in Figure 50B). Additionally, certain movements indicated a change in shape (e.g., exemplified in Figure 50C); in other instances, they were used to delimit the upper limb (as illustrated in Figure 50D).

In Figure 50D, the entity hand shape adopts an articulated fist in the non-dominant hand, while the dominant hand employs a straight trajectory movement to delimit the boundaries of the entity handshape on the arm, specifically at the apex and base of the fist. It is important to note that the movement observed in this particular SASS does not involve the extension of the entity hands; rather, it focuses on delimiting the boundaries of the shape. Additionally, this movement can also be interpreted as indicating the boundaries for size.

A (curved cylinder) B (Small elipsoid) C (Tapered cylinder)

D (Cylinder)

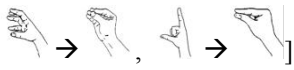
E

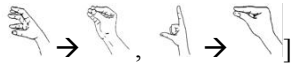
F

Figure 50: The different movements associated with entity handshape in the haptic task.

An intriguing observation in the data pertained to the representation of 2-dimensional flat objects, such as squares, triangles and elipsoids, which were represented using the flat hand [ ]. The entity handshape, in context exhibited various forms, including static positioning in space (n=1) and slight straight trajectory motion either in space (n=1) or on the palm (n=4). Notably, when articulating the flat hand on the palm for 2-dimensional objects, participants employed a rub motion and a slap motion. Figure 50E and Figure 50F illustrate the slap motion, where the signers articulated the sign with a downward directional movement from space onto the palm.

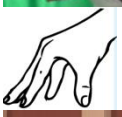
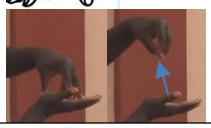
This change in hand shape indicated that the referent possessed a pointed apex at another end-point, which could also signify different sizes at the end-point. Figure 50C provides an illustration of this concept, showing the changes in hand shape for referents such as tapered cylinders, pyramids, hollow pyramids, and 2-dimensional triangles.

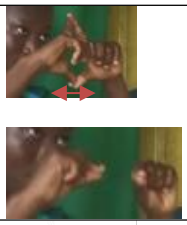
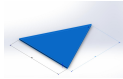
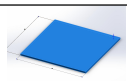
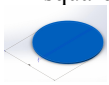
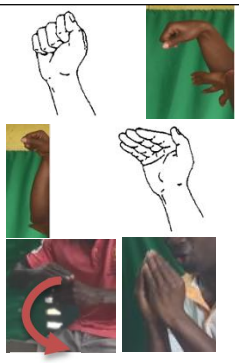
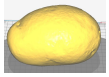
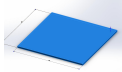
Furthermore, Figure 50B illustrate a brief right and left directional movement with the bundle fingertips . Although this movement may seem inconsequential, different signers consistently used it to mark focus on the SASS employed. Another distinct movement identified in the data involved a change in shape. This movement predominantly entailed hand-internal motions, often involving a reduction in the aperture within the hand [i.e., ] or a change in handshape.

This change in hand shape indicated that the referent possessed a pointed apex at another end-point, which could also signify different sizes at the end-point. Figure 50C provides an illustration of this concept, showing the changes in hand shape [i.e., ] for referents such as tapered cylinders, pyramids, hollow pyramids, and 2-dimensional triangles as found in the haptic task.

Among the 69 tokens of signs analysed, it was observed that 32 of them did not involve any movements. These static signs were assumed to represent the referents iconically in an adequate manner, thereby eliminating the need for movement to convey aspects like extension, delimitation, or changes in shape during their production.

Table 26: Entity handshape signs in the haptic task with illustration of phonology and depicted referent.

Categorization of hand	**Type**	**Loc.**	**Freq.**	**Depicted entity**
1. Fingertips		Space	2	Small elipsoid
2. 1-hand Pyramid Handshape	 	Space & Head	12	Tapered cylinder Pyramid Hollow pyramid
3. 2-hands Pyramid Handshape		Space	15	Hollow pyramid Pyramid Tapered cylinder

				 2D Triangle
4. Flat hand		Space	6	 2D square  2D Elipsoid
5. Curved hands		Space	10	Curved cuboid Curved cylinder  Big Potato
6. Fist		Space	14	Cylinder Hollow cylinder Tapered cylinder Big carrot
7. Index Finger		Space Head	10	 2D square Rod Small carrot

One particular hand shape not included in the table above (Table 26), exhibited a dynamic and multifaceted role. This particular hand shape exhibits the potential for analysis as an entity hand, representing internal hand size and potentially for handling handshape. However, in the context of this specific situation (i.e., haptic task) and the manner in which the sign was articulated, the option of a handling hand is not considered. Below, examples of these hand shapes are provided to illustrate their complexities further. Among this particular SASS, two signs (Figure 51C & D) incorporated an upward movement that could be considered an entity extension. Conversely, three other signs (Figure 51A, B & F) demonstrated the movement of the non-entity hand [&] moving in a circular trajectory on the apex of the entity handshape. In Figure 51A and Figure 51B, the circular movement of the dominant hand likely indicated that the referent is circular. In contrast, in Figure 51F, the movement emphasised both the circular shape and hollowness, as indicated by the small insertion of the fingertip into the aperture of the entity's handshape.

A similar kind of insertion also occurred in the data; this time, the non-entity hand was the bundle of four fingers without a circular movement (see Figure 51E). This articulation in 4.8E also depicts that the referent is hollow. In the dataset, signs using this hand shape to refer to the hollow cylinder were observed in entries 6A (n=2), 6B (n=4), 6C (n=1), 6D (n=1), 6E (n=1) and 6F (n=1). On the other hand, the solid cylinder in the haptic task was also represented using this hand shape in entries 6B (n=4), 6C (n=5) and 6D (n=1). Notably, in Figure 51, the entity handshape already exhibits some hollowness explaining its representation of the hollow cylinder without the need to emphasise its hollowness (see Figure 51E and Figure 51F).

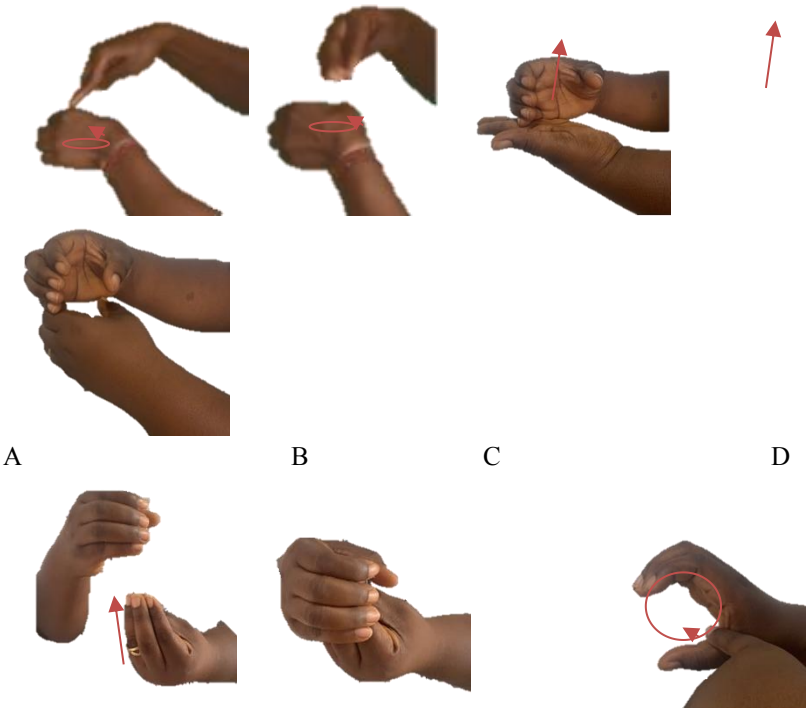


Figure 51: Entity handshape for cylindrical entity

It is essential to acknowledge that signers did not consistently employ SASS for all objects in the haptic task. In certain instances, they associated the objects with real-life entities in the surrounding environment. For example, a hollow cylindrical object was likened to a telescope, while a spherical object was referred to as a handball.

One unusual situation was noted during the haptic task with a signer. The signer laughed and expressed shyness while using her body, particularly her head, in conjunction with her hand to represent an entity for a specific referent (tapered cylinder). This sign can be found in Figure 52B below, and it was articulated following Figure 52A, which was articulated with two hands. Both signs (Figure 52A & B) perfectly depicted the tapered cylinder iconically. It is probable that the signer became self-aware after signing Figure 52B and realised that the embodiment used was not conventional. However, this realisation did not deter her from using the sign, as she repeated it multiple times to another deaf interlocutor.

A B

Figure 52: The entity handshape for the tapered cylinder

Gesture: Entity Handshape Gestures in the Animal Encounter Narrative and Haptic Task

Under the narrative of the animal encounter, a total of six gesture tokens were observed, employing three distinct entity handshapes. One of the entity handshapes was a curved, non-spread four fingers handshape [ ], used iconically to refer to a snake (Figure 53). The second entity, hand shape, involved the use of the fingers (i.e., index and middle finger) to represent a snake (Figure 54). Lastly, a fist [ ] was used as the third handshape to depict circular referents (Figure 55). Notably, in Figure 55A, the hand shape was articulated on a nearby wall without any movement, symbolising an ant nest. Conversely, in Figure 55B, the same handshape was employed to signify a mouse.

In the animal encounter narrative context, only one gesture token used an entity handshape with movement. However, this movement did not indicate an extension of the shape; instead, it was employed to mark the boundary of the shape on the upper limb. Specifically, the entity handshape in this instance was a fist with flexion and wrist extension (see Figure 55B). The gesturers use of the upper limb to depict size and shape was a common practice. The flexion and extension of the wrist served to delimit the size and shape of the referent, focusing on the hand as the key articulator. To further clarify this boundary, the gesturer quickly followed up with another gesture, using the other hand to physically hold the wrist, thereby reinforcing the delineation of the shape's boundary.

Regarding the size of the referent with an entity handshape, it was noted that they sometimes occurred without any movement. For instance, in Figure 55B, the movement signified the inherent delimiting points, with a flexion and extension movement of the wrist emphasising only the fist as the gesture representing the size

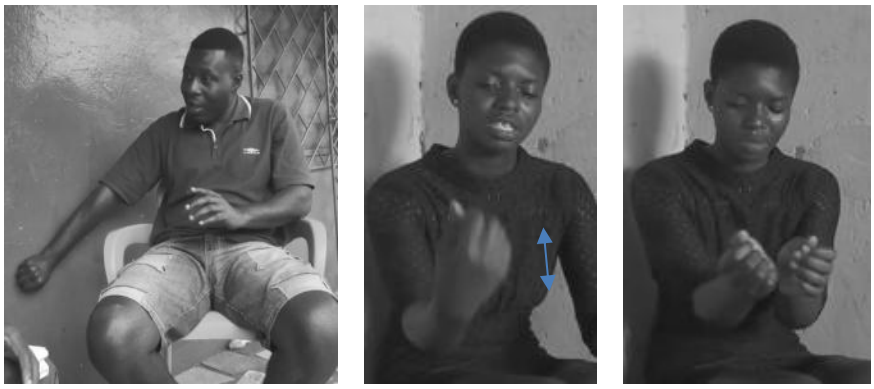
of a mouse. In addition, within the sentence, the co-speech gesture (Figure 55B) was used, and the gesturer followed up with a gripping hand to delimit one boundary (the wrist) of the inherent points on the fist. As described in Subsection 4.3.2.2.3, this gripping hand gesture provided further clarity to the interlocutor when the movement alone may not have sufficiently defined the boundary.

Moreover, it was observed that the boundary of the referent could also be inherently present without any movement. For instance, in Figure 54, the gesture (handshape) was formed with the index and middle fingers . In these gestures, without explicitly indicating the boundaries, it was inferred that the diameter between the extension of the index and middle finger was the marker of the snake's size and shape. Additionally, in Figure 55C, the gesturer conveyed a larger snake by joining the wrists of both hands, indicating that the snake's size and shape were equivalent to the diameter of both wrists joined together.

Figure 53: The use of the curved hand for entity handshape_ Snake's head

or

Figure 54: The use of the fingers for entity handshape_ snake



A: Ant nest B: Mouse C: Snake

Figure 55: The use of the fist for entity handshape

Five distinct entity handshapes were observed in the haptic task, producing approximately 47 gesture tokens. Notably, some of these handshapes exhibited different variants, which could be considered allophones. For instance, the fist handshape had two forms based on the thumb position: and . Similarly, the four fingers extended handshape also displayed multiple variants: , , .Additionally, the curved bundle hands had variations influenced by the size of the referent, as shown in Table 27. The Table 27) presents the entity handshapes that occurred during the haptic task among gesturers. Examples 4 (under Table 27) illustrate the usage of the four fingers extended handshape (, ,) with a straight part movement to represent 2-dimensional flat objects such as square, triangle and elipsoid. Notably, similar to the signers' gestures for 2-dimensional entities, these gestures also incorporated movement and were articulated on the palm, on a nearby surface, or in space. However, it is worth noting that, unlike gesturers, signers never articulated the sign on a nearby surface. The gesture was occasionally used as a stand-alone gesture or as part of a compound gesture.

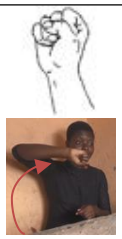
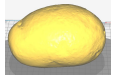
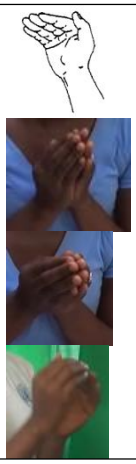
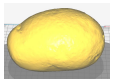
In Figure 56, an illustration is provided to demonstrate how gesturers used the 2-dimensional depiction gesture as a compound gesture. In Figure 56A, the gesturer traced the perimeter of the elipsoid with an index finger and then transitioned the handshape to a flat hand with a slight path movement (see

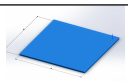
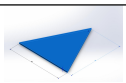
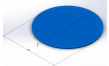
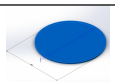
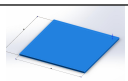
Figure 56A). This compound gesture effectively conveyed that the circular referent was a 2-dimensional flat object.

A + B

Figure 56: Entity handshape with movement depicting BALL3.

Table 27: Entity handshape gesturers in the haptic task with illustration of phonology and depicted referent.

Categorization of hand	**Type**	**Loc.**	**Freq.**	**Depicted entity**
1. Fist		Space	11	Big & medium Elipsoid  Big potato Cylinder cylinder Curved
2. Curved hands		Space	7	Big & medium elipsoid  Medium potato

		Space	17	Curved cuboid Curved cylinder
3. 2-hands Pyramid Handshape		Space	2	Pyramid
4. Flat hand		Head	2	Tapered cylinder
		Table	2	 2D square  2D Triangle
		Space	2	 **2D** Elipsoid
		Palm	2	 **2D** Elipsoid  2D square
		Space	2	Pyramid Hollow pyramid

During the haptic task, all the observed movement exhibited by gesturers was employed to indicate an extension of the shape. In example 2 (under Table 27 section for Curved hands), the handshape predominantly used movement to depict the extension of the referent. Out of 12 tokens of gestures involving the curved handshape , eight tokens were used to represent the curved cuboid, while for the curved cylinder, four out of the five tokens of gestures employed movement. Notably, two distinct types of directional movement were identified in the gesture articulation for these two entities (curved cuboid BOX3 and curved cylinder CLY3). The hands were either moved towards the plane of the fingertips (Figure 57A) or towards the plane of the ulnar side of the hand (Figure 57B).

Among the signs produced, eight (8) gestures used the ulnar plane for the curved cuboid, while two employed the same directional plane of movement for the curved cylinder. Signers also used these two directions of movement for the curved cuboid and curved cylinder.

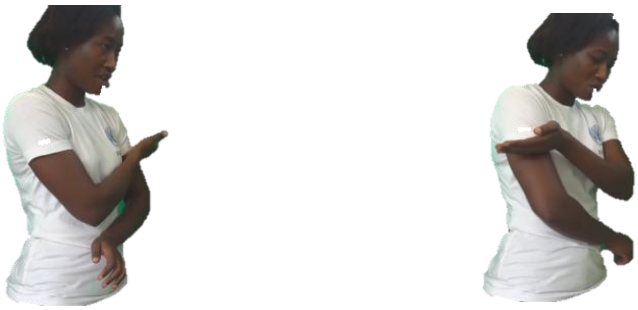
A B

Figure 57: Different directions of movement for both the curved cuboid and curved cylinder

In the haptic task, gesturers also demonstrated two (2) distinctive types of entity depiction for four tokens of gestures. This involved the use of the shoulder to depict an arc-like referent. In Figure 58 and Figure 59, the bent handshape was employed to demarcate an outline the edge of the shoulder through ulnar plane movement, effectively indicating the shape of the entity. The movement of the hands over the perimeter of the shoulder served to draw attention to the shoulder's shape, resembling the intended referent. However, in Figure 60A and Figure 60B, no such outlining movement was observed; instead, the gesturer simply delimited the upper limb to mark the shoulder as the entity for the referent. Interestingly, in Akan, the gesturer noted to the interlocutor that the shape of the referent had been cut in a manner similar to her gestural depiction. Notably, the gesturer produced the gesture in Figure 60 after making a similar gesture with hand movement (in Figure 59) for the same referent within the same discourse. Furthermore, in Figure 60, the gesturer employed a dominant hand reversal to indicate the shape of the curved cylinder the curved cylinder.

Figure 58: Non-handling hand gesture for the curved cuboid with movement

Figure 59: Non-handling hand gesture for the curved cylinder with movement



A B

Figure 60: Non-handling hand gesture for the curved cylinder without movement

Not all the objects in the haptic tasks were depicted with gestures. In a co-speech gesture, gesturers sometimes mention something in the natural environment that shared similarities with the haptic task object's size and/or shape. For instance, when describing a large spherical object in the Akan language, a gesturer likened to a pawpaw, and for the smaller spherical object, it was compared to an orange in terms of size and shape. They employed other strategies like mentioning geometrical shapes or using literary devices like simile and metaphors to convey information about the entity.

An interesting observation is that none of the participants used numerical measurement values to describe the size or shape of any entity. Instead, they relied on visual comparisons and qualitative descriptors to express the attributes of the objects in question. This highlights the gesturers' preference for information through visual representations and gestures rather than numerical precision.

In the use of entity handshapes for depicting size and shape, both signers and gesturers have showcased a remarkable flexibility. They have illustrated that different segments of the entire upper limb, spanning from the shoulder down to various parts of the hand, can be effectively employed or delineated.

Tracing Handshape

This category of SASS involves using the hand(s) to trace the referent. The form of the trace usually varies yet is iconic to the shape of the referent.

Sign: Tracing Handshape Signs in the Animal Encounter Narrative and Haptic Task

In the animal encounter narrative, two tracing handshapes occurred for shape depiction producing four tokens of signs. All four tracing SASS had their location on the palm. Two of the signs used the index figure for tracing the shape of a fishing float (see Figure 61A), and another traced a rubber ring used for playing a toss game. While the third tracing, SASS used the bundle fingers to refer to the shape of a frog by making a circular trajectory movement around the palm (see Figure 61B). This sign used to indicate the shape of the frog was articulated as a compound after the size of the frog has been indicated in space with two hands.

A) Using the index finger

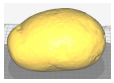
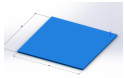
B) Using the bundle figures

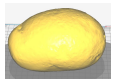
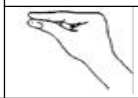
Figure 61: Illustrations of the tracing centred on the palm.

In the haptic task, two tracing handshapes (index finger & bundle fingers) in different variational forms were used for the SASS, occurring about 61 times in the dataset. The use of the index finger had the following variant , , , , while the bundle fingers were , . In one instance, the index and middle finger were used (for CLY1). Table 28 list the handshape and the objects. Several objects could either be traced on the palm or in space, with either the index figure or bundle fingers. The movements were all iconic in tracing the widest perimeter of the referent. For example, a circular object or an object with a circular perimeter would be articulated with a circular trajectory movement. The phonological location of the tracing was either on the palm or in space. It was observed not having any significant pattern or attribute of the object could account for the choice of tracing handshape or the location.

Table 28: Tracing handshapes signs in the haptic task with illustration of phonology and depicted referent.

Categorization of hand	**Type**	**Loc.**	**Freq.**	**Depicted entity**
Index Finger		Palm	13	Small Potato Tapered cylinder Hollow cylinder 2D Elipsoid
		Space	2	Small potato 2D Elipsoid
	+	Space	34	2D Triangle 2D Elipsoid

	(2-handed)			Pyramid Hollow pyramid Tapered cylinder Hollow cuboid Hollow cylinder Big cuboid  Big potato Big & small carrot  2D square Medium cuboid Curved cuboid Small elipsoid .
Fingertips		Palm	5	Tapered cylinde 2D Elipsoid Medium elipsoid

		Space	6	Cylinder Medium elipsoid  Small & Medium potato
		Space	1	Cylinder

It appeared, however, that only entities whose size can fit within the palm had their tracing on the palm. In other words, a based hand was used as the location for these small entities. However, this did not mean smaller objects could not or were not traced in space. Signers used space to trace both smaller and bigger referents. Similarly, two hands were sometimes used to trace the perimeters of the entities. The movement was like a mirrored articulation with the same handshape; each hand traces the outside edge of the referent, as depicted in Figure 62. The index figure was only used for this type of mirrored tracing in the data. Some signers differentiated between 3-dimensional entities (e.g., BOXB1, BOX2, BALLB1) and 2-dimensional entities (e.g., BOX4, PYRA3 & BALL3) when indicating their shape through tracing. In the case of 3-dimensional entities, the distance between the hand and the body was consistently maintained during path movement or tracing in space to represent the horizontal and vertical sides of the entity (see Figure 62A). Conversely, for 2-dimensional entities, the direction of motion was towards the body when depicting the width or vertical side of the entity (see Figure 63). However, some signers who did not use the tracing direction to signify a 2-dimensional entity employed alternative strategies. For instance, they would affix the path for the shape sign with an entity handshape sign, as illustrated in Figure 62B.

A B

Figure 62: Tracing and hand entity for BOX4.

Figure 63: Tracing for BOX4.

A subtle kind of movement for extension of shape was also observed for all the triangular-like shaped entities. They are subtle because the movement is brief, and the whole arm is moved for the tracing as if the hand could also be considered an entity hand (see Figure 64A). In all the situations, the index finger was used, and they occurred one time for the 2D triangle, tapered cylinder and big carrot-like object.

A B

Figure 64: Subtle trace for tapered cylinder object[99]

Gesture: Tracing Handshape Gestures in the Animal Encounter Narrative and Haptic Task

With the gesture data, only one gesture was identified to trace the referent's shape during the narrative of the animal encounter. As illustrated in Figure 65, the gesturer used slightly flattened 2-handed spread fingers [ ] to outline the form of a pond in an arc trajectory movement in space.

[99] The addition of the sign in Figure 64B was rare for all triangular-like shaped entities that used the sign in Figure 64A.

Figure 65: Tracing the outer edge of a pond.

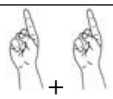
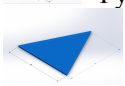
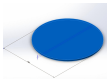
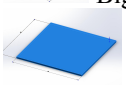
On the other hand, the haptic task produced several paths for shape. Twenty-one (21) paths for shape tracing gestures occurred in the data. Three main types of handshapes were used for the tracing. The first was the index figure with the following variant , , . The second was the extended index and middle finger . The third handshape gesture is closely related to the bundle finger handshape used by signers for tracing. It was a flattened finger with two variants; (spread) and (non-spread fingers). The index finger was the most frequently used handshape for tracing by gesturers. See Table 29 for the handshapes, frequency, and referent list.

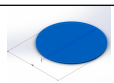
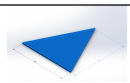
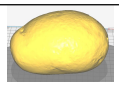
Tracing was mostly articulated in space; however, there were a few occasions in which it was produced with close proximation to the palm and sometimes on a nearby surface (table). But when the location was not in space, the index finger was not used. For example, in two instances, all four fingers were used in close approximation to the palm location to outline a spherical object (tapered cylinder & medium potato-like object). In another example, the gesturer used both the index and middle finger for tracing the shape of a triangular object on the table.

Some tracings were also 2-handed in mirrored articulation to outline the referent (see Figure 66). This type of mirrored articulation was used for triangular, spherical, and square referents. Figure 66 also illustrates an occasion where a gesturer laughed for consciously using her hands to describe the referent's shape. This was also an unusual situation in the gesture data.

Figure 66: Tracing BOX4 with 2-hands

Table 29: Tracing handshape gesturers in the haptic task with illustration of phonology and depicted referent.

Categorization of hand	**Type**	**Loc.**	**Freq.**	**Depicted entity**
1. Index finger	 + (2-handed)	Space	10	Pyramid  2D Triangle  2D Elipsoid Big cuboid  2D square Medium elipsoid Hollow pyramid
		Space	6	Big & small carrot Hollow cylinder Tapered cylinder 2D Elipsoid

2. Two fingers (index & middle)		Space	1	 2D Elipsoid
		Table	1	 2D Triangle
3. Curved hand		Palm	1	Tapered cylinder
		Palm	2	 Medium potato

It is crucial to highlight that, among signers and gesturers, the index finger stands out as one of the primary articulators for tracing. Nevertheless, a noteworthy distinction arises: while gestures may involve tracing on nearby surfaces, spatial environment or on palm, signers opt for tracing either in the neutral space or on the palm.

Handling hand: Hand = Hand

In this type of SASS, the hand represents the form of a hand. The hands are still considered the articulatory hands, manipulating or handling the referent to depict its shape.

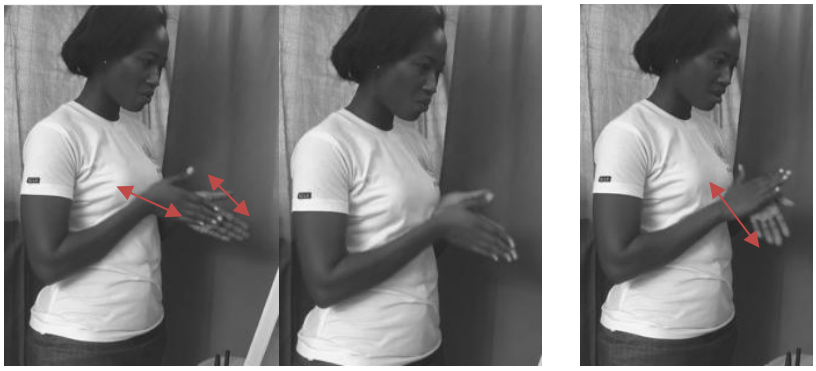
Sign: Handling Hand Signs in the Animal Encounter Narrative and Haptic Task

A single-handling hand SASS was observed in the animal encounter narrative, while none appeared in the haptic task. Figure 67 illustrates its use, where it was employed to represent the handle of a traditional push-walker used by children for fun. The sign was articulated in space, featuring a straight trajectory movement that depicted the extent of the referent (movement for extension).

Figure 67: Handling hand gesture for the control bar of a traditional push-walker[100].

Gesture: Handling Hand Gestures in the Animal Encounter Narrative and Haptic Task

No gesture for handling hands was produced in the narrative of the animal encounter. However, rubbing motions in 3 tokens (rod (n=1) & small potato-like object (n=2)) for handling hands were produced by two gesturers in the haptic task (see Figure 68). I believe the environment culturally influences this gesture. It considers some small spherical and cylindrical shaped local Ghanaian biscuits/snacks (e.g., Kuli kuli & Agbli krako; made with grated peanuts & cassava, respectively) are moulded with this kind of handling gesture during preparation. The gesturer using this gesture in co-speech quickly helped the interlocutor identify the referent to be something small, spherical, or cylindrical that can fit between both palms.



A **B**

Figure 68: Handling hand gesture for rod & small potato-like object

[100] The traditional push-walker, fondly known as a "car" by the children who use and craft it, is simply a long wooden cross with wheel carved out from flip-flops. The vertical part normally extends from the ground to the shoulder of the user, with smaller horizontal bars serving as steering wheels.

Summary of signs and gestures for shape depiction

This section explores the signs and gestures used to depict the shape of a referent. Three main types of size and shape markers fall under this category: Entity Handshape, Tracing Handshape, and Handling Hand. The following provides a breakdown of the comparison on signs and gestures for shape depiction gathered for each category.

Entity Handshape:

Entity handshapes serve as a means to represent the shapes of non-hand entities. This study observed the delimitation of upper limb components to convey shape. Predominantly, this delimitation involved segments of the hands, although variations were observed in how these segments were delimited. Signers and gesturers exhibited the ability to delimit: 1) solely the index finger and 2) both the index and middle finger. In addition, only signers were seen delimiting 3) the thumb and index, and 4) the tips of the fingers and thumb.

Another noteworthy distinction between signers and gesturers pertained to the extent of upper limb delimitation. While signers could delimit part of the forearm or the entire forearm, gesturers were observed delimiting the shoulder, a distinction not observed among signers. For visual representations of these delimitations of the upper limb, please see Figure 69 and Figure 70.

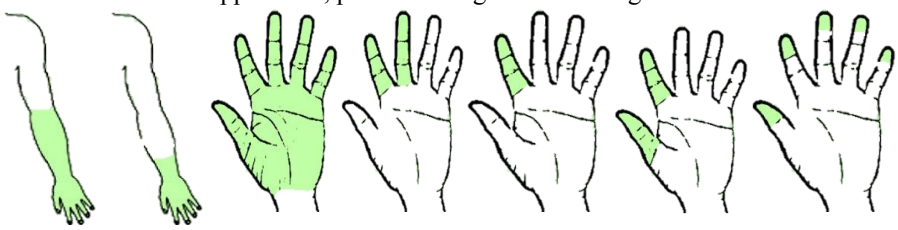


Figure 69: Delimitation of the upper limb by signers

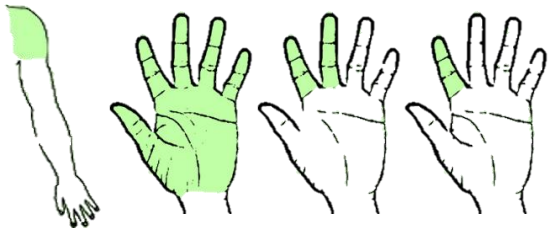


Figure 70: Delimitation of the upper limb by gesturers

Within both gestures and signs, movement played a vital role in conveying aspects such as extension, boundary delimitation, focus marking, and changes in shape. Nonetheless, some signs and gestures remained static in form. An intriguing

contrast, however, was observed, as gestures displayed a greater degree of flexibility by using ad hoc locations for articulation. This included instances where gestures were articulated on nearby walls or tables, a departure from the relatively more constrained signing conventions.

Tracing Handshape:

Tracing handshapes involve using hand(s) to outline the shape of the referent. The act of tracing for shape was identified as a common practice among both signers and gesturers in the datasets. Within both datasets, we observed the use of three distinct handshapes for tracing purposes. In gestures, we observed (1) the whole fingers, (2) the index finger, or (3) the index finger in conjunction with the middle finger being employed for tracing (as depicted in Figure 71). In sign language, on the other hand, tracing typically involved the use of (1) the index finger, (2) the thumb in conjunction with the index finger, or (3) a bundle of fingers and the thumb (as illustrated in Figure 72).

Figure 71: Tracing handshapes by gesturers

Figure 72: Tracing handshapes by signers

Notably, only the use of the index finger was found among signers and gesturers and was the most frequently used handshape. The way tracing movements were articulated demonstrated iconicity, with signers being able to differentiate between 2D and 3D entities based on the direction of their tracing movements. Signers and gesturers predominantly articulated their tracing movements in open space or on their palm. Additionally, gesturers were occasionally observed tracing on nearby surfaces, such as a table.

Handling Hand:

The handling hand SASS representing the form of a hand(s) manipulating or handling a referent to depict its shape had limited occurrence. A singular instance of a handling hand SASS involving two hands was identified in both the sign and gesture datasets. Despite variations in handshapes (a fist grip vs a flat hand) between

the two datasets, it was evident that both were iconically inspired by the cultural context.

In summary, Subsection 4.3.1 explored the use of entity handshapes, tracing handshapes, and handling hand SASS in sign languages and gestures. Both signers and gesturers use various articulations to depict the shape of referents. Some similarities and differences were found within the handshapes, delimiting body parts and locations. The observed similarity suggests a connection, hinting at the shared cultural environment between signers and gesturers. While the observed differences can be attributed to the linguistic structure or the formalized system inherent in GSL. Notably, not all objects in the elicitation task for gesturers were depicted with gestures; they sometimes used visual comparisons and qualitative descriptors in Akan. The Subsection (4.3.1) also illustrated moments when signers and gesturers found amusement in using specific articulations to describe the shape of the referent.

4.3.2 Signs and gestures for size depiction

This category of SASS involves using articulators to indicate two referent points or apertures, which serves to convey the concept of size. The study revealed that creating two points to depict distance and size could be executed in relation to the body or the surrounding space. Consequently, the data is presented in these two subcategories; size depicted in space (Subsection 4.3.2.1) and size depicted on the body (Subsection 4.3.2.2).

Size depiction in space

In the realm of space, both signers and gesturers employ diverse strategies to depict size. This can be achieved by forming an aperture between the two hands or creating an internal aperture using the finger(s) and thumb. Additionally, size can be conveyed by indicating an aperture between the hand and the ground or, occasionally, between the hand and the body.

Distance delimited between two hands

Sign: Two Hands Space Signs in the Animal Encounter Narrative and Haptic Task

About 82 tokens of signs depicting size in space with two hands were identified in the animal encounter data. These signs involved two main handshapes: the index finger [e.g., ,] or all the fingers extended [e.g., ,]. It is worth noting that certain signs for expressing distance, represented by the aperture

between two hands in GSL, have become lexicalised and can be found in GSL online dictionaries (e.g., by Mill Neck International[101] & by HANDS! Lab[102]) specifically for signs like BIG and SMALL.

Figure 73 illustrates some examples of lexicalised SASS signs for "BIG." However, it was observed that there were variations in handshape and movement used to convey the lexemes "big" or "small" in GSL. The size of the object being referred to often influenced the aperture's size and the movement used (e.g., as shown in Figure 73A or B), and sometimes these signs were repeated for emphasis. The handshapes are sometimes opened [ ], closed [ ] or bent [,]. The thumb opposition could also vary [e.g., ,]. Some signers also preferred to use initialisation for the signs; in this case, they used the B-handshape [ ]. When an L-handshape [ ] is used, it is considered as “large”. However, in the GSL online dictionaries (by Mill Neck International & by HANDS! Lab), the sign with the L-handshape [ ] is translated as BIG or GREAT. One distinctive feature of the lexicalised BIG sign is that they all had their apertures aligned horizontally with their hands.

A B

Figure 73: Big

Out of the initial 82 tokens of signs after excluding suspected lexicalised SASS signs based on my knowledge of GSL as a user and information from secondary data such as online dictionaries, approximately 21 unlexicalised SASS signs remained. The selection of unlexicalised SASS signs was guided by the context of their usage and the nature of articulation. For instance, consider the SASS for a palm tree shown in Figure 74. Although the signer used the aperture between both hands to indicate size and employed movement to depict extent, the sign

[101] http://www.ayelefoundation.org/dictionary/

[102] https://play.google.com/store/apps/details?id=com.ljsharp.gsldictionary

differed from what is found in GSL dictionaries, suggesting that it is not yet lexicalised, particularly regarding the function of movement for extent.

Among the 21 unlexicalised SASS signs, 9 used the index finger [, &] to represent distance delimited between two hands. As depicted in Figure 75, out of these nine signs, only one (Figure 75C) incorporated movement. Notably, the movement observed in Figure 75C was not a mere reduplication of the sign, as the aperture continued to increase with each motion. Instead, this movement indicated intensity, conveying the size or magnitude of the referent being discussed.

Figure 74: SASS for a palm tree

A: Chameleon B: Lion C: Snake

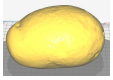
Figure 75: Distance delimited between two hands with the index finger.

In the haptic task, 81 tokens of signs occurred, delimiting the distance between the hands. Eight main types of handshapes were found among the tokens. See Table 30 for examples of the handshapes, their frequencies and referent.

Table 30: Two Hands Space Signs in the haptic task with illustration of phonology and depicted referent.

Categorization of hand	**Type**	**Freq.**	**Depicted entity**

Index finger		8	Small Curved carrot; Cuboid; 2D square cuboid
Flat hand	Four fingers nonspread	36	Big carrot; Cuboid; 2D Elipsoid; Hollow cuboid; Cylinder; Big elipsoid
	Four fingers spread	1	Big potato
C-Hand		2	Hollow cylinder; Big potato
Pyramid Handshape		10	Pyramid; Hollow pyramid; Tapered cylinder; 2D. Triangle
Curved hand		11	Big & Medium elipsoid; Medium potato
		3	Hollow cuboid

Claw handshape		7	Pyramid  Big potato Medium elipsoid
		2	Big carrot

Regarding movements, approximately 50 of the tokens analysed in the study incorporated some form of movement. Among these movements, 33 were driven by the shape of the referent, 8 were used to indicate the extension of the shape, and 5 served as focus markers. These movements added an iconic dimension to the articulation of the signs, further enhancing their visual representation. An exemplary illustration of iconic handshapes motivated by geometrical shapes can be observed in the static signs depicted in Figure 76. Each sign in this figure uses specific handshapes that closely resemble the geometric properties of the referent. For instance, in Figure 76A, the curved handshapes mimic the circular sides of the spherical referent, while in 25D, the flat hands are used to simulate the flat apex and base of a cylindrical referent. Similarly, Figure 77 and Figure 78 illustrate how the shape of the referent influences the 33 movements driven by the shape, further highlighting the iconicity of the signs.

A B C D

Medium ellipsoid Pyramid Big ellipsoid Cylinder

Figure 76: Examples of two-hand space signs to depict entities

Figure 77: Two hands space sign for the Medium ellipsoid or potato-like object

Figure 78: Two-hand space sign for the Big ellipsoid

Some handshapes employed for signs indicating the distance between the hands were subject to controversy during analysis, mainly due to internal apertures within the hands. This complexity is illustrated in Figure 79, where, in addition to the aperture (indicated by the line) between the two hands, each hand internally exhibits an aperture that could be interpreted as an internal size depiction. Interestingly, GSL includes a lexical sign for BOX, which involves an aperture within two hands (see Figure 79). During the haptic task, participants frequently used the lexical sign for BOX due to the involvement of various geometrical shapes. However, these signs were not classified as SASS in the data for this study.

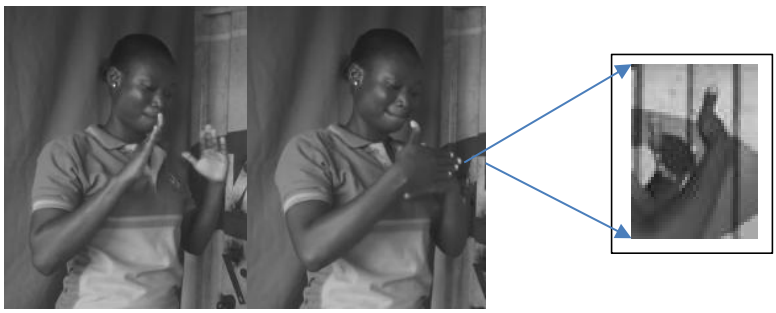
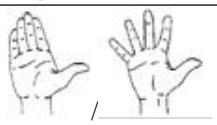


Figure 79: BOX

Gesture: Two Hands Space Gestures in the Animal Encounter Narrative and Haptic Task

Using both hands to denote size was the most frequently employed gesture to depict the size of various entities, occurring 21 times in the narrative on animal encounters. This expressive gesture was used to portray the size of different animals such as snakes (n=10), dogs (n=4), chickens (n=2), rodents (n=1), grasscutters (n=1), sheep (n=1), as well as inanimate entities like cassava (n=1) and a pond (n=1). The data revealed four main handshapes involved in these gestures, and their respective frequencies and referents are detailed in Table 31. Comparatively, some of the handshapes used by gesturers did not possess obvious iconic motivations, possibly because gesturers were not always consciously aware of their gestures, leading to variations such as using a fist handshape for both dogs and sheep.

Table 31: Two Hands Space gesture in the animal encounter narrative with illustration of phonology and depicted referent.

Categorization of hand	Type	Freq.	Depicted entity
Curved hand	/	9	Snake, chicken, dog, cassava & pond
Fist		3	Dog & sheep
flat hand	 /	8	Snake, chicken, rodent & grasscutter
Index finger		1	Snake

It is also worth mentioning that except for two gestures with their apertures in their hands aligned vertically, all the other two-hand gestures depicting size in space were aligned horizontally (see Figure 80A). The two gestures with a vertical aperture were both bent hands ( ), with one depicting the size of a dog and the other a

chicken (see Figure 80B). Out of the 21 two-hand gestures depicting size in space, three (3) gestures used movement to depict extent (see Figure 81A, Figure 81B & Figure 82).

A B

Figure 80: Gesture depicting the size of a chicken.

A **B**

Figure 81: Gesture depicting a snake with 2-hands.

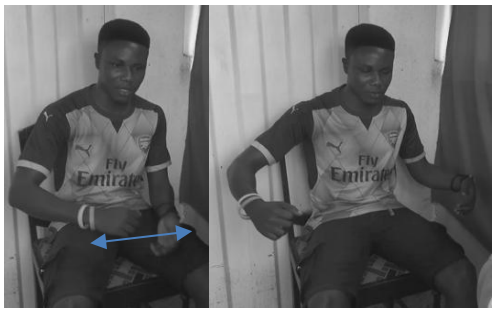


Figure 82: Gesture depicting the size of a dog.

Another movement was observed in the two-hand gesture depicting size in space data. This gesture used bent hands ( ) to depict the size and shape (Figure 65,

repeated here as Figure 83). I believe this time; the movement was not intended to express an extent in size but rather to indicate the shape of the referent.

Figure 83: Gesture depicting the size and shape of a pond.

Table 32 below summarises the two-hand gestures depicting size in space during the haptic task. About 44 token gestures were produced. In most cases, handshapes were also influenced by the shape of the referent. For example, 50% of the spherical referent tokens used a bent or C-handshape (e.g., ,). However, some spherical referents did not use the bent or C-handshape for depicting size; instead, they used a straight or flattened handshape (e.g., ,). It seems gesturers were just interested in using the aperture in the two hands to depict the size.

Regarding movement, 50% of the two-hand gestures depicting size in space did employ movement. The gesture associated with movement had 11 tokens for shape (see Figure 84), eight (8) movements for extent (see Figure 85), 2 for focus marking (see Figure 86) and one (1) movement for a change in size (see Figure 87). In Figure 84, the trajectory of the movements was semi-circular to depict the spherical nature of the referent. The hands' movement in Figure 85 widens the aperture between both hands to indicate the extent of the referent. Focus-making was also seen in Figure 86, where the gesturer kept repeating the gesture. In Figure 87, apart from the gesturer indicating the extent of the referent by moving the hands upward, she also reduces the aperture between both hands to show that the shape of the referent is narrowed at the apex.

We can also observe a handshape change in Figure 85B during the movement for extension (also in, e.g., 4 under Table 32). One could also consider the gesture initially an entity handshape, which applies movement for extension with a change in handshape from flat to curved [➔] to indicate that the referent is spherical.

A

B

Figure 84: Movement to depict shape of BALLB2.

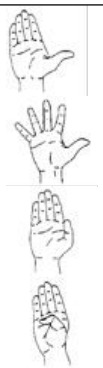
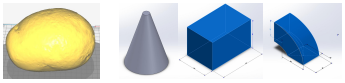
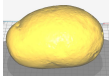
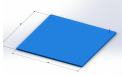
A: BALLB2 B. BALLM1

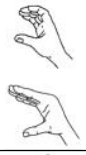
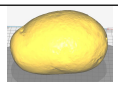
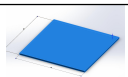
Figure 85: Movement to depict extent.

Figure 86: Movement to depict focus making for BALLB2.

Figure 87: Movement to depict the change in shape for the tapered cylinder.

Table 32: Two Hands Space gesture in the haptic task with illustration of phonology and depicted referent.

Categorization of hand	**Type**	**Freq.**	**Depicted entity**
1. Flat hand		**15**	Hollow cuboid, 2D Elipsoid, 2D Triangle Small carrot Rod  Medium Potato, Tapered cylinder, Small cuboi, Curved cuboid
2. Curved hand		**22**	2D Elipsoid, Cylinder, Pyramid  Big & medium potato Hollow Pyramid, Hollow cylinder, Big carrot  2D square Big & Medium elipsoid

3. Flat → Curved hand		**1**	Medium elipsoid
4. C- Hand		**5**	Big elipsoid  Medium potato Big carrot
5. Pyramid Handshape		**1**	 2D square

Distance delimited hand-internally

Sign: One-Hand Space Signs in the Animal Encounter Narrative and Haptic Task

A total of 323 hand-internal signs, delimiting distance, were observed in the haptic task, making it the most frequently used type of SASS in the data. Table 33 provides an overview of the various handshapes and their respective frequencies. Among these signs, the curved hands with an aperture between the thumb and the four fingers emerged as the most commonly employed handshape, accounting for 163 tokens. Within this set, six tokens raised suspicions of being a lexicalised sign for "CUP." Nevertheless, I classified them as SASS in the data due to slight parameter variations compared to the established lexicalised sign for "CUP" (Figure 88). For instance, while the lexicalised sign involves articulation from the mouth with a straight trajectory and a downward movement onto the palm, my six suspected SASS showed different movements, either from the palm into space (Figure 89A) or from space onto the palm (Figure 89B). These distinctions justified their categorisation as separate SASS in the analysis.

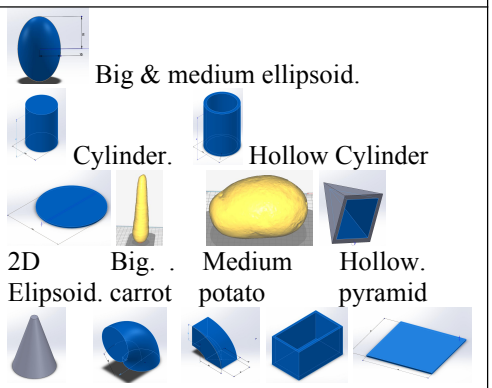
A B

Figure 88: GSL sign for CUP.
A: http://www.ayelefoundation.org/dictionary/
B:https://play.google.com/store/apps/details?id=com.ljsharp.gsldictionary

A B

Figure 89: SASS for hollow and solid cylinder object.

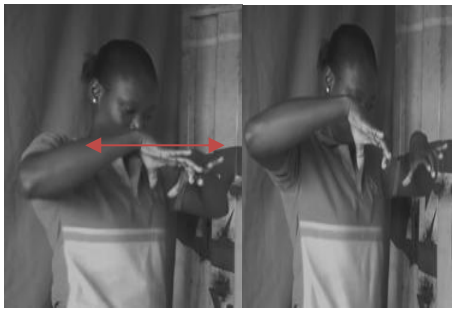
Table 33: One Hand Space Signs in the haptic task with illustration of phonology and depicted referent.

Categorization of hand	**Type**	**Freq.**	**Depicted entity**
C-Hand		163	 Big & medium ellipsoid. Cylinder. Hollow Cylinder 2D Elipsoid. Big. carrot Medium potato Hollow. pyramid Tapered. Curved. Curved.. Hollow 2D

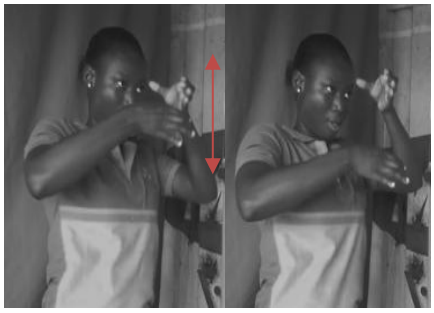
			Cylinder. Cylinder. Cuboid. cuboid square
Index and Thumb		69	2D Triangle, Tapered Cylinder., Curved. Cylinder., Hollow. Cylinder., Small Cuboid Pyramid., Rod., Cylinder., 2D Elipsoid, 2D Square Small elipsoid, Curved cuboid., Potato., Carrrot
		16	Big, Medium & Small potato, Small. carrot, Tapered cylinder Curved cuboid, Curved. cylinder., Hollow. cuboid., Medium elipsoid, Cylinder
Four fingers and Thumb		32	Big & Medium potato, Big carrot, Tapered. cylinder, 2D square Big Elipsoid, Hollow cuboid, Curved, Cylinder cuboid
		27	Small Cuboid, Hollow cuboid, Small elipsoid, Small potato 2D Elipsoid, 2D Triangle, Rod
		13	Pyramid, Hollow. Pyramid., Medium Elipsoid, Big potato

			Tapered Cylinder. Hollow Cylinder Hollow cuboid Cylinder
Middle finger and Thumb		1	Rod

Within this category of SASS, a significant portion of the signs also incorporated movement. Specifically, around 279 of the SASS observed in the data used movement for various purposes. Among these movements, 105 were associated with depicting the extent or size of the shape (as illustrated in Figure 90), 88 were used to represent real-life movements of the referent, 59 were motivated by the shape of the referent (as shown in Figure 91), and 27 were employed to signify a change in the shape (as demonstrated in Figure 92). In the case of movements depicting a change in shape, this often involved either a change in handshape or an internal hand movement that reduced the aperture formed within the hand (e.g., Figure 92). The movements exhibited high iconicity, effectively conveying size or shape characteristics.



A: Hollow cuboid



B: Cylinder

C: 2D ellipsoid

Figure 90: Movement for the extent of shape.

A: BOX3

B: BALLM1

C: BALLM1

D: BALL3

Figure 91: Movement for the shape.

Figure 92: Movement for a change in shape [tapered cylinder].

In animal encounters, 85 SASS were observed, specifically used to depict distance delimited hand-internally. The aperture employed to indicate size predominantly involved the area between the thumb and the index finger [e.g.,] or between the thumb and the four fingers [e.g.,]. However, it's worth noting that the aperture's size varied depending on the size of the described referent. Out of the 85 SASS tokens, 71 were observed with movement, while the remaining were static without any movement. The movements were primarily used to depict the extent of the referent's size (Figure 93A). In addition, I came across two instances where movement was used for focus marking, presumably to emphasise certain aspects of the size or shape (as illustrated in Figure 93B).

A

B

Figure 93: Space Signs for Snake

The SASS in this category was primarily used to describe circular referents, such as snakes, rods, holes, horns, crocodile's tails, chameleons, and logs. However, there were a few exceptions where the referents were not elongated, including rats, fishes, dogs, and mice. Interestingly, approximately 90% of the signs with movement were specifically employed to depict the size of a snake. At the same time, entities without an elongated shape, like rats and mice, did not elicit the use of movement.

Within the data, four unique signs were captured, and they are presented below (Figure 94– Figure 96). Two of these signs stood out due to their unique handshape. In Figure 94A, the handshape was articulated on the body, while in 4.47B, it was in space. Another example of size depicted on the body is in Figure 95, where the signer first articulated the sign on the body to localise the referent (see Figure 95A) and then in space for the interlocutor to view the size depicted with the hand clearly (see Figure 95B) and then in space to demonstrate the size depicted with the hand (Figure 95B).

The final unique sign, shown in Figure 96 (also presented as Figure 46 above), exemplifies a multifunctional SASS where two types of SASS (Entity handshape & distance delimited hand-internal) are combined in a single sign. In this instance, the dominant hand depicts the entity's shape with movement for extension. In contrast, the non-dominant hand simultaneously indicates the size of the referent with the aperture made between the thumb and index finger. This particular sign demonstrates the versatility and complexity of SASS in conveying information about both the shape and size of the entities being discussed.

A

B

Figure 94: Size of a hole

A

B

Figure 95: Size of a horn of a frog

Figure 96: Size of a rod

Gesture: One-Hand Space Gestures in the Animal Encounter Narrative and Haptic Task

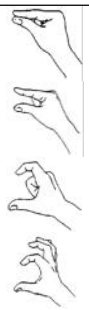
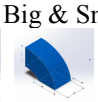
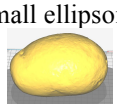
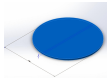
In the animal encounter narrative, only one gesture was elicited for hand-internal size depiction in space. This gesture featured an aperture between the thumb and the index finger and, as depicted in Figure 97, involved movement to illustrate the extent of the referent.

Figure 97: Scorpion

Conversely, the haptic task yielded about 21 gestures for hand-internal size depiction in space. In this case, the aperture was primarily observed between the thumb and the four fingers, with occasional instances between the thumb and the index finger. Table 34 provides a summary of the different handshapes and their corresponding referents.

Interestingly, all but three gestures involved movement to depict the extent of the shape. These three exceptions were very brief in articulation, almost as if the gesturers were unaware of their hand movements while verbally describing the object. The use of movement in most gestures highlights their iconic nature, wherein the gesturers intuitively employed hand movements that conveyed the size and shape of the objects they were describing.

Table 34: One Hand Space gesture in the haptic task with illustration of phonology and depicted referent.

Categorization of hand	**Type**	**Freq.**	**Depicted entity**
Index and Thumb		10	Big & Small ellipsoid Small Cuboid  Curved cuboid  Medium & Small potato Rod
Four fingers and Thumb		11	 2D Curved. Curved Big Big

			elipsoid. cuboid cylinder ellipsoid.carrot

Distance delimited between hand and ground

Sign: Hand and Ground Space Signs in the Animal Encounter Narrative and Haptic Task.

In the haptic task, no distance delimitation was observed between the hand and the ground. However, about 17 signs occurred for distance delimitation between the hand and the ground in the context of animal encounters. These signs were mainly articulated without the use of movement.

On some occasions (3 instances), signers were not entirely satisfied with the relative aperture and sought to clarify the delimitation in space by slightly moving their hands upward. It's important to note that this slight movement was not considered part of the SASS articulation. Three different handshapes were observed in these signs. The first handshape featured closed extended fingers and was used for referents like dogs, goats, rabbits, lions, trees, and humans (n=14). The second handshape involved an opened extended finger and was used to determine the size of the seal animal (n=1). The third handshape comprised a closed flattened finger and was used for the size of a lion and a dog (n=2). In all these instances, the palms of the hands were oriented downward, except for one unique occurrence illustrated in Figure 98, where the palm orientation faced upward. The signer used this upward orientation when referring to the size of a cub.

A: Dog

B: cub/young lion

Figure 98: Distance delimited between hand and ground by signers

Gesture: Hand and Ground Space Gestures in the Animal Encounter Narrative and Haptic Task

During the haptic task, no gestures were observed to depict size through distance delimitation between the hand and the ground. However, in the data from the animal encounter narrative, ten (10) gestures of this kind were recorded. These gestures were used to represent various referents, including a snake (n=1), dog (n=3), sheep (n=3), chicken (n=2), and monkey (n=1). All these gestures were articulated with extended fingers: Eight of them used closed fingers , while the remaining two involved opened fingers . Examples of these gestures can be seen in Figure 99, with Figure 99A showing the use of closed fingers for chickens and Figure 4.52B illustrating the use of open fingers for sheep.

A: Chicken

B: sheep

Figure 99: Distance delimited between hand and ground by gesturers.

In all the gestures except one, the palm was facing downwards. The exception was the gesture depicting the size of a sheep (Figure 100), where the palm was oriented upward. Interestingly, the same gesturer who used an upward palm orientation for the size of the sheep also used a downward palm orientation for another size depiction within the same narrative.

Figure 100: Sheep

Another exceptional gesture depicted size through distance delimitation between the hand and the ground with a specific motion used to illustrate the length of a snake (Figure 101). This motion added an extra dimension to the gesture, effectively enhancing the snake's size.

Figure 101: Snake

Distance delimited between hand and body

Sign: Hand and Body Space Signs in the Animal Encounter Narrative and Haptic Task.

During the haptic task, only one SASS was observed where distance was delimited between the hand and the body. This SASS is illustrated in Figure 102, where the index finger and the thumb were used to hold the nose and then imaginarily pulled apart, creating an aperture between the hand and the nose to depict the extent.

Figure 102: Pointed apex of PYRA2.

On the other hand, in the animal encounter narrative, 14 SASS occurrences involved distance delimitation between the hand(s) and the head, torso, or leg (see Figure 103). Among these, five (5) tokens of SASS were focused on the mouth to refer to the snout of a crocodile and a catfish (e.g., Figure 103A), while two signs depicted the nose of a rhinoceros and a snake-like animal (e.g., Figure 104 & Figure 103B). Other variations included the entire face (for a seal animal and the head of a snake), the jaw (for a dog), the cheek (for the snake's head), and the whole head (for a lion's head).

Figure 105 represents an example of a lexicalised SASS with an aperture between the hand(s) and the head. The sign was commonly used to refer to animals like rats and birds, but signers also interpreted it to mean "fat," as found in the GSL dictionary (by Hands!Lab). However, this study did not consider it a SASS due to its lexicalised nature.

The articulation was iconic in form and used different handshapes (i.e., , , , , , ,). Except for one [ ] (see Figure 104), the entire handshapes were not necessarily iconic but functional for identifying the relevant part, imaginarily pulling it, or elongating it.

Figure 104 also illustrates an exceptional handshape that could be considered an entity hand for depicting the shape, with the aperture being made to indicate the size.

A: Snout of a crocodile B: Nose of a snake-like animal

C: Blotted body of snake/man D: Swollen legs

Figure 103: Various distance delimitations between the hand and the head

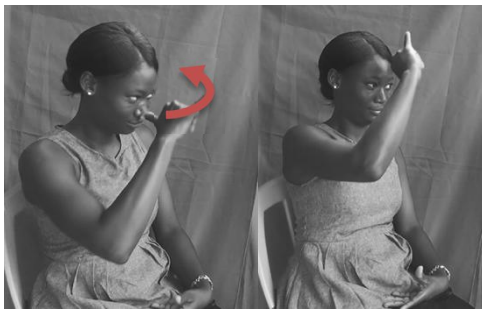


Figure 104: Rhinoceros' horn

Figure 105: Fat

In some instances, handshape changes were observed during the articulation of the signs. For example, while describing a seal animal with an aperture between the hands and the face, the initial handshape was opened with extended fingers and ended with bent closed fingers to depict the pointed face, and the aperture indicated the elongation of the face.

In most cases, the aperture between the hand and the head represents a relevant body part that is virtually held or touched. Then the distance was created to indicate its elongation. Some handshapes used for this purpose were not necessarily iconic but functional for identifying the relevant part and visually representing its elongation.

Gesture: Hand and Body Space Gestures in the Animal Encounter Narrative and Haptic Task

During the haptic task, gesturers produced no gestures falling under this category. However, during the animal encounter narrative, only one gesture was elicited, which involved using a two-handed fist articulated at the forehead region. This gesture, illustrated in Figure 106, depicts the size and shape of the horn of a wild sheep. The relative distance between the forehead and the hand conveyed the length of the horn, while the fist handshape represented an entity handshape, symbolising the horn itself.

Figure 106: Horn of a bighorn sheep

Size depiction on the body

Within this category of SASS, three different types were identified: size denoted hand-internally (Subsection 4.3.2.2.1) and size depicted with two hands on the body (Subsection 4.3.2.2.2). Additionally, it was observed that one point could overtly be delimited with one hand, while the other point may be inherent (Subsection 4.3.2.2.3).

Size denoted hand-internally

Sign: Hand-internal Body-Based Signs in the Animal Encounter Narrative and Haptic Task

The haptic task data showed 15 instances of hand-internally SASS tokens. It was found that out of these 15 tokens, signers used 3 handshapes delimiting the hands internally. Table 10 presents the handshapes found in the data with their corresponding referents and frequencies.

Examples under the category of four fingers and index finger, as shown in Table 35: Hand-internal Body-Based Signs in the haptic task with illustration of the handshape and depicted referent., could potentially be considered as being lexicalised to connote the meaning "SMALL" in GSL.[103] However, I classified all of them as SASS since they did not appear to be fully conventionalised. Signers demonstrated variations of the same form to indicate the size as big or small for a given referent. They achieved this by demarcating various parts of the fingers to illustrate size. For instance, the distal interphalangeal part of the finger could be delimited by the thumb to refer to the size of a small entity (e.g., a small ellipsoid & a small potato-like object). On the other hand, the delimitation was done at the proximal interphalangeal part of the fingers for larger objects like medium ellipsoids. Generally, movement was not associated with this type of SASS. However, we did observe two occasions where the handshape was moved (see Figure 107). The movement found in Figure 107 was not iconic but rather served as a focus marking in these instances.

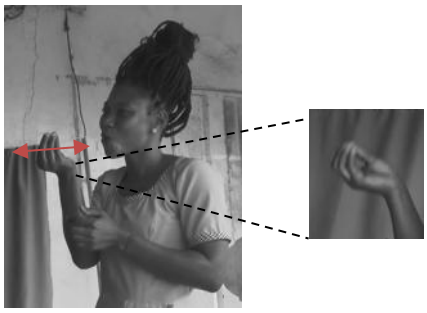


Figure 107: SASS for Small ellipsoid and small potato-like object under Hand-internal Body-Based Signs.

Table 35: Hand-internal Body-Based Signs in the haptic task with illustration of the handshape and depicted referent.

[103] Note: Example 2 can be found in the GSL dictionary by Hands!Lab.

Categorization of hand	**Type**	**Freq.**	**Depicted entity**
Four fingers	a. , b. c.	**8**	Medium & Small ellipsoid Small potato
Index finger	a.	6	Small ellipsoid Small. potato Small cuboid
Little finger	a	1	Small potato

Only two examples of hand-internal SASS were observed in the animal encounter narrative. These instances are illustrated in Figure 108 and Figure 109, where signers either demarcated the bundle of four (4) fingers or the thumb to indicate the size of the referent.

Figure 108: Mouse

Figure 109: Fishing hook

Gesture: Hand-internal Body-Based Gestures in the Animal Encounter Narrative and Haptic Task

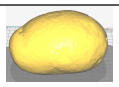
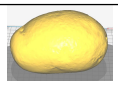
The hand-internal gesture, used to depict size on the body, occurred only two (2) times in the animal encounter narrative. These two gestures demonstrated two types of finger delimitation. One gesture involved delimiting the index finger (see Figure 110) to represent the size of a snake, while the other involved delimiting all four fingers (see Figure 111) to indicate the sizes of some small fishes. Notably, the hand-internal gesture in Figure 111 was produced during co-speech, specifically referring to the sizes of fishes in a particular pond witnessed by the participants. This observation raises the intriguing possibility of a potential relationship between the number of fingers delimited and the concept of plurality in gesturing. However, further data is needed to explore this idea fully in the context of Ghanaian gestures.

Figure 110: Snake

Figure 111: Fishers

In the haptic task data, the hand-internal gesture depicting the size on the body was observed nine times. These gestures exhibited three different handshapes. The most common involved using the thumb to delimit the bundle of four fingers at the distal interphalangeal region (e.g., for example, four fingers under Table 36). Additionally, other hand-internal gestures involved the delimitation at the distal interphalangeal region but with different fingers. For instance, in one gesture, the bundle of fingers delimited the thumb (e.g., example thumb under Table 36), while in another gesture, the thumb delimited the index finger (e.g., example index under Table 36). These variations in handshapes highlight the flexibility and adaptability of Ghanaian gestures in conveying different sizes and shapes.

Table 36: Hand-internal Body-Based gesture in the haptic task with illustration of the handshape and depicted referent.

Categorization of hand	**Type**	**Freq.**	**Depicted entity**
Four fingers	a. , b. , c.	5	Small Cuboid Small ellipsoid  Small potato. Small. carrot Pointed apex of the pyramid Rod
Thumb	a.	2	Small ellipsoid  Small potato
Index	a. , b.	2	Pointed apex of the pyramid & tapered cuboid

Size denoted with two hands on the body

Sign: Two Hands Body-Based Signs in the Animal Encounter Narrative and Haptic Task

During the haptic task, no SASS were found that denoted size with two hands on the body. However, three tokens of such SASS occurred in the animal encounter narrative. These signs were produced by two signers and were all articulated on the legs (see Figure 112). The handshapes used in these signs were the flat hands

in two instances and the index finger in one instance. Notably, no movement was observed in these SASS, indicating that the size was conveyed solely through the handshapes and their placement on the body.

A

B

Figure 112: Snake

Gesture: Two Hands Body-Based Gestures in the Animal Encounter Narrative and Haptic Task

In the gestures section, we also observed that no gestures were produced during the haptic task. However, one gesturer made two gestures during the animal encounter narrative to denote the size of a snake in relation to the thigh. As illustrated in Figure 113, the gesturer used flat hands to delimit the thigh, indicating that the referent had the same diameter as the thigh circumference. Similar to the gestures mentioned earlier, no movement was used in these SASS, suggesting that the gesturer relied on the static handshapes and their placement on the body to convey the size of the referent.

A

B

Figure 113: Snake

Size denoted with one hand on the body.

This category of SASS involves delimiting boundaries on a limb, with most signs/gestures concentrated on the hands, followed by the upper limb/arm, and the least on the lower limb. In this chapter, I refer to the hand that delimits the boundary as "callipers" and sometimes as a "measuring line." The comparison to callipers stems from the observation that signers and gesturers use their hand in this type of SASS as if it were a measuring tool. Like the jaws of callipers used to measure an object's dimensions, the hand serves a similar purpose, determining length, diameter, or thickness. When the hand assumes an extended finger(s) instead of a grip (calliper jaw) to demarcate the boundary, I refer to it as a "measuring line."

Sign: One Hand Body-Based Signs in the Animal Encounter Narrative and Haptic Task

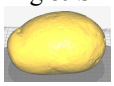
In the GSL signs section, we encountered 42 SASS during the haptic task. All of these SASS involved a calliper hand delimiting various part of the hand. Table 37 presents the list of SASS found and their frequency and referents.

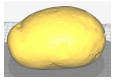
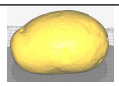
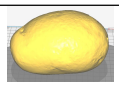
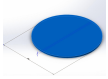
The most frequent delimitation occurred on the index finger, with 17 tokens (see, e.g., on the index under Table 37). The bundle fingers were the second most used, with 11 tokens (e.g., 4 & 6), followed by the fist with five tokens (e.g., on fist under Table 37). The least frequent SASS involved using the calliper (i.e., little finger and thumb) to demarcate the boundary on the palm with one token (e.g., on the palm under Table 37).

The body part chosen for the SASS appears to be iconic for the referent, as the delimitation is based on the discretion of the signer. For instance, signers delimited the entire index finger with small cylindrical referents, creating a direct replica of the referent. Signers could delimit the distal interphalangeal part of the index finger (closest to the fingertip) for small spherical referents. With larger spherical referents, the bundle fingers were delimited with a calliper hand. Depending on the size of the referent, signers could create the delimitation on the distal, intermediate, and proximal phalanges. In some instances, signers even made the delimitation on the wrist of the forearm.

The signs were mostly articulated without movement. However, one SASS (e.g., see index under Table 37) employed movement to demarcate the two boundaries on the index finger.

Table 37: One Hand Body-Based Signs in the haptic task with illustration of the handshape and depicted referent.

Categorization of hand	**Type**	**Freq.**	**Depicted entity**
Index		17	Rod Big & Small Carrot  Small potato Small ellipsoid

Bundle fingers		11	Medium & small ellipsoid  Small potato Small cuboid
		8	Medium ellipsoid  Medium potato
Fist		4	Medium ellipsoid  Big potato
		1	Cylinder
Palm		1	 2D Elipsoid

In the animal encounter, we observed a total of 13 SASS tokens. Of these, twelve were calliper hand signs, and one was a measuring line sign. Among the twelve calliper hand signs, seven were concentrated on the forearm, three on the four fingers, and two on the index finger. The single measuring line sign was also on the forearm.

It was noted that four of the calliper hand signs involved movement. Three of these signs used movement for focus marking or intensity (see Figure 114B), while one used movement to delimit the boundaries (tip & base of finger) for the size on the body (see Figure 114).

The movement associated with focus marking or intensity involved repeating the articulation of the calliper grip on the body. Another movement considered as focus marking was a slight rubbing of the calliper grip hand on the forearm, akin to a firm or strong grab of the forearm. With signs associated with focus marking or intensity, the signer emphasised that the referent (snake) was very big. [104] These movement variations added nuances to the meaning of the SASS and provided insights into the size or intensity of the depicted referent.

Table 38, below provides the 12 tokens of SASS with the calliper hands. Three body parts were used: the index finger, bundle fingers and the forearm. Examples of how signers used the forearm (see Figure 115A) and the bundle fingers (see Figure 115B) for the size of a referent are illustrated below.

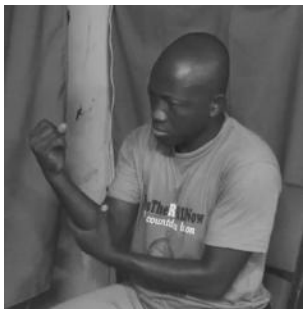
A: Size of a worn B: Size of a snake

Figure 114: Example of movement found with the calliper hands.

Table 38: Tokens of the calliper hand signs.

E.g.,	Body part	Delimiting calliper hands	Freq.	Referent
1A.	Index finger (entire fingers)		1	Worm
1B.	Index finger (distal interphalangeal/ closest to the fingertip)		1	Worm
2.	Bundle fingers and thumb	(N=2), (N=1)	3	Fish, Bird
3.	Forearm	(N=1), (N=5), (N=1)	7	Fish, rat, snake, tree stem

[104] Facial expressions could also be said to contribute to the focus marking or intensity as observed in figure 63B.



A: snake

B: Bird

Figure 115: Example of the calliper hands sign.

Apart from the calliper hand signs, there was one notable measuring line sign (see Figure 116). In this sign, the signer used his extended fingers to demarcate the boundaries on the forearm, indicating the size of a lion's body. The sign in Figure 116 specifically conveyed the length of the diameter observed in the lion the signer encountered. By using the extended fingers in a linear fashion, the signer effectively represented the lion's body size, providing a visual representation of the diameter. This measuring line sign added valuable detail to the description, giving a clearer sense of the lion's actual physical dimensions.

Figure 116: Lion's body.

Gesture: One Hand Body-Based Gestures in the Animal Encounter Narrative and Haptic Task

In the animal encounter data, a total of 34 gestures were used to depict size and shape. Among these, 29 gestures involved the use of calliper hands, while five gestures were measuring line gestures. The measuring line gestures demonstrated a variety of hand placements on the body to indicate size.

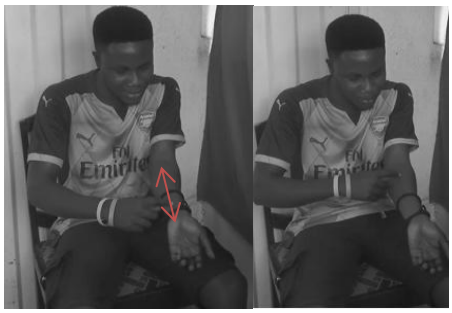
For the measuring line gestures, one had the measuring line hand concentrated on the forearm (see Figure 117A), one on the thumb (see Figure 117B), two on the palm (see Figure 117C), and the last one involved moving the measuring line back and forth between the palm and forearm. Table 39 summarises the features of the measuring line gestures found in the data.

Notably, all the measuring line gestures employed movement. The observed movements were associated with two different concepts of size depiction. In the first concept, by delimiting the target body, the gesture indicated the diameter of the referent. For instance, as shown in Figure 117A, the back-and-forth movement of the delimiting hand on the middle lane of the forearm was used to represent the diameter as half of the forearm, signifying the size of a snake. The gesturer further reinforced this representation through co-speech, mentioning that the snake was half of his hand and then gesturing.

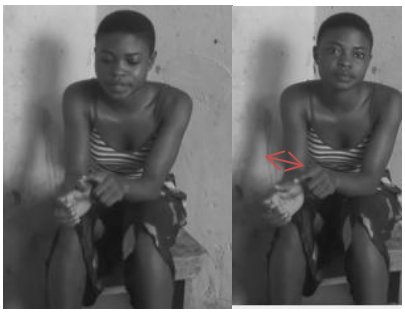
In the second concept of size depiction, the delimiting hands on specific body parts indicated the extent or length of the referent. This concept relied on the selected body part's iconic nature to reflect the target referent's size and shape. The movement made by the delimiting hands then conveyed the referent's diameter/width or length. As demonstrated in Figure 117B, the gesture involved delimiting the thumb to indicate the length of the referent (a millipede).

Similarly, in Figure 117C, the gesturer selected an open flat hand with a calliper hand as the base body part before demarcating a portion of the palm to depict the size of a scorpion she encountered. The movement in this gesture effectively conveyed the extent of the scorpion's body.

Overall, the measuring line gestures provided nuanced and detailed representations of the size and shape of the encountered entities, using the body as a measuring tool in a visually expressive manner.



A: Snake size on the forearm



B: Millipede size on the palm

C: Scorpion on the palm

Figure 117: Examples of measuring line gestures on the forearm

Table 39: Measuring line gestures; their frequency and referent.

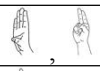
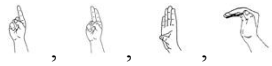
Body part	Delimiting measuring line HS	Freq.	Referent
Palm		2	Scorpion
Forearm		1	Snake
Thumb		1	Millipede
Palm + forearm		1	Scorpion

Table 39 also includes the different handshapes [i.e., ] observed for the delimiting hand movement in the measuring line gesture. Although it was not identified if the type of handshape selected for the delimiting hands was iconic, it was evident that the tip of the finger(s) in the chosen hand was functionally used to trace an imaginary line on the body to demarcate it accurately.

Conversely, the 29 calliper hand gestures also exhibited functional delimiting handshapes.

Table 40 provides an overview of the body part, delimiting hand used, frequency, and corresponding referents for the calliper hand gestures found in the data. A range of body parts was employed: one (1) sign involved the index finger, one (1) the middle plus ring finger, one (1) the thumb, three (3) the entire hand (comprising 3 fists and 1 bundle fingers), five (5) the arm (of which 2 had movement), 16 the forearm (of which 5 had movement), and one (1) calliper hand on the palm (see Figure 118 for examples).

In both types of gestures, the handshapes chosen for delimiting the body parts appeared to serve functional purposes, aiding in the precise representation of the size and shape of the referent. The diversity of body parts used for delimiting

suggests that gesturers effectively adapted their hand placements to match the specific dimensions and characteristics of the encountered entities.

A: Index_Snake B: Thumb_Mouse C: Fist_ Snake' head

D: Fingers _ snake E: Forearm Snake F: Arm _ snake

Figure 118: Example of the calliper hand gesture on various body parts

Table 40: Calliper hand gestures; their frequencies and referent

Body part	Delimiting calliper HS	Freq.	Referent
Index finger (proximal interphalangeal/ middle of the finger)		1	Snake
Bundle middle and ring finger (distal interphalangeal/ closest to the fingertip)		1	knife
thumb		1	Mouse
Entire hand (fist)	(N=2) (N=1)	3	Mouse Lizard Snake's head
Bundle fingers and thumb (metacarpophalangeal/ the base of the fingers)		1	Snake's head
Arm		5	Snake
Forearm	(N=13), (N=1), (N=2)	16	Snake (N=15) Scorpion (N=1)
Palm + forearm		1	Scorpion

During the data collection, gesturers provided insights into their selection of body parts for size and shape depiction. They emphasized that the choice of body part was determined by the size of the referent they encountered. In one instance, a gesturer recounted an encounter with a large snake and gestured that it was as big as their arm. They emphasized verbally that referring to the size as the forearm (gestured) would be different from saying it was like their arm (gestured). This implied that since the arm is generally larger than the forearm, the gesturer wanted to convey that the snake was very big. In another example, a gesturer pointed to their interlocutor's arm to indicate the size and shape of a snake. Since the gesturer had a larger upper limb than their interlocutor, they used the smaller appearance of the interlocutor's arm compared to theirs to represent the smaller size of the circular entity (snake) they wanted to refer to.

Among the gesturers, three (3) types of movement were associated with the calliper hand gestures (see Table 41). These were calliper tapping (e.g., Figure 119A), straight calliper line tracing (e.g., Figure 119B), and supination and

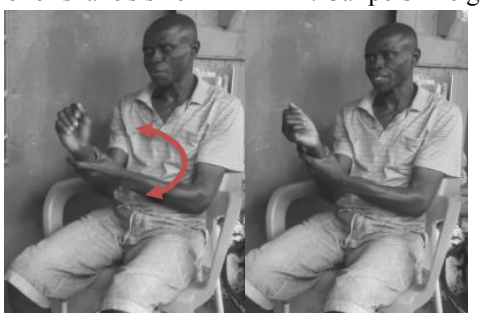
pronation of the forearm within the calliper handshape (e.g., Figure 119C). In calliper tapping, the end-points were demarcated sequentially, providing a representation of the diameter of the referent. In the straight calliper line, the end-points were indicated simultaneously, indicating the extent or length of the referent. The supination and pronation motion of the forearm were used to convey the sphericalness or curvature of the referent. Table 41 provides a summary of the type of movement observed, their frequency, and their specific functions during the size and shape depictions using calliper hand gestures.

Table 41: Types of movements associated with the calliper hand gestures and their functions.

Movement	Freq.	Function
Calliper tapping	2	Marking end-points of diameter
Calliper straight line tracing	5	Marking end-points of diameter (n=1) Marking end-point of extension (n=4)
supination and pronation of the forearm inside the calliper handshape	1	Sphericalness

A: Tapping gesture for snake's size

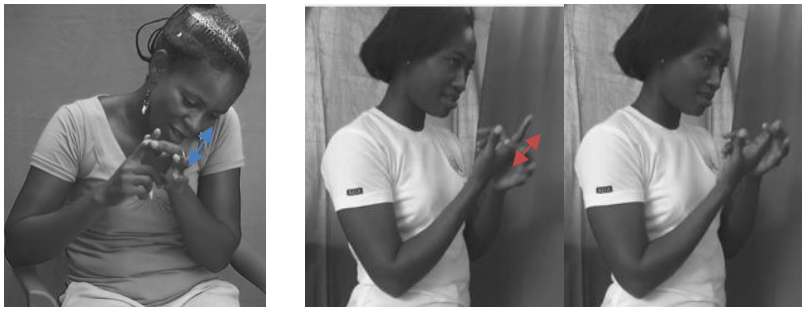
B: Calipers line gesture for scorpion



C: Circular motion of forearm for snake's size

Figure 119: Example of movements with the Calliper hand gesture for size.

Two (2) calliper hand gestures involving the index finger were produced during the haptic task. One of these gestures was performed without movement, while the other included movement. Figure 120 illustrates these two calliper hand gestures:



A: Apex of Pyramid B: Rod

Figure 120: Calliper's hand gesture during the haptic task.

In the first gesture (Figure 120A), the gesturer did not use any movement. While describing a pyramid with a pointed apex during her co-speech, she used a calliper grip on the fingertip of her index finger to depict the size of the tapered part of the pyramid.

On the other hand, the second gesture (Figure 120B) involved movement. The gesturer was describing a small cylindrical referent, a rod, using her index finger. In this case, the movement of the calliper grip was used to mark the delimiting boundaries for the size of the referent. During her co-speech, she mentioned that the referent was slim, resembling the size of her finger, and then gestured accordingly.

These examples demonstrate how gesturers used the calliper hand gestures with and without movement to depict the size and shape of different referents encountered during the haptic task. The choice of movement or the lack thereof seemed to be influenced by the specific characteristics of the described referent.

Summary of signs and gestures for size depiction

This section compares different strategies signers and gesturers use to depict size in space and on the body and the similarities and differences between their approaches. The gestures and signs are analysed in the context of the animal encounter narrative and the haptic task.

Size Depiction in Space:

Both signers and gesturers use various strategies to depict size in space, such as creating apertures between hands, fingers, the hand and the ground, and the hand and the body. They employ different handshapes and movements to convey the size of the referent.

- Distance Delimited Between Two Hands:

Signers and gesturers employed the same four distinct areas of the hands to convey information about size, using different hand configurations and movements based on the characteristics of the referent's size or shape. For instance, the entire hand could be curved when referring to a spherical entity. The four specific hand parts for distance delimited between two hands are depicted in Figure 121. Interestingly, it was observed that some of these size depicting gestures have become lexicalised in signs. Notably, the handshapes commonly known as the "L-handshape" and "B-handshape" in ASL alphabetical signs have also become lexicalised signs in GSL, denoting LARGE and BIG, respectively.

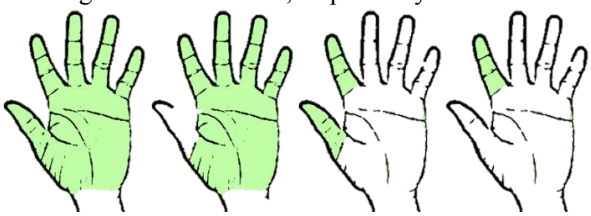


Figure 121: Articulatory hand parts for distance delimited between two hands by signers and gesturers.

- Distance Delimited Hand-Internally:

Two types of gestures featuring distance-delimited hand-internal articulations were observed among gesturers. They primarily used apertures between either 1) the fingers and the thumb or 2) the index and the thumb. In contrast, signers were also observed using these same two articulations employed by gesturers (as depicted in Figure 122). However, signers introduced two distinctive apertures not observed among gesturers, which involved 1) the use of the index and middle finger versus the thumb aperture and 2) the use of the index and middle finger aperture (illustrated in Figure 123). Notably, signers occasionally localized apertures created with the index and the thumb on specific body parts, such as the eyes or forehead, to convey characteristics of the referent. This kind of localisation was not observed among gesturers.

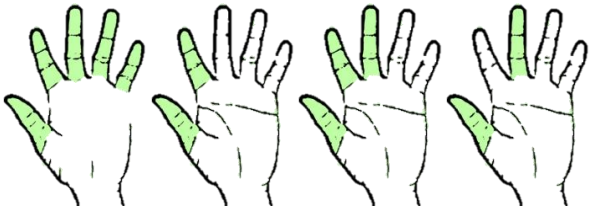


Figure 122: Hand parts for distance delimited hand-internally by signers.

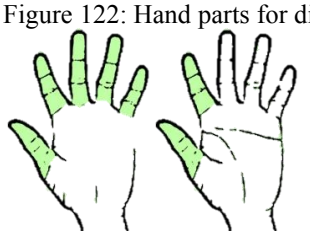


Figure 123: Hand parts for distance delimited hand-internally by gesturers

- Distance Delimited Between Hand and Ground:

Both signers and gesturers employed the same hand parts to indicate the distance between the hand and the ground, primarily using closed or open flat-hand fingers (as depicted in Figure 124). As observed, movements played a crucial role in clarifying the delimitation.

Figure 124:Hand parts for distance delimited between hand and ground by signers and gesturers.

- Distance Delimited Between Hand and Body:

Regarding the distance delimited between hand and body category, gesturers primarily employed one specific hand part. The same articulation used by gesturers (see Figure 126) was also observed among signers (see Figure 125). However, signers introduced two additional distinct hand parts not present in gestural communication. These two additional hand parts included 1) the thumb and index finger handshape and 2) the thumb and little finger handshape. While gestures typically created apertures between the hand and the head, signers employed various body parts (such as the nose, mouth, chest, thigh, and head) with diverse movements to convey information about size.

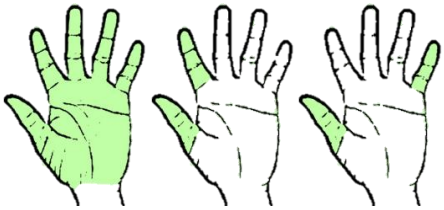


Figure 125: Hand parts for distance delimited hand and body by signers.

Figure 126: Hand parts for distance delimited hand and body by gesturers

Size Depiction on the Body:

This category involves using the body to depict size, either with distance delimited hand-internally or two hands on the body. Both signs and gestures are often iconic, reflecting the referent's size and sometimes with specific handshapes and movements reflecting the referent's size or diameter.

- Size denoted hand-internally:

In the context of indicating size through hand-internal gestures, gesturers used four distinct delimited hand parts, including the delimitation of 1) all four fingers, 2) the tips of the fingers, 3) the tip of the index finger, and 4) the tip of the thumb (see Figure 128). As depicted in Figure 127, signers employed the same articulators as gesturers, along with the addition of a fifth hand part, which involved the use of the tip of the little finger. It's worth noting that among both signers and gesturers, the delimitation of the tip of the index finger was observed to be a lexicalized form connoting the meaning "small."

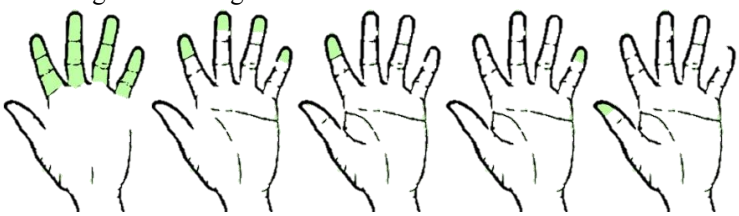


Figure 127: Delimited hand parts for size denoted hand-internally by signers

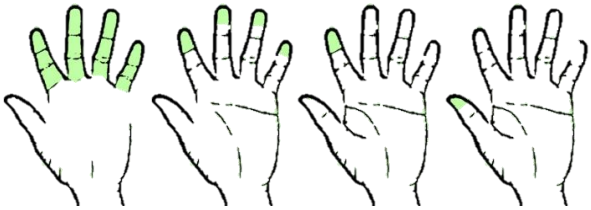


Figure 128: Delimited hand parts for size denoted hand-internally by gesturers.

- Size Denoted with Two Hands on the Body:

This specific type of articulation was relatively limited in both datasets, primarily occurring when signers and gesturers used the thigh as the sole body part for reference. Interestingly, there was no accompanying movement in either the gesture or sign when this articulation was employed. While both gesturers and signers used flat or curved hands for this SASS, signers were occasionally observed using the index finger, a variation not found among gesturers.

- Size Denoted with One Hand on the Body:

Both signers and gesturers employed various parts of the hands, including the entire hand, four fingers, and finger tips, to convey size. However, distinctive selections were made by each group. Gesturers used the delimitation of the thumb and the combination of the thumb and index finger, while signers did not employ these specific hand selections. Conversely, signers made use of delimiting the tip of the index finger, a distinction not found among gesturers. In addition Both signers and gesturers appeared to use the forearm, but gesturers also employed the upper arm, a choice not observed among signers. The figures below provide visual representations of the upper limb segments delimited by signers (Figure 129) and gesturers (Figure 130) for size reference.

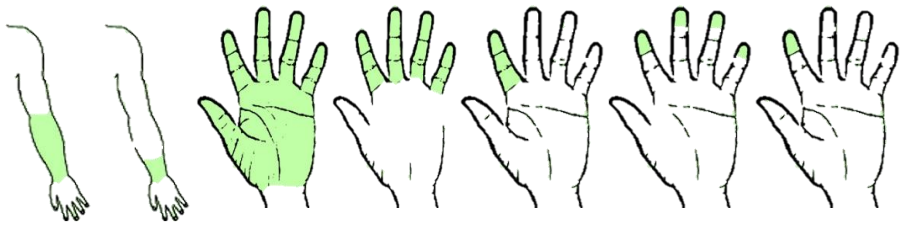


Figure 129: Parts of upper limb selected for size depiction with One Hand by signers.

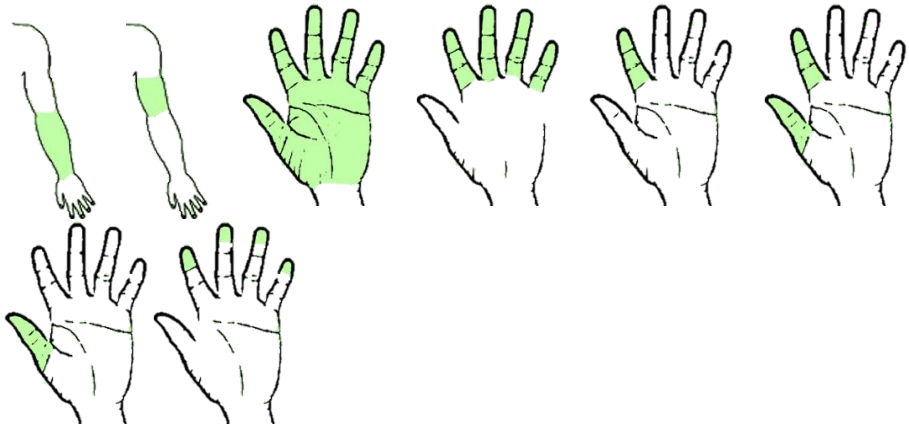


Figure 130: Parts of upper limb selected for size depiction with One Hand by gesturers

Movement played a significant role in conveying size-related aspects, serving to mark intensity or to delimit boundaries indicating diameter, width, or length of the referent. When movement was employed to delimit boundaries resembling a measuring line, gesturers used specific handshapes such as the flat hand, the index finger, or the index and middle finger for this purpose. In contrast, signers exclusively used the flat hand for movement-based boundary delimitation. Beyond the measuring line movement, the active hand sometimes grasped part of the upper limb, acting as callipers to indicate boundaries. The handshapes for this calliper-like action were consistent between sign and gesture, involving either the fingers and thumb or the index and thumb. Various movements, such as calliper tapping, tracing a straight calliper line, and supination and pronation of the forearm within the calliper handshape, were employed for this purpose.

Overall, both signers and gesturers use a variety of handshapes, movements, and body parts to depict size in space and on the body. However, there are some differences in the specific body parts and handshapes used and the frequency of occurrence. Additionally, while both signers and gesturers sometimes use movement in size depiction, the reasons and functions for movement differ between them. Movements are often used by gesturers to provide emphasis, focus marking, or to convey the extent of the referent.

4.4 Discussion

In this discussion section, I will compare some essential features of signs and gestures related to SASS while drawing attention to the striking similarities that emerge among these distinct modes of communication. Especially noteworthy is the

use of body-based SASS by both signers and gesturers. I will also integrate insights from the literature on ASL and AdaSL.

One prominent feature from this study is the diverse range of delimitation techniques observed in both signers and gesturers. They employ various articulators, including the index finger, middle finger, thumb, and even the tips of the fingers and thumb. However, signers place more emphasis on using the fingertips for delimitation. It's worth noting that among gesturers, only fingertip articulations are typically lexicalised. An intriguing aspect is the lexicalisation of specific SASS elements, particularly using the tip of the index finger to convey "small." This lexicalisation feature is common to signs and gestures and extends to other locally developed sign languages in Ghana, such as AdaSL (Morgado and Nyst, 2022; Nyst, 2007; Nyst and Tano, 2018).

A significant distinction arises concerning the extent to which arm segments are involved. Signers demonstrate the capacity to delimit the forearm and the hands, while gesturers typically confine their articulations to the shoulder region, the forearm, and the hands. This discrepancy implies that gesturers possess a broader range of upper limb segments to choose from when representing object shapes. Signers' preference for the hand could be attributed to established sign language conventions mirrored in AdaSL (Nyst & Tano, 2018).

A crucial discovery from this study is the prominence of distalization process among signers, directing their focus toward the fingertips. Distalization refers to the shift in sign language articulation from proximal joints closer to the body to distal joints, like the fingers. This shift effectively reduces the energy required for articulation, a phenomenon well-documented in sign language literature (Crasborn, 2001; Crasborn & van der Kooij, 2003; Napoli et al., 2011). The same principle is observed among fluent ASL singers in general, where moving individual fingers is notably less demanding than relocating the entire hand from the wrist, elbow, or shoulder, attributed to the reduced mass and effort involved (Crasborn & van der Kooij, 2003; Napoli et al., 2011). In our study, signers predominantly used fingertip articulations to convey size and shape, distinguishing them from gesturers. However, the root cause of this distalization effect among signers remains a subject of intrigue. While it may be influenced by signing style, as a marker of competence in sign language and a means of economising articulatory effort, it need not be a direct result of the previous state of the articulator, as Crasborn (2001) pointed out. Notably, compelling evidence for distalization in SASS signs by signers in this study is based on the remarkable similarities found with the use of the body (see section 4.3.1.4 & 4.3.2.3) between signs and gestures in a shared linguistic environment.

In contrast to distalization, AdaSL literature suggests a case for concentrating on the hand (Nyst & Tano, 2018). This observation implies that body-part SASS in AdaSL tends to converge toward the hands. In our study, both the

concentration on the hands and distalization emerged as recurring themes across various parameters, including location, handshapes, and movement, serving as key distinguishing factors between SASS used by gesturers and signers. SASS exhibits common ground between AdaSL and the GSL, aligning with Nyst and Tano's (2018) implicational hierarchy, which links the use of SASS for body parts to arm parts and subsequently to hand parts, underscoring shared linguistic elements.

Another noteworthy point of comparison pertains to the unconventional locations used by gesturers, which includes instances where gestures are articulated on nearby walls or tables, deviating from the relatively more constrained signing conventions. For example, in the case of tracing, it is interesting to note that the index finger is the most frequently used handshape in both groups. Signers typically trace in space or palm, while gesturers often resort to nearby surfaces, like tables, indicating their more flexible approach to articulation. This difference, characterized by the absence of unconventional locations among signers, further highlights their concentration on the hands and use of distalization for SASS production.

Additionally, a unique feature among signers is the localization of body part SASS, which involves object handshape placement on the body. This localization was predominantly found in one or two-handed signs, typically on various parts of the head region, such as the mouth or forehead. While this localization is evident in AdaSL, it was only observed in gesturers on the forehead with two-handed signs (Nyst 2007; Nyst & Tano 2018).

Closely related to localization is the internal modification of existing signs, as described by Nyst (2007:151). In this context, certain signs emphasizing the size or shape of specific body parts are modified by virtually holding the relevant body part and pulling it. For example, AdaSL signers might hold their nose or ears and then virtually pull it away from the face. This form of internal modification, which was not previously identified in other sign languages, such as ASL (Nyst, 2007:151), is now identified in this study among signers using GSL. However, this internal modification was not found among gesturers or in the literature on ASL SASS.

Another unique feature among gesturers is the occurrence of hesitation, often preceding the articulation of delimited body part gestures. This hesitation arises as gesturers search for the most suitable body part to represent the desired size and shape accurately. Interestingly, this hesitancy, common among gesturers, is largely absent among signers in AdaSL (Nyst & Tano 2018) and was not identified in signers in my study.

The occurrence of Handling Hand SASS is limited in both sign and gesture datasets. Variations in handshapes exist between these two groups, influenced by cultural context. Moreover, both signers and gesturers use apertures between hands, fingers, the hand and the ground, and the hand and the body for SASS, employing similar configurations and movements to match the size or shape of the referent.

Notably, the body-base SASS found among signers and gesturers in Ghana was not identified in the ASL literature.

The literature on AdaSL SASS suggests that the signers in this study exhibit commonalities in body base and space base SASS, which contrasts with ASL practices. Furthermore, a noteworthy distinction between SASS in the GSL and AdaSL is the presence of body-base SASS on the thigh among gesturers and signers in Ghana, a feature conspicuously absent in ASL. While Morgado and Nyst's work in 2022 indicates the potential for SASS production on the thigh in AdaSL, it is essential to acknowledge that this feature is not prevalent or prominently observed in the dataset.

In examining the use of Size and Shape Specifiers in signs and gestures, this discussion has shed light on the diverse strategies and conventions employed by both signers and gesturers. It underscores the shared features and emphasises the differences in their methods of expressing size and shape information. As Nyst and Tano (2018) argue for a concentration on the hands in AdaSL, this study presents a compelling case for the simultaneous emphasis on both hand concentration and distalization in the GSL, potentially influenced by the observed influence of ASL conventions.

4.5 Conclusion

This chapter delved into the examination of gestures and signs used by Ghanaians, focusing on 226 tokens of gestures (79 elicited from animal encounters & 147 from the haptic task) and 820 signs (285 elicited from animal encounters & 535 from the haptic task) corresponding to productive size and shape markers. The data was annotated for phonological features, emphasising handshape, location, and movement parameters.

Throughout the study, hearing participants were instructed to communicate solely in Akan, to encourage the production of natural gestures. This approach, although reasonable for naturalistic expression, resulted in a lower number of gestures compared to the signs produced by signers. Nonetheless, gesturers exhibited a considerable amount of gesturing, aligning with the theories of some researchers that highlight gestures as enriching communication tools (Bavelas et al., 2008; Goldin-Meadow & Brentari, 2017; Iverson & Goldin-Meadow, 2001; Kendon, 2017; Pouw et al., 2019).

Examining similarities in the gestures and signs, it was found that both SASS signs and gestures displayed variations, but SASS signs demonstrated a more consistent form. In contrast, gestures exhibited irregular forms, particularly in handshape. However, gestures became more regular when produced in isolation. Signers were observed to limit themselves to specific phonological parameters, with a heightened awareness of these limitations compared to gesturers. Despite this, both

groups used similar strategies for size and shape within their linguistic repertoire, although signers' parameters were more consistent than those of gesturers.

The findings also indicated that some SASS elements may become lexicalised and conventionalised in sign language, integrating and nativising within the signing community's language system (Pfau & Steinbach, 2006; Nyst & Tano, 2018).

In conclusion, this chapter contributes to our understanding of SASS among Ghanaians, highlighting the similarities and differences in using gestures and signs in AdaSL and GSL. The study highlights the shared use of Size and Shape markers and similar strategies employed by both groups, suggesting a common communication repertoire. Particularly with the use of body-based SASS by both signers and gesturers. At the same time, signers demonstrate more restraint due to their phonological awareness. Differences exist in the frequency and distribution of these gestures and signs, with gesturers employing fewer gestures, likely influenced by the communication context and the absence of specific instruction. However, exploring size and shape gestures and signs reveals intriguing parallels between signs and gestures, both employing body-based representations and movements to convey entities and dimensions. Notably, a distinction was seen among signers in the GSL community adopting hand concentration and distalization for SASS. Overall, this research provides a valuable inventory of both groups' handshapes, locations, and movements, making a substantial contribution to the knowledge of sign language and gesture studies.

5.

IDEOLOGICAL INFLUENCES, JUDGMENTS AND SOCIOLINGUISTIC PROFILES OF BODY-BASE AND SPACE-BASE SASS

Language serves as a fundamental element of human communication and identity formation. Sociolinguistics examines the dynamic interactions between language and society, focusing on the social and cultural factors that shape language usage. Among these factors, language ideologies significantly influence how individuals perceive and employ language in their daily lives. This chapter presents an exploratory study that investigates the relationship between ideological influences and sociolinguistic profiles within the context use of SASS. According to Nyst (2007), SASS are signs that fully or partially have elements that indicate an entity's size and/or shape.

Language ideologies encompass beliefs and attitudes regarding language use and structure shaped by cultural, social, and political influences. These ideologies impact individuals' perceptions and utilisation of language in diverse contexts, reflecting broader social and cultural values and norms. Language ideologies can influence how people evaluate and perceive different types of SASS. For instance, in certain linguistic communities, using specific adjectives (e.g., SASS) for animate entities may be regarded as impolite or disrespectful, whereas in other languages, it may be a common and accepted aspect of everyday language use (Saitz and Cervenka, 1972:7). Saitz and Cervenka (1972) provide an example of using the distance between the hand and the ground as a means to convey the size of an entity. They explain that in the United States, the gesture can be articulated with the hand palm facing downwards to indicate the height of a child, but in Colombia that would not be acceptable to use that for a human being but appropriate to indicate the size of an animal (Saitz & Cervenka, 1972:7). It seems that individuals' judgments and perceptions of a particular feature can be influenced by individuals' language, cultural beliefs, attitudes or sociolinguistic profiles.

In the United States, a variety of ASL is known as Black ASL, predominantly used by African-American signers (McCaskill et al., 2011). Black ASL differs from the ASL used in the white deaf community, often called White ASL (McCaskill et al., 2011). Researchers have identified several distinctive features that set Black ASL apart. For instance, Black ASL frequently employs two-handed variants, non-lowered variants, increased signing space, enhanced phrasal repetition, integration of African American English lexical items and phrases, and retains general lexical variations. Based on these characteristics, Black signers demonstrate unique language preferences and perceptions (McCaskill et al., 2011:64ff). For example, some signers may favour White ASL as a means of asserting an educational background (McCaskill et al., 2011:72). In contrast, others

may prefer Black ASL for its expressiveness in nonmanual marking, which resonates with Black communication styles (McCaskill et al., 2011).

These findings by McCaskill et al. (2011) illustrate the presence of sociolinguistic markers that could influence language choices within the same linguistic framework. In this chapter, I aim to investigate whether body-based or space-based SASS in the GSL carries any social connotations. This exploration seeks to determine if specific linguistic markers are associated with social meanings in GSL. The extent to which SASS in GSL bear such sociolinguistic markers remains unexplored, and this chapter intends to address this knowledge gap.

In the previous chapter 4, the descriptive analysis of SASS usage in Ghana could not demonstrate variations based on the signer's social context and identity. Therefore, this chapter addresses a significant study area at the intersection of SASS production, ideology, and social factors. The primary motivation for this research is to gain a deeper understanding of the sociolinguistic aspects of body-based and space-based SASS usage in GSL. Specifically, I focus on body-based and space-based size and space specifiers to explore their distribution and variation among signers.

The research in this chapter aims to address the following questions: (1) Sociolinguistic Understanding of SASS Preference: The first objective is to investigate how social factors such as age, gender, educational attainment and socioeconomic status influence signers' preferences for specific body-based and space-based SASS forms. By exploring whether signers associate themselves with particular SASS forms based on their social identity or group membership, this study seeks to uncover potential barriers to effective communication and improve intergroup communication within GSL. (2) Ideological Influence on Language Judgments: The second goal is to understand how signers' ideologies regarding SASS impact their language judgments. By examining how personal beliefs, attitudes, and cultural norms shape the perception of SASS forms, this research aims to illuminate the complex relationship between language and culture, within the GSL community. (3) Uncovering Linguistic Prejudice and Bias: The third objective is to identify any linguistic prejudice and bias in the GSL community related to body-based and space-based SASS. It is possible that certain SASS forms may be stigmatised due to historical, social, or political reasons. Recognising and comprehending these biases will promote SASS diversity and inclusivity in language planning and education initiatives.

Ultimately, the research seeks to provide an understanding of the variation in GSL, focusing on body-based and space-based SASS usage, and the factors that govern this variation. By examining SASS's sociolinguistic profiles and ideologies among signers, this study aims to contribute to the intricate dynamics of language use, ideology, and social perception within the GSL community.

This chapter first presents a brief literature review on language ideology (Section 5.1). Then describes the research question and approach employed for the study in Section 5.2. Subsequently, the results are presented in two sections: Subsection 5.3.1 examines the judgment and perception of SASS, while Subsection 5.3.2 focuses on sociolinguistic profiles and how they interacted with signers' SASS production. The chapter ends with a discussion in Section 5.4 and a concluding section in Section 5.5.

5.1 Exploring Language Ideologies: Definition and Approaches

Language ideology, a concept explored by various disciplines such as social psychology, anthropology, and linguistics, offers insights into the ways language is perceived, valued, and used within a community. Despite the dynamic nature of sign languages, the role of language ideology in understanding their usage and structure has often been overlooked.

This section aims to address this gap by examining the definition of language ideologies (Subsection 5.1.1), and the approaches employed in the literature (Subsection 5.1.2).

5.1.1 Language ideologies

Language ideology refers to individuals' ideas and beliefs about their language. It is acquired within society and encompasses individual or group attitudes, beliefs, and values towards language and its usage (Blackledge 2005:32). Language ideologies are not limited to the views of the privileged in society but are diverse and shape linguistic evaluations and communicative activities (Kroskrity, 2004). This concept is essential in understanding variations in language practices, beliefs about language status and prestige, and constructing linguistic evaluations. Kroskrity, therefore, defines language ideology as a "ubiquitous set of diverse beliefs, however implicit or explicit they may be, used by speakers of all types as models for constructing linguistic evaluations and engaging in a communicative activity." (2004: 497). He explains that language ideology also provides us with variations in view and language practice and beliefs on language status and prestige.

In the field of Deaf and sign language studies, language ideology is defined similarly, incorporating not only ideas and beliefs but also emotions and practices (Kusters et al., 2022: 282-283). Language ideology encompasses various aspects, including perceptions of superiority and inferiority among languages, suitability of language use, language acquisition, and language contact in multilingual settings (Kroskrity, 2004). Woolard (1998) also highlights the intersection of language and human beings in social contexts as the core of language ideology. According to Woolard (1998:3), "representations, whether explicit or implicit, that construe the intersection of language and human beings in a social world are what we mean by

'language ideology'". Woolard (1998) provides two different perspectives on language ideology research. The first is about a shared belief system about a language, while the second is an implicit interpretation by language users within a particular context. Language ideologies have the potential to shape both the structure of sign languages and language practices (Woolard, 2020). For instance, research conducted in Ghana revealed that signers' ideologies about the socio-economic benefits of English language proficiency influenced their language usage and appreciation (Gillen et al., 2020). This influence extends to all language users, including hearing signers, emphasizing the importance of language ideological studies for language stability, development, and policymaking (Abudu, 2019; Calton, 2020; Krausneker, 2015). It is important to note that language users may not always be aware of their own language ideologies (Calton, 2020). Therefore, selecting appropriate methodologies is crucial in eliciting and understanding language ideology. In the subsequent subsection, we explore various methodologies employed to study language ideology within Deaf communities. By examining language ideologies and their impact on language structure, usage, and practices, researchers can gain insights into the complexities of sign language communities and contribute to language stability, policy development, and the overall understanding of language dynamics. The following subsection explores different methodologies employed to elicit language ideology within deaf communities.

5.1.2 Previous methods used in the field.

Studies focusing on language ideologies within sign language communities have seen a rise in recent years (e.g., Burns et al., 2001; Hill, 2011, 2012, 2015; Krausneker, 2015; Kusters, 2014a; Kusters & Sahasrabudhe, 2018; Kusters et al., 2020a, 2020b, 2022; Reagan, 2011). In the field of Deaf and sign language studies, researchers have used various methods for data elicitation, including interviewing, video-based data collection, focus group discussions, discourse analysis, ethnography, and autoethnography (Kusters et al., 2022). Among these methods, interviews and group discussions have emerged as the most prominent.

Kusters (2014a) conducted an extensive study on the language ideology of a local sign language (i.e., AdaSL) within Adamorobe village in Ghana. She employed participant observation and informal interactions to elicit the ideology of both signers and gesturers. The advantage of Kusters being a deaf researcher was evident in integrating into the deaf community, although eliciting ideology from gesturers posed a challenge (Kusters, 2014a, 2012). Other researchers, such as Gillen et al. (2020) and Hill (2011, 2012), have employed alternative approaches. Hill (2012), for instance, investigated attitudes towards American Sign Language (ASL) by asking participants to rate and classify signs from various signing varieties in video clips. Kusters et al. (2022) recommended using videos in interviews or

group discussions as a new and emerging trend for eliciting signers' ideologies. Hill's (2011) PhD thesis presents an in-depth methodological approach to language ideology in sign language studies, where he investigated ASL varieties among the American Deaf community, considering factors such as generation, race, and stage of sign language acquisition. He utilized interviews and questionnaires to elicit language ideologies from diverse signers. Similarly, Raicevic Bajic et al. (2021) adopted interviews and questionnaires to investigate ideology towards Serbian Sign Language and Deaf Education.

Focus group discussions have also been employed in sign language studies (e.g., Gillen et al., 2020; Kusters & Sahasrabudhe, 2018). Gillen et al. (2020:192) utilized focus group discussions to investigate sign language ideologies and literacy among Deaf Ghanaians, considering it a successful tool for data collection. On the other hand, Kusters and Sahasrabudhe (2018) conducted large group discussions (involving 30-100 members) to elicit language ideologies of deaf signers in Mumbai regarding gestures and signs. However, Kusters et al. (2022) note that using a large number of participants in group discussions may limit in-depth insights into individual attitudes.

It is important to acknowledge that in investigating language ideology, research methods can involve both direct and indirect approaches (Kircher & Zipp, 2022). The direct approach explicitly elicits participants' views through interviews or group discussions, but it may inhibit individuals from expressing their deeply ingrained language ideologies due to the observer's paradox. To address this, scholars often employ an indirect approach to complement the direct method (Hill, 2010). The indirect approach avoids immediate questions about language ideology and instead triggers subconscious views using linguistic items. However, it is worth noting that the indirect approach may involve fewer participants and can be time-consuming to set up (Hill, 2011).

This brief literature review presented the concept of language ideology within sign language (SL) communities and highlighted the importance of studying language ideologies in understanding language usage and structure. The review also surveyed previous research methods used to elicit language ideologies in deaf communities, including interviewing, group discussions, video-based data collection, and focus group discussions. The direct and indirect approaches to studying language ideology were discussed, highlighting the advantages and limitations of each method. Interviews and group discussions emerged as commonly used methods, while video-based data collection and focus group discussions have also proven effective in eliciting language ideologies. The choice of research method depends on the research objectives and the specific context under study. It is important to consider the advantages and limitations of each approach to ensure comprehensive insights into participants' language ideologies.

The next subsection (5.2) focuses on the research method for this chapter, fed by previous studies conducted in Ghana that explore language ideologies These studies shed light on the unique context of Ghana and provide understandings into how language ideologies shape language usage and appreciation among users. By examining language ideologies in a specific cultural and linguistic context, we can better understand the complex interplay between language, ideology, and social dynamics in the Ghanaian context.

5.2 Research Method

This section introduces the research questions that are explored in the study. The first research question focuses on the interaction between sociolinguistic factors (gender, age, and education) and the Ghanaian signing community's body-base and space-base SASS production. It aims to understand the impact of these factors on the complexity and usage of SASS. The second research question examines the perceptions and associations of body-base and space-base SASS in the Ghanaian signing community, exploring how these vary base on sociolinguistic factors. The study aims to uncover patterns, correlations, and trends through surveys, interviews, and observations. The findings will contribute to understanding the sociolinguistic dynamics and cultural significance of SASS in Ghana, benefiting inclusive language practices and supporting the linguistic heritage of the deaf community.

In this chapter, the same group of 20 deaf participants who participated in the SASS production study in Chapter 4 were also used for the judgment experiment conducted in this study. Regarding social profiles, only the social variables of gender, age, and educational attainment were corelated with the distribution of SASS types in production during data analysis. To collect the data, the participants were asked to provide information about their background, which included gender, age, and education, before they were engaged in the SASS elicitation (see Chapter 4 section 4.2.2). To analyse the data, I employed both quantitative and qualitative approach. The data were analysed for differences base on the social variables of gender, age, and education. These three social variables have been noted by some researchers (Eckert 1997; Hadjah 2016; Holmes 2001) to be vital in all sociolinguistic analyses. Kroskrity (2004) shows that the social profiles of language users can create multiple language ideologies.

In the judgment experiment, deaf participants were requested to provide their perspectives on questions regarding a SASS sign performed on the body versus one produced in space. This task involved a questionnaire and video stimuli. Each video stimulus comprised two video clips: in one clip, the model exhibited a noun, followed by a body-based SASS (e.g., Figure 131A), while the other displayed a space-based SASS following a noun (e.g., Figure 131B).

Although the video samples for this task featured my research assistant as the model, the participants were unaware. To ensure objectivity, the model's face was intentionally blurred, ensuring that participants' responses were not influenced by their knowledge of the model. Except for one participant, none questioned whether the model in the videos was my assistant.

A: Body-based B: Space-based

Figure 131: Example of SASS for snake

The selection of SASS and their corresponding referents for the task was collaborative, involving discussions with my deaf assistant. Additionally, our choices were informed by observations from previous studies involving participants in SASS elicitation and insights gathered from relevant literature on SASS. For instance, based on the work of Nyst and Tano (2018), we included the SASS that 'delimited the body part waist,' even though it had not been observed among GSL signers. The task's primary objective was to explore signers' perceptions of different types of SASS; hence, this particular aspect of using a waist SASS was not a cause for concern. To ensure accuracy and iconicity, my deaf assistant and I ensured that each selected SASS for both body- and space-based categories accurately represented the referent.

In the body-based SASS category, we selected SASS that delimited various body parts, such as the index finger, fist handshape, upper leg (thigh), arm, bundle fingers plus thumb, and the waist. On the other hand, for the space-based SASS, we created distance using one or two hands. The one-hand SASS involved creating distance between finger(s) and the thumb, while the two-hand SASS created distance using the index finger or entire hand. We also incorporated movement in the form of tracing, to indicate the referent's extent.

The referent entities used in the task, including beans, egg, pepper, snake, tomato, tree, and yam, were carefully chosen based on their common presence in the environment and their suitability for iconic depiction using the selected body-based or space-based SASS. We drew from relevant literature (e.g., Nyst & Tano 2018; Nyst, 2018, 2016a, 2007) and our fieldwork experience to ensure the

appropriateness of these referents. Table 42 summarises the SASS used in the judgment task, along with their corresponding referents:

Table 42: SASS and their corresponding referents used in the judgment task.

TYPE OF SASS		REFERENTS
SPACE-BASED	BODY-BASED	
Index & thumb (See fig. 2A)	Index (See fig. 2B)	Beans
Index & thumb (See fig. 6A)	Buddle fingers (See fig. 6B)	Egg
Index & thumb (See fig. 7A)	Index (See fig. 7B)	Pepper
Flat hands (See fig. 8A)	Thigh (See fig. 8B)	Snake
Index fingers (See fig. 9A)	Fist (See fig. 9B)	Tomato
Curved hands (See fig. 10A)	Waist (See fig. 10B)	Tree
Curved hands (See fig. 11A)	Arm (See fig. 11B)	Yam

Participants in the judgment experiment were asked to respond to the following seven questions based on their usage of body-based and space-based SASS:

1. Which of the signers do you think grew up in the village?
2. Which of the signers do you think is not from Ghana?
3. Which signer do you think would be the oldest?
4. Which signer do you think is well educated?
5. Which of the signers do you think could easily be understood by a larger group of deaf people?
6. Which signers would be easy to communicate with if you met them?
7. Which signers do you think got a better (academic) result in a deaf school?

The answers provided by participants to these questions were used to assess the language ideologies associated with the usage of body-based and space-based SASS among deaf individuals in Ghana. For instance, in analysing the results, questions 1 and 2 were employed to ascertain which type of SASS (i.e., body-based, or space-based) could be considered indigenous to Ghana, and if there were any differences between the two types in that respect. Questions 1 and 4 were used to determine to what extent there were differences in prestige associated with the different SASS types.

We gained insights into the reasoning and thought processes behind their decision-making by requesting participants to explain their choices. The format of the questions required participants to indicate their choice by selecting either "Signer 1" or "Signer 2" on the questionnaire and explaining their selection. This approach allowed for the collection of qualitative data alongside the quantitative responses. This qualitative data provided a deeper understanding of participants' language ideologies and perspectives on SASS usage. The approach, therefore, enriches the analysis and interpretation of the results, offering nuanced insights into participants' beliefs, attitudes, and cultural influences.

To facilitate participants in providing thorough explanations, the following options were provided on the question paper:

a. Because the signer used a body part sign (body-based SASS).
b. Because the signer used space SASS (space-based SASS).
c. Because the signer used ASL.
d. Because the signer used natural signs [i.e., GESTURES].
e. Because the signer used GSL[105].

These prompts encouraged participants to engage in reflective thinking and articulate their rationale for choosing a specific SASS type. This process of reflection and explanation prompted participants to consider their language ideologies, cultural background, and personal experiences that influenced their decision. Consequently, the responses provided a richer understanding of the complex factors that shape individuals' language choices and ideologies. Analytically, providing options and prompts helped standardise the answers and make them more comparable and interpretable. Clearly defining the choices as "Signer 1" or "Signer 2" and requesting participants to explain their selection facilitated consistency in the data collection process. This standardisation increased the reliability and validity of the study's findings, allowing for more accurate comparisons and generalisations. Including options such as ASL, GSL, and natural signs acknowledged the potential influence of different sign languages and signing systems on participants' judgments. This allowed for exploring participants' familiarity, preferences, and perceptions associated with specific sign languages or signing systems, thereby contributing to an analysis of language ideologies. By providing these options on the question paper, I ensured participants had a structured framework to express their thoughts and reasoning. In summary, including options and prompts for participants' explanations or selections in the study was important to

[105] Please note that at this stage of the study, the full extent of diversity within GSL was not yet apparent to me. Consequently, labels like "ENGLISH" and "BROKEN" were not initially employed during our questioning; however, participants introduced and used these terms in addition to "GHANA" to reference GSL.

capture qualitative insights, standardise responses, and encourage reflective thinking. This approach enabled me to gain deeper insights into participants' language ideologies and preferences, fostering a better understanding of the research topic.

The judgment task was conducted as an interview, with my research assistant serving as the interviewer. The decision to use a deaf interviewer fostered a welcoming and inclusive atmosphere for participants, ensuring they could communicate freely and comfortably using sign language. By having a deaf interviewer, who shares a common linguistic and cultural background with the participants, it was anticipated that the participants would feel more at ease and be able to express themselves fully. This approach aimed to create a conducive environment that would encourage participants to share their experiences, perspectives, and insights without any barriers or limitations imposed by a hearing interviewer. This approach allowed participants to respond to certain questions in an open-ended manner, providing more in-depth insights. For instance, when participants were asked to indicate either "Signer 1" or "Signer 2," some participants responded with statements like "both Signer 1 and Signer 2" or "I have not seen this SASS sign before." This open-ended format enabled the study to uncover additional aspects of participants' language ideologies.

In analyzing the data, I began by transcribing the interviews with the 20 deaf participants to ensure accurate representation. The data was then organized systematically, keeping individual responses separate for each question. I used thematic coding to identify recurring themes, patterns, and trends related to the study's objectives, categorizing them into meaningful themes. I also assigned numerical values to participants' responses and integrated the data into an MS Excel sheet for an overview and to explore relationships between variables.

This data-gathering approach allowed for examining explicit and implicit data, providing a more nuanced understanding of signers' ideologies on SASS. Combining different approaches to the data collection contributed to a deeper understanding and explanation of participants' language ideologies. Therefore, this chapter's findings are presented in the order described in this research method, ensuring a structured and organised presentation of the results.

5.3 Results

The following section presents the results of our study, focusing on the perceptions of SASS among deaf signers. In Section 2.1, I delve into the participants' assessments and perspectives regarding the use of SASS, aiming to gain insight into their perceptions of its appropriateness and effectiveness in various contexts. This section analyses their judgments, shedding light on the ideological dimensions surrounding SASS usage within the Ghanaian signing community.

Moving forward, in Section 5.3.2, I delve into the correlations between SASS and sociolinguistic profiles. By examining the relationship between SASS usage and sociolinguistic factors such as gender, age, and education, I aim to uncover any potential associations or influences. This section explores whether and to what extent these factors shape individuals' preferences and practices regarding SASS.

By analyzing the results from both sections, I aim to provide insights into the perceptions, judgments, and sociolinguistic factors that shape the usage and understanding of SASS among deaf signers in Ghana.

5.3.1 Judgments and Perception of SASS

This section presents the findings from the judgment experiment conducted to investigate the perceptions of deaf signers (n=20) regarding body-based and space-based SASS. This experiment aimed to examine how these signers perceived and evaluated the application of 14 SASS[106] in response to specific questions.

The judgment experiment involved asking the signers questions about using SASS and asking them to provide their views and preferences. The participants were specifically instructed to consider the application of body-based and space-based SASS and to articulate their opinions in response to the provided questions.

The following subsections present the results of the judgment experiment, focusing on how the signers perceived and evaluated the use of body-based and space-based SASS.

Question A: Which signers do you think grew up in the village?

vs

A: Space-based SASS B: Body-base SASS

Figure 132: SASS signs to depict BEANS

Among 16 participants, which accounted for the majority (80%), the prevailing perception was that the body-based SASS (Figure 132B) were associated with

[106] Both the body-based and space-based SASS consisted of seven distinct signs each.

individuals from rural or village backgrounds. Conversely, a smaller group of three participants (15%) believed using space-based SASS (Figure 132A) was associated with villagers. However, it is important to note that one participant (5%) expressed uncertainty regarding this association.

Participants who attributed the body-based SASS to village signers provided insightful comments (e.g., 1a & b) below. These comments shed light on the underlying reasons for their perceptions and interpretations.

1)

A. VILLAGE USE THIS SASS: index_tip BECAUSE NOT HAVE GHANA.
'Uneducated deaf members use this body-based SASS (i.e., index_tip) because they do not know GSL'

B. ILLITERATE USE THIS SASS: index_tip UNDERSTAND COMMUNICATION
'Uneducated deaf members use the body-based SASS (i.e., index_tip) to facilitate communication'

The participants' perceptions regarding the body-based SASS revealed distinct associations. While some participants linked it to villagers, others connected it to the concept of iconicity and locally evolved signs in Ghana. These implicit ideologies suggest that body-based SASS represents iconicity and the incorporation of locally developed signs within the Ghanaian signing community.

During the study, participants provided descriptions of the body-based SASS sign using various terms such as "NATURAL" (Figure 133), "VILLAGE" (Figure 134), or "ILLITERATE" (Figure 135) signs.[107] Those who described the body-based SASS sign as NATURAL, VILLAGE or ILLITERATE considered it as part of GESTURE (a local evolved sign), and those who said it was GSL referred to it as GHANA (i.e., ENGLISH or BROKEN) or FOREIGN[108] (i.e., ASL). Interestingly, some participants acknowledged that the body- and space-based SASS signs are part of GSL. However, they perceived the body-based SASS primarily used by villagers or individuals deemed uneducated (unschooled) signers.

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[107] These labels (NATURAL, VILLAGE, ILLITERATE) are regarded as part of the signing varieties that exist in Ghana. It is possible that each signer had different understanding of the terms. But generally, it connotes the idea of the sign being iconic, Ghanaian or the fact that it is used by someone who does not know the standard variety of GSL.

[108] FOREIGN signs are considered ASL, or sign language used in other countries.

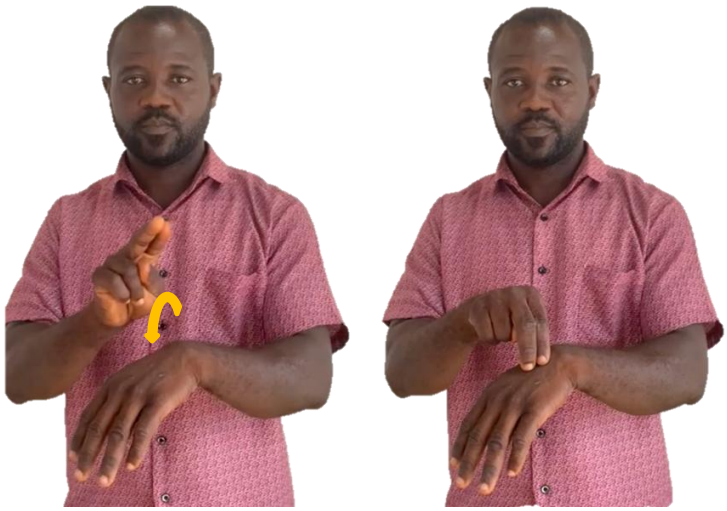


Figure 133: NATURAL

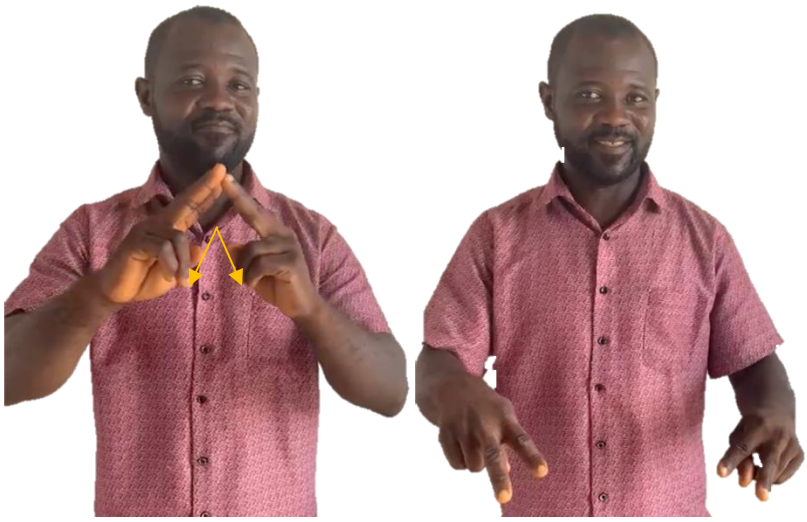
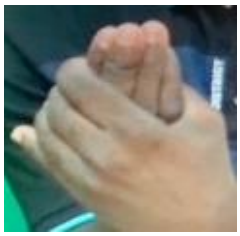


Figure 134: VILLAGE

Figure 135: ILLITERATE

Question B: Which of the signer do you think is not from Ghana?

vs



A: Space-based SASS B: Body-based SASS

Figure 136: SASS signs to depict an EGG.

The data indicate that 14 participants, constituting the majority (70%), associated the space-based SASS (Figure 136A) with individuals not from Ghana. A minority group of 10% believed that the body-based SASS (Figure 136B) signer was not from Ghana, while another 10% perceived both SASS users as Ghanaians. One participant (5%) expressed uncertainty, and another individual (5%) considered both signers non-Ghanaians.

Interestingly, the participants who believed that both types of SASS are used in Ghana, made distinctions between them. According to their perception, the space-based SASS was seen as ASL or FOREIGN, while the body-based SASS was viewed as a NATURAL sign. This suggests that within the deaf community in Ghana, there is a recognition of the presence of ASL and locally evolved sign language, each associated with different types of SASS.

Most participants who perceived the space-based SASS (Figure 136A) as foreign expressed that it was unfamiliar, and they believed that many Ghanaians might not use it. Some participants also mentioned that white people use space-based SASS. These comments shed light on the participants' perspectives and highlight their awareness of the cultural associations and perceived usage patterns of the different types of SASS. The comments below (see, e.g., 2), among others, provide further insight into the participants' perceptions and opinions on this matter.

2)

A. SASS: curved_index+thumb NOT COMMON IN GHANA. IT USE SPACE, OTHER SASS: bundle_fingers GSL
'This space base SASS (i.e., curved_index+thumb) is not common in Ghana, it uses space. The other body based SASS (i.e., bundle_fingers) is a GSL sign'

B. WHITE PEOPLE USE SASS: curved_index+thumb; IT ASL OR FOREIGN
'White foreigners use this space based SASS (i.e., curved_index+thumb). It is an ASL sign'

C. FOREIGNERS USE SASS: curved_index+thumb, SASS: bundle_fingers GSL
'Foreigners use this space based SASS (i.e., curved_index+thumb). This body based SASS (i.e., bundle_fingers) is a GSL sign'

D. SASS: curved_index+thumb ASL, SASS: bundle_fingers GSL
'This space based SASS (i.e., curved_index+thumb) is an ASL sign. The body based SASS (i.e., bundle_fingers) is a GSL sign'

E. GHANAIANS DON'T USE THAT SASS: curved_index+thumb ASL; OTHER SASS: bundle_fingers GSL
'Ghanaians do not use this spaced based SASS (i.e., curved_index+thumb), it is an ASL sign. The other body based SASS (i.e., bundle_fingers) is a GSL sign'

Additional explanations provided by participants shed further light on their perceptions of the space-based SASS (Figure 136A). Some participants noted that space-based SASS could be appropriate for packaged referents, such as tomato paste in a sachet. However, if the same handshape was used to represent an egg (as in question B above), it was perceived as not being Ghanaian. This distinction suggests that the specific referent being depicted can influence the appropriateness of space-based SASS.

In contrast, some participants from the minority group (30%) acknowledged the association of space-based SASS with ASL or a foreign sign language. However, they hesitated to conclude that the signer who used it was a foreigner based solely on that fact. It is worth noting that the model's complexion may have influenced the participants' stance since the concept of "foreigner" is commonly associated with a white person rather than a person of black ethnicity, like the model. Importantly, it should be recognised that labelling a sign as foreign or associated with ASL does not necessarily imply discouragement of its use or absence within the Ghanaian deaf community.

These additional perspectives highlight the nuanced understanding of participants regarding the usage and cultural connotations of space-based SASS. The participants' explanations demonstrate the complexities involved in evaluating the origins and associations of specific sign forms within the Ghanaian signing context.

Question C: Which signer do you think would be the oldest?

A: Space-based SASS B: Body-based SASS

Figure 137: SASS signs to depict PEPPER.

A significant proportion of the participants, specifically 65% of the total sample size of 20, attributed the usage of space-based SASS (Figure 137A) to older individuals. This perception stemmed from their belief that space-based SASS, being foreign (such as ASL), was used in the past when deaf people in Ghana used ASL. As an example (3), one participant expressed this view by stating,

3) I USE SEE SASS: index+thumb_extention WHEN YOUNG, BUT NO MORE USE
'I used to see this space-based SASS (i.e., index+thumb_extention) when I was young, but it is no more used'

According to the majority, contemporary deaf individuals in Ghana primarily use body-based SASS (Figure 137B) for referring to pepper. Some participants acknowledged the space-based SASS as part of GSL and perceived it as natural or iconic, while others considered it ASL or foreign. Interestingly, one participant mentioned that space-based SASS was used in the past because, during that time, deaf individuals did not know how to sign; thus relied on NATURAL signs. Another participant noted that both signs are used in Ghana, but the body-based SASS is more prevalent among the younger deaf signers.

In contrast, a portion of the minority group (25%) believed that the user of body-based SASS was the oldest. They claimed to have witnessed its use among deaf individuals but stated that it is no longer currently used. They considered body-based SASS a natural sign or part of GSL while perceiving space-based SASS as foreign. One participant (5%) was uncertain about who could be viewed as the oldest but emphasised that the space-based SASS was unfamiliar to him, whereas the body-based SASS was known as part of GSL. Another participant (5%) suggested that both users could be old, acknowledging the existence of sign variation and considering both signs as natural and part of GSL.

These diverse perspectives highlight the participants' perceptions regarding the age associations of body-based and space-based SASS. Their explanations reflect the belief that the usage of these signs has changed over time within the deaf community in Ghana, with body-based SASS being more commonly used among the younger generation.

Question D: Which signer do you think is well educated?

vs

A: Space-based SASS B: Body-based SASS

Figure 138: SASS signs to depict SNAKE.

An overwhelming majority of 16 participants, specifically 80% out of the total sample size of 20, perceived the usage of space-based SASS (Figure 138A) as characteristic of an educated individual. They perceived it as part of GSL and considered it a NATURAL sign. Two participants even mentioned that it could be seen as ASL, GSL, and NATURAL. They emphasised that space-based SASS is used in educational settings and is well-known among educated individuals within the deaf community. Additionally, one participant provided alternative SASS options (both space-based & body-based) for referring to a snake, demonstrating the presence of both variations in the signers' language repertoire.

Another participant explained that their judgment of space-based SASS being associated with an educated person was because the parameters used in the sign were phonologically conventionalised. Therefore, they considered the space-based SASS sign part of ASL or GSL while perceiving the body-based SASS (Figure 138B) sign as a NATURAL sign.

Among the minority group, 5% of participants believed that both signers could be educated, while the remaining 25% felt that the user of body-based SASS was educated. However, within this subgroup, there were conflicting views. Some participants claimed that the choice of body-based SASS was due to being part of GSL, while others believed it was ASL, and the space-based SASS was either GSL or ASL. Some participants considered the body-based SASS as iconic or a NATURAL sign, representing the LOCAL. One participant made an intriguing comment (see example 4 below), stating,

4) WHEN USE SASS: leg_delimited PEOPLE AFRAID AND RUN-AWAY.
'When you use this body-based SASS (i.e., leg_delimited) people will disassociate themselves from you'

This statement reflects a perception ideology that certain locally evolved GSL signs can be humorous and provoke laughter. The majority links space-based SASS with educated individuals, perceiving it as part of GSL and NATURAL. At the same time, the minority expresses differing opinions, including views on body-based SASS being part of GSL or ASL and the presence of humorous connotations in locally evolved GSL signs. These varying perspectives provide insights into how participants perceive the educational background associated with the use of body-based and space-based SASS.

Question E: Which signer do you think could easily be understood by a larger group of deaf people?

vs

A: Space-based SASS B: Body-based SASS

Figure 139: SASS signs to depict TOMATO.

An overwhelming majority of 19 participants (95%) expressed that body-based SASS (Figure 139B) could be easily understood by a larger group of deaf people when used. However, there were differing opinions regarding the specific sign language associated with it. Some participants considered it part of ASL, while others considered it part of GSL or a NATURAL sign.

Below (see, e.g., 5) are some of the comments by participants who highlighted this viewpoint.

5)

A. PEOPLE KNOW TOMATOES SASS: fist, SASS: round AMERICA
'People are familiar with tomatoes as this body-based SASS (i.e., fist), while the space-based SASS (i.e., round) is part of ASL'

B. PAST WHITE WAY DIFFICULT SASS: round WHEN SCHOOL LEARN WHEN PEOPLE TEACHER SEE SASS: fist PAST WHITE DIFFERENT SAY SASS: round DEAF COPY SASS: fist OTHER THEY UNDERSTAND
'In the past, there were ASL space-based SASS (i.e., round) and it was challenging. In deaf school, the teacher sees our body-base SASS (i.e., fist), and they acknowledge that ASL signs are different from what we do. When others copy or use our body-base SASS (i.e., fist), they understand better'

It is worth noting that some participants who do not perceive a distinction between GSL and ASL tend to refer to signs they are familiar with as ASL. Additionally, participants mentioned that using body-based SASS (Figure 139B) to describe tomatoes was a common practice among deaf individuals. They explained that they had never seen this space-based SASS (Figure 139A) used for tomatoes but speculated that it might be used if the referent is a canned tomato or a flat object. According to their perspective, the body-based SASS is preferred and widely used because it effectively conveys the visual aspects of shape and size.

In contrast, a minority of participants (5%), represented by a single individual, believed that a larger group of deaf people could easily understand the space-based SASS. This participant viewed the space-based SASS as ASL, and since all deaf members were familiar with ASL in Ghana, s/he considered it readily understood. However, s/he did acknowledge the body-based SASS as GSL. Still, due to people's preference for ASL in Ghana, he was influenced by the fact that all deaf members in Ghana could easily understand a sign associated with ASL.

These divergent views shed light on how participants perceive the ease of comprehension and preference among deaf individuals regarding body-based and space-based SASS. As observed the majority considered the body-based SASS (in Figure 139B) to be easily understood by a larger group, while the minority perceived the space-based SASS (in Figure 139A) to have broader comprehension due to its association with ASL.

Question F: Which signer do you think would be easy to communicate with if you met them?

vs

A: Space-based SASS B: Body-based SASS

Figure 140: SASS signs to depict a TREE.

The majority of 16 participants (80%) believed that they would find it easy to communicate with someone using the space-based SASS (Figure 140A) if they were to meet them. Their reasoning was based on the perception that it is a common and iconic sign. While some participants considered it GSL, others mentioned it ASL. Interestingly, some participants indicated that it could be both ASL and GSL. One participant explained that deaf Ghanaians typically sign trees without specifying the size or shape, implying a preference for the space-based SASS in such contexts. However, many participants expressed unfamiliarity with the body-based SASS (Figure 140B) that incorporates the trunk element.

Participants acknowledged that space-based and body-based SASS signs might exist in Ghana, but they considered the body-based SASS more easily understood by them. Among the minority group, 15% expressed confidence in understanding the body-based SASS. On the other hand, one (5%) of the minority group was unsure of the answer but mentioned that s/he had never seen the space-based or body-based SASS used for the entity tree before. However, this participant stated that the space-based SASS is a sign associated with ASL.

These findings reflect the majority's perception that the space-based SASS is a common and easily understandable sign, potentially due to its iconic nature. Conversely, some participants expressed limited familiarity with the body-based SASS used for the entity tree, suggesting that it might not be as commonly used or recognised among the participants. The minority group showed a range of views, with some expressing confidence in understanding the body-based SASS and others being unsure or unfamiliar with both signs.

Question G: Which signer do you think got a better result in a deaf school?

vs

A: Space-based SASS B: Body-based SASS

Figure 141: SASS signs to depict a YAM.

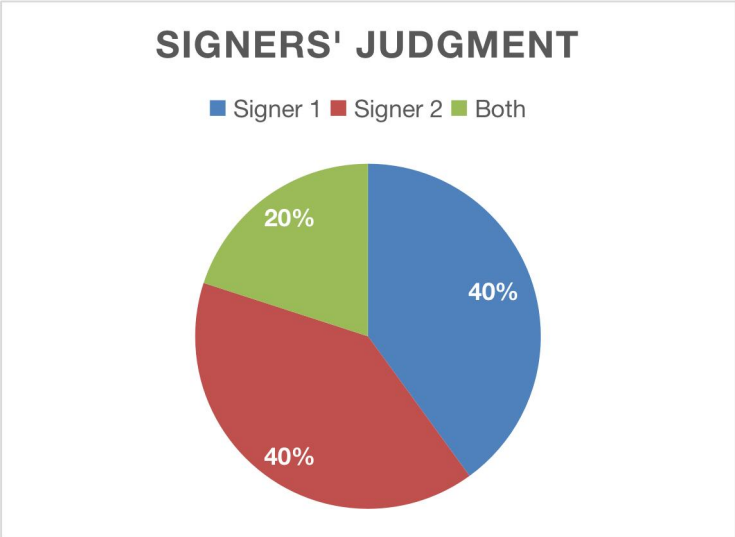


Figure 142: Signers' judgement on the SASS that indicates an assumed high academic performance.

Figure 142 below depicts the distribution of signers' responses to the question. The findings reveal that 40% of the participants considered the space-based SASS (Figure 141A) iconic and capable of effectively conveying the intended description. Consequently, they perceived the user of the space-based SASS to have a high academic performance. This group also attributed the sign to GSL. In contrast, another 40% of participants regarded the body-based SASS (Figure 141B) as iconic and capable of conveying the description effectively, associating it with high academic performance. However, within this group, opinions diverged, with some identifying the body-based SASS as ASL while others considered it a GSL sign.

Conversely, 20% of participants agreed that both signs, the space-based and body-based SASS, could indicate an assumed high academic performance based on

the question. They recognised that these signs are employed by deaf individuals and classified them as both GSL and NATURAL. This distribution of responses provides insights into the participants' perceptions of academic performance associated with using different SASS signs. The findings indicate that the space- and body-based SASS signs were attributed with iconicity and the potential to convey descriptions effectively. Moreover, while some participants associated the body-based SASS with ASL, others viewed it as a GSL sign. The recognition that deaf individuals utilise both signs suggest their prevalence within the deaf community and their classification as GSL and NATURAL.

Summary

The primary objective of this investigation was to gain a deeper understanding of how signers perceive and assess the application of SASS. Most participants associated the body-based SASS with individuals from rural or village backgrounds, while a smaller group associated the space-based SASS with villagers. Some participants linked the body-based SASS to iconicity and locally evolved signs in Ghana, considering it representative of LOCAL or iconic gestures. Participants used terms like " NATURAL," "VILLAGE," or "ILLITERATE" to describe the body-based SASS signs.

Regarding which signer is not from Ghana, most participants associated the space-based SASS with individuals, not from Ghana. Some participants mentioned that the space-based SASS was unfamiliar and believed white people might use it. However, participants recognised both types of SASS within the Ghanaian signing community, associating the Space-based SASS with ASL or foreign sign languages. Regarding age associations, the majority associated the space-based SASS with older individuals, believing it was used when ASL was prevalent in Ghana. Some participants mentioned that contemporary deaf individuals in Ghana primarily use body-based SASS for referring to certain concepts. However, a minority group believed that the user of body-based SASS was the oldest, mentioning its past usage but considering it no longer in current use. Regarding educational background, most associated the space-based SASS with educated individuals, perceiving it as part of GSL or a natural sign. Some participants emphasised its usage in educational settings and among educated individuals in the deaf community. The minority group expressed differing opinions, including views on body-based SASS being part of GSL or ASL and perceiving humorous connotations of local signs.

When asked which signer could be easily understood by a larger group of deaf people, the majority believed that body-based SASS could be easily understood. A minority felt that space-based SASS could be easily understood due to its association with ASL. Some participants associated it with ASL, GSL, or a natural sign.

Regarding ease of communication, if they were to meet the signers, the majority believed it would be easy to communicate with someone using space-based SASS, perceiving it as common and iconic. Some participants considered it GSL or ASL. Participants acknowledged the existence of both types of SASS in Ghana but expressed limited familiarity with the body-based SASS used for the entity tree.

In terms of academic performance, participants attributed both space-based and body-based SASS to have potential to convey the description of an individual with high academic performance. Some associated body-based SASS with ASL, while others considered it a GSL sign. A group of participants recognised both signs as utilised by deaf individuals, classifying them as both GSL and natural.

Overall, the findings highlight participants' perspectives on the usage and associations of body-based and space-based SASS within the Ghanaian signing community, shedding light on factors that shape those perspectives such as rural or village associations, familiarity, educational background, comprehension, communication, and academic performance.

5.3.2 Exploring the Correlations: SASS and Sociolinguistic Profiles

This section investigates the potential associations between language usage and sociolinguistic profile, including age, gender, and education. Building upon the findings presented in Chapter 4 regarding the distribution of SASS, this study further explores the influence of social variables on signers' ideologies and SASS production. By integrating the outcomes of the preceding analysis with data pertaining to participants' language ideology, we aim to gain a deeper understanding of the interplay between social variables and signers' attitudes towards SASS.

As depicted in Figure 143, space-based SASS were prominently employed throughout the entire dataset by deaf participants. In the Animal Encounter narrative data, there were 135 instances of space-based SASS used, contrasted with 20 occurrences of body-based SASS. Similarly, within the Haptic task data, 584 occurrences of space-based SASS were elicited, while only 90 instances of body-based SASS were observed. An intriguing pattern emerged from the frequency distribution, as it presented a consistent ratio in both tasks—Animal Encounter narrative and Haptic task. Specifically, 87% of the SASS produced were space-based, while the remaining 13% were body-based. This pattern underscores signers' pronounced preference for utilizing space-based SASS consistently across tasks.

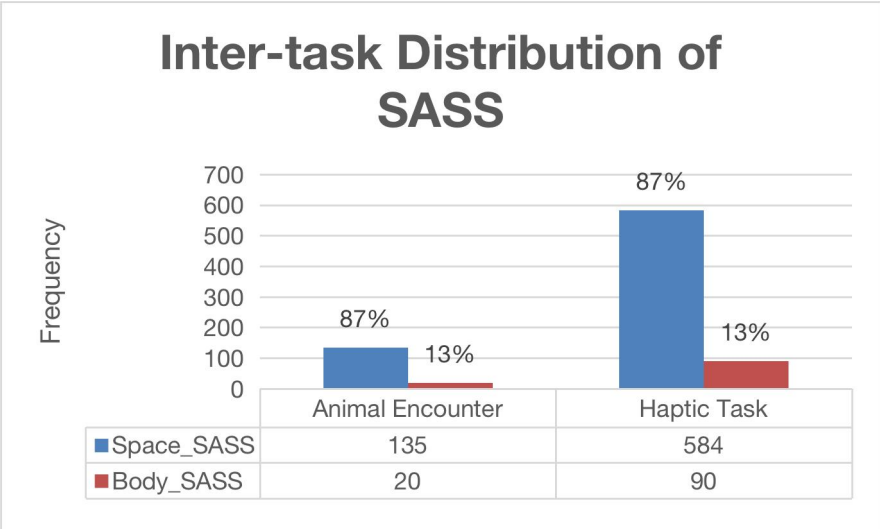


Figure 143: Distribution of body-based and space-based SASS in the data.

Through an analysis of participant data, the study concludes that the social variables of gender, age, and education do not significantly impact SASS production. In other words, no large difference was found between men and women across various age groups. Strikingly, a notable observation was that non-formally educated signer abstained from employing body-based SASS. This intriguing trend could potentially be linked to avoidance behaviors or hypercorrection arising from concerns about stigmatization. Below is the breakdown of SASS type distribution in terms of production and its correlation with gender, age and education as social variables. Consequently, I conclude that the social variables examined in this study do not substantially impact the SASS production among the participants.

Distribution of SASS types in production and Associated Social Variables

Whereas the previous sub-study used a judgement task to evaluate signers' attitudes vis a vis space-based and body-based SASS signs, in this sub-study, I look at the relation between the distribution of SASS types and sociolinguistic characteristics. To this end, I will examine the distribution of space- and body-based SASS signs in the production task in Chapter 4 and see how this distribution squares with the sociolinguistic characteristics of the signers involved.

It was observed that females exhibited a higher usage of body-based SASS 61 (54%) compared to males 52 (46%). Conversely, males demonstrated a higher use of space-based SASS 393 (55%) than females 326 (45%). However, the percentage differences in the distribution of SASS based on gender were marginal, making it challenging to establish variation in SASS usage between genders.

Unique patterns emerge regarding the distribution of body- and space-based SASS among different age groups. Younger adults (age 25-44), comprising 12 individuals, exhibited a significantly higher usage of both body-based SASS (42%) and space-based SASS (41%) compared to other age groups. Conversely, senior adults (age 65 and above) comprising of one individual displayed lower usage of both body-based and space-based SASS compared to different age groups.

The analysis revealed the hierarchical distribution trajectory that SASS production was highest among younger adult, followed by one young people (age 15-24), six older adults (age 45-64), and one senior adults. Figure 144 depicts a graphical representation in the form of a bar chart, illustrating the distribution of body-based and space-based SASS across various age groups. Notably, due to an uneven distribution of participants across age and education group, result is given in percentages.

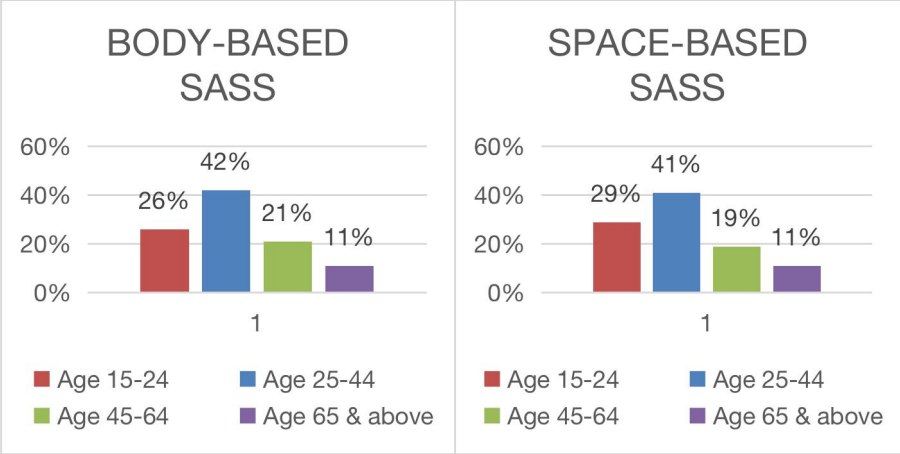


Figure 144: Distribution of SASS based on age groups.

Based on education, participants were classified into four categories: one individual with no formal education, eight participants with basic education, four participants with secondary education, and seven participants with tertiary education. The distribution of SASS based on participants' education level yielded intriguing results, potentially influenced by the language norms within the deaf community. The participant without formal education did not employ any body-based SASS. This finding is noteworthy since this type of SASS is conventionally associated with illiteracy. Surprisingly, the individual without formal education did not use it; however, this may be due to a conscious avoidance of signs with derogatory connotations within the deaf community. Conversely, all participants within other educational groups used body-based SASS, predominantly observed among those

with basic education, 8 SASS and secondary education, 8 SASS (42% each) and less used among those with tertiary education, 3 SASS (16%). Regarding space-based SASS, all educational groups demonstrated usage without significant differences (No Education = 19% (24 SASS), Basic Education = 29% (38 SASS), Secondary Education = 22% (29 SASS), Tertiary Education = 30% (39 SASS)). Figure 145 summarises the distribution of SASS based on participants' educational levels.

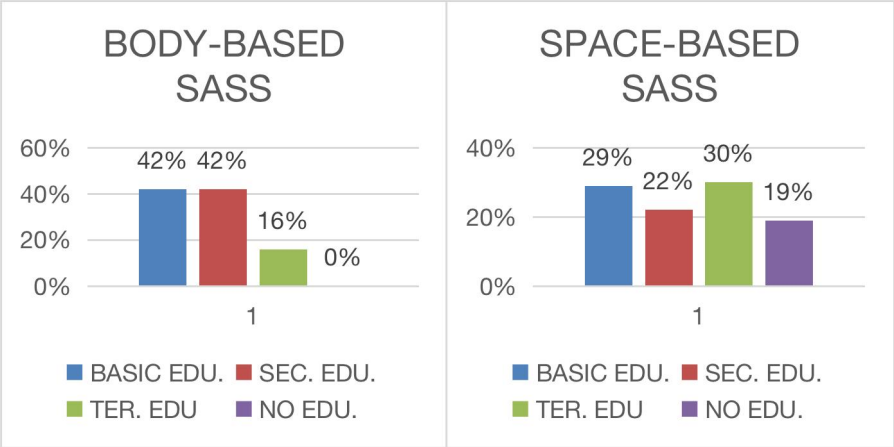


Figure 145: Distribution of SASS based on education.

Through an analysis of SASS distribution and its correlation with social factors, namely gender, age, and education, this study reveals interesting patterns and trends. While slight variations were observed, no significant differences were found, indicating that social factors do not substantially influence SASS usage among the participants.

Summary

This section demonstrated the potential associations between language usage and sociolinguistic profile, specifically focusing on age, gender, and education. Drawing upon the findings presented in Chapter 4 regarding the distribution of SASS, this study further explores the influence of social variables on SASS production.

The study concludes that the social variables of gender, age, and education do not significantly impact signers' SASS production. Specifically, no significant differences in SASS production were found between male and female participants, nor were there any significant age-related discrepancies. Furthermore, although participants with lower levels of education exhibited a slightly higher complexity in SASS production, this difference was not significant. Therefore, it can be inferred that the social variables examined in this study do not substantially influence the

production of SASS among the participants. It is important to note that comparisons were made based on average scores due to an uneven distribution of participants across age and education groups.

The language norms within the deaf community influence the distribution of SASS based on participants' education levels. Participants with no formal education did not employ any body-based SASS, which is conventionally associated with illiteracy. This finding is intriguing and suggests a conscious avoidance of signs with derogatory connotations in the deaf community.

Overall, these findings contribute to our understanding of the distribution of SASS in relation to gender, age, and education. Although some patterns and trends exist, the differences observed are not significant, indicating that social factors do not substantially influence SASS usage among the participants.

5.4 Discussion

Generally, the perceptions of signers regarding SASS in Ghana have not been reported in any academic work. The findings in this chapter, as revealed through the judgment experiment on SASS (i.e., body-based & space-based), address key ideological issues related to SASS usage in Ghana.

In brief, body-based SASS was perceived as indigenous or native to Ghana, serving as an appropriate iconic device. It was commonly linked to uneducated deaf individuals, villagers, the younger generation, and a local sign. In contrast, space-based SASS was generally regarded as foreign, yet acknowledged for its use within the Ghanaian signing community. It carried associations with prestige, ASL, white people/foreigners, educated individuals, and the older generation of signers.

Participants' perceptions suggested that body-based SASS was commonly used in everyday communication among the signing community in Ghana compared to space-based SASS. However, this perception did not align with the SASS elicitation results, which revealed a predominant usage of space-based SASS. As previously suggested, this discrepancy could be attributed to avoidance strategies or hypercorrection tendencies. This phenomenon was particularly evident in the case of the participant with no formal education. The uneven distribution of participants across educational levels, although a limitation, indicated that signers particularly stigmatized (e.g., uneducated) individuals might tend to avoid using this variant more frequently in an observer's paradox.

Nonetheless, the study offers perspectives into the ideology and attitudes prevailing in the urban deaf community. For instance, an interesting observation emerged when participants were asked about their personal preference for SASS. Despite agreeing that body-based SASS is widely used and easily comprehensible, the majority (80%) expressed a preference for space-based SASS as their personal choice. This preference could originate from various factors, including individual

language ideologies, perceptions of linguistic aesthetics, or the association of space-based SASS with prestige. The findings reveal that participants attributed assumed high academic performance to both variants. This assumption likely arises from the fact that both variants are used by all categories of students within a school setting. It would thus be biased for them to attribute superior academic performance to either variant. A comment from one of the participants further hints at the situation. She noted that within formal settings and interactions with their teachers, the space-based SASS associated with ASL might be employed in the classroom. However, outside the classroom, the deaf community tends to use body-based SASS on campus or among themselves. This observation underscores the nuanced dynamics of SASS usage within different contexts.

Foreign or local: Body-based SASS as marking Ghanaian identity of GSL

One significant finding is the distinction between body-based and space-based SASS in terms of their origin. Body-based SASS is regarded as indigenous to Ghana, reflecting its close association with local communities and the second generation of GSL signers. Conversely, space-based SASS is perceived as foreign, likely due to its perceived connection with ASL and its introduction through formal education. Furthermore, it is worth noting that participants' interpretations of body-based SASS varied. Some attributed it to GSL, while others particularly identify it as LOCAL, used by individuals in rural areas or signers with limited education.

On the other hand, participants who categorised it as GSL perceived it as part of the ENGLISH, BROKEN or even associated it with foreign sign languages such as ASL. This view indicates the participants' diverse understanding of 'GSL', highlighting the language's multifaceted perspectives within the Ghanaian signing community.[109] For instance, while some participants may consider GSL as another name for ASL, others may perceive it as a completely distinct language, with GSL as a vernacular and ASL as a foreign language. This perspective variation highlights the diverse understandings and interpretations of the relationship between GSL and ASL within the Ghanaian signing community.

The study also reveals that social connotations and language ideology influence the choice of SASS. The choice of SASS is often influenced by the nature of the depicted referent. Body-based SASS is associated with villagers and is a common variant used in everyday communication. In contrast, space-based SASS is linked to educated individuals and carries prestige. Participants consciously opt for the prestigious variant in certain contexts, indicating the influence of social factors on their language choices. Interestingly, while participants recognise the prestige and common usage of the two SASS variants, they do not consider these factors

[109] This matter is further examined and discussed in Chapter 6 of the book, providing a more detailed analysis of the topic.

indicative of an assumed high academic performance. This situation suggests that signers have a nuanced understanding of language and do not solely rely on the choice of SASS to assess academic abilities.

The study also sheds light on the influence of education and generational factors on using SASS. Participants attribute the introduction of space-based SASS to formal education, particularly in deaf schools where ASL was historically prevalent. The shift to teaching GSL in present-day deaf schools has led to an increased usage of some body-based SASS, considered indigenous to Ghana. The history of deaf education in Ghana and the associated struggle over the appropriate language of instruction provide relevant context for the point discussed in this paragraph (For an exploration of this topic, see Subsection 2.4.1.3 & 2.4.2.3 of Chapter 2). As posited by Kusters et al. (2020:6) over time, oralist educational policies have ingrained negative perspectives towards sign languages within their framework. This finding highlights the dynamic nature of sign language practices and the impact of educational policies on language choices.

The study underscores the sociolinguistic complexities surrounding the perceptions and associations of body-based and space-based SASS in the Ghanaian signing community. It provide perspectives into the social, cultural, and educational factors that shape language ideologies and influence the choice of SASS variants. Understanding these dynamics is essential for promoting inclusive language practices and fostering a deeper appreciation of the rich linguistic heritage of Ghana's signing community.

While this study specifically focuses on the perceptions and usage of body-based and space-based SASS among signers, it is worth acknowledging that observations made regarding the usage of body-based SASS among gesturers can provide insightful implications for understanding the broader situation within the signing community. Although not presented in this study, exploring the usage patterns and factors influencing gesturers' use of body-based SASS can contribute to understanding SASS usage across different communication modalities.

Language ideology and body-based SASS

Drawing a parallel between language ideology and acceptability, I find that the authority and prestige of a standardized variety influence the perception and judgment of body-based SASS. This aligns with Garrett's (2010:7) explanation that people's positive or negative language ideologies towards a language variety are often influenced by the standardization process in other languages. The existence of a supposed standard language variety can affects judging other languages. In the context of sign language in Ghana, ASL can be regarded as the standardized variety, whereas other locally evolved sign languages in Ghana are typically seen as non-standardized. As Garrett (2010) explains, a standard variety gets authority and prestige via its use in dictionaries and educational settings, leading to devaluing

those supposed to be non-standardised. Similarly, in a sociolinguistic study, Lucas (2001: 190) mentioned that in language contact situations, the dominant majority language is typically viewed positively, while the non-dominant minority language is often seen in a negative light. These negative perceptions can originate from the more powerful language group and gradually affect the minority group, leading them to perceive their language as inferior or lacking compared to the dominant language (Lucas 2001: 190). This observation may provide an explanation for why a signer might consciously refrain from using a specific body-based SASS variant in a formal setting.

Additionally, the findings shed light on the perception of space-based SASS as having higher status due to its standardized phonological location. It is worth noting that certain body-based SASS with standardized phonological locations may not be associated with lower status. In fact, they may be lexicalized and included in GSL dictionaries (e.g., the sign for SMALL which is form by delimiting the index finger). As Garrett (2010:10) highlights, positive or negative language attitudes can also be associated with specific aspects of a language or the language as a whole.

Negative attitudes towards a language can arise when individuals perceive it as having a limited vocabulary or lacking essential grammatical structures for effective communication in specific domains (Garrett, 2010). In the case of GSL, there has been a negative conceptualisation regarding the richness of its vocabulary. This perception may lead some signers to feel the need to adopt ASL as an alternative.

Observing negative attitudes towards GSL and the perception of its limited vocabulary highlights a significant sociolinguistic aspect within the signing community. When a language variety is devalued or considered inadequate in certain domains, individuals may seek alternatives perceived as more prestigious or better equipped for effective communication.

The notion that some signers need to adopt ASL suggests recognising its perceived advantages, such as a larger vocabulary or better-developed grammatical structures. This preference for ASL may be influenced by factors such as exposure to ASL through formal education, interactions with ASL users, or societal attitudes towards ASL as a more standardised and prestigious sign language.

It is important to note that individual preferences, language ideologies, and the sociolinguistic dynamics of the signing community influence the decision to adopt ASL or any other sign language. It does not imply that GSL or body-based SASS is inherently inferior or lacks communicative abilities. Language adoption and language shift are complex processes driven by various sociocultural, educational, and linguistic factors.

Further research exploring the motivations behind signers' adoption of ASL and the implications of language choice within the signing community would

contribute to a deeper understanding of the dynamics between different sign languages and their sociolinguistic status. It would also shed light on the sociocultural factors that shape language attitudes and preferences among signers.

In conclusion, the discussion provides insights into the observations made regarding the usage patterns of body-based SASS among signers, the perceived prestige and status associated with different SASS variants, and the factors influencing these perceptions. Additionally, it draws attention to the influence of language ideology, standardisation processes, and perceptions of vocabulary richness on attitudes towards different SASS variants and GSL. It highlights the need for further research to explore the contexts and formulate theories around these observations, especially concerning GSL signers.

5.5 Summary and Conclusion

The study examined the perceptions and associations of body-based and space-based SASS in the Ghanaian signing community. The findings shed light on various ideological issues related to SASS usage in Ghana.

The study found that body-based SASS was associated with Ghana and perceived as a feature of GSL. It is considered native to the local signing community. On the other hand, space-based SASS is seen as foreign and associated with educated individuals and prestige. Participants showed a preference for space-based SASS as their personal choice, potentially influenced by factors like language ideologies and perceptions of linguistic aesthetics. However, both variants were recognised for their potential to effectively convey complex information, indicating that neither variant was considered superior in academic capacity.

The study also revealed the influence of education and generational factors on SASS usage. Space-based SASS was attributed to formal education and its connection to ASL. The shift to embracing local signs in present-day deaf schools by teachers has led to increased use of body-based SASS, reflecting the impact of educational policies on language choices. The findings highlighted the sociolinguistic complexities surrounding the perceptions and associations of body-based and space-based SASS. They underscored the influence of social, cultural, and educational factors on language ideologies and the choice of SASS variants. Understanding these dynamics is crucial for promoting inclusive language practices and appreciating the linguistic heritage of Ghana's signing community. Additionally, I discussed observations regarding the usage of body-based SASS among gesturers, suggesting a higher use among younger adults compared to older and senior adults. It is speculated that language preferences and competencies could influence this pattern.

In conclusion, this chapter presents a judgement task whereby signers were asked to evaluate two signers. In each case, one of the signers gives a body-based

SASS sign to describe the size and shape of a referent, and the other a space-based SASS sign. Signers are asked about their impressions of each signer in relation to various social dimensions. The results show that signers associate body-based SASS signs with low prestige and locally evolved sign language, while space-based SASS is associated with high prestige and a foreign based sign language (ideally ASL). The judgment experiment provided perspectives into the ideological dimensions surrounding SASS usage in Ghana. The study shed light on nativeness, generational preferences, prestige associations, common use, personal choices, and the perception of academic performance associated with different SASS variants.

The data analysis also indicates that the social variables of gender, age, and education do not exhibit any large difference on signers' SASS production. This lack of significant impact may be attributed to the study's limitation of not achieving an even distribution of age and educational attainment among the 20 participants used. It is worth noting that despite a balanced representation of participants regarding gender, the study did not identify any significant impact of gender on SASS usage.

Overall, the results indicate that social factors such as gender, age, and education do not substantially impact SASS production among the participants. The findings also shed light on the perceptions and associations surrounding body-based and space-based SASS in Ghana. The study contributes to a better understanding of the ideological dimensions of SASS usage and highlights the importance of considering sociolinguistic factors in studying sign language variation and perception. Further research is, however, necessary to explore other potential factors that may impact SASS production and to gain a better understanding of the complexities involved.

6.

LANGUAGE IDEOLOGIES AND THE COMPLEXITY OF GSL USAGE IN THE DEAF COMMUNITY

Globally, the use of sign languages among deaf communities has garnered attention from linguists, highlighting the significance of locally evolved sign languages alongside foreign-based signing systems. In the context of Ghana, several sign languages have emerged, including GSL, AdaSL and Nanabin SL. However, despite the existence of these sign languages, a full linguistic nature of the national sign language and its relationship with other locally evolved sign languages and foreign-based signing systems remains unclear (see Chapter 2). This chapter aims to investigate the language ideologies surrounding the usage of GSL in the urban deaf community of Ghana and shed light on the linguistic perspective of this complex linguistic landscape.

The research findings in other chapters highlight the diverse ways in which signers in the deaf community label and name sign languages. Multiple labels may be used for the same sign language, and the prevalence of these variations within the community remains largely unexplored. More generally, existing literature on this topic is limited, as most discussions focus on officially recognized labels such as GSL and ASL. Researchers, such as Hou and de Vos (2022), have proposed different labels and classifications for sign languages used in deaf communities worldwide. The choice of labels can be influenced by various factors, including the linguistic structure of the language, demographic characteristics, researcher's ideology, methodology, language age, and more. This diversity in labels reflects the complexity of categorizing sign languages. It is important to note that labels given to sign languages can overlap and vary among different signing communities. Green (2014) demonstrated how a particular signing variety may be labelled differently by researchers and signers from different communities. For instance, what one researcher identifies as a "Local sign" may be labelled the same way by village signers but considered a natural sign with broader social functions and usage by signers in the urban deaf community (Green, 2014). The extent to which these classifications benefit the signing community, and their appropriateness remains uncertain.

Within the Ghanaian deaf community diverse signing system lacks clearly defined descriptions, often leading to interchangeable use of terms such as GSL and ASL. Furthermore, the presence of two varieties of GSL, as presented in Chapter 2, adds further complexity to the understanding of the national sign language's form and usage in the deaf community at large. This chapter explore language ideologies within this context, building upon the background established in Chapter 1, which

motivate the need to investigate the diverse ideologies and attitudes of participants in the urban deaf community.

The intricate nature of the signing system can be attributed in part to the historical development of deaf education in Ghana (see Chapter 3). However, this chapter aims to determine the extent to which language ideology also contributes to this complexity. It is essential to note that the diverse views discovered in informal settings outside formal research settings prompted the inclusion of this chapter. The primary objective is to examine signers' understanding of the national sign language in comparison to ASL and to gain insights from a linguistic perspective.

Within Ghana's multilingual society, sign languages are often considered minority languages, and some individuals may even question their status as languages due to their visual gestural nature (Kyle & Allsop, 1997:22; Kusters et al. 2020a,b). While Ghana does not have a designated national language, Akan is occasionally regarded as such due to its widespread usage as a lingua franca. English, as the official language, is used for instructional purposes in educational settings, including schools for the deaf. In this context, GSL serves as the national sign language in the country, and it is employed for deaf education. Although sign language linguistic research is gradually progressing in Ghana, studies on language ideologies related to sign languages have been relatively neglected.

Recently, the teaching of GSL in universities, primarily for hearing students, has gained momentum to ensure accessibility for the deaf minority group and to promote GSL as the primary means of communication. However, the structure of GSL remains incompletely described, and individual teachers continue to teach sign language based on their personal language ideologies. While anecdotal reports suggest the introduction of some form of ASL, this is not surprising given the limited understanding of GSL and the diverse signing system prevalent in the urban deaf community. Similar to hearing individuals, deaf signers also possess their language ideologies, which, as Woolard (2020) suggests, can shape perceptions of language nature and linguistic norms. Therefore, exploring language ideology data in this chapter is expected to contribute to a better understanding and reconstruction of the nature of GSL.

Garrett (2010) emphasizes the crucial role of language ideologies in language development, survival, or death, particularly in multilingual communities where languages may be in competition or face threats. Accordingly, this chapter delves into the language ideologies of deaf signers in Ghana, whose primary language is GSL, aiming to shed light on the significance of language ideologies in shaping the usage and perception of GSL within the deaf community.

This chapter provides an exploration of language ideology within deaf communities. It begins with a background of studies on language ideology in Ghana (Section 6.1), and research questions (Section 6.2). The methodology for data acquisition is described (in Section 3), followed by the presentation of results

(Section 6.4). Finally, a detailed discussion of the results (Section 6.5) and concluding remarks are provided (Section 6.6).

6.1 Studies on Language Ideology in Ghana

In this section, I delve into a literature review of language ideology research in Ghana. This review aims to provide an understanding of language ideologies in the Ghanaian context and highlight the major findings that have emerged from this field of study. Additionally, I will explore the specific aspects of language ideology among spoken language users in Ghana and the unique perspectives and insights gained from studying language ideologies among deaf signers. Finally, I will discuss the future directions and potential exploration areas within this dynamic research field. By examining the studies on language ideologies in Ghana, we can deepen our understanding of how language shapes social dynamics and cultural practices within this multilingual society.

6.1.1 Language ideology among hearing people

Early scholars in this field examined the perception that African languages were inferior to European languages, resulting in the marginalization of African languages in social, cultural, and political contexts. Studies on language ideology in reveal a prevalent negative attitude among Ghanaians toward the use and study of Ghanaian languages, with a preference for English Ghana (e.g., Dako & Quarcoo, 2017; Duah & Mensah, 2017; Guerini, 2008; Kwofie, 2001; Owu-Ewie & Edu-Buandoh, 2014; Saah, 1986; Twumasi, 2021). This preference for English is driven by the belief that it is the only language in Ghana that can provide socio-economic benefits, such as improved academic performance, access to higher education, and better employment opportunities. Similar attitudes have been observed in other African countries, where indigenous languages are often discriminated against in favour of former colonial languages (Magwa, 2015; Ramachandran & Rauh, 2016).

One significant area of study in language ideology is the relationship between language and identity. Dako and Quarcoo's (2017) study explored how language choice and attitudes reflect social identity among Ghanaians. They found that English was perceived as a prestigious language, while local languages were considered inferior, leading to a preference for English. The official status of English in Ghana further reinforces its importance, gradually eroding the competence of Ghanaian mother tongues for some individuals. This can be observed through excessive borrowing and code-switching when using local languages (Dako & Quarcoo, 2017). However, it is important to note that despite the perceived prestige of English, Ghanaians still hold value for their indigenous languages and prefer to maintain their use, particularly in informal interactions, as they are seen as

more appropriate for expressing Ghanaian culture and values (Dako & Quarcoo, 2017; Guerini, 2008; Obeng, 1997).

Another aspect of language ideology in Ghana relates to Ghanaian English, a variety distinct from standard British English, which has led to three ideological positions among Ghanaians (Ahulu, 1994; Simo Bobda, 2000). Some argue that Ghanaian English should not be considered a separate language variety and label it as mere errors in English. Others believe that Ghanaian English has been nativised and should be accepted as the standard variety known as Ghanaian English. Lastly, some reject the use of English as a foreign language and advocate for using indigenous languages instead (Ahulu, 1994).

A similar attitude is observed towards Ghanaian Pidgin English, a language variety without a standard orthography that is not officially recognised as a Ghanaian language (Adika, 2012; Huber, 2013). Ghanaian Pidgin English emerged from contact situations between British merchants and Ghanaian traders, blending English and several Ghanaian languages (Suglo, 2012). However, its usage is often associated with low prestige. Despite this, it continues to thrive among males in urban areas and competes with other Ghanaian languages by expanding its domain of usage (Adika, 2012; Huber, 2013; Suglo, 2012). Attitudes towards pidgin vary, with some individuals considering it fashionable to use, while others view it as a hindrance to English proficiency (Adika, 2012; Suglo, 2012).

According to several scholars (Adika, 2012; Huber, 2013; Suglo, 2012), Ghanaian Pidgin English can be categorised into two main varieties: an educated variety known as mesolectal or acrolectal pidgin and an uneducated variety known as basilectal pidgin. The educated variety is predominantly used by students and members of the elite in society, while the uneducated variety is more commonly used by individuals with lower levels of education as a means of communication. The attitude of Ghanaians towards pidgin can be attributed to the fact that it is considered a hybrid or non-standard variety of English (Suglo, 2012).

Language ideology also plays a role in education. Owu-Ewie and Edu-Buandoh (2014) examined how language ideologies influence language policies in schools. They found that English was the dominant language of instruction in secondary schools, leading to the marginalization of local languages and a lack of resources for their development. This perpetuates linguistic inequality and reinforces existing power structures. Guerini (2008) discovered a negative attitude among faculty members in tertiary institutions towards the use of indigenous languages as a subject of study. Similarly, the study by Owu-Ewie and Edu-Buandoh (2014) revealed that the use and study of African languages in education are stigmatized, even by local scholars. Students studying Ghanaian indigenous languages in secondary education often face stereotyping and humiliation from their peers, and some parents discourage their children from learning these languages because they believe proficiency in English is the measure of literacy (Obeng, 1997). In some

cases, weak academic performance or English proficiency is associated with predominant use of indigenous languages (Amissah et al., 2001; Andoh-Kumi, 1997 as cited in Owu-Ewie and Edu-Buandoh, 2014:1). Ghanaians express a negative attitude toward the frequent use of indigenous languages, particularly in formal educational settings, as they believe these languages may not be suitable for discussing technical subjects (Guerini, 2008). These attitudes reflect how Ghanaians perceive their languages and their preference for the appropriate language for education.

Indigenous languages in Ghana play a crucial role in religion, interpersonal communication, mutual comprehension, solidarity and cultural identity (Morris, 1998; Saah 1986; Sadat & Ibrahim, 2022). In educational settings, even during English classes, teachers may opt to code-switch to indigenous languages to ensure students' comprehension or emphasise specific subject matter (Sadat & Ibrahim, 2022). Morris (1998) also note that Ghanaians have special connection to the indigenous languages. This is particularly evident in local business interactions and extends beyond white-collar job settings. According to Morris (1998) Ghanaians have a profound sense of their language being an integral part of their identity, fostering a unique and deeply cherished connection. Consequently, safeguarding the language is not only about its preservation but also entails the preservation of the people and their cultural identities.

In the realm of national politics, dating back to the period of independence, the use of indigenous languages has served as a means to capture the attention of citizens, thereby establishing a candidate's competence as a capable leader and representative of the people (Ansah, 2017; Apronti, 1972; Saah, 1986). For example, political figures often resort to local languages (e.g., Akan, pidgin) when conveying their messages to the masses. They recognise that their success in elections largely hinges on their ability to connect with people through indigenous languages. Consequently, they conduct their campaigns primarily in local dialects. In some instances, politicians try to learn additional local languages to ensure effective communication with various segments of the public during political visits.

In conclusion, research on language ideology in Ghana highlights the prevailing negative attitudes towards indigenous languages in favour of English. This preference for English is driven by perceived socio-economic benefits and the higher status assigned to the language. However, there is still recognition and value placed on indigenous languages for informal interactions and the expression of Ghanaian culture and values. The existence of Ghanaian English and Ghanaian Pidgin English adds complexity to language attitudes in the country, with varied ideological positions held by Ghanaians. These attitudes also extend to the education system, where English dominates as the language of instruction, marginalising local languages and perpetuating linguistic inequality. The attitudes towards indigenous languages in education reflect the belief that English proficiency is crucial for

academic success and social advancement. Yet indigenous languages serve as custodians of cultural heritage, nurturing a feeling of identity and fostering national unity.

6.1.2 Language ideology among deaf signers

The literature review on language ideology among deaf signers provides insights into the perception and attitudes towards different sign languages within the Ghanaian context. While previous research has extensively explored language ideology among hearing people, there needs to be more attention given to sign languages. For a review on available work regarding the perception and attitude towards sign languages in Ghana, see Chapter 1 (Subsection 1.4.3).

In West Africa, a notable inclination exists towards foreign sign languages, such as ASL, at the expense of locally developed sign languages, as Nyst (2010) and Schmaling (2003) observed. This preference arises from the perception that locally evolved sign language has not received significant attention in deaf education and needs to be systematically developed to serve various communicative situations. Notably, this kind of language ideology is not confined solely to deaf communities; it extends to hearing individuals who may perceive their native communication forms as dialects while regarding foreign languages as true languages (Nyst 2010:418).

Contrasting views exist on locally evolved sign languages' status and vocabulary richness. Nyst (2010) suggests that locally evolved sign languages may be seen as having limited vocabulary. However, within the Adamorobe community, Kusters (2014a) found that AdaSL signers considered their language prestigious, expressive, and equivalent to any foreign language. While Nyst (2007) observed a higher status attributed to GSL in Adamorobe, Kusters (2014a) explained that this perspective needed to be more comprehensive and that AdaSL signers valued bilingualism in both GSL and AdaSL. Foreign encounters and the interest of outsiders in AdaSL may have gradually influenced the ideology of AdaSL signers to recognize its equivalence with GSL (Kusters, 2014a:153; 2015:173).

Language ideologies are known to be dynamic within a community, capable of evolving, changing, or even disappearing over time. From my perspective, the period between Nyst's (2007) observations and Kusters' (2014a) research is significant enough, allowing for varied encounters with foreigners, which might have influenced the language ideology of Deaf signers in Adamorobe. One observation that persists between Nyst's (2010:418) research and Kusters' (2014a) findings is that certain locally evolved signs were associated with mockery in contrast to GSL signs.

Parks (2014) notes that Ghana is part of the over 17 African and Asian countries where ASL is a primary sign language facilitated by educational

institutions, religious groups, international aid organisations, or international relationships. Parks (2014) presents her perspective on the international acquisition of ASL within the context of deaf communities. Her viewpoint is through analysing various factors and considerations that influence the adoption and use of ASL by deaf individuals globally.

One prominent aspect highlighted in Parks' (2014) perspective is the perceived significance of ASL competence as a gateway to full participation in the international deaf community. Deaf individuals participating in her study believe that proficiency in ASL enhances their ability to engage actively in global conversations and interactions within the Deaf World. ASL is seen as an instrument of empowerment and upward mobility. Concurrently, there exists a concern among some study participants regarding the potential repercussions of ASL on the vitality of their native sign languages. This apprehension underscores the complex interplay between ASL and local sign languages, wherein ASL's dominance raises questions about the preservation of linguistic diversity and cultural identity within specific deaf communities. (Parks, 2014).

The influence of international organisations, such as the World Federation of the Deaf, plays a significant role in shaping the discourse surrounding deaf human rights and local deaf heritage. These organisations impress on their network of deaf association members globally, thereby contributing to the construction and consolidation of international deaf identity (Parks, 2014). Parks therefore notes that deaf individuals grapple with the challenge of striking a balance between their desire for international engagement and their commitment to maintaining their unique cultural and linguistic identities.

Parks (2014) outlines three main responses exhibited by deaf communities when confronted with the presence of ASL in their respective countries, each of which compresses distinct attitudes and strategies for incorporating ASL into their linguistic and cultural landscapes.

a. Acceptance through Adoption: In certain countries (e.g., Grenada; St Vincent & the Grenadines), especially those without an established deaf community or cultural framework prior to the introduction of ASL, deaf individuals and communities wholeheartedly embrace ASL. This often occurs through the founding of deaf schools or missionary endeavours that actively promote ASL adoption. It's crucial to emphasise that while ASL is embraced, not all members within these communities may wholeheartedly endorse it. In such cases, communities may strive to distinguish their ASL variant by emphasising local signs that compress unique aspects of their culture. This differentiation establishes their national identity as distinct from other ASL-based signing in other countries.

b. Selective Adoption with Distinction: Unlike complete assimilation, some deaf communities (in Trinidad & Jamaica) incorporate ASL for specific purposes while deliberately setting it apart from their native sign languages employed in other contexts. While welcoming ASL for particular functions, they maintain a distinct status for their local sign languages. This approach allows them to function in a bilingual capacity, leveraging ASL for international communication while preserving their indigenous sign language as an exclusive representation of their cultural heritage and values.
c. Mixing and rejection: The third situation predominantly rejects the significance of ASL in shaping contemporary deaf identity construction, especially when ASL and the local sign language lack clear boundaries within the community. This often leads to the fusion of the two sign languages to the extent that distinctions are drawn between "old sign" (employed by individuals not exposed to ASL at a young age) and "new signs" (comprising a blend of ASL and local sign variations). According to Parks (2014), in this situation (e.g., in Ecuador & Dominican Republic) deaf leaders actively participate in a language purification initiative to reduce ASL influence on their national sign language. This endeavour involves eliminating undesirable ASL signs, reclaiming traditional signs, and creating new signs authentically reflecting their culture.

In Parks' (2014:216) study, a noteworthy finding emerged as some signers conveyed the belief that the choice of sign language is of secondary importance, emphasising instead the act of signing itself. This observation sheds light on the preference of deaf individuals for flexible and barrier-free communication, underscoring a desire to transcend linguistic confines and prioritise effective interaction.

In her concluding remarks, Parks (2014: 217) emphasises the significance of ongoing research to assess the global prevalence of ASL adoption due to its extensive influence across continents. She notes that such investigations can greatly enhance our comprehension of the diverse strategies employed by deaf individuals in shaping their deaf identity and delineating symbolic boundaries, spanning various levels from personal expression to global systems.

6.1.3 Summary and concluding remarks on language ideological studies in Ghana

In the previous section, the review explores language ideology in Ghana, particularly focusing on attitudes towards indigenous languages and English. It highlights the marginalisation of African languages (as well as Ghanaian varieties of English, including Ghanaian English & Ghanaian Pidgin English) due the colonial history and the preference for English driven by socio-economic benefits. Studies

reveal a prevalent negative attitude towards indigenous languages, although local languages are valued especially for informal interactions. In education, English dominates as the language of instruction, marginalising local languages and perpetuating linguistic inequality. The review identified that negative attitudes towards indigenous languages reflect the belief that English proficiency is essential for academic success and social advancement. Positive attitudes toward indigenous languages were primarily associated with cultural identity, values, and fostering a sense of solidarity.

In a later section, the literature review provides insights into the language ideology among deaf signers in Ghana, specifically examining their perceptions and attitudes towards different sign languages. The review underscores the importance of studying sign languages within the Ghanaian context. The findings reveal that deaf AdaSL signers in Ghana view their as " HARD," which they consider a positive and unique aspect of their identity. In contrast, GSL is described as "SOFT" in comparison. AdaSL signers highly value their language, considering it more pleasant and expressive than GSL and Akan, without diminishing the importance of GSL. This urban community tends to shift between signing systems, including adopting a more English-like style, probably driven by the desire for English literacy skills and socioeconomic advancement. Opinions on the status and vocabulary richness of locally evolved sign languages vary, but AdaSL signers in Adamorobe perceive their language as prestigious and on par with foreign languages. However, it is important to note that deaf signers outside of Adamorobe may hold different perspectives on AdaSL and other signing varieties. More importantly these observations highlight the complex and diverse language ideologies among deaf signers in Ghana.

However, language ideology research among signers in Ghana is still limited, reflecting the broader gap in studies on language ideologies of sign languages worldwide (Kusters, 2014a). This scarcity of research on African sign languages further intensifies the knowledge gap. Apart from Kusters' (2014a) work, which focused on the language ideology of AdaSL users, there has been a lack of in-depth studies on the language ideologies of deaf signers in the urban deaf community in Ghana.

6.2 Research Question

In this chapter, I aimed to explore the language ideology of deaf signers in the urban deaf community in Ghana by incorporating language ideological themes from the existing literature. Kusters (2014a:141) proposes three essential themes for studying language ideologies in village sign languages: the perception of the language's structure, function, and status; the relationship between the sign language and the spoken language within the community; and the relationship between the

village sign language and urban or national sign languages. The works of Nyst (2012; 2007) and Kusters (2014a; 2019) provide insights into these themes regarding AdaSL in Ghana. Additionally, Burns et al. (2001:190) offer themes for language ideological studies, including investigating attitudes toward a language or language variety, exploring stereotypes, and examining language usage.

While these themes provided by Kusters (2014a) and Burns et al. (2001) appear similar, Kusters specifically focuses on sign languages used in a small community context. In this study, I attempt to bridge the literature gap by applying these themes to signers in the urban deaf community in Ghana. The research questions guiding this study are as follows:

1. How do signers perceive their language and other signing varieties used in Ghana?
2. What are signers' attitudes toward the use of their language compared to other signing varieties used in Ghana?

Guided by the aforementioned research questions, this chapter employs the following methodology to investigate the language ideologies and the use of GSL within the Ghanaian deaf community.

6.3 Fieldwork and data collection method

The fieldwork and data collection methods employed in this chapter involved a variety of approaches among deaf Ghanaians. A deaf field assistant[110] was trained and worked under my supervision to engage with deaf participants for formal data collection, including interviews and administering questionnaires. The data was primarily gathered in the Greater Accra and Eastern Region of Ghana, which were selected for their convenience, historical significance in deaf education and associations, and their cosmopolitan nature, providing a representative sample of GSL deaf signers.

This chapter encompassed two main studies to explore the language attitudes, perceptions, and experiences of deaf signers in Ghana. Study 1 involved the administration of a questionnaire, while Study 2 consisted of focus group discussions on sign languages in the country. The participants who took part in Study 1 were the same individuals who participated in the study conducted in Chapter 4. The selection of participants for both Study 1 and Study 2 is elaborated upon in the subsequent subsections. These participants represented a diverse range of backgrounds and experiences, contributing to an understanding of the topic at hand.

The fieldwork and data collection methods employed in this chapter proved instrumental in gathering valuable insights. The questionnaire utilized in Study 1

[110] Alexander Okyere

enabled the exploration of language attitudes, perceptions, and usage, while the focus group discussions conducted in Study 2 provided a platform for in-depth conversations on sign languages in Ghana. By engaging a wide range of participants with varying backgrounds and experiences, this research aimed to capture a comprehensive understanding of the language dynamics within the deaf community in Ghana.

In addition to the methods mentioned earlier, I also utilized observation and informal data elicitation, which were presented in the discussions section (section 5) of the chapter. These methods complemented the formal data collection approaches and provided additional insights into the participants' language attitudes and behaviours. In the following subsection, I will outline the specific methods employed to ensure an understanding of the research topic.

6.3.1 Observation and informal elicitation

During the fieldwork conducted for this book, I made several observations and engaged in informal discussions, some of which were also documented on camera. However, I encountered the observer's paradox, wherein participants may modify their behaviour or language use due to the presence of a camera or an observer. To mitigate this effect, I employed the assistance of a deaf field assistant, which helped in reducing the observer's paradox. For instance, one signer refrained from using body-based signing varieties in a formal setting when the camera was recording. However, in informal settings, away from the camera, the signer freely used body-based signing. To gain deeper insights into participants' language ideology and to clarify certain aspects, I conducted unstructured interviews during informal conversations outside the formal camera recordings. In some instances, these informal interviews were also recorded for reference.

One significant outcome of these informal interviews was the discovery of an 'informal variety of GSL' used among deaf signers in the urban deaf community. This finding prompted further exploration of the LOCAL in Chapter 2 of this book and Section 6.4.2.2 (second Focus Group Discussion in Study II) of this chapter, based on the information provided by one participant, J. Amoah.

Overall, my longstanding involvement with the deaf community in Ghana, both formally and informally, and the use of observation and informal elicitation methods have enriched my understanding of the language ideologies and dynamics within the deaf community.

6.3.2 STUDY I: Questionnaire

The questionnaire employed in this study consisted of approximately 50 questions that covered various topics related to language attitude, perception, and use. The

focus was primarily on GSL and its relationship with ASL and Signed English. The questions were grouped into five major following themes,

1. Language background: Participants were asked about their linguistic background and experiences.
2. Thoughts about language contact: Participants were encouraged to share their thoughts on language contact situations they had encountered.
3. Thoughts about language status: The participants' perspectives on the status of their language were explored.
4. Thoughts about language usage: Participants were invited to express their views on the usage of their language in various contexts.
5. Language ideology about gesture: The participants' beliefs and attitudes regarding gesture as a communication mode were examined.

These questions aimed to uncover participants' ideologies related to GSL and the influence of ASL. Detailed of the questionnaire can be found in Appendix F.

A total of 20 participants were involved. The sample was balanced in terms of gender, and there was a fair distribution of age and education among the signers, as presented in Table 43. All participants were competent users of GSL, and 13 also indicated familiarity with ASL. Most participants reported acquiring sign language at an early age in deaf schools, although one participant learned it at home from a deaf parent, and another learned it from friends at the GNAD office and not through formal education.

Table 43: Participants' characteristics

SOCIAL VARIABLES	FREQUENCY	PERCENTAGE
Gender		
Male signers	10	50
Female signers	10	50
TOTAL	**20**	**100**
Age group		
Young	1	5
Younger Adult	12	60
Older Adult	6	30
Senior Adult	1	5
TOTAL	**20**	**100**
Education[111]		

[111] Note that in Ghana there are deaf basic schools all over the country and only one deaf second cycle school (Mampong Senior High/Technical School (SHS) for the Deaf,) in the country. For tertiary education, all the deaf students join mainstream institutions where they are sometimes assisted with sign language interpretations.

No formal education	1	5
Basic Education	8	40
Second Cycle Education	4	20
Tertiary education	7	35
TOTAL	**20**	**100**

The participants were categorized into four age groups: young (15-24), younger adult (25-44), older adult (45-64), and senior adult (above 64). They exhibited a range of education levels, from no formal education to those who attended tertiary education. Their occupations varied based on their education and training, with self-employment being the most common (e.g., wood choppers, cobblers, farmers, traders, caterers, hairdressers). Additionally, three participants were students, two were teachers, and one was a GNAD official. Some participants had also gained international exposure through business trips (e.g., to Togo), Deaf sports events (e.g., in Cote d'Ivoire), conferences (e.g., in the UK, Nigeria, and Cote d'Ivoire), or educational opportunities (e.g., in the United States).

Overall, the questionnaire aimed to capture participants' thoughts on various aspects such as their awareness of sign languages, experiences with language contact, perceptions of language status, sociocultural views on sign languages and deafness, and language usage patterns. To accommodate the diverse literacy levels of the participants, some of whom were educated while others were not, a deaf assistant provided support in filling out the questionnaire. Participants who were able to read had the option to read the questions themselves, but the questions were also signed by the assistant. Participants replied in sign language, and the assistant wrote down the responses. This entire process was also recorded on camera, allowing cross-checking between the written responses and the participants' communication in sign language.

6.3.3 STUDY II: Focus group discussions (1st & 2nd)

Two separate focus group discussions were conducted with distinct groups of participants. The selection of participants for the first focus group discussions was based on their availability and the diversity of ideas they exhibited in their responses to the language awareness section of the questionnaire. Table 44 provides an overview of the participants' characteristics in the first focus group discussions. The focus group discussions were facilitated by my deaf research assistant, who followed a predetermined set of topics related to sign language ideology.

Table 44:Participants' characteristics under 1st focus group discussions.

SOCIAL VARIABLES	FREQUENCY	PERCENTAGE
Gender		

Male signers	3	50
Female signers	3	50
TOTAL	**6**	**100**
Age group		
Young	1	17
Younger Adult	2	33
Older Adult	3	50
TOTAL	6	**100**
Education		
Basic Education	3	50
Second Cycle Education	2	33
Tertiary education	1	17
TOTAL	6	**100**

A second focus group discussion involved a different set of participants, prompted by the objective of gathering information on LOCAL signs. The main focus of this discussion revolved around the existence of LOCAL and its associated language ideologies. In this case, I took on the role of chairing the discussion, as the concept of LOCAL was relatively new to me then. Although I found the notion intriguing and valuable, I struggled to clearly articulate what aspects I was interested in exploring to my research assistant.

The second focus group discussion comprised five more mature participants: three older adults and two senior adults. Among them, three individuals (two males and one female) resided in Akuapem Mampong, a town in the Eastern Region of Ghana. In contrast, the other two deaf participants (male and female) hailed from a small town called Apirede[112]. These participants were selected based on their status as role models in education and within the deaf community. Additionally, their backgrounds indicated significant formal and informal educational interactions with uneducated deaf individuals in the country. Thus, it was believed that their perspectives would provide insights into the existence of LOCAL in Ghana and the language ideologies associated with it.

Before the focus group discussions took place, participants were unaware of the specific topic of discussion. This approach aimed to foster a spontaneous conversation, mirroring how interactions typically occur within the deaf community. Members would gather at a designated deaf hub and engage in conversations naturally.

In summary, two separate focus group discussions were conducted during the data collection process. The participants for each focus group discussion were selected based on different criteria and objectives. Overall, the insights and perspectives gained from these methods serve as crucial groundwork for the

[112] Sometimes spelt Apiredi.

subsequent section, presenting the findings and results obtained from the data collected during the fieldwork and discussions.

6.4 Results

6.4.1 STUDY I: Result from the questionnaire

The questionnaire administered in this study generated a wealth of diverse perspectives. The participants' viewpoints, captured through their responses, provide perspectives into various aspects of sign language use. The findings are presented across four key topics: language background, perception of language contact, perception of ASL and GSL in Ghana, and thoughts about language usage. By examining the questionnaire responses within these four topics, this study aims to unravel the intricate web of language attitudes, perceptions, and experiences among deaf signers in Ghana. The subsequent sections will present the detailed findings, providing an understanding of the participants' viewpoints on these crucial aspects of sign language use in Ghana.

Language background

In the section on language background, participants were asked three main questions that provided insights into their awareness of linguistic diversity, cultural perspectives, and personal experiences related to sign languages and ideology. These questions covered the number of sign languages worldwide, sign languages used in Ghana, and individual sign language preferences.

Out of the 20 participants, 17 (85%) reported using GSL, while 3 (15%) mentioned using ASL. Among the 17 participants who stated they use GSL, 4 (24%) identified as bilinguals, using ASL, International Sign, or a locally evolved sign language referred to as GESTURE (Note: GESTURE is capitalized to differentiate it from the term "gesture" used by linguists and the hearing community).

Participants also exhibited varying levels of language awareness. For example, 3 (15%) believed that the world revolves around two or three sign languages: ASL, GSL, and GESTURE. Signers' perceptions influenced their attitudes towards sign language and their interactions with it. Additionally, participants expressed diverse views on the sign languages existing in Ghana. The majority (55%) believed there is more than one sign language in Ghana, suggesting the presence of two or three sign languages, including ASL, GSL, ENGLISH (SL), and GESTURE. On the contrary, the minority (40%) held the belief that only one sign language is used in Ghana. They referred to it as either GSL or ENGLISH. However, one participant noted the complexity of the situation regarding sign languages in Ghana and expressed uncertainty about the exact number of sign languages used in the country.

Interestingly, participants used different terminologies to refer to ASL, such as "AMERICA," "WHITE," "FOREIGN," or simply finger spelling A-S-L (see Figure 146). Similarly, GSL was referred to using terms like "GHANA," (see Figure 147) with or without "SL" (GHANA SL) and fingerspelling G-S-L. The study also explored participants' signs for ENGLISH (SL) and GESTURE, depicted in Figure 148 and Figure 149, respectively. In this Chapter section 6.5.1, a detailed discussion is provided on the various terminologies used by signers to refer to the different signing varieties present in Ghana.

A: AMERICA B: WHITE C: FOREIGN

Figure 146: Various form/signs to refer to ASL

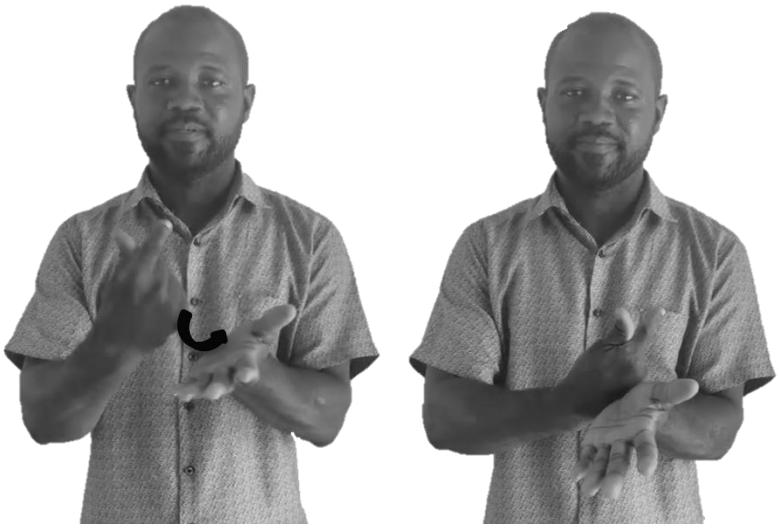
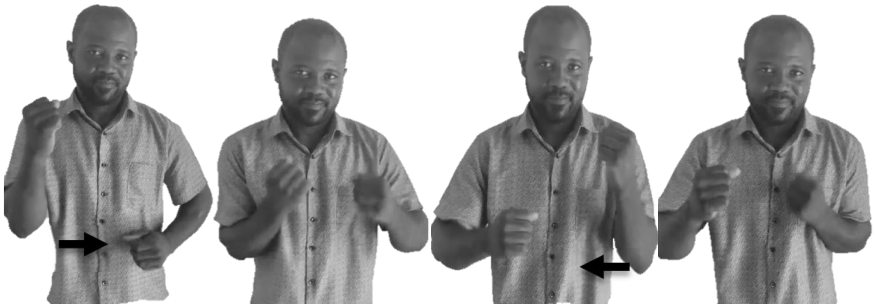


Figure 147: GHANA

Figure 148: ENGLISH



Initial movement Final movement

Figure 149: GESTURE

Perception on language contact

In this section of the questionnaire (Question 4-10), participants were asked a series of seven questions that focused on language use, media engagement, linguistic resources, communication preferences, and cultural identity within the context of sign languages. The purpose of these questions was to gain insights into the dynamics of language choices, cultural interactions, and ideological perspectives within the deaf community.

Among the findings, it was observed that the majority of participants (80%) perceived it as important for deaf individuals to continuously learn new signs from foreigners, particularly from deaf white people. This shared ideology seemed to be

rooted in the belief that sign language is primarily for deaf individuals, while spoken language is for their hearing counterparts. This viewpoint was echoed by a participant with tertiary education, who expressed this sentiment as a general suggestion and viewpoint (in comment 1).

1) I SUGGEST THAT WE SHOULD USE SIGN IN ANY LANGUAGE. GSL OR ASL WHEN WE MEET PERSON, NOT ENGLISH, BUT WHEN WRITE, USE ENGLISH, NOT SIGN
'I suggest we use any sign from any sign language, either ASL or GSL. We should also not use Signed English when signing but only when writing'

The participants' understanding of sign language being primarily for deaf individuals did not necessarily imply a desire to become bilingual or multilingual. Instead, it seemed to be more focused on linguistic borrowing. Only two participants disagreed with the idea of learning new signs from foreigners, particularly from WHITE individuals. Two other participants did not provide any comment on the subject matter.

In general, the majority of participants (16 out of 20) expressed a strong sense of pride in using their sign language (GSL) in public places. However, four participants indicated that they occasionally felt less proud of their minority language. Interestingly, most of these participants were females with a tertiary education.

In addition to their perception and language awareness, not all participants had exposure to international language contact with deaf signers through electronic media. Eight participants (40%) reported that they do not use social media to engage with deaf Americans or foreigners. This group included both uneducated[113] individuals and tertiary students. The presence of tertiary students in this category suggests that one's level of education does not necessarily correlate with engaging in international language contact through electronic media.

Perception of ASL and GSL in Ghana

In this section, the questionnaire included two categories of questions: language status (questions 11-21) and sociocultural views (questions 22-46). The language status questions aimed to explore beliefs and perceptions regarding sign languages, including comparisons between GSL and ASL, language authenticity and development, language prestige and social respect, as well as the linguistic complexity and expressiveness of sign languages. On the other hand, the sociocultural view questions delved into various perspectives related to deafness,

[113] Their socio-economic background (2 cobblers & 1 woodchopper) was observed to be a factor hindering them from accessing devices for social media contact.

sign language education, language choice, and educational practices within the deaf community. These perspectives encompassed beliefs about language preservation, cultural authenticity, societal norms, identity, access to education, and the influence of cultural and linguistic ideologies on the experiences of deaf individuals in Ghana.

Generally, the participants had the impression that knowledge of ASL offers numerous socio-economic benefits. For instance, 16 out of 20 participants believed that deaf Ghanaians who know ASL are always successful in life. However, when asked whether it is important for Deaf Ghanaians to use ASL among themselves in daily interactions, only 11 participants (55%) agreed. The remaining participants either disagreed (20%) or did not provide a comment (25%).

Nevertheless, when participants were questioned about the motivational factors that encourage deaf Ghanaians to learn ASL, all of them (100%) described ASL as a superstratum or superstrate language that could provide socio-economic benefits to its users and fill the lexical gap in GSL. Some participants described ASL as "SOFT" as a reason for learning it, while others provided strong emotional comments. Below, I present some of their statements (examples 2-5) along with my interpretations when necessary.

2) WHY LIKE LEARN ASL? BECAUSE ASL SOFT AND SLOW. ASL SEE WISH LIKE.
   'Why would one like to learn ASL? It's because ASL is soft and slow. The signs are so appealing to the eye that you just want to learn them'
3) LEARN NOT CHEAT COMMUNICATION, NOT STUPID. MUST KNOW DIFFERENT SIGN LANGUAGE TO KNOW THEIR WAYS.
   'The Deaf must not communicate with lowly (less prestigious) signs, we need to learn ASL'.
4) WHITE TEACHES HOW SIGN WAY BECOME BRIGHT.
   'White foreigners can teach us a standard sign language that can make us successful'.
5) YES, WANT TO LEARN ALL SIGN SO WHEN TRAVEL TO TOGO KNOW HOW TO COMMUNICATE.

In this section, a series of questions were designed to gather insights on various aspects related to GSL and ASL. These included exploring language prestige, societal attitudes towards GSL and ASL, language discrimination, and the impact of language choice on perceptions of education and intelligence within the deaf community.

In question 16, it was found that eleven participants expressed the view that the use of GSL does not generate the same level of respect as using ASL, which may be seen as a symbol of education. However, despite this observation, signers still hold a certain level of respect for GSL. For example, in question 18, participants were asked about their perception of the authenticity and legitimacy of GSL as the

primary sign language used by deaf people in Ghana. A significant majority of the participants (16 out of 20) considered GSL to be their native language.

Question 41 of the survey revealed that approximately 6 respondents (30%) expressed reservations about the suitability of GSL for university education, primarily citing its limited vocabulary as a concern. Among those who shared this perception (45% of the general comments section), there was a consensus on the importance of sign language education and development. Specifically, they advocated for addressing lexical gaps in GSL and incorporating elements from other sign languages such as ASL, fingerspelling, and Signed English. Here are a few representative comments (examples 6-10) from the general comments section:

6) I THINK GHANA MUST DEVELOP SL, MUST LEARN FROM ASL, AND HELP IMPROVE
   'I believe that for GSL to develop, we must learn some new signs from ASL'
7) SL MUST IMPROVE; GSL AND ASL MIX
   'For GSL to improve, it must adopt loan signs from ASL'
8) HELP TEACH SIGN LANGUAGE ALPHABET. SO NOT WRITE. MAKE COMMUNICATION EASY.
   'Fingerspelling must be taught so that there would be no need to write on paper for communication'.
9) NEED LEARN DICTIONARY WAY, NEED LEARN, IMPROVE.
   'The Deaf must educate themselves with more vocabulary from sign language dictionaries'
10) DEAF STUDENTS MUST LEARN SL; SOME SIGNS NOT PERFECT, MUST ALL PERFECT
   'Some students use unstandardised signs (variety of LOCAL), they must all learn the formal/standardise signs (i.e., ENGLISH OR BROKEN)'.

The majority of participants (14 out of 20) expressed support for using Signed English in educational settings. However, it is important to note that signers may have different perceptions of Signed English. Some may view it as a distinct language, while others may associate it with ASL or GSL. Consequently, not all participants equally supported its use for daily interaction among Deaf individuals outside of the classroom.

A minority group of participants (6 out of 20) believed that using Signed English for everyday communication was a good idea. This group considered GSL to have lexical gaps and believed that incorporating foreign elements would contribute to the development of the language and its users. On the other hand, the majority (11 out of 20) disagreed with the idea of using Signed English for everyday communication. They expressed that it could be boring and lead to delayed communication or circumlocution (i.e., BORING), making it difficult to understand.

Overall, these findings reflect the diverse perspectives and attitudes within the Deaf community in Ghana regarding the use of GSL, ASL and signed English in different contexts.

Thoughts about the domain of language usage

The language usage section of the questionnaire aimed to explore the specific contexts or domains where GSL and ASL were predominantly used within the Deaf community. This investigation covered various settings including homes, schools, workplaces, Deaf churches, television programs, ceremonies, GNAD meetings, conferences, and daily interactions in outdoor environments. The results revealed a notable pattern, although the search for distinct domains of usage between ASL and GSL did not yield conclusive findings.

The lack of success in identifying specific domains of usage can be attributed to the participants' varying understanding of ASL, GSL, and other sign language varieties used in Ghana. The questionnaire's classification of sign languages may have introduced unfamiliar or misunderstood terms for the participants, leading to biased responses. For instance, participants who considered GSL to be the same as ASL might have been misled by a question asking about contexts where GSL is used independently from ASL.

One participant provided an interesting perspective in the general comments section, suggesting that GSL incorporates ASL and locally evolved signs. She stated, " IN MY VIEW, I SEE GSL NOT SAME, SO MUST HOME GESTURE INVOLVED IN THE SIGN" This participant's view highlights variations and the integration of LOCAL signs (GESTURE) into the language.

Despite the challenges in classification, the following summary was derived from the responses. The largest group of participants (40%) indicated that ASL is rarely used at home, at friends' houses, and when interpretation is provided. In the workplace, ASL usage was reported as infrequent by 50% of participants. However, most stated that ASL is often used during church services, television programs, sports events, and outdoor interactions. In educational settings, opinions were divided, with one group stating that ASL is not used in Deaf schools and another group reporting its frequent usage. Most participants considered ASL sometimes used during general ceremonies, GNAD gatherings, and conferences.

In contrast, most participants indicated that GSL is often used in almost every context. However, there was a division within the majority regarding sign language interpretation. Some participants believed that sign language interpreters do not use GSL, while others stated that interpreters often use it. Most rated GSL as frequently used during church services (60%) and sports events (50%). Approximately 45% of participants noted its frequent usage during GNAD meetings,

conferences, television programs, outdoor activities, and at home. Additionally, 40% of participants in the majority reported that GSL is often used in their schools and homes, while a majority (40%) stated that it is sometimes used in the workplace.

6.4.2 STUDY II: Result from focus group discussions

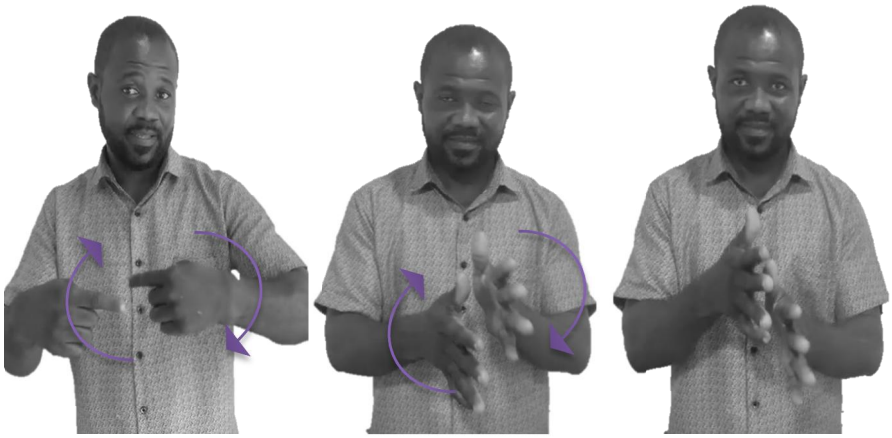
In this section, I will present the results obtained from the two focus group discussions conducted, focusing on the specific questions that were discussed during these sessions. The findings from the first focus group discussions will be presented in subsection 4.2.1, while the results from the second focus group discussions will be outlined in subsection 4.2.2.

1st Focus Group Discussion

Language usage

During the focus group discussions, participants refrained from explicitly mentioning the specific names of sign languages and instead preferred to refer to their language as SIGN or DEAF SIGN. This preference was observed across the participants, indicating a shared understanding and identification with the language as a means of communication for the Deaf community. When participants were asked about what language they refer to by articulating SIGN or DEAF SIGN, one participant stood out in his response. A deaf man (D8a) in his 50s with a second cycle education, described it as a language primarily relying on hand movements. His comment received support from others, further emphasizing the pride they felt perceiving it as their own language as deaf individuals. They suggested that SIGN or DEAF SIGN is for deaf individual and no need to differentiate between different sign languages used by deaf people actively.

However, within the discussion context, participants later acknowledged the existence of different sign languages used in Ghana. They made a distinction between "GESTURE" and "SIGN" (see Figure 150). This recognition suggests that while they may not proactively distinguish between sign languages used by deaf individuals in general, they were aware of the presence of distinct signing varieties within their local context.



A B

Figure 150: SIGN

Based on my fieldwork observations and the examples shared by participants, it became evident that they distinguished between two forms of signing: the LOCAL also referred to as GESTURE, and the ENGLISH also referred to as SIGN. GESTURE was associated with locally evolved signing practices, while SIGN was perceived as a foreign sign language (i.e., GSL/ASL). Participants attributed the usage of GESTURE to uneducated deaf individuals, whereas the SIGN was associated with educated deaf individuals. This distinction in language usage reflected a societal perception of different prestige levels attached to each form.

One participant (D8a) explicitly highlighted that GESTURE comprised locally evolved signs, whereas SIGN was seen as an imported sign language. Another participant, D1a, emphasised that he became familiar with GESTURE during his childhood through domestic activities, indicating a strong domestic association with this form of signing.

Interestingly, when participants were asked if they used GESTURE, they unanimously articulated with a resounding NO. This attitude towards GESTURE reflected a perceived low prestige among signers, leading to a reluctance to be associated with it. Participants provided examples, such as signs for MOTHER, FATHER, and WATER, to demonstrate the phonological differences between GESTURE and SIGN (see Figure 151 for an illustration). In terms of syntax, participants explained that GESTURE involved more indexing in space or visually indicating the referent in the environment. This indexing method was believed by them to enhance transparency and reduce ambiguity in meaning.

A: MOTHER (GESTURE)

B: MOTHER (SIGN-1/-2) [GSL App]

Figure 151: Distinction between GESTURE (LOCAL) and SIGN (ENGLISH)

The discussions further revealed that participants had varying levels of familiarity and competence in SIGN. One participant (D6a), mentioned that her primary language was GSL with some ASL lexicon mixed in. She reported that her interactions with other deaf individuals predominantly occurred in GSL and ASL. However, if her interlocutor did not understand her, she would occasionally code-switch to GESTURE for better comprehension.

In sum, the result of this subsection shed light on the distinction between GESTURE and SIGN, highlighting the participants' societal attitudes, cultural associations, and language competencies.

Everyday interaction

11) EVERYWHERE I USE ASL, ALWAYS ASL. BUT HEARING AND ILLITERATE, I MIX ASL WITH LOCAL. BUT MOSTLY, USE ASL.
‘I use ASL everywhere I go. I only use a mixture of ASL and locally evolved sign language when I meet hearing signers or uneducated deaf signers. But generally, I use ASL.’

During the discussions on everyday interactions, one participant (D8a) expressed a general observation that educated deaf individuals typically preferred to use ASL rather than the LOCAL (see Figure 152) or BROKEN (see Figure 153). However, participants mentioned that when it came to identifying local things, such as food, they might resort to using LOCAL if a specific sign did not exist in ASL.

It was highlighted that the default language used by participants in their daily interactions was the GSL/ASL. However, if they encountered an uneducated interlocutor, they would code-switch to what they referred to as the LOCAL or BROKEN signing system. The use of these terms indicated a distinction in signing style based on the literacy level of the person with whom they were communicating.

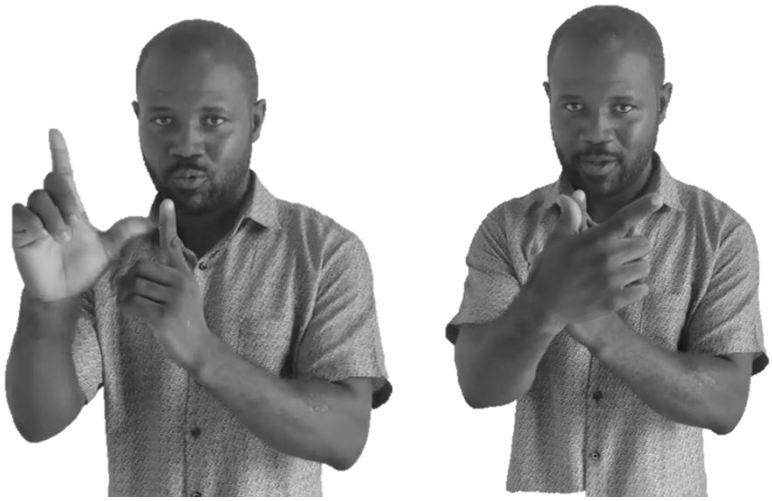


Figure 152: LOCAL

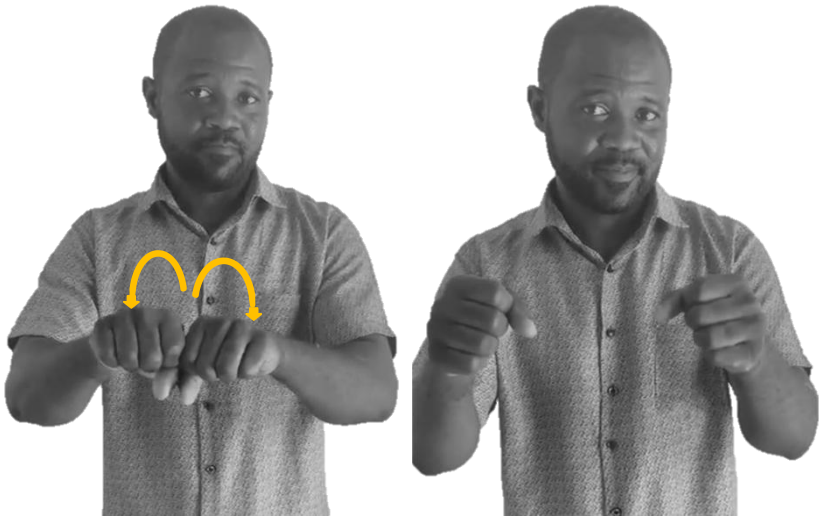


Figure 153: BROKEN

In an informal discussion, I asked one participant (D8a) why he does not use the LOCAL considering his rich knowledge of the variant. His response led to the following comment (12) below,

12) MANY PEOPLE LIKE ENGLISH, THAT WHY USE IT. IF YOU MET COMMUNICATE LOCAL, CAN USE, WELL COMMUNICATE WITH YOU. I RESPECT LOCAL SL
'Majority of deaf members like ENGLISH (Signed English), that is why I also use it. But if you approach me with communication in LOCAL, I can as well communicate with you. I respect the LOCAL too'

According to signer D8a, LOCAL which involves indexing the referent and searching for them nearby, can be time-consuming. He finds it very inappropriate to do that in a conversation and degrade such a practice. Shows the negative attitude towards the local language and his preference for ENGLISH.

Participants also introduced the term " BROKEN " to describe a signing style that falls somewhere between SIGN and GESTURE. Through further investigation, it became evident that BROKEN represents a mixture of ENGLISH and LOCAL.[114] Participants explained that BROKEN (SL) is sometimes used to facilitate communication in social settings involving deaf individuals with varying educational backgrounds. For example, participant D3a, an older adult with a first cycle of education, mentioned that family members often find it more convenient to use GESTURE.

One common understanding among the participants was that code-switching from GESTURE (LOCAL) to SIGN (ENGLISH) is influenced by the interlocutors' background and their proficiency in SIGN (ENGLISH). Participant D5a, an older adult with secondary education, expressed this view (e.g., 13), stating that;

13) WHEN SIGN SPONTANEOUS, SIGN LANGUAGE WAY. IF KNOW PERSON ILLITERATE, USE BROKEN. CAN SWITCH.
'By default, the deaf use their natural sign language (GSL), however if the interlocutor has no formal education, pidgin sign language is used. Codeswitching is commonly practiced'

It is worth noting that the participants frequently used the terms SPONTANEOUS (see Figure 154) or DEAF(– POSS) (see Figure 155) to refer to any of the signing systems, including GSL or ASL, excluding Signed English. In other words, participant D5a's statement implied that the deaf community does not typically default to using Signed English in their interactions.

[114] Note that this kind of mixture is not only related to lexeme, but the entire grammar as understood by signers.

Figure 154: SPONTANEOUS

Figure 155: DEAF (– POSS)
[This signing variety is denoted with a possessive marker in parentheses (– POSS) due to its optional use with the sign DEAF. Signers may refer to this signing variant as either DEAF or DEAF– POSS. Including the possessive marker highlights that this signing variant is distinctively associated with the deaf community, symbolising the "deaf way" or a sense of belonging among deaf individuals (i.e., “deaf belong”)]

When comparing their sign language communication between deaf and hearing interlocutors, participants noted that a combination of SIGN and GESTURE could be used when conversing with Deaf individuals. However, hearing interlocutors would solely rely on SIGN, albeit with less rapid hand movements. Participants, such as D6a (a young female with tertiary education) and D3a (an older

male with a first cycle of education), highlighted that interactions with hearing interlocutors were not as "SPONTANEOUS" as those with deaf signers. This suggests they might employ their version of Signed English in such situations. Participants also emphasised that they would not stereotype individuals who use SIGN or GESTURE since effective communication in Ghana often requires familiarity with both varieties.

Nevertheless, GESTURE was associated with low prestige and evoked negative attitudes and resentment among the participants. For instance, when asked if she used GESTURE, participant D6a expressed displeasure with the following comment (e.g., 14):

14) HOW COME I DEAF WOULD GESTURE
‘Why would someone with my reputation, use the LOCAL.

This sentiment conveyed her offense at the notion of using or being associated with GESTURE as an educated Deaf person. However, participants acknowledged that GESTURE might be known by all members of the deaf community, and they stated that they could code-switch between ENGLISH and GESTURE when necessary.

When asked about settings where GESTURE might be provoked, participants unanimously agreed that trade negotiations at the market were common situations. They shared examples of GESTURE signs used in market transactions, causing laughter among the group. For instance, when representing the cost of an item or numerical values, they mentioned that it often involved mouthing and unconventional phonological locations such as using toes (see Figure 156 below).

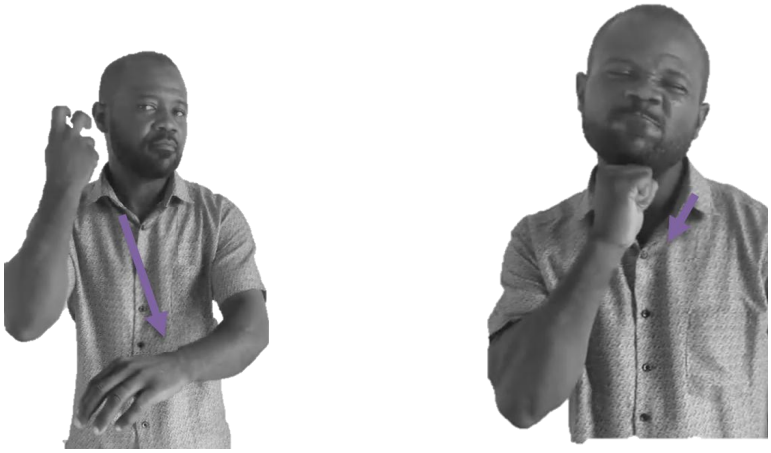
Figure 156: Using the toes for numerical values in GESTURE

GSL vs ASL

Most participants (67%) agreed that GSL and ASL are different languages. However, there was a minority group that did not affirm this distinction, and among them was signer D3a (a male, older adult with a first cycle of education). D3a made a comment (15) to highlight the historical connection between GSL and ASL, suggesting that there have been some diachronic changes over time.

15) IN PAST, GSL ASL SAME; AS-TIME-WENT-ON, NOW DIFFERENT. AS-TIME-WENT-ON, CHANGED
‘Historically, GSL was known as ASL. Over time, the two languages are now distinct due to changes’

When asked to provide an example of these changes, D3a could not easily recall one, but he expressed the difference between the two languages through another comment by stating that ASL SOFT, GSL HARD ‘ASL is “soft” and GSL is “hard”’. D3a's response generated laughter among the participants, although the exact reason for their amusement was unclear. However, I believe their laughter was not solely due to the description of ASL being "soft" and GSL being "hard," but rather because D3a could not recall an example and provided an intriguing response. This incident caught my attention as a researcher, and I later discuss it (in Subsection 6.5.1.16). In Figure 157 and Figure 158 below, I provide visual representations of the signs used by the signers to convey the concepts of "HARD" and "SOFT."



A: HARD – 1 B: HARD – 2

Figure 157: HARD

Figure 158: SOFT

After numerous examples highlighting the differences between GSL and ASL, even those who initially disagreed eventually came to an agreement and provided additional examples of variant signs (such as BYE, IF, HAVE) that exist in both languages. Some participants also shared syntactic examples to demonstrate the distinctions between the two languages. One notable example was the expression "you are a talkative," which showed how it could be conveyed in both GSL and ASL. In GSL, this information is expressed using a simple sign, while a sequence of signs is made in ASL. They considered it a good example of the difference between GSL and ASL. The signers who initially claimed that both languages were different acknowledged the historical connection and some lexical similarities between GSL and ASL, as expressed in example (16) below.

16) DIFFERENT LANGUAGES. BOTH SAME. SOMETIMES DIFFERENT, 30% DIFFERENT
‘GSL and ASL are different languages. They could sometimes be considered as the same language. The difference between them could be 30%’

Their response to the question of whether ASL was better than GSL also evoked an emotional reaction. With the exception of one participant, all of them swiftly and passionately responded with a resounding "NO". This response highlighted their solidarity with their own language and a sense of distinction between GSL and ASL. Several positive remarks about GSL in comparison to ASL were shared. For example, GHANA PROUD ‘I am proud of GSL’; GHANA BETTER ‘GSL is better’; GHANA HARD ‘GSL is hard’.

Notably, Signer D3a, who initially did not support the notion that GSL was better than ASL, later came to accept this viewpoint after hearing the arguments

made by other participants. In fact, he (D3) concluded with a patriotic statement in support of GSL, as illustrated in example (17) below.

17) DEAF AND GHANAIAN, MY SIGN LANGUAGE BETTER THAN ASL
'I am a deaf Ghanaian; my sign language is better than ASL'

Initially, D3 expressed his belief that ASL has a rich vocabulary, a claim that was also supported by other deaf members. However, they emphasized that richness in vocabulary alone does not make ASL a better language than GSL. It was in this context that a female participant asserted that GSL is better and described it as " HARD." She further explained that GSL effectively meets the environmental needs of deaf people in Ghana, including expressing various Ghanaian foods.

During a heated discussion, participants also acknowledged the prevailing attitude in Ghana that looks down upon the use of GSL in education. This attitude often influences individuals to learn ASL to pursue higher education. However, they argued that such reasoning inadequately justifies labelling GSL as inferior. Since sign languages are considered essential for deaf individuals, all participants stressed the importance of interpreters and deaf people learning any sign language they encounter. They explained that within the deaf community, this approach fosters positive interactions on both local and international levels. Their perspective highlights their interest in learning ASL and recognises the educational benefits of such endeavours. Consequently, signers hold ASL in high regard, but they maintain that this prestige given to ASL should not be used to compare it as superior to GSL. By consciously making this comparison, they are ready to refute any claims of inferiority regarding their own language. Some of the comments made by participants to support this viewpoint are presented in example (18) below. It is evident that signers demonstrate solidarity for GSL while acknowledging the prestige associated with ASL, revealing their explicit and implicit ideology.

18)

a. CAN'T SAY AMERICA BETTER THAN GHANA. EVERYBODY; EVERY COUNTRY HAVE SIGN LANGUAGE, ALL IMPORTANT
'I can't say ASL is better than GSL. Every individual or nation have their sign language which is equally important to the language users'

b. BORN IN GHANA, GHANA SIGN USED GROWING-UP
'I was born in Ghana, and GSL is the language I used from birth'

ENGLISH (i.e., GHANA/GSL) vs LOCAL (i.e., GESTURE)

On participants' perception of GHANA/ GSL vis-a-vis GESTURE, there was a general consensus among the signers that they are distinct. Signers associate GESTURE with uneducated signers, while GHANA/ GSL is linked to educated signers. A signer

provided a comment (see e.g., 19) to clarify the differentiation between GHANA/GSL and GESTURE:

19) EDUCATED HAVE SAME SIGN, ILLITERATE SIGN DIFFERENT. USE GESTURE.
'The educated Deaf members have a shared sign language (ENGLISH), which is different from what is used by uneducated Deaf members. The uneducated members use LOCAL'.

According to our participant (D8a), GESTURE exhibits diversity. With examples, he further explained that the lexemes and syntax used by uneducated signers differ and involve more indexing.

Signers generally observed that GESTURE can be iconic in form, but there are variations, and some signs are also arbitrary. When expressing aspects of their language ideology regarding GESTURE, they mentioned that some signs can be humorous, provoking laughter among educated members of the deaf community. They also noted that GESTURE exhibits regional and religious influences. For instance, participants mentioned that signers from the northern part of Ghana use signs different from those used in the south. Additionally, Deaf Muslims have their own unique signs that they use among themselves. Signer D8a described the variant used by Muslims as "HARD," "DIFFERENT," and "FAR," indicating that understanding these signs can be challenging for non-Muslims. The participants provided examples of the GESTURE used by Muslims. Participants explained that deaf individuals are exposed to these variations in school, mainly during their secondary education (SHS), and sometimes the signs are standardized. Signer D3a expressed support for the use of GESTURE in deaf schools with the following comment (e.g., 20):

20) SCHOOL, WE LEARN GESTURE, UNDERSTAND FAST
'In school, we learn the LOCAL, and it helps with transparent communication'.

Signers also noted that GESTURE follows the syntax of the Akan language and is often supported by voicing or imitating the mouthing of Akan pronunciation. Note that this is not a general statement of GESTURE but reflects the perspective of certain participants within an Akan community. In light of the above contact-induced features, Table 45 below summarises notable features identified by participants to differentiate between (formal) GSL and GESTURE (LOCAL). By examining 12 features, including Domain of usage, Sentence length, Phonological LOC, Handshape, Mouthing, Word order, Modal verbs, Initialisation, Fingerspelling, Vocabulary, Variation, and Indexing, the table illustrates the distinctions between the two varieties.

Table 45: Notable Features Distinguishing LOCAL from ENGLISH.

	ENGLISH	**LOCAL**
Domain of usage	More formal setting	Casual, everyday interaction (Informal setting)
Sentence complexity	Complex sentences	Simple sentences
Phonological LOC.	Use of conventional LOC. (More precise & consistent)	Use of unconventional LOC. (Less consistent or varied)
Handshape	Stern and fix (Standardized & conventional)	Lax and unfix. (More spontaneous or varied)
Mouthing	English mouthing (Minimal or absent)	Vernacular mouthing (Frequent use)
Contact English (e.g., word order)	More structured and rigid	Less strict or flexible
Modal verbs	Frequent use of modal verbs	Limited use or omission
Initialisation	More frequent	Limited use or omission
Fingerspelling	More common or frequent	Limited use or omission
Vocabulary	More vocabulary (Formal registers and technical terms)	More vocabulary (Informal, colloquial vocabulary)
Variation	Less variation within signs	Greater variation within signs
Indexing	Less indexing and specific	More indexing and context-dependent

Deaf GESTURE vs hearing gesture

To explore the distinction between deaf GESTURE and hearing gesture, the signers were asked if the GESTURE used by deaf individuals were the same as those used by their hearing counterparts within the same society. While the term " GESTURE " was not clearly defined by the signers and could potentially lead to confusion, their responses shed light on the topic. Except for one participant (D3a Male; older adult with 1st cycle Edu.), all other participants quickly acknowledged that deaf GESTURE and hearing gestures differed.

Initially, signer D3a believed that they were the same, providing examples of gestures that are commonly used in interactions between deaf and hearing individuals. He mentioned examples such as "FATHER," "MOTHER," and "PLAY-FOOTBALL." However, other participants who argued that they were different presented counterexamples that were not found to be used by the hearing community. One compelling point that convinced signer D3a that deaf GESTURE was distinct from hearing gesture was the realization that the hearing community could not understand several lexical signs used in GESTURE. This observation highlighted

the linguistic complexity and uniqueness of deaf GESTURE, which differed from the gestures employed by hearing individuals. The participants recognized that deaf GESTURE encompassed a broader range of signs and had its own specific lexicon that was not readily understood by those outside the deaf community. This distinction between deaf GESTURE and hearing gesture emphasized the richness and depth of the sign language system, reinforcing the notion that it was a distinct and independent language even though they could share some history or similarity.

2nd Focus Group Discussion

The existence of a locally evolved GSL (i.e., LOCAL)

During the discussion, significant communication among participants was conducted using LOCAL. It seemed as though they understood that the purpose of the meeting was to use LOCAL exclusively. This misunderstanding, however, was fortunate as it provided an opportunity to observe the members' familiarity with LOCAL. At times, I found myself lost due to my unfamiliarity with the LOCAL signs and had to ask for clarification on certain signs. Another important observation was that within the group, the term " LOCAL " or " GESTURE " was used to refer to a variant of GSL. In contrast, ENGLISH was simply referred to as sign language or GSL/GHANA.

I was unsuccessful when I attempted to elicit their explicit language ideology regarding LOCAL. Instead of providing direct responses, they shared numerous stories and engaged in role-plays using various LOCAL signs when questioned. For example, when I asked whether two deaf couples would prefer to use LOCAL or ENGLISH at home, this prompted them to act out scenarios or give examples of the interactions they might have with each other at home. In a direct response to the question, one participant (Signer 2: female; food vendor @ deaf School) mentioned using ENGLISH with her deaf husband at home (see Figure 159). Generally, they all agreed that they would primarily use ENGLISH, with NATURAL (LOCAL) signs incorporated, depending on the education level of their interlocutor.

GESTURE NO GHANA SIGN ENGLISH

'I don't use GESTURE: I use Ghanaian Sign Language; thus, Signed English'.

Figure 159: Expressing inclination/habit for ENGLISH.

Most of the role-plays and examples focused on domestic settings or interpersonal communication between two deaf individuals. They highlighted that in romantic or sexual relationships, deaf individuals might initially communicate using GESTURE (LOCAL) but eventually switch to GHANA (ENGLISH). This suggests that LOCAL can serve as a means of solidarity among deaf members. They also provided numerous role-plays where deaf individuals engaging in intimate relationships would use GESTURE (LOCAL). In other words, LOCAL can be used for secrecy. One participant (Signer 1: male; sign language tutor; teacher; linguist) further noted that in-group association could lead to the development of signs for concealing information. The discussions and examples provided insight into LOCAL within the GSL landscape and the domains where LOCAL are predominantly employed.

On the issue of GESTURE (i.e., LOCAL) acquisition and nature

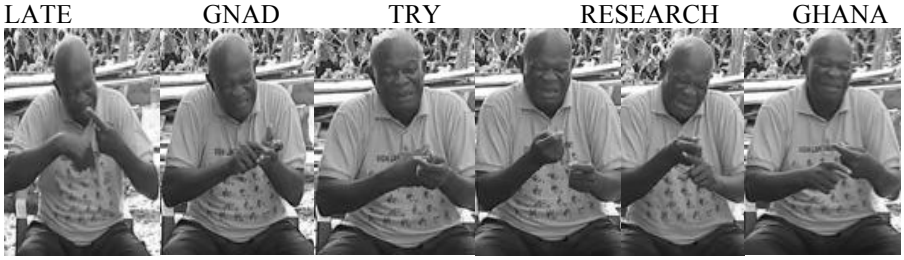
I asked the participants whether deaf individuals learn GESTURE (i.e., LOCAL) from hearing people. One participant (Signer 3: male; retired teacher; church leader) responded with a YES, but not everyone agreed. Another participant (Signer 2) mentioned that GESTURE is sometimes learned in school. She also explained that ENGLISH can be used at home for similar purposes as GESTURE. This ideology suggests that GESTURE is a fully developed natural language and not just a rudimentary form of signing used primarily by those with no formal education. However, not everyone agreed with her perspective. Signer 3 expressed that GESTURE is initially accepted in deaf schools (SHS), but as users become educated, they are encouraged to sign using GHANA (ENGLISH). He believes that individuals with no formal education use GESTURE, but if they become aware of GHANA, they abandon GESTURE and choose not to use it anymore. Nevertheless, Signer 2 emphasised that the use of GESTURE by deaf individuals does not imply that they lack intelligence.

Regarding the nature of LOCAL, Signer 2 explained that it incorporates pointing signs (indexing) during conversations. She further elaborated that indexing was also used to teach LOCAL signs within a domestic setting. Her explanations suggest that many local signs for food items are created within domestic environments and shared among deaf individuals.

Signer 1 stated that there is no pure GESTURE used by uneducated deaf individuals. He believes that GESTURE is mixed with ENGLISH. To him, sign language is the default language used by educated deaf individuals. Signer 3 explained that this situation arose because, after the introduction of ASL in Ghana, deaf people did not prioritise the development of their sign language specifically for Deaf education. Instead, they preferred to use ASL. Figure 160 illustrates how Signer 3 expressed his views.

AMERICA HABIT SIGN HABIT GHANA SL

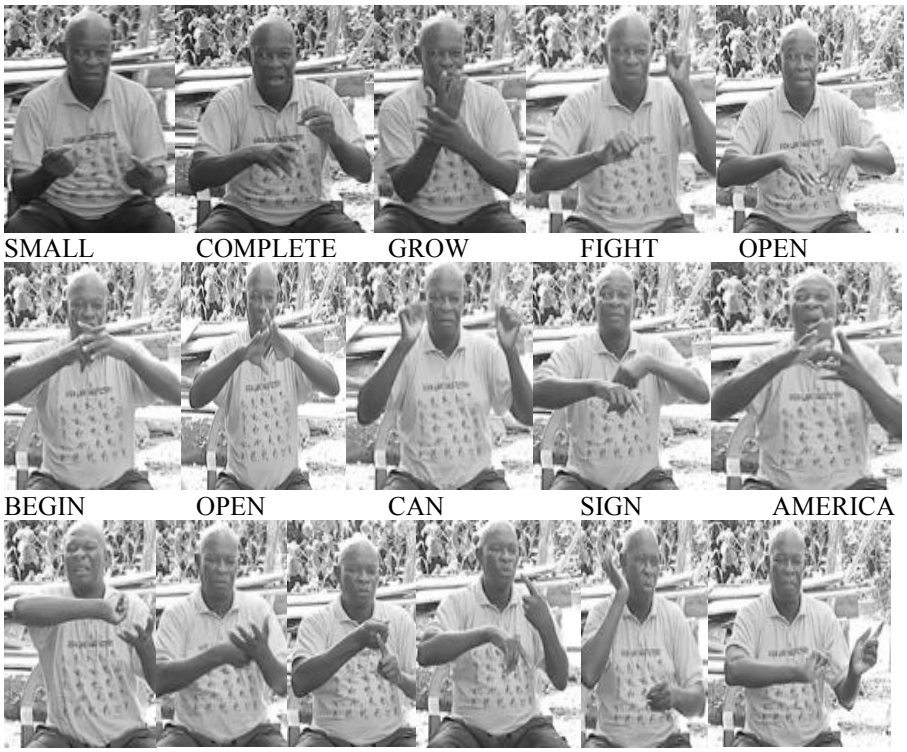
LATE GNAD TRY RESEARCH GHANA



SIGN PRINT GHANA-SIGN SMALL THEMSELVES SIGN

SMALL CONT. WHY-EXCLAM THINK FOCUS

ON DEAF SCHOOH SERIOUS Neg WHY-EXCLAM BEGIN



'The use of ASL has been a habit. GSL is late with its development. GNAD undertook small-scale research and published a preliminary dictionary [GNAD, 2001: containing 810 signs (T.M.H)] but was not adequate. I think it is so because their focus was not seriously on deaf education. That is a pity. Gradually we can advocate for the development of GSL so that ASL would be abandoned and GSL restored.'

Figure 160: Expressing views on why deaf members are inclined to use ASL and the need to develop GSL.

The previous comment suggests that deaf individuals in the broader deaf society primarily use ASL due to its historical introduction as a suitable language for Deaf education. Signer 3 perceives ASL as the same as the sign language used by the deaf people in Ghana. He mentioned that GSL did not exist in the past, and they were not aware of sign language (GHANA, WE DIDN'T KNOW SL. NO!). According to him, their exposure to sign language only occurred through Deaf education initiated by an American, Andrew Foster. On the other hand, Signer 1 shared the view that the sign language they use is a combination of the language introduced by Andrew Foster (i.e., ASL) and NATURAL signs for local items that do not exist in America.

This ideology among the elite within deaf communities fosters their desire to learn more ASL signs and incorporate them into their own vernaculars. As expressed by Signer 1 in example (21) below:

21) PEOPLE FEEL EDUCATED, MUST COPY ASL

'Some signers assume that because they are educated, they must adopt ASL.'
Signer 1, with his linguistic knowledge as a GSL teacher, highlighted that GSL is distinct from ASL, noting the excessive use of initialisation in GSL compared to ASL. Similar to the views expressed in figure 16, Signer 1 also emphasized the need for deaf individuals to focus on the uniqueness of GSL and develop their language. This comment appears to advocate for the extensive use of initialisation to differentiate GSL from ASL.

Signers also acknowledged the existence of variation in GESTURE usage. They expressed concerns that some signs are considered "GOOD" while others are not. They suggested that the signs considered good should be incorporated into the (formal) GSL to expand its lexicon. The exact meaning of "GOOD" signs was not clear, but it can be assumed that they refer to GESTURE or GESTURE signs that conform to conventional phonology (e.g., handshape and location). They also assumed that a "GOOD" sign, according to the upper-class members, would be a sign that does not provoke laughter. As mentioned by Signer 1, newcomers who use GESTURE in Deaf schools (SHS) are often mocked by their seniors. According to his explanation, the seniors in the school perceive their own signs and status as belonging to the upper class (educated), and any sign different from what they use is considered inferior or not "GOOD."

The discussion among participants revealed differing views on GESTURE, with some considering it a fully-fledged language and others viewing it as rudimentary. The acquisition of GESTURE varied, with some learning it from hearing people or in school, while others emphasised its development within domestic settings. The introduction of ASL for Deaf education influenced the language landscape, with some perceiving it as synonymous with sign language in Ghana, while others emphasised the need to preserve and develop GSL. The desire to learn and incorporate ASL signs among the educated members highlighted a sense of prestige. The existence of variations in GESTURE and the distinction between "GOOD" and "not good" signs raised questions about standardisation and lexicon expansion in ENGLISH. The next section will further analyse these findings and discuss language labelling, ideologies, diversity, and language development within the deaf community in Ghana.

6.5 Discussion

The discussion section provides an overview of key aspects related to GSL landscape. It covers topics such as language naming/labelling (Section 6.5.1); GSL usage patterns, prestige and influences (Section 6.5.2); the relationship between foreign-based and locally evolved sign language (Section 6.5.3). The discussion in this section aims to contribute to understanding GSL and its sociolinguistic dynamics within the deaf community in Ghana.

6.5.1 Language naming/ labelling sign languages

In the following subsection, I present 16 general labels signers use to name or describe sign languages based on their perspectives or ideology. One of the labels serves as a generic name (SIGN); ten of these labels are specifically for sign language naming (BROKEN, LOCAL, NATURAL, C-O-D-E, GESTURE, ILLITERATE, VILLAGE, ENGLISH, ASL/AMERICA & GSL/GHANA) while five labels describe particular signing styles (i.e., PRETEND, SPONTANEOUS, DEAF (-POSS), INITIALIZATION, HARD/SOFT). Figure 161 illustrates the various labels signers give to different signing forms that can be called GSL within the deaf community. It is important to note that not everyone is on the same page on these labels, but they generally represent the prevailing ideology within the community.

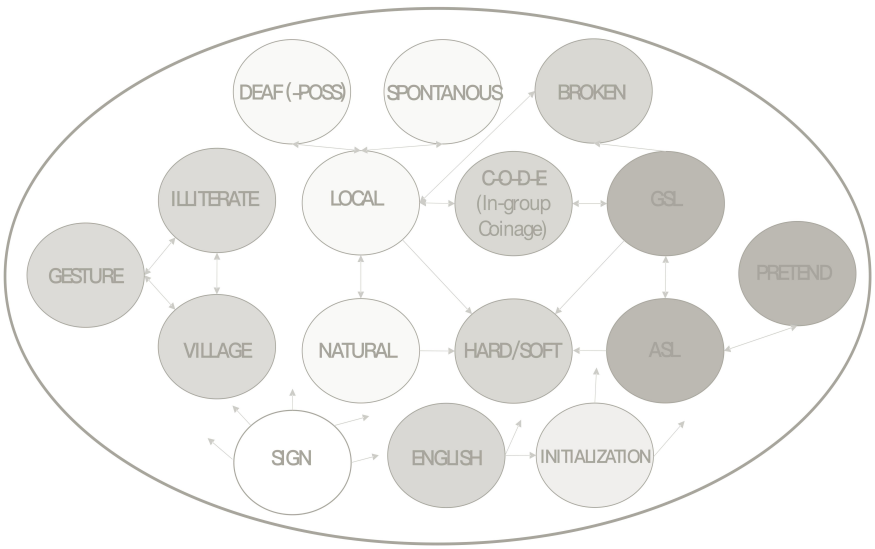


Figure 161: Folk categorisation of SIGN forms within the deaf community

These labels are not necessarily explicit folk classification of sign languages in Ghana, nor are they dependent on linguistic criteria. Rather, they reflect signers'

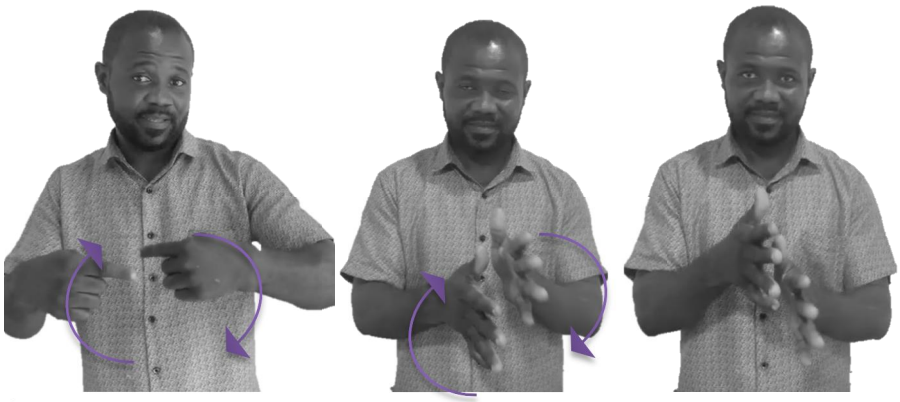
perspectives and their everyday interactions with other members of the deaf community. Some labels may overlap in meaning or serve as synonyms, and there may be variations in their usage based on context, personal preference, inclination, and individual signing repertoire, which may not have been fully captured. Figure 161 above uses colours and arrows [→] to depict labels with overlapping meanings or relationships.

Based on my interviews and observations, my semantic analysis of the 16 labels provides insights into how signers conceptualise and describe different sign languages within their community. These labels contribute to the rich tapestry of language naming and reflect the complex dynamics and ideologies surrounding sign language variation and identification.

It is worth noting that these labels are not based on linguistic or ethnographic criteria but rather on the lived experiences and perspectives of signers within the Deaf community. The list of labels provided may sometimes overlap in meaning, and additional variations and nuances may not be explicitly captured.

SIGN

The sign is articulated using two hands, either employing a double articulation with the index finger (see Figure 162A) or using extended fingers (see Figure 162B) in a circular motion with the arms alternately moving towards the body.



A B

Figure 162: SIGN (Figure 150 repeated here as Figure 162)

The label SIGN is a generic term, all-embracing the signing varieties of deaf people in Ghana, including GSL and ASL. Signers use two variants of the term SIGN (i.e., Figure 162). However, this chapter does not explore whether signers distinguish between these labels. It is important to note that the term SIGN specifically refers to signing varieties used by deaf signers and does not include gestures used by hearing speakers. However, if gestures from the hearing community have been integrated into the sign language used by deaf individuals, they may be considered part of the SIGN repertoire.

The SIGN label recognises sign language as a distinct and independent linguistic system. It acknowledges the linguistic creativity and expressive power of signers in Ghana, with their own signing varieties to communicate among themselves through visual-manual communication.

While SIGN encompasses various signing varieties, including GSL and ASL, it also acknowledges the potential existence of local variations or dialects within the broader category of sign language. Overall, the use of the label SIGN reflects the understanding and appreciation of sign language as a rich and complex linguistic system, distinct from spoken languages and essential for effective communication and cultural expression among deaf individuals in Ghana.

G-S-L or GHANA

During informal conversations, signers often use the terms GHANA or finger spell G-S-L to refer to GSL. The sign for GHANA can be articulated with a G-handshape moving slightly upward, striking the open palm of the nondominant hand with the slightly curved back of the G-handshape (see Figure 163). Remarkably, apart from the handshape, the parameters of the sign emulate the articulation of the sign for NEW. This symbolic choice is rooted in the historical context of Ghana, as the term "Ghana" emerged as a new name for the region after gaining independence from British rule.

Figure 163: GHANA (Figure 147 repeated here as Figure 163)

This terminology (GHANA) is commonly employed to describe the national sign language used by deaf Ghanaians in the urban deaf community. GSL is primarily taught and propagated through Deaf schools, which gives it a strong association with educational settings. However, GSL faces challenges due to its inherent variation, making it difficult for deaf individuals to establish a unified definition. According to the perspectives shared by the participants, deaf Ghanaians view the label GSL or GHANA as a simple and inclusive term representing the language used by Deaf individuals in Ghana, regardless of its specific nuances or variations. This ideology aligns with Oppong's definition of GSL as "[t]he visual-gestural mode of communication used by individual Ghanaians who are deaf or hard of hearing" (Oppong, 2006:21). Signers appear to imply that if deaf Ghanaians use this signing variety, it is sufficient to label it as GSL.

The use of GHANA or finger spelling G-S-L reflects a common shorthand or colloquial way of referring to the national sign language. It signifies a sense of

ownership and identification among deaf Ghanaians, emphasizing their language as an integral part of their cultural and linguistic identity.

However, it is essential to acknowledge that language ideologies and perceptions can vary within a linguistic community. While some individuals may view GSL as a comprehensive term encompassing all variations and dialects used by deaf Ghanaians, others may recognize the need to further explore and define the specific linguistic features and regional variations of GSL. Recognizing and valuing these different perspectives can contribute to an insightful understanding of GSL as a dynamic and evolving sign language.

Furthermore, it is crucial to involve deaf community members, linguists, educators, and researchers in discussions surrounding GSL. Their insights and collaboration can provide a deeper understanding of GSL's linguistic structure, sociocultural significance, and potential standardization efforts. By including diverse perspectives, it is possible to foster a more inclusive and accurate representation of GSL and ensure that it meets the needs and aspirations of the deaf community in Ghana.

A.S.L., AMERICA, WHITE or FOREIGN

Within the Deaf community, there are various ways in which signers refer to ASL. They may use terms such as AMERICA, WHITE, FOREIGN or may simply finger spell A-S-L. The sign AMERICA (see Figure 164A) is articulated by interlocking both open hands (four fingers spread), slightly curving the fingers, and moving them in an outward circle from right to left. The sign for WHITE here (see Figure 164B) does not denote colour; rather, it signifies the fair complexion of a person's skin. Signers aptly use this sign due to its connection with the diverse complexions found within the American population. To articulate WHITE, one employs the four fingers in a non-spread position, rubbing it back and forth on the forearm of the non-dominant hand. Similarly, the sign for FOREIGN (see Figure 164C) involves the use of the F-handshape, rubbing it in a circular motion outside the nondominant hand near the elbow. These signs, such as AMERICA and FOREIGN, seem to have been potentially borrowed from ASL, showcasing the linguistic influence and exchange between ASL and GSL.

A: AMERICA B: WHITE C: FOREIGN

Figure 164: Various signs to refer to ASL (Figure 146 repeated here as Figure 164)

It is important to note that some signers do not make a clear distinction between ASL and GSL. Consequently, many deaf individuals perceive GSL to be the same as ASL. Therefore, when signers indicate the use of A-S-L, they often imply the use of GSL. However, when there is a need to differentiate between the two signing varieties (i.e., ASL & GSL), signers may intentionally use the labels "AMERICA, WHITE or FOREIGN" to highlight the foreign origin of ASL. The choice of these labels demonstrates the linguistic ideology of disassociating GSL from ASL. The lack of a clear distinction between ASL and GSL among some signers indicates a perception of GSL as being equivalent to ASL. This understanding may stem from limited exposure to ASL and GSL linguistics.

PRETEND

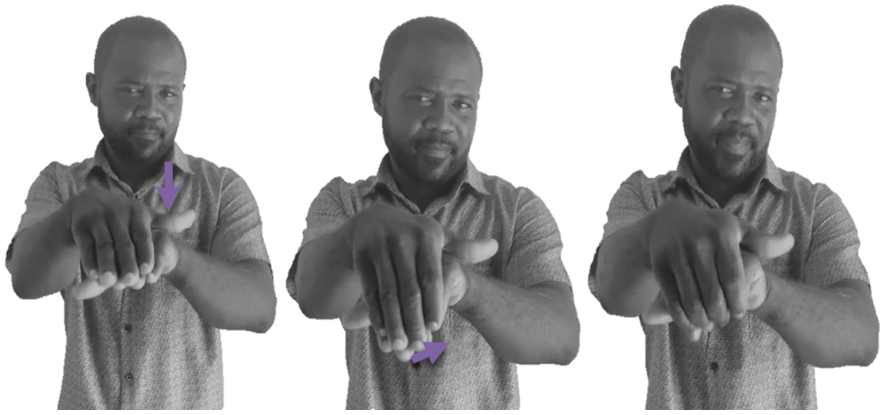


Figure 165: PRETEND

The label PRETEND (see Figure 165) is given to the formal use of ASL or ENGLISH. It is used as a description of the signing variety, which is considered not to be the vernacular of the signer. In other words, during a formal setting or in the event of observers' paradox, Deaf signers are inclined to use PRETEND SL. Thus, consciously avoid a particular signing variety that is native or accustomed to them, in favour of the PRETEND, considered to be prestigious.

The motivation for the label PRETEND in relation to sign languages can be understood based on the description provided. It describes a signing variety that is not considered the vernacular or native language of the signer. The motivation behind using the label PRETEND seems to stem from the context of formal settings or the presence of observers. In such situations, deaf signers consciously choose to use this "Pretend" sign language instead of their native or accustomed signing variety. This choice is motivated by a perception that the "Pretend" sign language is considered prestigious or more socially valued in those formal contexts. By using the "Pretend" sign language, signers aim to conform to the expectations of the setting and to present a more polished or professional image of their signing abilities.

In summary, the motivation for the label PRETEND appears to be rooted in the desire to project a specific image and conform to the perceived norms and expectations of formal settings, where a prestigious signing variety is preferred.

ENGLISH

The sign for ENGLISH (see Figure 166), likely borrowed from ASL, involves grasping the outer edge of the closed nondominant hand at the wrist with the curved active hand and moving both hands back and forth. While the sign, ENGLISH can denote either the country England or the English language, in this context, signers employ it to specifically describe a signing variety that adheres to the syntax or word order of the English language.

Figure 166: ENGLISH (Figure 148 repeated here as Figure 166)

Signers who use this variety believe it to be well-suited for certain contexts, such as formal interviews and educational settings, where it aligns with the linguistic expectations of the dominant spoken language. It provides a familiar framework for communication between Deaf and hearing individuals, particularly when the hearing individuals are more familiar with English. Participants perceived ENGLISH as a communication option commonly used by deaf individuals when interacting with hearing signers. However, there were mixed attitudes towards this signing variety among participants.

Some signers hold a negative view of ENGLISH and find it "boring", primarily due to its grammar: perceived circumlocution and time-consuming nature. They believe ENGLISH involves unnecessary elaboration and communication. For instance, one signer expressed their frustration with ENGLISH in a statement (22) below:

22) ENGLISH KEEP EYE BUSY, MAKE DIFFICULT TO FOLLOW. SOMETIMES MAKE WANT SLEEP.
'One need to observe a lot when using Signed English. It creates sleepy eyes. It is sometimes difficult to understand.'

The signer believed that ENGLISH lead to longer and more complex expressions that may be perceived as unnecessary or cumbersome. The criticism of ENGLISH as time-consuming and potentially causing drowsiness suggests a desire for more concise and streamlined communication. This language ideology surrounding ENGLISH highlights the tension between adhering to the syntax of a

spoken language and the desire for efficient and streamlined signing practices within the deaf community. While some signers value the familiarity and compatibility with the dominant spoken language, others prioritize linguistic efficiency and prefer sign varieties that use a more concise and agglutinative morphology. It is important to note that language ideologies are not static and can vary among individuals and communities.

INITIALISATION

Signers do not have a specific label for the signing variety known as "initialisation," but they are familiar with its characteristics and can provide examples to describe this system of signing. The label used by signers focuses on the use of initialised signs, where the manual alphabet handshape is incorporated for every sign during articulation. Typically, the handshape represents the initial letter of the corresponding English word or shares a similar concept.

In contrast to Signed English, signers in this study perceive initialisation as a separate form of signing system. This suggests that they distinguish between the two and recognize initialisation as a unique linguistic feature within the Ghanaian deaf community. In Ghana, this system of signing is predominantly used by young elite individuals within the deaf community. The preference for initialisation among young elite individuals may be influenced by various factors, such as exposure to educational settings or the desire to align with certain linguistic norms and practices. However, it is important to note that older deaf members expressed concerns about the increasing use of initialisation among young people. This observation aligns with Saah's (1986) findings among hearing Ghanaians, where the older generation tends to critique the language development of the younger generation, considering their linguistic form as the original norm. The older generation's tendency to criticize the linguistic practices of the younger generation is a common occurrence. This can be attributed to a perceived deviation from what is considered the traditional or original norm of the language. However, it is important to recognize that language is dynamic, and linguistic forms evolve and change over time. Different signing varieties, including initialisation, contribute to the linguistic diversity and creativity within the deaf community.

LOCAL

In articulating LOCAL (Figure 167), the tip of the thumb in an L-handshape on the active hand makes contact with the tip of the index finger on the nondominant hand. As this contact is maintained, the active hand is moved in an anticlockwise arc position. This sign, which involves initialization, appears to have originated from the phonological location used in signs for localities such as cities, towns, or villages.

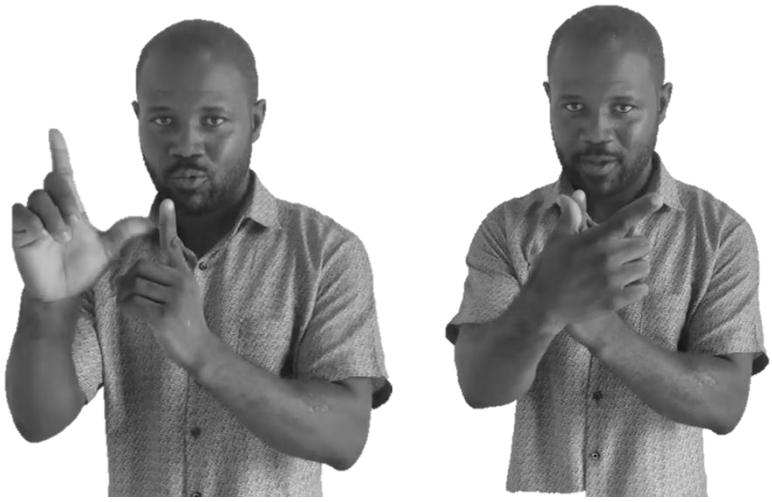


Figure 167: LOCAL (Figure 152 repeated here as Figure 167)

The term LOCAL within the language ideology of the deaf community evokes the concept of a signing variety that is regarded as purely vernacular or indigenous in nature. Researchers, such as Edward and Akanlig-Pare (2021) and Nyst (2010), have also used the term "local SL" to describe sign languages that have emerged within specific Ghanaian deaf communities, such as AdaSL and Nanabin SL. According to Nyst (2010), sign languages labelled as "local" tend to have lower prestige in comparison to sign languages influenced by foreign languages. The ideological understanding of the term LOCAL by deaf signers aligns with the perspective expressed by Nyst (2010). The perception of LOCAL signs as having lower prestige can be attributed to sociolinguistic factors and the historical dominance of foreign-based sign languages in educational and institutional settings. This disparity in prestige may influence the attitudes and perceptions of deaf signers towards their own local signing variety.

Deaf signers use this term to describe signing varieties that have evolved within specific Ghanaian deaf communities. LOCAL signs are considered to have distinct linguistic features and cultural influences that reflect the unique experiences and heritage of the community. The alignment between the ideological meaning expressed by deaf signers and Nyst's (2010) findings suggests a shared understanding of the term LOCAL within the Ghanaian deaf community. The term carries connotations of authenticity, cultural relevance, and a connection to the local deaf community's experiences and identity. It signifies a sense of pride in their indigenous signing variety while acknowledging its position in relation to other sign languages.

The language ideology surrounding the LOCAL signing variety sheds light on the complex dynamics of language status and prestige within the deaf community.

It highlights the significance of recognizing and valuing locally developed sign languages as important linguistic resources that contribute to the cultural heritage and identity of the community. By understanding and appreciating the unique characteristics of local sign languages, efforts can be made to promote their recognition, documentation, and preservation alongside other sign languages in Ghana and beyond.

NATURAL

The sign NATURAL (see Figure 168) is articulated using an N-handshape of the active hand, with a subtle arching motion, placing the tips of the index and middle fingers on the back of the nondominant hand. It appears to have been borrowed from the ASL signs for "nature" or "natural" (Riekehof, 1978).

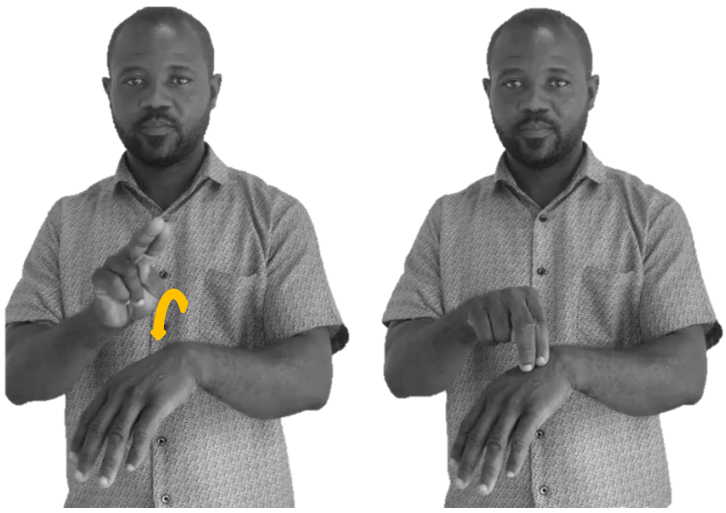


Figure 168: NATURAL (Figure 133 repeated here as Figure 168)

The language ideology surrounding the signing variety referred to as NATURAL highlights its connection to both the lexicon and syntax of a signing variety. Signers perceive it as a language that possesses iconicity, where signs may carry inherent meanings that relate to their referents. This notion of NATURAL sign language is not associated with any negative connotations, and it is applicable to both educated and uneducated members of the deaf community.

The term NATURAL signifies a linguistic system considered inherent, intuitive, and closely tied to the cultural context of its users. It is often associated with signers from rural settings, suggesting that their signing variety is deeply rooted in their local experiences and cultural practices. This association with rural signers reflects the belief that their signing variety is closer to a "natural" form of

communication, less influenced by external factors or formal education. The use of term NATURAL has also been used by signers in Nepal to represent a specific variety of sign language (Green, 2014). Green defines it as "a limited repertoire of signs shared by Deaf and hearing people" (2014:1). In their context, NATURAL is distinguished from both foreign sign languages and the national sign language of Nepal, Nepali Sign Language. A similar understanding can be attributed to Ghanaian signers' use of this terminology.

The language ideology surrounding the NATURAL signing variety underscores the significance of iconicity, cultural embeddedness, and accessibility in communication. It recognises the value of intuitively meaningful signs and is culturally relevant to the users. By acknowledging and appreciating the unique characteristics of NATURAL, a more inclusive and comprehensive understanding of diverse signing varieties can be fostered within the deaf community.

BROKEN

The sign denoted as BROKEN (Figure 169) appears to have been adopted from the ASL sign for "BREAK" (Riekehof, 1978:126). Articulated with two hands in an S-handshape, they touch each other at the side of the index and thumb, with palms facing down. An outward twist movement follows, effectively simulating the action of breaking something, iconic to snapping a stick within the hands.

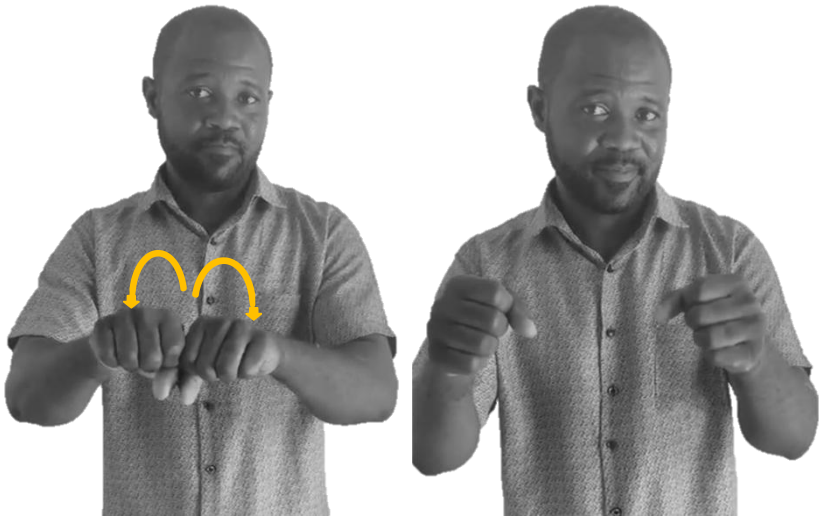


Figure 169: BROKEN (Figure 153 repeated here as Figure 169)

The term BROKEN within the language ideology of the signing variety signifies a unique morpho-syntax. Signers use the sign BROKEN to indicate that the language,

similar to Ghanaian Pidgin English, has a simplified morpho-syntax. It is worth noting that among speakers of the hearing community, the term 'Broken' is also used to refer to Ghanaian Pidgin English. However, when deaf signers use the sign BROKEN, they refer to one of their signing systems and not the language used by the hearing community. Further exploration and study are needed to establish if the BROKEN language used by the deaf shares any linguistic features with the "Broken" language used in the speech community.

Many signers appreciate the use of BROKEN in communication as it seems to be a compromised version that combines elements of the locally evolved signing system and the foreign-based signing system in Ghana. It serves as a bridge between the two systems, offering a more accessible and simplified form of communication.

In informal discussions, I have observed signers use the sign BROKEN as a stand-alone sign to signal a directive, indicating that one should use BROKEN. According to one participant's explanation, in such instances, the sign may convey a message of "Please be straightforward, avoid circumlocution". The use of the term highlights the dynamic nature of sign languages and their ability to adapt and evolve based on the needs and interactions of the deaf community. It signifies a signing variety that may have undergone simplification in its morpho-syntax, potentially facilitating communication and bridging gaps between different signing systems. The appreciation of BROKEN as a communication tool demonstrates the recognition of its value in enabling more efficient and direct expression of ideas.

It is important to note that while the term BROKEN may suggest a simplified form, it does not imply inferiority or lack of linguistic richness. Signers who use BROKEN signs have developed a linguistic system that meets their communication needs, incorporating elements from both local and foreign signing systems.

ILLITERATE

ILLITERATE (see Figure 170) is articulated using an I-handshape, with the palm facing left, and a circular movement just in front of the forehead. The term ILLITERATE within the language ideology of the signing variety signifies a unique signing system distinct in both lexeme and syntax. As the name suggests, it is often associated with a signing variety that is not considered a language for the educated. Educated signers may not want to be associated with it, and there is a negative attitude towards this signing variety within the deaf community.

Figure 170: ILLITERATE (Figure 135 repeated here as Figure 170)

The ILLITERATE signing variety is predominantly used by signers with no formal education. It is characterized by the exclusive use of locally evolved signs, without incorporating elements from ASL or any other foreign-based signing system. The signs used in ILLITERATE signing have ad hoc and unconventional parameters, deviating from the established norms and conventions of school-based signing systems.

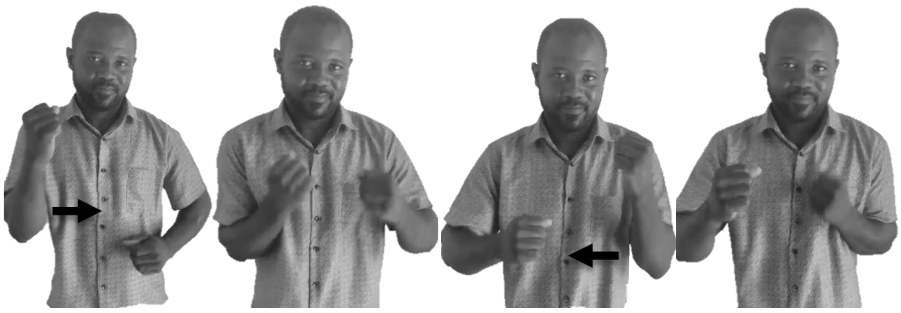
It is important to note that ILLITERATE primarily refers to the signing variety itself. However, it can also be used to describe an individual signer. In this context, the term does not necessarily imply that the individual cannot read or write. Rather, it is linked to the lack of formal education or schooling, specifically in GSL or other school-based signing systems. Signers labelled as ILLITERATE may have limited knowledge and proficiency in GSL due to their lack of formal education.

The negative attitude towards the ILLITERATE signing variety can be attributed to societal stigmas and biases associated with education and literacy. It is important to challenge these negative perceptions and recognise the value and significance of all signing varieties within the diverse deaf community. While ILLITERATE signing may not adhere to formal linguistic standards, it represents a unique linguistic expression and cultural identity for those who use it.

Understanding ILLITERATE signing variety can provide insights into the linguistic features, sociocultural context, and experiences of signers who rely on this form of communication. Promoting inclusivity and respect for all signing varieties is essential, acknowledging the diverse linguistic landscape within the deaf community and the contributions of individuals from various educational backgrounds.

GESTURE

The sign for GESTURE involves two hands in an S/A-handshape, with palms facing left and elbows slightly extended away from the body (see Figure 171). It is articulated with a swift and subtle movement, where the elbows either move sequentially or simultaneously towards the body. This sign appears to originate from the concept of portraying the instinctive and spontaneous reactions individuals exhibit when responding to stimuli. As such, it is regarded as an intuitive and innate.



Initial movement Final movement

Figure 171: GESTURE (Figure 149 repeated here as Figure 171)

GESTURE within the language ideology of the signing variety refers to a specific form of communication used by deaf individuals. It is important to note that GESTURE, as used by signers, differs from what is commonly understood as gestures by hearing people in mainstream society. While there may be some influence from hearing people's gestures, signers consider GESTURE to have unique characteristics and linguistic features.

It is worth mentioning that in the urban deaf society in Ghana, many individuals refer to village-based sign languages as GESTURE. This includes signers both within and outside of Adamorobe village and those in Nanabin village who also label their language as GESTURE. This perception of referring to various sign languages as GESTURE might be more prevalent among deaf individuals with limited exposure to sign language linguistics and formal linguistic education.

However, in the case of Adamorobe signers, their perspective differs. Due to the significant interest of researchers in studying AdaSL compared to other sign languages in Ghana, Adamorobe signers have received linguistic education and recognize their language as AdaSL rather than merely a GESTURE (Kusters, 2019). This distinction highlights the impact of ongoing research and contact with researchers on shaping their perception and understanding of their language.

Similarly, continuous interactions between researchers and signers in Nanabin village have sparked curiosity among the signers about their language and

the reasons for researchers' visits. It is possible that sustained engagement with researchers could lead to a shift in their perception, encouraging them to view their language as more than just a GESTURE and recognizing its linguistic richness and significance.

From the view of signers, while the term GESTURE may imply a lower prestige or the notion that the signing variety is not a fully developed language, it does not necessarily carry a negative connotation. Instead, it signifies that the form of communication being referred to does not meet the criteria of a conventional, fully-fledged language in the eyes of the signers.

VILLAGE

The sign VILLAGE (see Figure 172) is formed with two hands in a V-handshape, where the tips of the index and middle fingers touch, and the palm faces the side. The movement involves a downward motion, separating the contact between the fingers. While the sign for village is likely borrowed from ASL, in GSL, it has been initialized with a specific form.

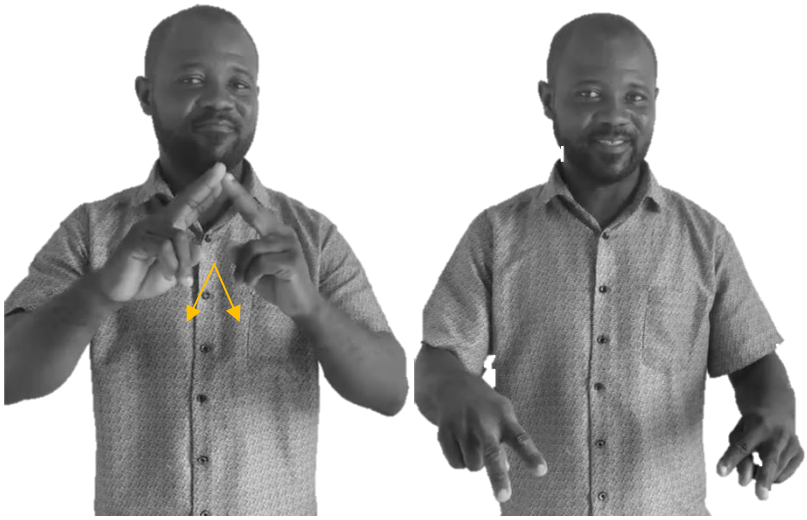


Figure 172: VILLAGE (Figure 134 repeated here as Figure 172)

VILLAGE within the language ideology of the signing variety refers to sign languages used by deaf individuals from rural areas, such as AdaSL and Nanabin SL. Some signers commonly associate these sign languages with the label VILLAGE. Deaf individuals residing in small cities or villages without formal education may also be labelled as using VILLAGE signing. For example, signers in the urban deaf

community could consider deaf signers in Apirede (a city in the Eastern Region) to use VILLAGE or GESTURE.[115]

In the urban deaf community, signers may also use the term VILLAGE to refer to certain signs or signing styles that are considered unconventional or do not conform to established phonological patterns. This use of the term carries a negative connotation and is seen as demeaning. Signers generally hold a negative attitude towards any sign or signing variety labelled as VILLAGE. It is important to recognise that the use of the term VILLAGE as a label for a signing variety or an individual's signing style reflects a linguistic and cultural bias. The term implies a perceived lack of sophistication or adherence to established linguistic norms. This attitude can be detrimental to the appreciation and recognition of the linguistic diversity and richness within the deaf community.

C-O-D-E

The signing variety referred to as ' C-O-D-E ' is fingerspelled, which is why I have included hyphens between each letter. According to the information gathered from participants, it appears to have a limited domain of usage primarily associated with the youth, particularly in the Mampong School for the Deaf. This C-O-D-E language is considered a form of Youth sign language and is mainly used for in-group identity, communication, and sometimes as a means of secrecy. Signers consider it as a locally developed system without established grammatical rules, resulting in idiosyncrasies and variations of signs.

According to one consultant (D6a) the use of C-O-D-E tends to diminish among deaf individuals who graduate from Mampong SHS. This may be due to the lack of a strong in-group presence outside of the school setting. While the signs may still remain with the language users, the bonding and motivation to use the C-O-D-E language decrease over time.

The distinction between GESTURE and C-O-D-E highlights the complexity of language naming and association. My consultant suggested that the origin and proponents of the signs could influence how the language is labelled or perceived. For instance, if LOCAL signs evolve and spread among students (seniors in the school), it may be considered C-O-D-E language. On the other hand, if it develops among newcomers in the school, it may be labelled as GESTURE. This understanding may contribute to the perception of GESTURE having low prestige, explaining why individuals, including the proponents themselves, avoid association with GESTURE as they progress through their education. This kind of ideology on GESTURE having low prestige is what I believe makes uneducated deaf signers shy away from GESTURE, as I experienced during my data collection for such sign (see Chapter 3). Based on

[115] See chapter 2, on my encounter with signers in Apirede.

my understanding, GESTURE and C-O-D-E are considered part of LOCAL. However, it is possible that signers distinguish between GESTURE and C-O-D-E based on certain sociolinguistic aspects of the signs.

Some examples of the C-O-D-E signing provided by the consultants can be found in the GNAD (2001) dictionary under the content heading "Idiomatic Expression." For example, a sign was given which could subtly convey a desire to initiate a particular intimate interaction with the intended recipient (see Figure 173). This specific sign is captured in the GNAD (2001:97) dictionary, with the caption "FLIRT, HAVE CHILDREN BUT NOT MARRIED". Although the study did not extensively explore this C-O-D-E variant, it presents an interesting area for future research to understand further the signing situation in Ghana and the acknowledgement of the C-O-D-E label within the deaf community.

Figure 173: Promiscuity Code (GNAD, 2001:97)

SPONTANEOUS

The sign SPONTANEOUS (see Figure 174) is articulated by extending open fingers with palms facing sideways. Using both hands, positioned one slightly above the other in a neutral stance close to the body's side, the hands are then spontaneously wiggled from side to side.

Figure 174: SPONTANEOUS (Figure 154 repeated here as Figure 174)

The term SPONTANEOUS is used by signers to describe a signing variety that emphasises the natural and uninfluenced signing style of deaf individuals. It focuses on the syntax of the signing variety, highlighting the use of a 'true communication' strategy instead of adhering to the word order of another language, such as English. This signing style is observed when groups of deaf people engage in lively conversations using signing varieties like BROKEN or NATURAL.

During my research, two participants mentioned the term SPONTANEOUS in informal discussions after our formal interviews in different settings. One participant acknowledged it as a label/sign/name given to a signing variety among deaf Ghanaians, although they could not recall an equivalent English word. The second participant was the one who initially provided us with the label SPONTANEOUS. When I revisited the topic a year later to model the sign with my deaf research assistant, we contacted the participants. Interestingly, they initially showed signs of being oblivious to the term in sign (SPONTANEOUS) and with its English translation (spontaneous) shown to them. It took considerable effort and contextual cues to help their memories. The second participant who had given us the name a year ago could not recall the sign or its English translation. Initially, this made me hesitant to document the label SPONTANEOUS, as the participants themselves could not readily acknowledge it after a year. However, my deaf research assistant assured me that he had seen the label being used among the deaf community. Therefore, I concluded that the understanding of SPONTANEOUS as a signing variety could only be fully comprehended within the specific context. It became evident that one may need intense ethnographic research to uncover signers' ideologies on language naming in Ghana, as identifying and documenting these labels took deliberate effort.

Interestingly, the label SPONTANEOUS as a signing variety has also been used by signers in other countries, as documented in previous studies (Firth, 1966, as cited in Deuchar, 1977; Hofer, 2020:85ff). This suggests that the concept of SPONTANEOUS signing style extends beyond Ghana and is recognised by signers in different cultural and linguistic contexts.

DEAF (-POSS)[116]

To articulate the sign DEAF – POSS (see Figure 175), the index finger is employed to touch or point to the right side of the mouth and ear (or vice versa). Optionally, a possessive marker (i.e., – POSS) can be added, articulated with open hand, palm forward in a neutral position, indicating ownership or association with the deaf community.

Figure 175: DEAF – POSS (Figure 155 repeated here as Figure 175)

The label DEAF (– POSS) describes a signing variety emphasising syntax, particularly highlighting its deviation from the morpho-syntax of English or any other spoken language. The term DEAF (– POSS) conveys the notion of a signing variety with a unique syntax specific to deaf individuals. It suggests that signing varieties such as NATURAL or BROKEN can be categorised as DEAF (– POSS) based on their syntax. By associating the DEAF (– POSS) label with any signing variety, signers acknowledge the syntactic autonomy and creative expression that characterise deaf communication. The term implies that deaf individuals have developed their own inherent grammatical structures and syntactic patterns, forming a language distinct from spoken languages.

By using the label DEAF (– POSS), signers recognise and celebrate the linguistic diversity and independence of deaf individuals. It signifies the importance

[116] In Figure 155, I also explain why the possessive marker (-POSS) is place in parenthesis.

of understanding and valuing sign languages as fully-fledged ones with distinct grammatical systems, separate from spoken ones.

HARD vs SOFT

There are two ways to sign HARD. In one method, the knuckle of a V-bent handshape by the index and middle fingers strikes the back of the nondominant hand (see Figure 176A). The second method involves articulating an S-handshape under the lower jaw and moving the hands forward into a neutral position but closer to the face (see Figure 176A). On the other hand, SOFT is signed using both hands with open, curved palms facing up. The hands are then slowly moved downward while extending the fingers and closing the hands repeatedly, simulating the action of gently squeezing something to assess its softness (see Figure 177).

A B

Figure 176: HARD (Figure 157 repeated here as Figure 176)

Figure 177: SOFT (Figure 158 repeated here as Figure 177)

The language ideology surrounding the signing variety described as HARD or SOFT in Ghana reveals interesting perspectives and attitudes among signers. The labels HARD and SOFT are used by signers to describe the characteristics of different sign languages, particularly locally evolved sign languages, and foreign sign languages.

My initial encounter with the description HARD for GSL[117] came from an informal discussion after a formal interview with a signer. During our encounter, the participant posited, LOCAL is hard ("TRUE WAY; THE LOCAL ILLITERATE SIGN; HARD"). HARD was used to convey that in the GSL landscape, LOCAL is not easy to understand. The above idea was prompted by a question about which sign language variety in Ghana was considered good or better. In addressing how HARD GSL can be, the participant noted that signers, even those familiar with GSL, found it challenging to comprehend when two uneducated individuals were signing. The difficulty in understanding was attributed to lexical variations.

The characterisation of GSL as HARD may be due to its unique features. For example, a signer provided two variants for RICE (see Figure 178 & Figure 179), exemplifying the lexical variations within LOCAL. Even though from my intuitive knowledge I assume that RICE -1 (see Figure 178) may be for uncooked rice while RICE -2 (Figure 179) for cooked rice, the presence of such variations led to GSL signers describing their language as HARD because non-users of these variants found it difficult to comprehend. The term HARD in this context implies that the language is unique and not easily understood by outsiders.

[117] ENGLISH and LOCAL are considered a HARD language.

Figure 178: RICE – 1

Initial position final position

Figure 179: RICE -2

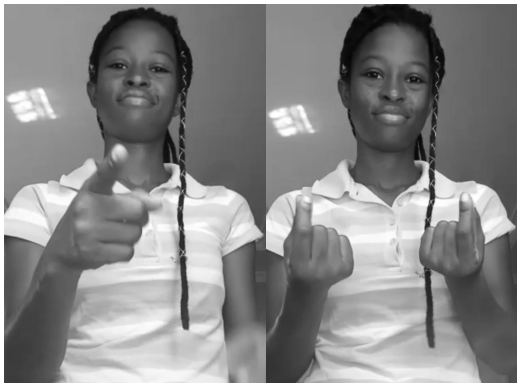
In Adamorobe village, located in the Eastern Region of Ghana, deaf signers who use AdaSL also describe their language as HARD. According to Kusters (2014a:139), this perception among AdaSL signers "means that the language is unique and difficult to learn for outsiders, but "hard" also means clear, firm, and expressive." As such, the term HARD also carries positive implication of pride in its use. In comparison, GSL signers describe their language as HARD in contrast to AdaSL signers. Kusters (2014a:151) notes that AdaSL signers associate the "hard" language with pride in using it. On the contrary, this is not the case observed among GSL signers, who prefer a language they perceive as SOFT. They consider ASL to be SOFT and may choose it over GSL, which they describe as HARD. From the perspective of AdaSL signers, GSL[118] is seen as "soft" or "easy" (Kusters,

[118] Note: AdaSL signers do not make a distinction between GSL, ASL and Signed English: They could also describe GSL as fingerspelling, English or American (Kusters, 2014:152).

2014a:151). The situation becomes more nuanced when considering that both AdaSL and GSL signers may be expressing similar sentiments. AdaSL signers might view GSL as another name for ASL and describing it as SOFT aligns with the perspective of GSL users. However, one practical distinction between the two groups lies in the fact that while AdaSL signers prefer to use the language they describe as HARD (AdaSL), GSL signers opt for a SOFT language (ASL). The nuanced differences in their descriptions highlight the complexity of language ideologies among different signing communities.

To further explore the perceptions of signers regarding the concept of a language being SOFT or HARD, I conducted additional investigations. Specifically, I reached out to five participants, three deaf friends, and my deaf research assistant through video calls and messaging to explore their understanding of a language being labelled as SOFT or HARD.

The feedback from participants and consultants revealed that HARD could be translated as 'solid,' 'difficult,' or 'not easy,' indicating ambiguity and complexity. In contrast, SOFT was associated with ease of comprehension and desirability among deaf individuals. One consultant who considered GSL to be HARD described it as "long" (in terms of circumlocution) with numerous rules resembling English grammar. To explain, she offered an illustration explaining that when articulating the question "What will you do?" in GSL, individual signs are employed for each English word (namely WHAT, WILL, YOU, & DO). In contrast, in ASL, she emphasized that the entire sentence can be conveyed with a single manual sign, such as DOING or YOU DOING (see Figure 180). According to her, ASL, being a SOFT language, uses BROKEN structure, making it simple and concise.



YOU DOING[119]

Figure 180: Signer's view of how to sign ‘What will you do?’ in ASL

[119] The sign involved tapping the thumb and the index finger in a neutral space with an upward orientation.

Another consultant mentioned that if a language is described as SOFT, it implies something desirable for deaf people. He concluded by saying, 'white people's signs are soft and different from Africa.' Other consultants stated that ASL is SOFT because it possesses flair (stylishness and originality) and is easily understood without ambiguity. Regarding the flair of ASL, one consultant mentioned that 'Deaf people perceive ASL as a beautiful, flexible language due to how the whites sign and fingerspell.' They specifically related this perception to handshape and facial expression. Signers may also describe the handshape of a sign as HARD or SOFT. For instance, one consultant remarked, 'our hands are HARD when signing, but with the whites, it is SOFT.'

It is important to note that the terms HARD and SOFT used to describe sign languages does not imply a judgment of their quality or inherent value. Instead, they reflect signers' perspectives on the characteristics and desirability of different languages within the cultural and linguistic context of the signers. GSL signers express concern about the challenges posed by their language being described as HARD, while AdaSL signers take pride in their language being perceived as HARD.

In conclusion, the language ideology surrounding the labelling of sign languages as HARD or SOFT in Ghana reveals distinct perspectives and attitudes among signers. While both GSL and AdaSL signers describe their languages as HARD, the connotations and implications associated with this label differ. The term HARD for GSL signers expresses concern, while for AdaSL signers, it signifies pride (Kusters, 2014a:155). Similarly, GSL signers perceive ASL as SOFT, emphasizing its desirability, simplicity, and stylistic qualities. These ideological distinctions shed light on the complex dynamics and perceptions of sign languages within the Ghanaian signing community.

6.5.2 GSL usage, prestige, and influences

The language ideologies within the Ghanaian deaf community play a crucial role in shaping the usage, prestige, and influences of GSL. These language ideologies encompass a wide range of attitudes, beliefs, and perceptions regarding sign language diversity in Ghana and the influence of external factors such as ASL, Signed English, and English. This discussion will explore several subtopics related to GSL usage, prestige, and influences within the Ghanaian deaf community.

Attitudes towards GSL in the Deaf Community

Attitudes towards GSL vary within the Ghanaian Deaf community, ranging from a sense of pride and solidarity to perceptions of low prestige. The language ideology surrounding the usage and prestige of GSL among signers in the urban deaf community in Ghana reveals an interesting dynamic. While GSL is seen as a language of solidarity, it is often associated with low prestige. Signers may employ

certain GSL signs to convey covert information on behalf of in-group members, a practice also observed among AdaSL users. Kusters (2014a:147; 2019:13-14) noted that young and adult signers proficient in both AdaSL and GSL might use GSL to conceal information from nearby interlocutors, passers-by, or observers. This use of codeswitching serves as an unconscious effort to create solidarity among interlocutors but may go unnoticed by monolinguals (Garrett, 2010).

GSL signers display a strong sense of connection to their locally evolved signing. Similar sentiments have been observed among hearing Ghanaians regarding their vernacular languages (Guerini, 2008; Owu-Ewie & Edu-Buandoh, 2014). Despite their interest in foreign languages for social and international benefits, Ghanaians still maintain a deep bond and respect for their indigenous languages when it comes to cultural interactions. This deep connection suggests that the local sign languages are unlikely to face language death. Additionally, the domain of language use serves as a determining factor in attitudes toward a particular language or language variety. Ghanaians tend to use vernaculars in more informal interactions, while foreign-based languages are preferred for formal engagements.

Signers residing in rural areas also exhibit a strong attachment to their local language. Kusters (2019) found that deaf youth in Adamorobe village, who were more proficient in GSL than AdaSL, expressed a special feeling when using their local language (AdaSL) due to the iconic nature of signs that resonate with their everyday experiences. Similarly, signers with knowledge of GSL varieties (ENGLISH, BROKEN & LOCAL) may engage in codeswitching or codemixing for solidarity.

Using unconventional phonological location and ad hoc referents (pointing with index finger) in the environment is a prominent practice in LOCAL. As such, some signers in the urban deaf community hold negative attitudes toward LOCAL, which may discourage it use. Another factor that negatively affects LOCAL is the close association of some sign variants with gestures used by hearing speakers. For instance, one participant (D8a) in an informal discussion highlighted why many signers prefer to use ENGLISH (see e.g., 23 below).

23) ASL FAST UNDERSTAND. SEARCHING THINGS ILLITERATE WAY. HOW? BETTER USE EASY AND FAST
‘ASL [ENGLISH] is unambiguous. Searching for things to index is for LOCAL. Why would you use that strategy. It is better to use a conventional sign language’

According to his view, ENGLISH is unambiguous and offers a more efficient communication method than the LOCAL, which involves searching for referents nearby. He perceives this practice in LOCAL as demeaning and believes it is better to use a conventional sign language.

Language Choice in Formal and Informal Contexts

Language choice is a significant aspect of language ideologies within the Ghanaian Deaf community. We see how signers navigate between formal and informal contexts, and how some factors influence their language choices and the social dynamics involved. The findings suggest that signers consciously prefer to use only ENGLISH and BROKEN in the urban deaf community. However, signers may choose to use the LOCAL based on context. Signers perceive ENGLISH and BROKEN as easier to comprehend because it is more conventionalised.

Furthermore, the negative attitude towards LOCAL usage suggests a certain degree of stigma or lack of acceptance within the urban deaf community. This may stem from various factors, such as the association of LOCAL with ad hoc gestures used by hearing individuals or the perception that it is less efficient and less conventionalised compared to ENGLISH, BROKEN or other sign languages.

The preference for ENGLISH, also known as A-S-L, or AMERICA, among many deaf members can be attributed to its familiarity and acceptance within the community. The concept of signers recognising and engaging in the act of codeswitching between variants of GSL, based on their interlocutor or context, demonstrates a certain degree of adaptability and respect for the different language varieties.

The negative attitude towards LOCAL and the preference for ENGLISH or BROKEN in certain contexts highlight the complex language ideologies at play within the Ghanaian deaf community. While LOCAL may be seen as challenging or stigmatised, it still holds significance in specific social and communicative contexts. The conscious choice to use ENGLISH suggests a desire for clearer communication and conformity to established linguistic norms.

It is important to recognise and understand these language ideologies and attitudes towards GSL usage and prestige within the Ghanaian deaf community. Acknowledging the different perspectives and preferences can promote inclusivity and appreciation for the diversity of signing practices, whether ENGLISH, BROKEN, LOCAL, AdaSL, or other local sign languages.

The Inclusion of LOCAL Signs in Official Resources

During my fieldwork and discussions with various members of the deaf community in Ghana, I encountered an interesting language ideology surrounding the usage and prestige of GSL. One observation was made during a deaf meeting organised by GILLBT (Ghana Institute of Linguistics, Literacy and Bible Translation) on 23 March 2021, where deaf members were involved in a Bible translation project. Despite the presence of deaf individuals and the focus on GSL, the participants predominantly used ENGLISH with some basic English grammar. This choice of

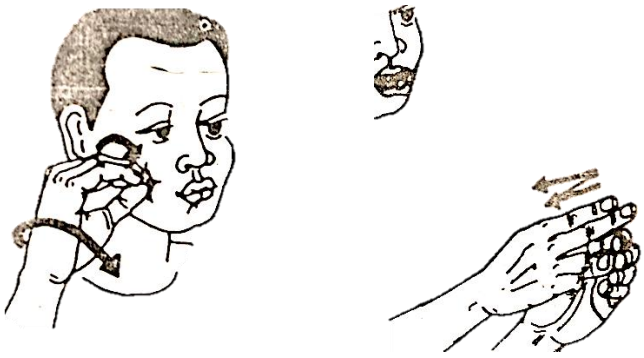
language variety could be attributed to the perception of Bible translation as a formal engagement, where a standard variety is preferred to serve as a role model within the community. This observation aligns with the claim made by one of my consultants, J. Amoah, that even in deaf meetings, ASL (i.e., ENGLISH) is commonly used. He explained that deaf individuals tend to avoid LOCAL due to the fear of being stigmatised as uneducated or belonging to a rural background. In fact, the use of ENGLISH in deaf religious meetings and even in GNAD meetings is considered a prestigious code. On the other hand, LOCAL is often observed in more relaxed settings, such as at home, during deaf sports events, or at night when there are no conscious onlookers. LOCAL is typically learned among peers and used by deaf individuals who may not have received formal education.

Despite the negative attitude towards LOCAL, some of its signs found their way into the first GSL dictionary published by GNAD (2001). However, over time, not everyone within the deaf community expressed satisfaction with such inclusions. During a conversation in 2016 with the late Francis Boison, he pointed out that certain signs in the GNAD dictionary were incorrect. His explanation revealed that some pioneers had the intention of demonstrating the distinctiveness of GSL from ASL, and thus they included LOCAL signs in the dictionary. This revelation came as a surprise to me at the time, as I was unaware of the existence of other varieties of GSL. Through my ongoing research, I have come to realize that the signs considered incorrect were actually LOCAL signs that were included in the dictionary.

The presence of LOCAL signs in the dictionary can be attributed to certain factors. According to Mr. Boison (PC. 2016), some community members aimed to highlight the differences between GSL and ASL by promoting informal signs (i.e., LOCAL) used in deaf communities. Additionally, during interviews with participants like Alexander Okyere[120], it was revealed that the sign language dictionary committee would discuss and select signs based on their appropriateness, sometimes deliberately choosing an informal sign when multiple options were available. The dictionary attempted to capture variations, but due to the language ideology within the deaf community, some members may deny the existence or appropriateness of informal variants. The GNAD (2001) dictionary includes only a small number of instances (13 out of the 810 vocabulary index) where variations are depicted. This suggests that there was likely no consensus on a single appropriate sign to use. In cases where variants existed, both ENGLISH and LOCAL signs were included in the dictionary. For instance, in the GNAD (2001: 25) dictionary, the sign for ONION had two variants (see Figure 181). Based on my observations within the deaf community, Figure 181A is an example of ENGLISH (initialized), while Figure 181B is an example of LOCAL sign. It is important to note that due to the language

[120] Alexander Okyere passed away on 7th September 2022. He served as the vice president for Mr. Boison at GNAD.

ideology prevalent in the Deaf community, some members may deny the existence of these informal variants. This could explain (late) Mr. Boison's assertion that some signs were considered "wrong," indicating that they were deemed inappropriate or not commonly used or seen among some educated members in the deaf community.



A B

Figure 181: Onion GNAD (2001:25)

The Influence of ASL and Signed English on GSL

Language contact with ASL and Signed English has had a significant influence on the structure and evolution of GSL. The discussion on GSL usage and prestige reveals several important aspects of language ideology. For example, GSL is generally considered a form of ASL (Kusters, 2014a; Nyst, 2007; Oppong, 2007), leading some language users to adapt ASL learning materials to enhance their GSL signing skills. However, from an ideological perspective, the structure and evolution of GSL is influenced not only by language contact but also by gestural influence, language attitude, and prestige. Language ideology, whether explicit or implicit, plays a significant role in shaping language usage and linguistic structure (Patterson & West, 2018:251ff).

The language contact between GSL and ASL, primarily through deaf education, has resulted in contact-induced features such as mouthing, initialisation, and Signed English. In Deaf schools, foreign language contact continues to persist, driven by the perception that sign language syntax hinders the English writing skills of deaf students (Gadagbui, 1998). This ideology, originating from the early days of deaf education, still lingers among some deaf individuals and educators, thereby influencing the influence of English on sign language. Reports indicate the presence of Signed English in Deaf schools, with American Volunteers from the Peace Corps organization often introducing ASL elements into the classroom (Abudu, 2019; Nyst, 2010). Although volunteers receive some orientation in GSL (particularly ENGLISH

and BROKEN signs), the introduction of standard variants based on their ideology further reinforces the influence of ASL.

Furthermore, the historical and current sign language situation in the urban deaf community has led some signers to embrace ASL-based Signed English as part of the GSL. ENGLISH, BROKEN and LOCAL exist in deaf schools, with distinct domains of usage. ENGLISH, developed within the school setting as the language of instruction, contrasts with LOCAL, predominantly used outside the classroom. This educational context contributes to the decline and low prestige associated with GSL variants.

English's Prestige and its Influence on Ghanaian Languages

The attitude towards English reflects its historical and socio-economic significance in the broader Ghanaian context. As a foreign language, English holds a high prestige and status due to its association with colonial rule, government employment, and economic benefits. This attitude towards English parallels the role of ASL in Ghana, where its history and socio-economic advantages contribute to its perceived value.

During the colonial era, proficiency in English was highly valued, offering Ghanaians the opportunity to secure prestigious positions as government workers with lucrative salaries (Obeng, 1997:72). Ghanaian oral history also reveals that individuals with basic English skills were employed by colonial masters as interpreters. These historical circumstances have elevated English to a position of high prestige and status in Ghana, posing a threat to the use and vitality of Ghanaian languages, particularly in urban areas (Guerini, 2008; Owu-Ewie & Edu-Buandoh, 2014).

This inclination to prioritize English over local languages may have deep historical roots. According to Obeng (1997:73), Ghana has a history of punishing students for using Ghanaian languages on school premises. I vividly remember being subjected to wearing a large necklace made of empty snail shells as a form of punishment, aimed at humiliating and discouraging the use of vernacular languages in school. These practices likely contribute to the prevailing attitudes towards our local languages within the framework of formal education and language selection.

During the 1500s, Ghanaians began encountering English through various channels, including international travel, exposure, education, and intermarriage/cohabitation with British individuals (Simo Bobda, 2000). This early and prolonged exposure to the English language had a profound impact on Ghanaians, leading to the formation of a positive attitude towards English (Simo Bobda, 2000:186). Consequently, Ghanaians developed a distinct Received Pronunciation, setting them apart from other English-speaking countries in Africa.

The extensive contact with English during this period laid the foundation for a favourable perception of the language among Ghanaians. This positive attitude towards English continues to shape language practices and linguistic behaviours in Ghana, influencing the sociolinguistic landscape and the status of English as a prestigious language in the country.

Concluding remarks

In summary, language ideology greatly influences GSL usage and prestige. The contact between GSL and ASL, the presence of Signed English, and the historical and socio-economic significance of English all contribute to the language attitudes and linguistic structures observed in the deaf community and urban Ghanaian society. Understanding these ideological factors is crucial for comprehending the dynamics of GSL and its place within the linguistic landscape of Ghana.

6.5.3 The relationship between foreign-based sign language and locally evolved sign language: The sign language situation in Ghana

The language ideologies within the Ghanaian deaf community shed light on how signers perceive sign language and the various signing systems around them. These ideologies shape the way they describe and categorize different sign languages and variants. In this discussion, we will explore the signers' ideologies and language practices, proposing the existence of a pluridimensional continuum within the broader deaf community in Ghana.

Signers use different terms to describe ENGLISH and LOCAL signing systems. ENGLISH is often labelled as HARD, "English way", "Educated SL", or "Pretend SL". In contrast, LOCAL signing systems, including village sign languages, are described as GESTURE, "deaf (-POSS)", "local SL", "true signing," "right SL", or "spontaneous signing." To differentiate between ASL and GSL, signers use abbreviations such as A-S-L or G-S-L. ASL is referred to as SOFT, “foreign SL”, "white", or "America". These terminologies reflect the signers' ideologies and their conceptualization of sign languages within their community.

I propose that there are multiple signing systems falling under the umbrella term GSL, forming a multidimensional continuum. Defining this pluridimensional continuum becomes essential, given the challenge of fully characterizing GSL. Willemyns (1987) was one of the first scholars to refine the theoretical concept of a continuum, transitioning from a unidimensional to a pluridimensional framework.

Willemyns (1987) explains that the unidimensional view of a continuum focuses solely on one aspect of communication, such as the distinction between a dialect and a standard code. Conversely, a pluridimensional continuum encompasses the entire range of codes available to language users, taking into account

communicative competency. According to Willemyns (1987:34), communicative competency should not be confined to a single code but should encompass the ability to switch between codes or variants based on the specific circumstances of the linguistic interaction. Willemyns argues that individuals with communicative competency within the pluridimensional continuum have mastered various codes within their language continuum. They can effortlessly switch between these codes when the context requires it. By using his concept of advanced communicative competency and the pluridimensional continuum, Willemyns (1987) introduces his theoretical model of language continuum and diglossia. This model proves valuable in explaining the sign language situation I have observed in Ghana.

The historical introduction of ASL and Signed English in 1957 for deaf education in Ghana resulted in the coexistence of foreign-based signing systems and locally evolved signs. ASL and Signed English gained prestige as languages used for academic and official purposes, serving as the language of instruction. Within the locally evolved signing systems, some codes were considered more prestigious than others. Signers viewed codes labelled as LOCAL or NATURAL as innovative, iconic, and suitable for filling lexical gaps in the foreign-based signing systems. Conversely, codes labelled as GESTURE, VILLAGE, or ILLITERATE had lower status and were not encouraged for use in formal setting.

Furthermore, within the educational context, the interaction between foreign base signing systems and locally developed signs has led to the emergence of additional signing varieties, such as BROKEN[121] and C-O-D-E, along with contact-induced features like initialization. The resulting national sign language in Ghana, known as GSL, encompasses all these signing varieties and contact-induced features, with ASL and Signed English serving as the external lexifiers.

It's worth noting that spoken languages have also played a role in the educational setting. Throughout history, deaf Ghanaians have been influenced to structure their signing either based on spoken language or a hybrid form that lies somewhere in between. From a linguistic perspective, I view the national sign language in Ghana as a pluridimensional continuum, encompassing a range of signing variations found within the broader deaf community. This continuum extends from educated signers to those who have not received formal education.

To visually represent my understanding of the evolution of the GSL landscape, I have included an infographic in Figure 182. The infographic visually portrays the linguistic influences that have contributed to the development of the GSL landscape throughout its history.

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[121] NB: Among speakers of the hearing community, “Broken” is another name for pidgin.

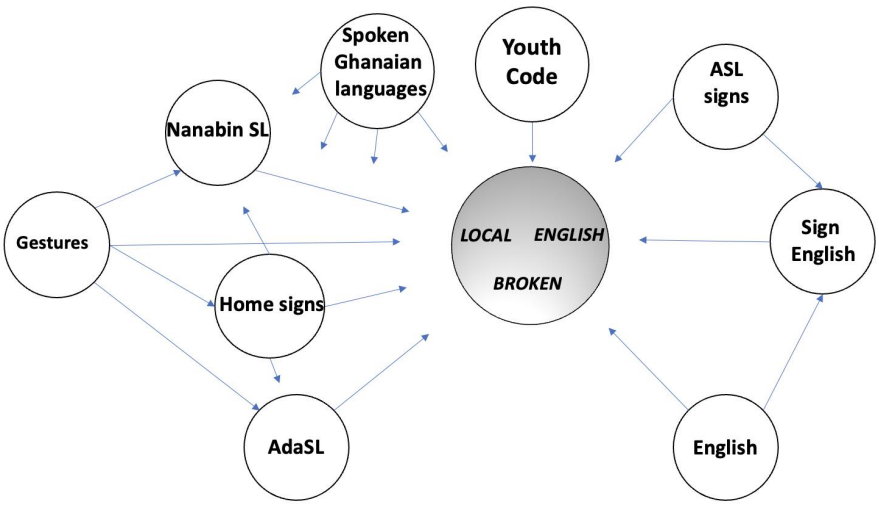

Figure 182: GSL and the sign language landscape in Ghana

The national sign language in Ghana can be understood as a hybrid of locally evolved signs and foreign-base signing systems, characterised by both a continuum and triglossia with a double overlapping diglossic situation. Although signers may not have specific linguistic terminology to describe their language situation, their ideologies reflect their understanding of the national sign language. Figure 182 above, GSL is depicted as the central national sign language, encompassing all known signing systems in Ghana. The arrows in the infographic represent the interrelation between the different signing systems and their influence on the national sign language.

While the various signing systems can be distinguished, the national sign language exists as a pluridimensional continuum. Three main codes within this pluridimensional continuum are ENGLISH, BROKEN and LOCAL. Even outside the continuum, signers using either of these codes (i.e., ENGLISH, BROKEN & LOCAL) are still considered as using GSL. It is worth noting that certain codes carry more prestige than others. A signer with communicative competence is described as having mastered all the signing codes within the continuum, making them competent native speakers (Willemyns, 1987). According to Willemyns (1987), individuals with communicative competence can adopt any available variants within the continuum, regardless of formal or informal settings. In other words, ENGLISH can have two versions: ENGLISH _1 for formal settings and ENGLISH_2 for informal settings. Similarly, LOCAL can have LOCAL_1 for formal settings and LOCAL_2 for informal settings. It is plausible to propose such a configuration for the Ghanaian context based on general observations, although further research is needed to solidify this conclusion. In my evaluation, I consider the BROKEN variant to play a

role that can be used in both formal and informal settings, acting as a bridging version between ENGLISH and LOCAL.

The understanding of the GSL situation aligns with Batibo's theory proposing that a triglossic structure that can be likened to a doubly overlapping diglossic framework, where two languages (High (H) & Low (L) varieties) intersect at two distinct levels, as depicted at both ends in Figure 184. In spoken languages in Ghana and Africa at large, it has been argued (by Agbozo and ResCue, 2020; Batibo, 2005; Yevudey & Agbozo, 2019) that there is an overlapping interplay between the ex-colonial language and the dominant language, as well as the minority language and the dominant language in a triglossic framework (see Section 1.1 of Chapter 1). These intersections give rise to intricate linguistic phenomena, including language conflicts, code-mixing/switching, borrowing, interference, and dual linguistic allegiances (Batibo, 2005: 27ff). This conceptualisation of triglossia as a doubly overlapping diglossic structure by Batibo (2005) remarkably encapsulates the dynamics of sign language within the GSL landscape. Building upon Batibo's language usage model in Africa, I propose a similar structure for the three signing varieties (ENGLISH, BROKEN, & LOCAL) identified in the GSL landscape (see Figure 183). In the realm of sign languages in Africa, the Ex-colonial language typically corresponds to a foreign-based sign language rooted in ASL or French Sign Language. In the Ghanaian context, this foreign-based sign language is identified as ENGLISH. BROKEN represents the Dominant indigenous language, while the Minority language is LOCAL.

H	Ex-colonial language (for official and technical medium)	
L	Dominant indigenous language (lingua franca)	H
	Minority language (language of limited communication)	L

Figure 184: Batibo's triglossic structure model of language use in Africa (Batibo, 2005:17&18)

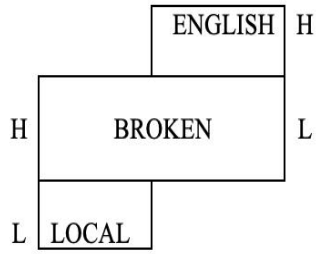

Figure 183: Proposed framework of triglossia and a doubly overlapping diglossia within the GSL landscape

Illustrating the application of the framework, let's examine the case of a female deaf graduate from a secondary deaf school. In her home environment, she might employ the LOCAL signing system when communicating with her deaf children, switch to the BROKEN variety when interacting with fellow deaf community members, and use ENGLISH in official settings, such as during a job

interview for a teaching position. Moreover, in dynamic situations involving both deaf and hearing signers or a mix of educated and semi-educated signers, the phenomenon of codeswitching or translanguaging may become apparent. The position of BROKEN within the framework introduces a double overlapping diglossia, embodying both high and low varieties in relation to ENGLISH and BROKEN. In specific contexts, such as the home environment, BROKEN may be regarded as a high variety employed for functions of elevated linguistic complexity. Conversely, in a classroom setting, BROKEN may assume the role of a low variety, tailored to facilitate simpler linguistic interactions.

In addition to the triglossia and a doubly overlapping diglossia within the GSL landscape, there is also significant interpersonal variation within the language. Signers in Ghana exhibit diverse language practices and ideologies, leading to variations in how GSL is used and perceived among individuals. Interpersonal variation in GSL can be observed in terms of signing styles, lexical choices, grammatical structures, and cultural influences. Signers may have their own unique signing styles, influenced by factors such as their age, education, regional background, exposure to different signing systems, and personal preferences. For example, certain signs may be more commonly used by older signers, while younger signers may introduce new signs influenced by contemporary culture or technological advancements. Or some signers may adhere more closely to the grammatical rules of English, while others may exhibit distinct grammatical features that have emerged within the local deaf community. This variation in grammar reflects the individual's language background, exposure, and the influence of other signing systems. Furthermore, cultural factors play a significant role in shaping GSL and its diversity. Cultural variations can manifest in the use of specific gestures, facial expressions, or body movements that convey nuanced meanings within the GSL context. It is essential to recognize and respect interpersonal variation in GSL as it contributes to the linguistic richness and diversity of the language.

Understanding the diversity within GSL and their appropriate usage in different contexts is crucial for effective communication within the Ghanaian deaf community. By acknowledging the complexities of GSL and its variants, we gain insights into the diverse linguistic landscape and the importance of studying language ideologies to promote inclusivity and appreciation for GSL landscape as a vital part of deaf cultural identity.

ENGLISH and LOCAL: Diglossia and Continuum

The concepts of diglossia and continuum are not new in the field of sign linguistics, as they have been observed and discussed in relation to ASL as well. Scholars such as Woodward (1972, 1973b), and Woodward and Markowicz (1975) have explored the diglossic and continuum aspects of ASL. Considering Ghana's historical

connection with ASL, it is plausible to assume that the ASL influence on GSL, which was imported into Ghana, still has traces in the ENGLISH, as discovered in Chapter 2. However, no link has been identified between LOCAL and ASL.

In the early stages of studying sign languages, researchers identified diglossia in several national sign languages, including British Sign Language, Danish Sign Language, and ASL, even in communities that were considered non-diglossic in terms of spoken languages (Deuchar, 1977; Hansen, 1975; Stokoe, 1969). Interestingly, Arabic Sign Languages, despite being within a diglossic speech community, are claimed not to exhibit diglossia (Abdel-Fattah, 2005). Abdel-Fattah (2005) suggests that factors such as the complexity and stability of the national language and the nature of formal education for deaf people contribute to the presence of diglossia. Formal education can introduce "superior and inferior language" varieties, with the superior variety being considered grammatical and associated with formal settings, while the inferior variety may be deemed improper or non-existent. These factors seem to account for the diglossic situation observed in the national sign language in Ghana.

In the context of GSL, ENGLISH is often associated with high prestige and is used for official purposes such as instruction, religion, and media. It aligns with the "grammatical English" associated with the High variety in diglossia (Firth, 1966 as cited in Deuchar, 1977: 348). On the other hand, similar to Firth's (1966) report, deaf Ghanaians also label the low variety of GSL as SPONTANEOUS and associate it with informal settings, such as private conversations among friends and dialogues among deaf children (Abdel-Fattah, 2005; Stokoe, 1969).

Through informal discussions with participants involved in deaf education, evidence suggests the existence of sign language diversity in all deaf schools (1st cycle education) across Ghana. The ENGLISH is used for official purposes, such as instructional language, while the BROKEN and LOCAL are used by students in unofficial contexts, such as communication in dormitories.

Consultations with teachers in deaf schools reveal that students from different regions in Ghana bring their own regional variants of GSL. For example, the BROKEN and LOCAL used by students in the Northern part of Ghana exhibits unique features, including initializations, iconicity, and specific morphological word formation processes. These signs reflect the Ghanaian environment, particularly the Northern region, and differ from some widely known iconic signs in GSL (GNAD, 2001). [122] For instance, Figure 185, illustrate the signs for BANKU and OKRO. Figure 185A and B represents the variant used by the students, while Figure 185C and D depicts the conventional signs found in the GNAD dictionary (GNAD, 2001).

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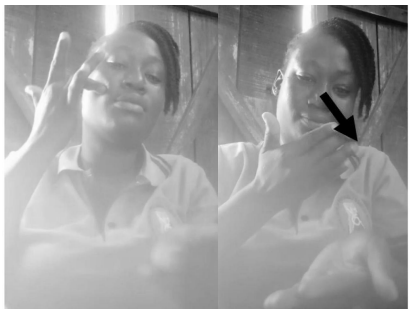
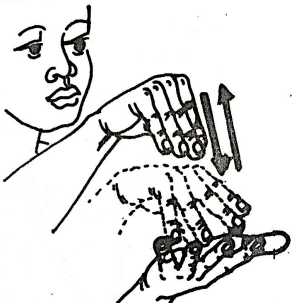
[122] Note: This informal discussion was based on personal experience of my deaf consultant who got transferred to the North as a teacher for deaf students.

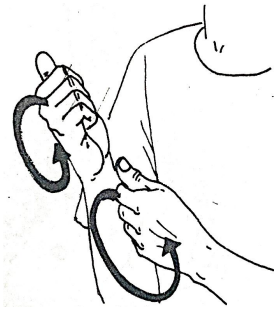
A: OKRO - 1



B: BANKU - 1



C: OKRO -2 (GNAD 2001:25)



D: BANKU -2 (GNAD 2001:29)

Figure 185: Lexical Variations in GSL

While the variant used by Northern students may be mutually intelligible with the one found in the dictionary, some signs may be ambiguous for interlocutors not familiar with the Northern culture.[123]

What intrigued me was the response I received regarding the students' attitude towards unfamiliar signs. Unlike in Mampong, where mocking is common, students in the North become ANGRY. This attitude stems from their efforts to advocate for their standard variant used in their community (school). They refer to

[123] It is important to clarify that presenting the variant used in the northern part of Ghana is not intended to stigmatize or mock signers. Rather, it is a valuable linguistic discovery that merits mention for future research. To ensure transparency, I would like to provide the following comment to my readers, considering an engagement my deaf research assistant had with other colleagues. He shared on a deaf community WhatsApp page that "Northerners have their own special sign language, apart from our main sign language." However, his comment was met with disapproval. He received rebukes and was warned to "be very sensitive to comments that can create division." It is crucial to approach this topic with sensitivity and respect, recognizing the importance of promoting unity and understanding within the deaf community. The intention of presenting the linguistic variation in GSL is solely for academic purposes and should not contribute to any form of division or discrimination.

their variant as GSL or LOCAL. According to my consultant, the students express a strong preference for their variant of sign language and are resistant to adopting the conventionalized or formal register used by the teachers.[124] However, it is worth noting that younger children, around the age of five, are more open to learning some signs from the newly transferred teachers from other regions. This suggests that while there is a resistance to the teachers' variant among older students, there is a potential for linguistic influence and adaptation among younger learners.

It is likely that regional variations in sign language exist in most 1st cycle schools for the deaf throughout Ghana. However, as student progress to the 2nd cycle Senior High Schools for the Deaf in Mampong, these regional variants tend to be conventionalized into the de facto national sign language (GSL). Graduates from these schools then play a significant role in disseminating the conventionalized GSL across the country through their socioeconomic activities. Additionally, Deaf-led associations such as GNAD, Churches, and Sports also contribute to the propagation of the de facto national sign language (GSL) through their activities nationwide. This process of convergence and standardization of sign language variants at the second cycle level, along with the efforts of various deaf organizations, helps establish and promote a unified sign language system across Ghana.

LOCAL and BROKEN: Signing Dynamics

This section explores the prestige associated with different varieties of GSL and the linguistic dynamics within the deaf community. Specifically, the focus is on LOCAL, which is perceived to have low prestige and BROKEN with a higher prestige than LOCAL. The discussion also compares the attitudes towards BROKEN, highlighting the preferences and motivations of deaf individuals.

LOCAL is often associated with low prestige and uneducated members within the deaf community. The transmission of this variety primarily occurs through interactions between educated signers and uneducated deaf individuals. While uneducated adults may have a good command of LOCAL, they tend to avoid using it in conscious environments due to stigmatisation. The negative perception of LOCAL is exemplified by one participant's statement that some deaf signers view LOCAL signs as "ugly." The lack of awareness among signers regarding the GSL

[124] In 2017, I encountered a similar comment from a hearing teacher in a Deaf school in the Central Region during an outreach program organized by the University of Ghana. This incident highlights that such attitudes are not exclusive to the northern part of Ghana and are not aimed at criticizing the hearing ability of teachers. Rather, they stem from a lack of familiarity with a specific sign variant among the students. It is important to acknowledge that these attitudes are related to linguistic differences and should not be misconstrued as judgments on the teachers' ability.

continuum and diglossic situation may be attributed to the low status and prestige associated with LOCAL. Some signers may even deny the existence of low-prestige sign language varieties, perceiving them as less worthy of recognition as a language.

In addition to ENGLISH, BROKEN holds a higher prestige within the deaf community. BROKEN is believed to have developed from both ENGLISH and LOCAL. Deaf Ghanaians prefer their BROKEN as it allows them to avoid English grammar, which is undesirable in deaf spaces. This preference aligns with the desire to distance themselves from English. Similarly, Woodward and Markowicz (1975) note that deaf Americans prefer ASL over their pidgin sign language due to their avoidance of English. In both contexts, signing varieties incorporating English elements are associated with higher status.

Woodward and Markowicz (1975) also observed that in America, pidgin sign language facilitates communication between hearing signers and deaf signers, often within a diglossic continuum. Deaf individuals would employ pidgin sign language to communicate with hearing signers. This sociolinguistic pattern may resonate with the practices among deaf Ghanaians, where ENGLISH or BROKEN is predominantly used for transparent communication when interacting with hearing signers.

The discussion highlights the prestige dynamics within the Ghanaian deaf community concerning LOCAL and BROKEN. LOCAL is often associated with low status, while BROKEN is viewed more favourably due to its avoidance of English elements. Understanding these variations and perceptions is vital for fostering inclusive language policies and promoting the development of GSL varieties that cater to the needs and preferences of the deaf community in Ghana.

Exemplifying individual signers within the GSL community

In this subsection, I examine the individual signers' representation within the complex linguistic landscape of GSL. I acknowledge the existence of multiple signing varieties within GSL, including ENGLISH, BROKEN and LOCAL signing. While there have been claims of ASL usage in Ghana (e.g., Edward & Akanlig-Pare, 2021), it should be noted that the ASL used in Ghana is not an exact replica of ASL as found in North America. Rather, it exhibits only lexical items similar to ASL with Ghanaian nativisation. Nonetheless, American visitors familiar with ASL may recognise certain aspects of signing among Ghanaian individuals.

To illustrate the diverse competencies and signing varieties among GSL signers, I present a continuum scale model (Figure 186) encompassing three prototypical signer profiles (A, B & C). This model highlights the varying linguistic repertoires and competencies of GSL signers.

	Signer - A	Signer - B	Signer - C
ENGLISH	LOW AVERAGE **HIGH**	LOW **AVERAGE** HIGH	**LOW** AVERAGE HIGH
BROKEN	LOW **AVERAGE** HIGH	LOW **AVERAGE** HIGH	LOW **AVERAGE** HIGH
LOCAL	**LOW** AVERAGE HIGH	LOW **AVERAGE** HIGH	LOW AVERAGE **HIGH**

Figure 186: A continuum scale model of GSL signer profiles

In this discussion, I explore the spectrum of competencies within the GSL community and the implications for communication between signers. At one end of the spectrum, we have a native signer (Signer A) who exhibits a high level of competency in ENGLISH, an average competency in BROKEN, and low knowledge of the LOCAL. On the other end, we have a signer (Signer C) who lacks knowledge of ENGLISH but possesses a high proficiency in LOCAL and an average understanding of BROKEN. Despite their differing competencies, signers A and C can still interact effectively due to their shared knowledge of BROKEN. From my experience within the community, Signer A may be considered educated, while Signer C may be deemed uneducated or unschooled. As such, Signer C's limited knowledge of the school base sign, i.e., ENGLISH, is usually due to language contact within the community.

Signer B exemplifies a semi-educated signer with a fair knowledge of all variants (ENGLISH, BROKEN & LOCAL) within the GSL community.[125] Such an individual (Signer B) can adeptly switch between the variants depending on the context. Thanks to their diverse signing knowledge, Signer B can communicate effectively with monolingual individuals not part of the GSL continuum, such as those using only LOCAL.

Due to language prestige in the community, most signers may strive to attain the competencies of Signer A, leading to a growing number of deaf individuals actively acquiring competence in ENGLISH and BROKEN lexicon. It is important to note that it is rare to find a signer with high competence in all the variants within the continuum, primarily due to language attitudes. Evidently, language attitude plays a significant role in language competency, as noted by Siti (2008), who found a correlation between learners' positive attitudes towards a language and their competency level. Most educated deaf signers can also be

[125] Note: Signers who contributed lexical data on LOCAL for Chapter 3 falls under this category; signer B.

considered under Signer B category since ENGLISH, BROKEN and LOCAL are all found in deaf schools.

I suppose that the role of ENGLISH and LOCAL provides an opportunity for an intermediate signing variety, known as BROKEN. While not explicitly mentioned, Schmaling's work in northern Nigeria (2003:306-307) introduces the concept of an intermediate signing variety observed among students. This variety arises when students blend different accessible languages, such as ASL, English, and Hausa Sign Language. Willemyns' continuum theory (1987) suggests that such an intermediate variant may exist, combining features of both formal and informal languages. It may be used in contexts where the informal variant would be too casual or inappropriate. In Ghana, signers may be oblivious to the language continuum but recognise a diglossic situation made up of formal GSL (high variety) and informal GSL (low variety). A similar phenomenon was noted by Willemyns (1987) in West Flemish towns, albeit among hearing individuals. When considering signers' adoption of an intermediate signing variety, it is possible that the situation arises due to the devaluation of their local language, as observed among some deaf individuals in Nigeria (Schmaling, 2003). In the Ghanaian continuum, ENGLISH is not only in contact with LOCAL but also with other signing systems (e.g., AdaSL, NanaSL) and an intermediate variant (i.e., BROKEN).

In the signers' ideology, ENGLISH holds high prestige while LOCAL holds low prestige. BROKEN is a fluid option often preferred due to its communicative efficiency. However, as a general misconception, educated deaf individuals may hesitate to use it extensively to avoid potential distortion of their English language proficiency, as they may have been warned against it during schooling (Gadagbui, 1998). Similar cautionary attitudes have been observed among hearing Ghanaians regarding using Pidgin English (Quarcoo, 1994:335).

The representation of individual signers within the GSL continuum showcases the varied competencies and sign language diversity in Ghana. The continuum encompasses a range of signers, from those with high competence in ENGLISH to those with a strong command of LOCAL. The triglossia with a double overlapping diglossia for GSL further contribute to the linguistic complexity within the GSL landscape. Understanding and studying the individual signers' placement within this continuum is essential for research on the sociolinguistic dynamics of sign languages in the urban deaf community in Ghana.

6.6 Concluding remarks

The chapter reveals signers' categorization of signing forms within the deaf community, with 16 general labels representing different perspectives and ideologies. These labels (SIGN, PRETEND, SPONTANEOUS, DEAF (-POSS), INITIALISATION, HARD/SOFT, BROKEN, LOCAL, NATURAL, C-O-D-E, GESTURE,

ILLITERATE, VILLAGE, ENGLISH, ASL/AMERICA and GSL/GHANA) reflect the prevailing ideology but also highlight overlapping and differing opinions. From a linguistic viewpoint, the findings suggest that the sign language situation in the Ghanaian deaf community can be understood as a pluridimensional continuum encompassing triglossia with a double overlapping diglossic signing systems. Linguistic categorisations may differ from how deaf individuals perceive and label these signing forms.

The pluridimensional continuum spans from educated signers who have received formal education to those who have not. Within this continuum, the GSL landscape consists of three main varieties; ENGLISH, BROKEN and LOCAL, each influenced by different factors. Signers' attitudes towards their languages mirror those of hearing Ghanaians, with a shared perception of foreign languages, particularly English, as more prestigious than local languages. This shared ideology is believed to have historical roots. It is evident that the prestige associated with ASL and English impacts on the GSL landscape. The language choices of signers in formal and informal settings reflect their desire for transparent communication and social acceptance. However, the limited inclusion of LOCAL signs in official resources highlights the stigmatisation of the informal variety and the preference for ENGLISH.

Within the deaf community, ENGLISH is considered prestigious due to its perceived contribution to socioeconomic benefits. Similarly, signers often attribute prestige to ASL due to its perceived socio-economic benefits, although not necessarily for socio-cultural interaction. Signers commonly view ENGLISH as a superstratum or superstrate language capable of conferring socioeconomic advantages to its users while also bridging the lexical gaps in educational domains. On the other hand, LOCAL elicits both positive and negative attitudes. Proficiency in LOCAL is associated with cultural identity and solidarity but monolingual use can also be judged as inappropriate or lacking linguistic legitimacy. It is important to highlight that due to the low status attributed to certain LOCAL variants, some signers in Ghana may be unaware of their existence as a language variant or even choose to deny them. Reflecting the impact of prestige on language acceptance and identity.

Understanding the pluridimensional continuum of GSL landscape and the associated language ideologies towards its variants is crucial in effectively teaching and promoting GSL in the country. Language educators and policymakers must take into consideration the diverse perspectives and attitudes towards GSL varieties and ensure that they are addressed in sign language teaching approaches. In conclusion, this chapter contributes to our understanding of the complex sociolinguistic landscape of GSL in Ghana. It emphasises the importance of considering the role of language ideologies, the impact of prestige on language acceptance and a pluridimensional continuum encompassing triglossia with a double overlapping diglossia for GSL.

7.
IMPLICATIONS AND CONCLUSION

The principal aim of this book is to explore the GSL landscape and its relationships with ASL and other locally evolved sign languages in Ghana. The book's aim is inspired by a critical objective to investigate the susceptibility of an established sign language to the influences of gestural substratum from its surrounding environment. This chapter is organised as follows: Section 7.1 summarises the historical context of GSL within deaf education and deaf networks, synthesising the findings on lexical comparisons, productive SASS, and language ideologies explored in previous chapters. The remaining sections examine the broader implications of these findings. Section 7.2 discusses the multilingualism in the GSL landscape, subdivided into discussions on the interplay between ENGLISH, BROKEN, and LOCAL as signing varieties in the GSL landscape (Subsection 7.2.1) and the language practice of eclipsing some varieties within the GSL landscape (Subsection 7.2.2). Section 7.3 is on oralism's impact on Ghana's sign language landscape. Section 7.4 addresses the complex issue of GSL's susceptibility to gestural influence. Finally, Section 7.5 concludes the chapter by summarising the key insights and offering directions for future research.

7.1 Summary of the results

In the effort to comprehend GSL, Chapter 2 of this book explores the history of GSL. It begins by tracing the origins of GSL back to the introduction of ASL signs and Signed English in 1957 by Rev. Andrew Foster in the context of deaf education. The sign language used in deaf education was named GSL in the 1990s, reflecting a Ghanaian identity. The introduction of the name (GSL) was through the effort of GNAD leadership at that time, notably Mr. Francis Boison and Mr. Alexander D. Okyere. Before this renaming initiative, the national sign language used in deaf education was known as ASL. The label GSL gained attention after the production and dissemination of the GSL dictionary by GNAD in 2001, marking a formal endorsement for adopting the new name GSL within the deaf education landscape. The production of the dictionary was not accomplished in isolation but found support through collaborative efforts with the Ghana Community-Based Rehabilitation Programme, UNESCO, and other international entities. Historically, after the government took over the school from Rev. Foster in 1967, the use of sign language in deaf education was officially banned due to oralism for over two decades. Remarkably, Ghanaian gestures were allowed in deaf education during oralism. Chapter 2 highlights a significant turning point from 1988 to 1999 when Total Communication policies allowed ASL to resurface officially. This period also

witnessed the introduction of ASL dictionaries and the documentation of local signs. The chapter pays tribute to key individuals and deaf-led associations that have been instrumental in preserving and promoting deaf culture.

Chapter 3 focused on a lexical study examining the relationships between ASL, GSL (formal & informal), AdaSL and NanaSL. Comparing the relative distance between lexical signs of these sign languages, Chapter 3 finds that the informal variant of GSL is more closely aligned with AdaSL and NanaSL, whereas another variant (formal GSL) resembles ASL more closely. Handshape types emerged as the primary phonological feature distinguishing ENGLISH, BROKEN, and LOCAL from ASL, showing the susceptibility of this parameter to change over time.

Chapter 4 of this book analyses size and shape expressions within GSL and gestural communication in Ghana. At the heart of this study is the exploration of body-based SASS, a pivotal element in investigating the adaptability of established sign languages to the gestures of new environments. The primary focus centres on whether GSL exhibits susceptibility to gestural influences. Two noteworthy observations contribute to this exploration. First, GSL signers actively employ body-based SASS, akin to gesturers in Ghana. Secondly, adherence to the implicational hierarchy of body-based SASS concentration on the hand parts was discovered in GSL. The chapter focuses on two primary categories: shape depiction and size depiction. For shape depiction, handshapes, tracing, and handling handshapes were used. Gesturers apply similar handshapes like signers but with more flexibility in articulation locations. With similar Tracing handshapes, signers and gesturers employ different strategies for distinguishing 2D and 3D shapes. Handling handshapes exist in both systems but are minimally used. Regarding size depiction, GSL signers and gesturers employ diverse techniques, including hand and finger apertures, interactions with the ground, and interactions with the body, often incorporating movements and visual cues. Both systems share common strategies and techniques for conveying shapes and sizes. However, distinctions arise, particularly in the reliance of gesturers on visual comparisons and qualitative descriptions in speech. Gesturers also use nearby surfaces like tables, walls, and interlocutors' bodies, while signers are primarily constrained to their bodies or space.

The remainder of the chapters, focusing on language ideology, lead into Chapters 5 and 6, which discuss signers' judgments on body-based and space-based SASS and the broader signing situation in Ghana, respectively. These findings delve into the complex interplay of factors within the Ghanaian signing community, such as nativeness, education, age, familiarity, and prestige, and how they relate to language usage and perception. Relying on judgment experiment as a research method in Chapter 5, signers associated body-based SASS with indigenous Ghanaian attributes and iconicity, often labelling the sign as NATURAL, LOCAL, or GESTURE. On the other hand, space-based SASS is often considered foreign and associated with ASL, high prestige and educated individuals. Even though education

does not seem to restrict the use of either variant, space-based SASS is ideologically associated with educated signers.

Finally, Chapter 6 used focus group discussions, questionnaires, observations and informal elicitations, to explore the complex sociolinguistic landscape of signing in Ghana. Shedding light on the different perspectives, ideologies, and dynamics of a pluridimensional continuum encompassing triglossia with a double overlapping diglossia within the deaf community. The chapter reveals the tripartite signing practices that include ENGLISH, BROKEN, and LOCAL. The chapter also demonstrated that signers had their language naming or labelling for the signing systems in Ghana. The community's attitudes towards these signing practices are multifaceted. Signers favour ENGLISH due to its status and prestige, yet a strong connection to LOCAL persists due to identity and familiarity/efficiency.

7.2 Multilingualism in GSL Landscape

Prior to the commencement of this study, GSL was perceived as a singular entity. However, the discoveries presented in this book unveil a nuanced perspective, revealing multilingualism. At the personal level, signers exhibit the ability to seamlessly transition between different varieties in a triglossic manner. Conversely, in certain contexts only a single variant maybe observed. In the subsequent subsection, I delve into these discussions, offering a summary of the data that addresses these issues.

7.2.1 Exploring ENGLISH, BROKEN, and LOCAL Variants

Drawing from the historical, linguistic, and ideological insights presented in this work, I posit that what is commonly designated as GSL actually consists of three primary signing practices, namely ENGLISH, BROKEN and LOCAL. Prior to the commencement of this research, other researchers with different perceptions have also observed a local signing variant (Abudu, 2019; Addo, 1997; Edward & Akanlig-Pare, 2021; Nyst, 2010). With the recognition of local signing varieties, signers employ various terms to distinguish them. This recognition underscores the presence of a multilingual situation with substantial overlaps. Notably, many African societies have been identified as triglossic with the interplay of multilingualism and education. Upon thorough analysis of the data, it becomes apparent that the sign language landscape within the broader deaf community in Ghana is also characterized by triglossia (Chapter 6).

As noted in chapter 1, several studies address the existence of a local signing variety. Addo (1997) appears to be one of the earliest authors to employ the term "local sign language" in conjunction with an ASL-based sign language in Ghana. Edward and Akanlig-Pare (2021) identify it as home signs among deaf Ghanaians, framing it as gestural communication within domestic settings. Abudu

(2019) similarly characterised a variant of signing observed in deaf schools as a home sign used together with ASL, citing its iconic nature and resemblance to environmental gestures. Nyst (2010) also notably highlights the presence of local or natural signs in Ghana. Characterising GSL as an ASL-based sign language incorporating local or natural signs. According to Nyst, integrating local or natural signs into the ASL-based sign language serves a purpose beyond merely filling lexical gaps. Rather, it reflects a growing awareness of the significance of establishing a distinct national sign language while recognising the "pre-existing local signs." Consequently, due to some of the local signs appearing in the first GSL (GNAD, 2001) dictionary, Nyst (2010) noted that local signs are embraced and elevated in status.

Based on the preceding discussions, I am evidently not the initial discoverer of a local GSL variant, or the first to talk about the plausibility that multiple varieties may coexist. Nevertheless, the unique contribution of this book lies in delineating the distribution of these variants. The primary achievement of the study is illustrating a scenario characterized by a pluridimensional continuum that involves triglossia, featuring a double overlapping diglossia within the GSL landscape. I show that ENGLISH, BROKEN, and LOCAL coexist, with each variant fulfilling unique communicative roles. The observations made in this book, especially on the fact that some signs from LOCAL have been catalogued in the GNAD dictionary (GNAD, 2001), support the coexistence of the variants. However, it is essential to note that some LOCAL signs outside deaf space are rarely used or recognised by some deaf members. In chapter 6, for example, I show how some members of the deaf community disapprove of the existence of some local signs in the dictionary. This lack of acceptance may correlate with language prestige and stigmatisation tied to specific signs for some deaf educated signers.

In Chapter 1 (Subsection 1.1), I introduced ENGLISH, BROKEN, and LOCAL labels to distinguish these variants. Although further research and semantic discussion may refine these labels, this book recognises ENGLISH, LOCAL, and BROKEN as distinct signing varieties in the GSL landscape. These varieties share some features (e.g., Incorporation of ASL Signs, Formality, prestige) while retaining their unique characteristics:

Incorporation of ASL Signs: Within these varieties, namely ENGLISH and BROKEN, there is an extensive integration of ASL signs, with ENGLISH likely to exhibit a more pronounced influence due to its strong educational focus. ASL signs play a substantial role in the lexicon of ENGLISH and BROKEN, signifying their hybrid nature. In contrast, LOCAL distinguishes itself by abstaining from ASL signs as illustrated by lexical similarity rate of 24% and draws its influences mainly from local natural gestures.

Formality: ENGLISH and BROKEN can be effectively used in formal and informal situations, while LOCAL is primarily an informal signing variety. This flexibility allows all three varieties to adapt to various communication contexts.

Acquisition: All three varieties are attainable through interactions with other signers. ENGLISH is typically taught in formal educational environments, whereas LOCAL and BROKEN are often learned through informal interactions within the deaf community.

Prestige: While ENGLISH holds a prominent status within the signing community, it is important to note that both LOCAL and BROKEN enjoy respect and recognition as genuine and integral constituents of the broader GSL landscape. Their distinct characteristics and contributions are acknowledged and esteemed.

Signers have employed various labels to capture the diverse sign languages within the GSL landscape, each carrying its associated prestige and connotations (Chapter 6). Some variants have been linked to lower prestige and labelled as ILLITERATE, GESTURE, or VILLAGE. In comparison, some labels are associated with higher prestige, such as ENGLISH, GHANA, AMERICA or PRETEND. Positioned between these poles are neutral prestige labels like DEAF(-POSS), LOCAL, BROKEN, NATURAL, or SPONTANEOUS signing. These labels reflect various sociolinguistic aspects of the sign language landscape in Ghana and sometimes overlap in their usage (Chapter 6). For example, in other countries (e.g., India, Nepal, Papua New Guinea and Cambodia) it has been observed that signers could use a different variety of signing with hearing individuals or those with limited formal education with signing labels like GESTURE (Kusters & Sahasrabudhe, 2018) or NATURAL (Green, 2014) or CULTURE (Reed, 2020). These different varieties of signing may sometimes carry lower prestige, face negative attitudes, or even be excluded from being considered fully-fledged languages (Moriarty Harrelson, 2017).

Similarly, in the GSL community, signers often attach low prestige to AdaSL and NanaSL, labelling them as ILLITERATE, GESTURE, or VILLAGE. However, it is important to note that this book primarily focuses on the examination of ENGLISH, BROKEN, and LOCAL signing variants. As such, in-depth studies were not conducted on AdaSL, NanaSL, or the youth code mentioned in Chapter 6, used within deaf schools. These sign languages, such as AdaSL and NanaSL, have the potential to exert influence on GSL, particularly in LOCAL or BROKEN. For instance, Ghanaian gestures have been identified as integrated components of AdaSL, as noted by Kusters (2014a) and Nyst (2007). Similarly, in the case of LOCAL, this integration has been acknowledged by Abudu (2019). Furthermore, when comparing LOCAL with AdaSL and NanaSL, a similarity rate of 36% and 39%, respectively, was observed (Chapter 3). This implies a discernible connection between LOCAL and the village sign languages, although they remain distinct entities (Chapter 3), with AdaSL and NanaSL outside the GSL landscape.

On the other hand, ENGLISH and BROKEN share a significant portion of their lexicon, mostly derived from ASL signs. In contrast, both BROKEN and LOCAL exhibit distinct grammatical structures not found in ENGLISH. While the grammar of ENGLISH is traceable to English, the nature of the grammatical structure in BROKEN and LOCAL remains to be determined. However, insights gleaned from this study allow for some projections and considerations. Given the hypothetical nature of the conditions under which BROKEN emerged (as projected in Section 7.3), it is plausible that it shares a similar grammar with LOCAL. The outreach efforts detailed in Chapter 2, where groups of deaf leaders travelled to various deaf schools to teach and promote local signing instead of Signed English, may have influenced the likelihood of BROKEN and LOCAL sharing a common grammar. Alternatively, another option is how BROKEN may have acquired its grammar. One possibility is that it borrowed grammar from ASL, given the historical information that ASL was introduced to Ghana before the period of oralism. However, a counterclaim against this option suggests that the opportunities for language contact or exposure to acquire ASL grammar would have been limited in the past. A second potential option is to consider that signers may have adopted the grammar of neighbouring spoken languages. Although oralism primarily focused on the English language, historical records indicate that deaf students were also introduced to the predominant Ghanaian spoken language of their school's location. This was an attempt to enable students to communicate with family members who were not proficient in English. Several counterarguments can be made against this option as the source of grammar. Firstly, there may not have been sufficient time for students to fully acquire the grammar of a spoken language during the period of oralism due to its unsuccessful nature in deaf Ghanaian history. Additionally, it would be unusual for people who are deaf or hard of hearing to transition from the grammar of one spoken language (English) to another. Furthermore, Ghana's multilingual society offers various spoken languages, each with distinct grammar, making it challenging to pinpoint which language's grammar might have influenced BROKEN and LOCAL. Nevertheless, it is important to acknowledge that certain spoken languages in Ghana may exhibit pervasive areal similarities, such as the prevalence of serial verb construction or vowel harmony in Kwa languages. Such linguistic similarities have the potential to influence neighbouring sign languages, as exemplified in the case of AdaSL (Nyst, 2007). It is undeniable that spoken languages could impact sign language phonology, morphology, and syntax, as noted by various scholars (Bank et al., 2016; Crasborn et al., 2008; Nyst, 2007; Sutton-Spence, 1999). Oppong (2007:8) documented in his dictionary that, in addition to GSL's connection with ASL, the linguistic structure of GSL exhibits commonalities with Twi, Ewe, Dagbani, and other Ghanaian languages. This statement leads to a third potential option: considering BROKEN as a hybrid form with a fluid grammar.

The grammatical structure of LOCAL and BROKEN needs more research to understand, yet I hypothesise that it differs substantially from ENGLISH. The intricate dynamics within the GSL landscape suggest the existence of a triglossic situation with a double overlapping diglossia (ENGLISH & BROKEN; BROKEN & LOCAL) characterised by low and high-prestige variants, each serving distinct purposes (Chapters 5 & 6). The GSL landscape reflects a multilingual scenario characterised by the fluid use of different variants within the urban deaf community. Given the observed overlap in variant usage in the urban deaf community, translanguaging could be one of the frameworks to describe the signing practices in Ghana (cf. Reed, 2020). This framework conveys that signers may seamlessly transition between variants without distinct boundaries, particularly in deaf spaces. In the translanguaging approach, there is a shifting of focus away from named languages to concentrating on idiolect, representing an individual's complete linguistic repertoire (Otheguy et al., 2015). In the GSL landscape, depending on the context signers could fluidly employ LOCAL, ENGLISH, and BROKEN. Translanguaging seems to offer one of the possibilities that allows us to explore the idiolects of LOCAL, ENGLISH, and BROKEN within the same framework rather than categorising them as distinct languages (Reed, 2020). A translanguaging approach for the GSL landscape could explain a more fluid and gradient examination of individuals' varied modes of communication rather than rigidly separating communication into LOCAL, ENGLISH, and BROKEN. This approach underscores the importance of looking at the diversity of communication styles among individuals, as signers may employ different signing approaches based on various social factors or contexts (Green, 2014; Jepson, 1991; Kusters & Sahasrabudhe, 2018; Moriarty Harrelson, 2017; Reed, 2020). Nonetheless, translanguaging may not provide a comprehensive framework to comprehend the signing dynamics fully. For instance, there could exist a level where the individual idiolect takes precedence in meaning creation. However, when a signer seeks to convey that meaning in interaction with others, reliance on socio-cultural repertoires may become crucial, superseding individual repertoires. It is essential to note that while translanguaging finds support among many linguists, it remains a subject of debate. Scholars like MacSwan (2014, 2017) advocate for distinct grammatical systems for each language, whereas others, such as Otheguy et al. (2015), endorse a unified linguistic system. Nevertheless, criticisms persist despite its transformative potential, especially concerning its implications on ignoring linguistic boundaries (Flores, 2013, 2017; Kubota, 2015).

To summarise, GSL serves as an all-encompassing umbrella term for a diverse array of signing variants. Based on the observed signing practices within the GSL landscape, it could be aptly characterised as a triglossia (LOCAL, ENGLISH & BROKEN) with a double overlapping diglossia (high variety & low variety) coexisting with a low and high variety. Additionally, the framework of

translanguaging is suggested as a potential factor contributing to the observed overlap in variant usage within the broader deaf community.

7.2.2 Eclipse of Variants: Prestige and Sign Language Diversity in Ghana

In addition to the triglossia interpretation, a notable phenomenon challenges the triglossic framework and the concept of translanguaging within the GSL landscape. This phenomenon can be attributed to the significant prestige accorded to ENGLISH, which effectively overshadows BROKEN and LOCAL, leading to what can be aptly described as the "eclipse" of these variants.[126] This eclipse has important implications for recognising and understanding the full spectrum of signing diversity within the Ghanaian deaf community.

The influence of ENGLISH's prestige cannot be overstated. ENGLISH, a more formal and prestigious variant of the GSL landscape, holds a dominant position due to its strong associations with formal education, established norms, and linguistic conformity. This prestige is reinforced by its connection to ASL, an internationally recognised sign language. As a result, ENGLISH often becomes the default or standard reference point when considering the GSL landscape.

In this context, the eclipse of BROKEN and LOCAL occurs as a direct consequence of the perceived superiority of ENGLISH. Deaf users and external observers may predominantly encounter or be exposed to ENGLISH in formal educational settings, academic resources, and more structured interactions. The prevalence of ENGLISH creates an environment where other signing varieties like BROKEN and LOCAL appear marginalised and less visible. Consequently, this eclipsing effect can lead to a skewed perception of the signing landscape within the Ghanaian deaf community. BROKEN and LOCAL, while unique and valuable, might be overshadowed and inadvertently relegated to secondary status due to the dominance of ENGLISH.

To better understand and appreciate the signing practices in Ghana, it is essential to acknowledge and counteract the eclipse of BROKEN and LOCAL. Recognising the existence and importance of these variants, even in the shadow of ENGLISH'S prestige, is a crucial step towards an accurate and comprehensive understanding of the GSL landscape in its full complexity. The concept of multilingualism, which could acknowledge the fluid and dynamic interplay of multiple signing varieties, may provide a more nuanced and accurate lens through which one can view the GSL landscape.

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[126] I would like to express my gratitude to Victoria Nyst, for suggesting that the term "eclipse" aptly describes the phenomenon found in my study.

7.3 Impact of Oralism on the Sign Language Landscape in Ghana

The historical insights into the GSL within the context of deaf education in Ghana reveal two significant implications of the impact of oralism. The first implication relates to the potential development and use of local signing (LOCAL or school-lect) during the period of oralism, cf. Nyst, (2010:420) oralist schools as safe havens for local sign language in East Africa (V. Nyst, PC., 2024). The second implication pertains to the hunger for a previously forbidden sign language (i.e., ENGLISH) after the end of oralism.

Chapter 2 reveals that despite the historical prohibition of sign languages (i.e., ENGLISH), Ghanaian gestures, were permitted in deaf education. The leniency to use gestures was due to the ability of such gestures to facilitate communication between signers and the hearing community in Ghana during the era of oralism. Additionally, oralism prompted the establishment of several deaf schools, creating a conducive space for the emergence of school-lect, relatively free from the influence of ENGLISH or ASL. However, its development could have been shaped by the gestural context prevalent in both domestic and academic settings. Furthermore, the association of deaf education with boarding facilities further encouraged and supported the GSL community in the emergence of locally developed signs (Chapter 2). Consequently, I propose that these gestures bear resemblance to school-lect or LOCAL among deaf individuals (Chapter 4). This notion aligns with Abudu's (2019) postulation that some signers use home signs in deaf schools, originating from the influence of gestures in the family setting and immediate environment. The LOCAL variant may have therefore developed from the use of gesture among different cohorts of deaf students. The emergence of Nicaraguan Sign Language parallels the situation being described for LOCAL, where signers initiate communication through gestures and home sign, eventually giving rise to a new sign language (Coppola, 2002; Kocab, 2017; Senghas et al., 2005). As a result, I anticipate that these LOCAL signs in deaf schools may often go unnoticed by teachers and authorities as a prohibited sign language, allowing the coexistence of local signing with oralist approaches.[127]

Crucially, the language of instruction in deaf education underwent several phases, initially characterized by a decade of Signed English with ASL lexicon, followed by a prolonged 21-year period of oralism. The resilience of signing during this extended oralist era, as discussed in Chapter 2, strongly indicates the eagerness of deaf students to embrace the once-forbidden sign language (i.e., ENGLISH) after the ban was lifted. The impact of this oralist period in this regard, manifests both positive and negative effects on the GSL landscape, as observed in this book.

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[127] Note: However, it is important to acknowledge that not all oralist approaches in deaf education promoted the use of gesturing (cf. Senghas et al., 2005).

On the negative side, the emergence of LOCAL during the oralist era cast a shadow over the variety, causing LOCAL to lack prestige and unable to be considered a genuine sign language for deaf Ghanaians. I postulate that, in the perception of signers, the mere allowance of LOCAL in deaf schools by authorities (e.g., oralist teachers) may have conveyed the message that it was not a legitimate language. Additionally, the absence of obvious corresponding signs for English words could have undermined its recognition as a legitimate language. Consequently, a strong desire to adopt ENGLISH became evident, driven by academic purposes and the perception that it was the authentic sign language denied to deaf students for over two decades during oralism. This desire was articulated by some participants in Chapter 6 and aligns with observations made by Green (2014), emphasizing the significance placed on a formal variant by signers who view it as essential for communication.

On a positive side, the 21-year ban on ENGLISH, followed by the subsequent 11-year reintroduction of ASL signs, coupled with the oral approach, also created an environment conducive to the coexistence of LOCAL and ENGLISH. This situation encouraged the use of gesture and home sign, feeding into LOCAL development, while the use of ASL signs and English contributed to the development of the ENGLISH. Consequently, the coexistence of both LOCAL and ENGLISH, contributed to the emergence of BROKEN as an intermediary form.

From the account of this book, I argue that this coexistence of the three identified signing varieties (ENGLISH, BROKEN, & LOCAL) within deaf education presented a triglossia situation, detailed in Section 6.5.3 of Chapter 6. In this triglossia, ENGLISH operated as a highly developed language, primarily used in official settings (e.g., classroom), and holds the distinction of being the most prestigious variety. BROKEN, functioning as a lingua franca, found its place in social settings and, while considered a lower-prestige variety in its relationship with ENGLISH, held a higher status when compared to its relationship with LOCAL. LOCAL, serving a more specialized role, was employed for limited communication within deaf spaces, domestic interactions, and cultural expressions. LOCAL is regarded as a lower-prestige variety in its relationships with both ENGLISH and LOCAL, resulting in fewer users, typically prevalent among individuals with limited exposure to ENGLISH and BROKEN. In summary, the historical context of oralism provides valuable insights into the GSL landscape, reflecting both negative and positive contributions.

7.4 The Influence of Gestural Environment on an Established Sign Language: A Case Study of GSL

This section addresses the core research question: Do already established sign languages remain susceptible to the influences of their gestural environment? Does the transition of an established sign language to a different gestural environment

alter its structural characteristics? By examining GSL, I aim to determine whether sign languages are open to gestural influences solely during their developmental stages or throughout their lifespan.

The book reveals that the lexicon of BROKEN and ENGLISH can be considered as primarily from an established Sign Language. Chapter 4 unveils the strategies employed for size and shape depiction in the GSL landscape, using an extensive dataset comprising 226 instances of gestures and 820 signs related to SASS. An understanding of patterns emerges, aligning with Nyst's (2016) observations on West African sign languages. While certain regions predominantly use a single strategy, Ghana's broader deaf community use two strategies (i.e., body-based & space-based SASS) in tandem with their gestural environment. In contrast, in the Netherlands, signers and gesturers predominantly adhere to using only space-based SASS (Nyst, 2016b).

The ensuing discussion accentuates the unique occurrence of body-based SASS among signers and gesturers in the Ghanaian context (Chapter 4). This construction is remarkably less preferred or uncommon in non-African sign languages (Nyst, 2018; Nyst, 2007). For instance, the literature on SASS in ASL has no documented instances of body-based SASS among signers and gesturers in North America. Studies by Kubus (2008), Schick (1987), Slobin et al. (2003), and Supalla (1982), present extensive description of SASS in ASL, yet none of them present the description of body-based SASS in ASL. Indicating the absence of this specific construction in the existing ASL or American gesture literature. This assertion gains further validation from a pilot study I conducted between January and June 2022, involving five American gesturers, including one Black American, and informal discussions with two signers, one of whom was Black American. My findings confirmed the absence of body-based SASS among American signers and gesturers. The exclusive preference for body-based SASS in Ghana, employing both lower and upper limbs or other body parts, renders it a captivating subject for the sign languages used in the country.

Throughout the research, complexities surfaced in unravelling the nature of the GSL landscape, particularly in uncovering the coexistence of LOCAL, BROKEN and ENGLISH variants. The intricacies complicate the assessment of gesture influence within the GSL landscape, as this influence may be linked to a specific variant and not uniformly across all variants. The tripartite nature of the GSL landscape and the particular focus on SASS impedes a holistic answer to the timing of environmental gesture integration into an established sign language in a new environment. However, the data collected has led to the development of a hypothesis: Through lexical similarity, historical, linguistic, and ideological data, this study establishes a relationship between BROKEN and ENGLISH's signs and ASL. Despite the complex nature of the GSL landscape necessitating caution, the study confirms the

integration of body-based SASS into BROKEN and ENGLISH, recognising the SASS as a locally evolved sign.

7.4.1 Integration Pathways of Body-Based SASS into ENGLISH and BROKEN

In this section, I hypothesise the potential integration mechanisms for body-based SASS into the GSL landscape. An area of specific interest in this book is the incorporation of Ghanaian body-based gestures for size and shape into BROKEN and ENGLISH. Two hypotheses are presented: Hypothesis 1 posits that a full-fledged sign language may be susceptible to influences in a new gestural environment if expressional gaps are present, and Hypothesis 2 suggests that in Ghana, body-based SASS is integrated into the BROKEN and ENGLISH through either direct incorporation from gestures or indirect assimilation via LOCAL. These hypotheses are summarised below:

- **Hypothesis 1:** A full-fledged sign language may be susceptible to influences in a new gestural environment.
- **Hypothesis 2:** In Ghana, body-based SASS is integrated into BROKEN and ENGLISH through two specific routes:
    - Direct incorporation from gestures
    - Indirect via LOCAL

The integration of body-based gestures for size and shape into the GSL landscape unveils a complex process that merits closer examination. As outlined in Example 1, I posit three distinctive routes through which these gestures become part of GSL expression. Each route delineates a unique trajectory, shedding light on the intricate dynamics at play in the incorporation of size and shape gestures into the GSL lexicon. In this context, the term "gesture" encompasses expressions employed by gesturers in everyday communication. The subsequent routes delineate the transformative journey of these gestures into productive elements within GSL, contributing to the language's dynamic and evolving lexicon. Understanding these integration routes becomes imperative to interpret the interplay between GSL and the surrounding linguistic and gestural influences. The historical context of GSL evolution (Chapter 2) serves as a backdrop to the intricate process of borrowing, adapting, and incorporating size and shape gestures into the framework of this unique sign language.

The following summary (see Example 1) outlines the routes that this study posits on how Ghana's body-based gestures for size and shape are integrated into the GSL landscape:

1)

Route 1: Gesture → productive size and shape constructions (S&SCs) in BROKEN and ENGLISH

Route 2: Gesture → productive S&SCs in LOCAL → productive S&SCs in BROKEN and ENGLISH
Route 3: Via both Route 1 and 2.

Example 1 outlines three pathways through which size and shape gestures may integrate into the GSL landscape. Initially (route 1), a gesture may directly transition into a lexical element in BROKEN and ENGLISH because they share the same lexicon. Alternatively, in route 2, a gesture can first evolve into LOCAL and then find its way into BROKEN or ENGLISH due to their association with LOCAL. Alternatively, with Route 3, routes 1 and 2 are both the pathways through which size and shape gestures evolve into the GSL landscape.

The history of the sign language landscape in Ghana demonstrates this process, revealing that BROKEN and ENGLISH have adapted to the local environment, incorporating signs for culturally specific items like food, games, festivals, and place names. Although sign languages borrowing from surrounding gestures is well-documented, incorporating these gestures (body-based SASS) into BROKEN and ENGLISH, especially when their lexifier or donor language (i.e., ASL) already has SASS signs for specific size and shape depiction, is intriguing. In other words, there is no SASS gap as a motivating factor for size and shape depiction, as ASL lexicon already had signs for these.

One hypothesis suggests that LOCAL, which likely emerged from Ghanaian gestures and local spoken languages, may have played a role in introducing body-based SASS into the BROKEN and ENGLISH. The presence of SASS in LOCAL bears similarity to environmental gestures, indicative of a contact-induced emergence (Matras, 2020). This emergence may be likened to other locally evolved sign languages in Ghana, such as AdaSL (see Nyst, 2007), where the study suggests that local signing has arisen from significant interaction with Ghanaian gestures and the languages spoken nearby. Consequently, variations in LOCAL that parallel regional variations in surrounding spoken languages should not be surprising (Hadjah, 2016, 2015; Peprah, 2021). The exposure to signing as the medium of instruction in deaf schools across various geographical locations throughout Ghana could account for the distinct regional variations in GSL communities. This observation mirrors the findings in British Sign Language, as Quinn (2010) documented. Nevertheless, the educational setting in Ghana, where deaf students converge during their senior high education, tends to create a levelling effect on the sign language landscape in Ghana. This convergence, particularly evident at the Mampong Senior High School, exposes BROKEN and ENGLISH to influences from the signs used in LOCAL as the youth are the agents of change.

Further, the historical introduction of gestures into deaf education during the era of oralism has possibly led to deaf signers becoming less resistant to natural gestures. In the highly sociable environment of Ghana, gestures are commonly

employed in communication between deaf and hearing individuals. However, such gestural forms are used less frequently among deaf interlocutors, as detailed in Chapter 6. BROKEN, ENGLISH and LOCAL signers' continuous contact with gestures in contemporary settings, such as family, work, religious, hospital or legal environments and daily life, facilitates this integration, especially when interpreters are unavailable (Fobi et al., 2022). Such ongoing exposure or contact facilitates the direct influence of gestures on the GSL landscape.

Thus, the section has explored the integration pathways of body-based SASS into BROKEN and ENGLISH. Building upon Wilcox's proposed integration routes (2004, 2007, 2009, 2014), GSL, as a full-fledged sign language, can be influenced by the gestural environment in which it operates. Two main hypotheses were proposed: Hypothesis 1 suggests that mature sign languages can incorporate gestural influences to address expressional gaps. In contrast, Hypothesis 2 proposes that body-based SASS integrates into the GSL landscape through direct gesture incorporation or/and indirectly via LOCAL.[128] The sign language landscape in Ghana's adaptability is evident, incorporating signs for culturally specific concepts. Even with existing ASL-based signs for size and shape in BROKEN and ENGLISH, body-based SASS finds its way into the GSL landscape, indicating that expressional gaps are not the sole driving force. LOCAL, rooted in Ghanaian gestures and local spoken languages, suggests contact-induced development akin to other locally evolved sign languages in Ghana. Regional variations in the GSL landscape correspond to the geographical diversity of deaf schools, while a common education system promotes ENGLISH. Historical gestures' introduction during oralism and continuous interaction with gestures in the general society heighten deaf signers' receptivity to natural gestures. The social context of Ghana, with frequent gesture use among deaf and hearing individuals (but limited among deaf interlocutors), amplifies gestures' role in communication. Overall, this section underscores the integration paths of body-based SASS into the GSL landscape, driven by historical and ongoing influences. The sign language landscape in Ghana's dynamic interaction with its gestural environment showcases its adaptability and evolution, enriching its language structure and vocabulary through a blend of formal education and continuous exposure to natural gestures.

7.4.2 Identity construction and Prestige within the GSL landscape

Prestige plays a key role in the sign language landscape in Ghana. A complex interplay of body- and space-based SASS influenced by identity construction results in several intriguing contradictions. The analysis presented in Chapter 5 highlights the preference of younger individuals for body-based SASS, yet this preference was

[128] These hypotheses form the foundation for a deeper exploration of how body-based gestures for size and shape find their way into BROKEN and ENGLISH.

not reflected in the data regarding productive SASS (Chapter 4). Additionally, there was a discrepancy in the perception that signers with no formal education would be more inclined to use body-based SASS. This inclination was observed in the perceptions of signers (Chapter 5) but was not supported by the data on productive SASS (Chapter 4). Furthermore, there is a notable difference between the participants' assertions in Chapter 5, which suggests that body-based SASS is commonly used in Ghana to represent size and shape, yet the production data, indicates a lower frequency of body-based SASS production among signers, compared to a higher prevalence of space-based SASS.

The study observed that signers intentionally distanced themselves from body-based SASS during data collection, favouring the more prestigious variant: space-based SASS. This preference reflects a broader association with literacy and ENGLISH, qualities tied to higher social standing. Participants in a formal context, such as camera recording, overwhelmingly preferred space-based SASS despite acknowledging that body-based signs are more commonly used. In this case, signers might have been conscious of avoiding sign variants that were associated with stigmatisation.

The discrepancy between the participants' ideological stances and behaviour during the study uncovers an understanding of identity construction or prestige in the signing community. During the study, the prevalent use of body-based SASS in informal or daily communication juxtaposed against its deliberate avoidance in favour of space-based SASS underlines a concerted effort to align with a more prestigious linguistic identity.

Furthermore, the perception exists that LOCAL lacks vocabulary and adheres to signs not conforming to conventionalised phonological parameters in sign language linguistics. This contributes to the low prestige associated with LOCAL, with signers actively avoiding association with this variety to maintain their identity. The community also values those who creatively mix varieties (LOCAL, BROKEN, & ENGLISH) in communication, allowing some signers to demonstrate their proficiency in the GSL landscape.

This signing landscape illustrates a collective judgment within the community about which signs are appropriate or inappropriate. Even signs not violating conventional parameters may be ridiculed, illustrating that educated signers' preferences for ENGLISH may be guided by an instinctual understanding of what should be embraced or dismissed. Such responses are aligned with broader language ideologies within the deaf community (Kusters, 2014a; 2019). My observations within the deaf community also suggest that ridiculing certain signs serves as a gentle deterrent against their use.[129]

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[129] A deaf informant revealed that Junior High School students in the Northern region become annoyed with teachers who do not use regionally specific signs.

These findings reveal the importance of identity construction within the GSL landscape, emphasising the complex interplay between prestige and linguistic preferences and choice. As discovered, personal perceptions and linguistic practices sometimes diverge, potentially influenced by the context of observation and the inherent desire to align with perceived prestigious linguistic norms. Such complexities emphasise the need for careful consideration and a more holistic understanding of the dynamics at play, recognising the factors that shape linguistic behaviours within the GSL landscape.

7.5 Conclusion and Further Research

In our quest to unravel the intricacies of 'GSL', this book has led to a profound understanding of the diversity within the GSL landscape, where high and low varieties, such as LOCAL, BROKEN, and ENGLISH, coexist. These findings have shed light on the complex sociolinguistic landscape of GSL and, by extension, the broader sign language landscape in Ghana.

The history of GSL traces its roots back to the introduction of Signed English, built on ASL signs, in the realm of deaf education. It vividly illustrates an era of official sign language banishment during the dominance of oralism, a period spanning over two decades, which encouraged the development of a local signing system now known as LOCAL. The reintroduction of sign language in the late 1980s saw the resurgence of Signed English, currently labelled as ENGLISH. This book posits the hypothesis that the coexistence of both ENGLISH and LOCAL gave birth to the signing variety known as BROKEN. The book pays tribute to the key individuals and deaf-led associations whose resilience played pivotal roles in preserving and promoting deaf culture throughout Ghana's history.

The exploration of the lexical landscape, which investigates the relationships between signs in ENGLISH and BROKEN, LOCAL, ASL, AdaSL, and NanaSL, yielded intriguing results. It highlighted the close relationship between ENGLISH and BROKEN signs with ASL signs, while LOCAL signs were found to be closely related to AdaSL and NanaSL signs. This suggests that environmental gestures have significantly influenced Ghana's locally evolved sign languages. Examining how an established signing system like ENGLISH could be influenced by a new gestural environment, this book attributes the integration of size and shape gestures to be a result of direct influence through gestures and, alternatively, indirect influence through the LOCAL signing system.

However, in Mampong Senior High School, it is noted that instead of being annoyed, students would laugh at certain variants. The underlying reasons for this change in response to linguistic diversity are unclear, highlighting an area for potential further study within the context of deaf education and community dynamics.

Examining language ideology towards SASS and signing in general within Ghana's sign language landscape revealed a diversity of perspectives. These ideologies revolve around identity construction and prestige within the deaf community. The signing practices within different settings could be fluid. They may be influenced by identity and prestige, making it challenging to fully understand the GSL landscape without insight into the dynamics of multilingualism and triglossia, particularly when prestigious variants like ENGLISH eclipse other signing varieties, such as LOCAL. This book sets the groundwork for further linguistic exploration of the sign language landscape within the urban deaf community, acknowledging the complex web of attitudes and practices that shape it.

Future Research:

The coexistence of high and low varieties within GSL and the historical, sociolinguistic, and ideological dimensions explored have painted a rich and multifaceted picture of the Ghanaian deaf community. As we (linguists) continue to unravel the complexities of the GSL landscape, we are reminded that there is much more to discover, both linguistically and socioculturally, in this vibrant and ever-evolving linguistic landscape.

Substantial further research is needed, focusing on:

- **Morphosyntactic Comparison:** An investigation into the relationships between LOCAL, BROKEN, and ENGLISH and the connections between ASL and other locally evolved sign languages (e.g., AdaSL & NanaSL) through a detailed morphosyntactic comparison. Such an analysis would help to establish clear and definitive relationships between these different sign languages.
- **National and Continental Perspectives:** This book enriches the understanding of ASL-based SLs in Africa, spotlighting how contact and deaf education have fostered sign language diversity in Ghana. Offering perspective on Ghana's national sign language and ASL's unique manifestation in Africa opens avenues for exploring linguistic similarities between the GSL landscape and other ASL-based SLs across African countries with parallel deaf education histories. Such exploration might require extensive corpus data and could uncover whether Ghana's sign language landscape scenario applies to other ASL-based SLs in Africa, including assessing susceptibility to body-based SASS.
- **Cross-Linguistic Gestural Practices:** This book uncovers an unexplored dimension of communication in Ghana by highlighting the prevalent but understudied use of co-speech gestures. It emphasises the need to investigate and document these gestural forms, functions, and variations, especially among ethnic groups. This study paves the way for understanding modality influences between contact with sign and spoken

> languages and the possible regional variations within the gestural landscape. It also underscores the necessity of further work on regional variations, such as assessing if co-speech gestures share the same forms and functions as those used for size and shape depiction by signers. By providing a foundation for future inquiry, the book calls for a more profound exploration of cross-linguistic gestural practices within Ghana, enhancing our comprehension of language, culture, and expression.

This book offers a pioneering view of GSL, illuminating its susceptibility to the gestural environment, the complex interaction between language, identity, and environment, and the influence of the gestural environment on established sign languages. It reveals the significant gaps in our understanding of sign language and the deaf community in Ghana, inviting new perspectives for future research. By taking a holistic, rigorous approach, future studies can enhance our understanding of language evolution, adaptation, and the complex dynamics in sign languages in Ghana and across the African continent.

APPENDIX A

List of secondary data used in the study of chapter 2

Book

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4. Kwaffo E.K. (1988). A comparison of the effectiveness of the use of oralism and the total system of communication in teaching the Ghanaian Deaf child in our schools. Unpublished Long Essay. Faculty of Education. Uni. of Cape Coast

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1. Ghana Education Service_SpeED. (2007, 27th November). Committee report on Common sign language usage in Special Schools for the Deaf in Ghana.

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1. GNAD Newsletter (2016; 2012; 2010; 2009a; 2009b;2008a; 2008b; 2005a; 2005b; 2004; 2003; 1998). Bi-Annual publication of the Ghana National Association of the Deaf.
2. Martey-Markwei A.(1989). Missing Link. *Radio and TV Times. Ghana Broadcasting Corporation.* VOL. 22. No. 2. September - October. p 5. Ocloo R. Della. (2014 August 8th). Founder State School for the Deaf. The Mirror Newspaper. P40.

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1. Amenumey Godwin. (1988). Memorial service for the late Dr. Andrew Foster. Accra. GNAD.
2. Ghana Mission School for the Deaf. (1958). Ephphatha Appeal Fund. Accra. The Advent Press
3. GNAD (2018). The Talking Hands: Our language, our pride. Unpublished pamphlet on GSL.
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5. Phillips H. (2002). Deaf Awareness Pack: Basic issues on Deaf culture, Communication, Sign Language, History and causes of deafness in Ghana!.

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[130] No longer in my possession. It was stolen.

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3. Anson-Yevu. (1977). History and Development of service for the handicapped in Ghana. Seminar paper. Training workshop in the education and rehabilitation of the handicapped. 11-29 July 1977. University of Cape Coast.
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5. Ocloo Seth. (2007). Rev. Andrew Foster's work in Ghana, 1957 – 1965. GNAT conference_50 years celebration of Deaf Education in Ghana. Oppong A. (1997). Rational for developing a Ghanaian Sign Language. April. Seminar paper on: Good leadership skills ensure effective organization. Organized by GNAD at Christian Village, Kumasi, Ashanti
6. Pecku. N. K. (1979). History and Development of special education in Ghana. Seminar paper. Second Training workshop in the education and rehabilitation of the disabled. 29 July - 11 August. 1979. University of Cape Coast
7. Akach, P. (1996, 1-7 September). The Deaf as a Language Minority. Seminar on Deaf Education, Winneba, Ghana.
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1. Amenumey Godwin. (1987, September 21st). [Letter to Ghana Education Division on the visitation of Foster for the 30th Anniversary of Deaf Education in Ghana]. Retrieved from A. Godwin's personal achieve.
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4. Amenumey Godwin. (1988, February 18th). [Letter to Bertha Foster on the demise of Foster_GNAD planning a memorial service in Accra]. Retrieved from A. Godwin's personal achieve.
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6. Baden Edward. [1988, April 8th]. [GNAD's appeal for funds letter]. "Memorial service for the late Dr. Andrew Foster." Retrieved from A. Godwin's personal achieve.
7. Botsio Kojo. [1988, April 12th]. [Letter to Amenumey Godwin on the demise of Foster]. Retrieved from A. Godwin's personal achieve.
8. Fiaxe D. D. (Mrs). [1988, March 29th]. [Letter to all schools for the Deaf]. "Memorial service for the late Dr. Andrew Foster." Retrieved from A. Godwin's personal achieve.
9. Foster Berta. [n.d.]. [Letter to praying friends in Ghana after the demise of Foster]. Retrieved from A. Godwin's personal achieve.
10. Foster Faith (Miss). [1989, June 12]. {Letter to GNAD]. "Greetings from Nigeria".]. Retrieved from A. Godwin's personal achieve.
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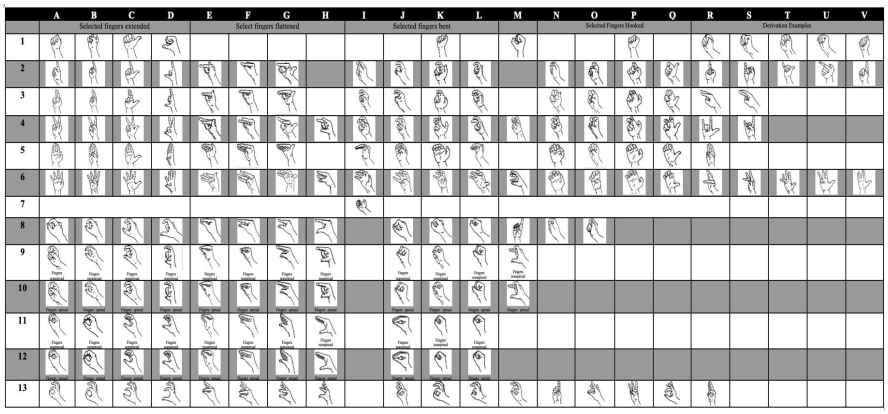
APPENDIX B

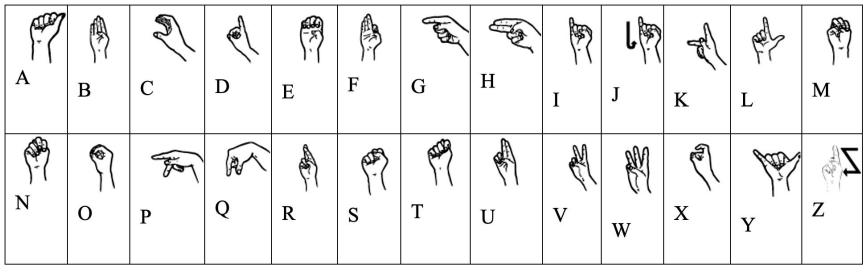
Handshape chat

The handshape chat is an adopted and modified version of the Hamburg Notation System for sign languages (HamNoSys)[131], with added alphabets and numbers for referencing.



GSL manual alphabet Chat

The GSL manual alphabet is identical to the ASL manual alphabet.



[131] https://www.sign-lang.uni-hamburg.de/dgs-korpus/files/inhalt_pdf/HamNoSys_Handshapes.pdf

APPENDIX C

GSL [GSL App] and ASL [Riekehof, 1978] "true friends" comparison with modified Swadesh list [73/88 =83%]

"True friends" are in bold text (e.g., **all**), while missing words are indicated with a strikethrough (e.g., ~~snow~~).

1. **all**	26. grass	51. **other**	76. warm
2. **animal**	27. **green**	52. **person**	77. **water**
3. **bad**	28. **heavy**	53. **play**	78. **wet**
4. **because**	29. **how**	54. **rain**	79. **what**
5. bird	30. ~~hunt~~	55. **red**	80. **when**
6. black	31.**husband**	56. **right**	81. **where**
7. **blood**	32. ice	57. **river**	82. **white**
8. **child**	33. **if**	58. ~~rope~~	83. **who**
9. count	34. kill	59. **salt**	84. ~~wide~~
10. day	35. **laugh**	60. **sea**	85. **wife**
11. **die**	36. ~~leaf~~	61. ~~sharp~~	86. **wind**
12. **dirty**	37. **lie**	62. short	87. **with**
13. **dog**	38. **live**	63. **sing**	88. **woman**
14. **dry**	39. **long**	64. **sit**	89. **wood**
15. **dull**	40. ~~louse~~	65. ~~smooth~~	90. **worm**
16. ~~dust~~	41. **man**	66. **snake**	91. **year**
17. **earth**	42. **meat**	67. ~~snow~~	92. **yellow**
18. **egg**	43. mother	68. **stand**	93. **full**
19. **fat/grease**	44. mountain	69. **star**	94. **moon**
20. father	45. **name**	70. **stone**	95. **brother**
21. ~~feather~~	46. ~~narrow~~	71. sun	96. **cat**
22. **fire**	47. **new**	72. ~~tail~~	97. **dance**
23. **fish**	48. **night**	73. thin	98. **pig**
24. **flower**	49. **not**	74. **tree**	99. **sister**
25. **good**	50. **old**	75. vomit	100. **work**

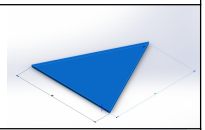
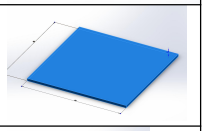
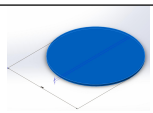
APPENDIX D

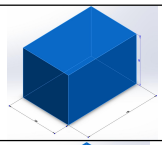
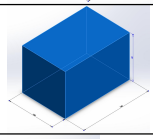
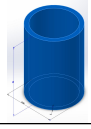
GSL [GSL App] and ASL [signBANK] "true friends" comparison with modified Swadesh list [68/86 =79%]

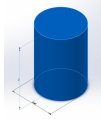
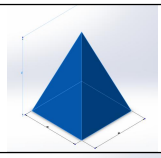
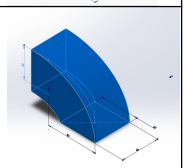
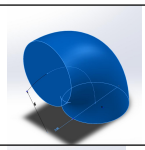
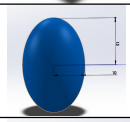
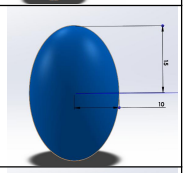
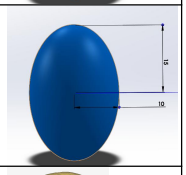
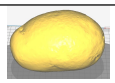
1. ~~all~~
2. **animal**
3. **bad**
4. **because**
5. bird
6. **black**
7. **blood**
8. **child**
9. count
10. **day**
11. **die**
12. **dirty**
13. **dog**
14. **dry**
15. **dull**
16. ~~dust~~
17. **earth**
18. **egg**
19. **fat/grease**
20. **father**
21. ~~feather~~
22. **fire**
23. **fish**
24. **flower**
25. **good**
26. grass
27. **green**
28. **heavy**
29. **how**
30. ~~hunt~~
31. **husband**
32. ice
33. if
34. kill
35. **laugh**
36. ~~leaf~~
37. **lie**
38. **live**
39. **long**
40. ~~louse~~
41. **man**
42. **meat**
43. **mother**
44. mountain
45. **name**
46. ~~narrow~~
47. **new**
48. **night**
49. **not**
50. **old**
51. ~~other~~
52. **person**
53. **play**
54. **rain**
55. **red**
56. right
57. **river**
58. ~~rope~~
59. **salt**
60. sea
61. ~~sharp~~
62. ~~short~~
63. sing
64. **sit**
65. ~~smooth~~
66. **snake**
67. ~~snow~~
68. **stand**
69. **star**
70. **stone**
71. **sun**
72. ~~tail~~
73. **thin**
74. **tree**
75. vomit
76. warm
77. **water**
78. **wet**
79. what
80. when
81. **where**
82. **white**
83. who
84. ~~wide~~
85. **wife**
86. **wind**
87. **with**
88. **woman**
89. **wood**
90. **worm**
91. **year**
92. **yellow**
93. **full**
94. moon
95. brother
96. **cat**
97. **dance**
98. **pig**
99. sister
100. **work**

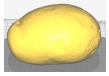
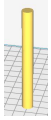
APPENDIX E

Haptic task objects used in the study of chapter 4

2D Forms					
1.	Triangle	H 8.00 cm L 8.00 cm Thickness 0.50 cm		PYRA3	
2.	Square	W 8.00 cm L 8.00 cm Thickness 0.50 cm		BOX4	
3.	Elipsoid	D 8.00 cm Thickness 0.50 cm		BALL3	

3D Forms				
	Object	Dimensions	Code	Illustration
1.	Big cuboid	H 5.00 cm W 6.00 cm L 8.00 cm	BOXB 1	
2.	Small cuboid	H 1.00 cm W 2.00 cm L 3.00 cm	BOXS1	
3.	Tapered cylinder	H 8.00 cm Base D 6.00 cm Apex D 1.00 cm	CLY4	
4.	Hollow cuboid	H 7.00 cm W 8.00 cm L 13.00 cm	BOX2	
5.	Hollow cylinder	D 6.00 cm H 8.00 cm Wall thickness 0,50 cm	CLY2	

6.	Cylinder	D H	6.00 8.00	cm cm	CLY1	
7.	Hollow pyramid	H Base W/L Wall thickness 0,5 cm	8.00 6.00	cm cm	PYRA2	
8.	Pyramid	H Base W/L	8.00 6.00	cm cm	PYRA1	
9.	Curved cuboid	L W H	8.00 6.00 5.00	cm cm cm	BOX3	
10.	Curved cylinder	L/H D	6.00 6.00	cm cm	CLY3	
11.	Big elipsoid	D L	10.00 15.00	cm cm	BALL B1	
12.	Medium elipsoid	D L	6.00 8.00	cm cm	BALL B2 BALL M1	
13.	Small elipsoid	D L	2.00 3.00	cm cm	BALLS 1	
14.	Big potato	L D	15.00 10.00	cm cm	BALL B1 BALL B2	
15.	Medium potato	L D	9.2 6.00	cm cm	BALL M1	

					BALL M2	
16.	Small potato	L D	3.00 2.00	cm cm	BALL M2 BALLS 2	
17.	Big carrot	D L	6.50 25.00	cm cm	CYLB6	
18.	Small carrot	D L	2.00 8.00	cm cm	CYLS6	
19.	Rod	H D Thickness	8.00 1.00 0.50	cm cm cm	CYL5	

APPENDIX F

LANGUAGE ATTITUDE, PERCEPTION AND USE QUESTIONNAIRE

Before you begin:

- Please provide your pseudonym assigned for this study.
- Please answer honestly to each of the statement with the following appropriate responds in relation to your personal experience
    - Feel free to also answer with explanation if you want.

Pseudonym…….

SECTION 1
SECTION 1
Language Background

1. How many sign languages do you think are in the world? Tell us more about your answer?

2. How many sign languages are used in Ghana? Name them?

3. What sign language do you use most often. You may list more than one (e.g., GSL, ASL, International sign, village sign language)

SECTION 2
Your thoughts about your Language contact (please by circling your answer)

Please understand each statement carefully before selecting your responds

4. How often do you use the media (television, internet) to engage (watch, learn or communicate) in sign language with Deaf Ghanaian?
   a. Never b. Sometimes c. Often

5. How often do you use the media (television, internet) to engage (watch, learn or communicate) in sign language with white/foreign or Deaf American?
   a. Never b. Sometimes c. Often

6. How often do you see and use GSL dictionary or books?
   a. Never b. Sometimes c. Often
7. How often do you see and use ASL dictionary or books?
   a. Never b. Sometimes c. Often

8. When sending text messages to other deaf Ghanaians, do you make an effort for the syntax of your sentence to be exactly as English or GSL
   a. Never b. Sometimes c. Often

9. When sending text messages to hearing people, do you make an effort for the syntax of your sentence to be exactly as English or you use GSL syntax.
   a. Never b. Sometimes c. Often

10. Do you feel proud using GSL with other Deaf in public?
    a. Never b. Sometimes c. Often

SECTION 3
Your thoughts about Language Status
Please indicate whether you agree or disagree with each statements

11. Knowing ASL can help me get a good job, than knowing GSL
    a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

12. Ghanaian Sign Language is the same as American Sign Language
    a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

13. Please explain your answer to question 12. Why do you feel that way?

14. American Sign Language is the same as Sign Exact English
    a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

15. Please explain your answer to question 12. Why do you feel that way?

16. If you use GSL you are not respected as educated but if you use ASL you are considered as educated and intelligent
    a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.
17. Sign Language is not really a language since it is not every concept that could be expressed using it

a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

18. Ghanaian Sign Language is the true sign language of deaf people in Ghana
    a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

19. Ghanaian Sign Language should rather be used as the language for teaching deaf and not English
    a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

20. Ghanaian Sign Language is not developed so deaf people in Ghana have to leam American Sign Language
    a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

21. Ghanaian Sign Language is not as good as American Sign Language
    1. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

SECTION 4
Your thought about Sociocultural view

22. Doctors need to find a cure for deafness.
    a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

23. Deaf people must learn Sign Exact English or how to speak because Ghana is a speech community.
    a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

24. It is good to be deaf and be able to use a hearing aid.
    a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

25. Deaf Ghanaian who knows Sign Exact English or American Sign Language are always successful in life.
    a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

26. Deaf students who are fluent in Ghanaian Sign Language always fail their English exams.

a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

27. If you have children it is better to teach them ASL
a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

28. Interpreters and deaf signer learning ASL will eventually cause GSL to die.
a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

29. Deaf people who can voice a little English than those who do not.
a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

30. Interpreters should learn GSL from deaf Ghanaians and not from foreign missionaries in church or from American Sign Language books.
a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

31. Deaf children must learn Ghanaian Sign Language from other deaf and not from internet or books.
a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

32. It is acceptable for deaf people in Ghana to learn advance signing from foreign deaf people.
a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

33. It is important that deaf children in Ghana should be taught by only deaf teachers.
a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

34. Please explain your answer to question 33. Why do you feel that way?

SECTION 5
Your thoughts about Language Usage

35. It is important to use Sign Exact English in the classroom for deaf students in Ghana.

a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

36. It is important for deaf Ghanaians to use ASL with other Deaf Ghanaians
a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

37. Is important to learn new signs from foreign/white deaf people.
a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

38. Deaf Ghanaian must not leam new signs from foreign/white deaf people so that GSL can be pure.
a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

39. Using American Sign Language give you a better chance to further your education.
a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

40. Using Sign Exact English gives you a better chance to further your education.
a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

41. Ghanaian Sign Language is not good for University Education because it only has limited vocabularies.
a. Strongly agree b. Agree c. Unsure d. Disagree e. strongly disagree.

42. Do you know about any stereotypes used for deaf Ghanaian and interpreters who use American Sign Language?

43. How do you feel about Ghana adopting the use of American Sign Language in schools?

44. What do you think about the idea of Deaf people using Sign Exact English?

45. What are some of the factors you think motivates Deaf Ghanaians to leam American Sign Language from books, internet or foreign/white people?

46. What do you think motivates interpreters in Ghana to learn American Sign Language?

47. Where and how often do you see ASL being used by deaf people in Ghana

Where	Always	Often	Sometimes	Rarely	Never
At my home					
At friend's home					
At school					
At work					
At church					
On television					
During ceremonies (e.g., weddings, funerals)					
At GNAD offices					
At conferences					
At sporting events					
Meeting friends on the street					
Interpretation service (e.g., hospital, bank)					
Others, please specify. ……					

(please tick in the box your response)

48. Where and how often do you see GSL being used by deaf people in Ghana (please tick in the box your response)

Where	Always	Often	Sometimes	Rarely	Never
At my home					
At friend's home					
At school					
At work					
At church					
On television					
During ceremonies (e.g., weddings, funerals)					
At GNAD offices					
At conferences					
At sporting events					
Meeting friends on the street					
Interpretation service (e.g., hospital, bank)					
Others, please specify. …… ……					

49. Any other information you would like to share about your perceptions and views on sign language in Ghana.

50. What are thought about Deaf education in Ghana. You can reflect on your time in school and the current situation now. What change(s) have you observed, or suggestion would like to make

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SUMMARY

This study delved into the multifaceted world of signing in the urban deaf community in Ghana, where the term "Ghanaian Sign Language" (GSL) serves as a cover term for a variety of signing forms. Signers within the deaf community use a range of terms, such as SPONTANEOUS, ILLITERATE, GESTURE, DEAF WAY, PRETEND, BROKEN, CODE, ENGLISH, NATURAL, or HARD to characterise their signing. The book examined aspects of the historical, linguistic, and ideological dimensions of GSL.

Chapter 1 sets the stage by introducing GSL as an umbrella term encompassing three distinct signing varieties: ENGLISH, BROKEN, and LOCAL. The chapter also offers an introduction into other aspects of GSL. Chapter 2 traced the evolution of GSL from the introduction of deaf education and ASL signs in 1957 by Rev. Andrew Foster. It highlights the contributions of deaf Ghanaians, associations and GSL's resilience, especially when official bans on sign language were imposed in the context of oralism in deaf education. Chapter 3 presented a lexical study to explore the relationships between ENGLISH, BROKEN, LOCAL, and their connections with ASL as a foreign sign language. It also includes a comparison with locally evolved village sign languages (i.e., Adamorobe Sign Language and Nanabin Sign Language). It revealled an interesting aspect of GSL where one form of signing is lexically related to ASL, while the other aligns with locally evolved sign languages. Chapter 4 shifted the focus to size and shape expressions in GSL, describing their structural characteristics. A comparison of Size and Shape Specifiers (SASS) in GSL with size and shape gestures shows considerable similarities. The chapter revealed that body-based SASS, prevalent among gesturers, were integrated into GSL. Chapters 5 and 6 explored language ideologies and the sociolinguistic landscape within the deaf community. Signers' preferences and judgments related to body-based and space-based SASS are unveiled. The ideological exploration underscored the division between high-prestige and low-prestige varieties within GSL. Signs associated with foreign languages (such as English or ASL) are esteemed for having high prestige. In contrast, locally evolved signs are valued for their native roots but often have lower prestige. Furthermore, in Chapter 5 that signers tend to specifically associate certain signs (e.g., body-based SASS) with particular language variants was uncovered. Chapter 6 extended this exploration by identifying diverse labels within the sign language landscape. Moreover, GSL is presented as a pluridimensional continuum characterized by triglossia. Chapter 7 synthesised the findings and implications drawn from the preceding chapters. GSL is historically traced to the introduction of ASL signs and Signed English in deaf education. The ban on sign language in deaf educational history spanning over two decades fostered the emergence of a local sign variety, now recognised as LOCAL. An indirect outcome of oralism was the proliferation of deaf basic schools

nationwide. The book further posited the emergence of school-lect as a hypothesis linked to the oralist approach. These school-lects merge and level at the sole secondary deaf school in the country. The subsequent revival of sign language in the late 1980s ushered back Signed English, now known as ENGLISH. The book posited a hypothesis that the coexistence of both ENGLISH and LOCAL led to the development of the signing variety referred to as BROKEN. Furthermore, it highlights the prevailing prestige of ENGLISH and its overshadowing (eclipse) of other GSL variants, namely BROKEN and LOCAL. The integration pathways of SASS gestures into GSL are also scrutinised, along with hypotheses regarding the adoption of size and shape gestures.

In conclusion, this comprehensive exploration of GSL landscape has unveiled the multifaceted nature of sign language usage, language ideologies, and linguistic diversity within the Ghanaian deaf community in the urban contexts. It has shed light on the complex history of GSL, from its humble beginnings as a banned signing system to the dynamic coexistence of ENGLISH, BROKEN, and LOCAL, each with its unique place and prestige in the GSL landscape. Integrating body-based SASS gestures into GSL (particularly ENGLISH) has provided insight into the adaptability of established sign languages to the surrounding gestural environment. The signing in the GSL landscape is part of a pluridimensional continuum, representing a multilingual scenario characterised by the fluid use of different variants in diverse settings. Recognising this complexity is essential for the effective teaching and learning of GSL, ensuring that the diverse needs and preferences of the deaf community are acknowledged and addressed. This work contributes to our understanding of GSL and is a valuable resource for those seeking to engage with and promote the rich linguistic heritage of deaf Ghanaians in the urban deaf community.

SAMENVATTING

Deze studie duikt in de veelzijdige wereld van gebarentaal in stedelijke dovengemeenschap in Ghana, waar de term 'Ghanaian Sign Language' (GSL, letterlijk 'Ghanese gebarentaal') gebruikt wordt om diverse gebarenvormen te omvatten. Binnen de dovengemeenschap gebruiken gebaarders een breed scala aan begrippen om hun gebruik van gebarentaal te karakteriseren, zoals SPONTANEOUS, ILLITERATE, GESTURE, DEAF WAY, PRETEND, BROKEN, CODE, ENGLISH, NATURAL of HARD. In dit boek worden aspecten van de historische, taalkundige en ideologische dimensies van GSL onderzocht.

Hoofdstuk 1 introduceert GSL als een containerbegrip dat drie verschillende gebarentaalvariëteiten omvat: ENGLISH, BROKEN en LOCAL. In dit hoofdstuk worden ook andere kenmerken van GSL geïntroduceerd. Hoofdstuk 2 volgt de evolutie van GSL vanaf de introductie van scholing voor doven en ASL-gebaren in 1957 door Andrew Foster. Ook zet het de bijdragen van dove Ghanezen, verenigingen en de veerkracht van GSL in het voetlicht, met name in de tijd dat gebarentaal officieel verboden was ten gunste van oralisme in het dovenonderwijs. Hoofdstuk 3 presenteert een lexicale studie die zowel de onderlinge relaties tussen ENGLISH, BROKEN en LOCAL onderzoekt als hun verbanden met ASL als een vreemde gebarentaal. In dit hoofdstuk wordt ook een vergelijking gemaakt met lokaal ontstane en ontwikkelde dorpsgebarentalen (namelijk Adamorobe Sign Language en Nanabin Sign Language). Dit laat een interessant kenmerk van GSL zien: één gebarenvorm is lexicaal verwant aan ASL, terwijl de ander juist dichter bij lokaal ontstane gebarentalen ligt. Hoofdstuk 4 verlegt de focus naar omvangs- en vormuitdrukkingen in GSL en beschrijft de eigenschappen van hun structuur. Een vergelijking tussen Size and Shape Specifiers (SASS) in GSL met omvangs- en vormgebaren laat duidelijke overeenkomsten zien. Dit hoofdstuk toont aan dat op het lichaam gebaseerde SASS, die frequent gebruik vinden onder gebaarders, in GSL geïntegreerd zijn. Hoofdstukken 5 en 6 verkennen taalideologieën en het sociolinguïstische landschap binnen de dovengemeenschap. Voorkeuren en waardeoordelen van gebaarders over SASS die op het lichaam en op de ruimte gebaseerd zijn, worden in deze hoofdstukken behandeld. Deze verkenning onderstreept de scheiding tussen GSL-variëteiten met veel prestige en variëteiten die weinig prestige hebben. Gebaren die een link met buitenlandse talen (zoals Engels of ASL) hebben, worden hooggeschat, terwijl lokale gebaren weliswaar gewaardeerd worden vanwege hun oorsprong maar desondanks vaak minder prestige genieten. Hoofdstuk 5 laat bovendien zien dat gebaarders sommige gebaren (bijvoorbeeld op het lichaam gebaseerde SASS) met bepaalde taalvariëteiten associëren. Hoofdstuk 6 breidt dit inzicht uit door diverse labels binnen het gebarentaallandschap te identificeren. GSL wordt hier voorts gepresenteerd als een

multidimensionaal continuüm gekenmerkt door triglossie. Hoofdstuk 7 biedt een synthese van de uitkomsten en implicaties uit de vorige hoofdstukken. GSL kan historisch herleid worden op de introductie van ASL-gebaren en Signed English in het dovenonderwijs. Het verbod op gebarentaal in de geschiedenis van dovenonderwijs, dat twee decennia van kracht was, heeft het ontstaan van een lokale gebarenvariëteit gestimuleerd, die vandaag de dag erkend wordt als LOCAL. Een indirect gevolg van oralisme was de proliferatie van dovenbasisscholen in het hele land. Dit boek stelt de opkomst van een 'school-lect' als een hypothese die verband houdt met de oralistische aanpak. Deze school-lecten komen samen en worden gelijkgetrokken in de enige middelbare school voor doven in het land. De verdere herleving van gebarentaal in de late tachtiger jaren leidde tot een terugkeer van Signed English, dat nu bekendstaat als ENGLISH. Hier wordt de hypothese gesteld dat het naast elkaar bestaan van ENGLISH en LOCAL leidde tot de gebarentaalvariëteit die met BROKEN aangeduid wordt. Bovendien onderstreept het het dominante prestige van ENGLISH ten koste van andere GSL-variëteiten: BROKEN en LOCAL. Voorts worden de manieren onderzocht waarop SASS-gebaren in GSL geïntegreerd worden, en passeren hypotheses over de adoptie van omvangs- en vormgebaren de revue.

Samenvattend laat deze omvattende verkenningstocht door het GSL-landschap het veelzijdige karakter zien van gebarentaalgebruik, taalideologieën en talige diversiteit in de Ghanese dovengemeenschap in stedelijke contexten. Het werpt licht op de complexe geschiedenis van GSL, ontstaan als een verboden gebarensysteem en ontwikkeld tot een dynamische coëxistentie van de variëteiten ENGLISH, BROKEN en LOCAL, elk met haar eigen plek in het GSL-landschap. De integratie van op het lichaam gebaseerde SASS-gebaren in GSL (met name ENGLISH) heeft inzicht geboden in het aanpassingsvermogen van bestaande gebarentalen ten opzichte van hun gesturale omgevingen. De gebaren in het GSL-landschap maken deel uit van een multidimensionaal continuüm, dat een meertalig scenario vertegenwoordigt waarin meerdere variëteiten vrijelijk al naargelang de situatie ingezet kunnen worden. Het is essentieel voor het effectief onderwijzen en leren van GSL dat deze complexiteit wordt erkend, opdat de verschillende behoeftes en voorkeuren van de dovengemeenschap gerespecteerd worden en er doeltreffend in voorzien kan worden. Dit werk draagt bij aan ons begrip van GSL en is een waardevolle bijdrage voor ieder die zich geëngageerd wil weten met en een bijdrage wil leveren aan de rijke talige nalatenschap van dove Ghanezen in de stedelijke dovengemeenschap.

CURRICULUM VITAE

Timothy Mac Hadjah, born on April 1, 1987, in Koforidua, Eastern Region, Ghana, completed his Junior High School education at Sarkodee L/A in Koforidua in 2002 and his Senior High school education at Ghana Secondary School - Koforidua in 2004. He earned his Bachelor's degree in Linguistics and Philosophy from the University of Ghana in 2010. Subsequently, he pursued a Master of Arts (MA) in Human Rights from the University of Education, Winneba, completing his thesis on "Exploring Challenges Faced by Deaf Students at Mampong Senior High School in Pursuit of Higher Education" in 2013. He continued his academic journey and attained a Master of Philosophy (MPhil) degree in Linguistics from the University of Ghana in 2016, focusing on "Number Marking in Ghanaian Sign Language". From 2016 until March 2018, Timothy served as a graduate assistant and resource person for the Office of Students with Special Needs (OSSN) at the University of Ghana, providing academic sign language interpretations. In 2018, he embarked on his PhD journey at Leiden University, becoming a member of the research project "From Gesture to Language," coordinated by Victoria Nyst. His PhD involves describing Ghanaian Sign Language using historical, linguistic, and ideological data. Additionally, Timothy founded the Centre for Sign Language and Deaf Literacy (CSLDL), an NGO in Ghana established to support and promote sign language and deaf individuals. Since June 15, 2022, he has been affiliated with Leiden University as a guest researcher, collaborating frequently with The Leiden HANDS!Lab.