Being deaf at the playground: the effects of hearing loss on children's social participation

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Chapter 10

Lay Summary

Social functioning is crucial for children's overall development, as social interactions are the means through which children learn about emotions, form connections, and acquire social norms (Bedell & Dumas, 2004; Law, 2002; Saarni, 1999). Deaf and Hard-of-Hearing (DHH) children often face challenges in social interactions because they live in a world primarily designed for hearing people, with these challenges persisting even after receiving hearing aids or cochlear implants, as these devices are not comparable to natural hearing (Jiam et al., 2017; Pisoni et al., 2017). As a result, DHH children may have fewer opportunities to learn from everyday social interactions, which are vital for developing social and emotional skills (Bandura, 1977; Kelly, 2012).

Playground interactions provide valuable insights into children's social functioning, as the way children play and interact with peers in a natural setting, is a reflection of their social behaviors and skills (Heravi et al., 2018; Veiga et al., 2017). However, studies show that DHH children often spend more time alone on the playground, preferring to observe others rather than join in(Levine & Antia, 1997; Vandell & George, 1981) . This tendency may stem from a fear of rejection or difficulty in understanding social cues (Levine & Antia, 1997; Vandell & George, 1981). As a result, DHH children may miss out on important social learning experiences, which can hinder their ability to form meaningful connections with peers (Henderson et al., 2004; Kouwenberg et al., 2012; Peterson et al., 2016).

Furthermore, one aspect that is particularly challenging for DHH children is free play situations, which mostly occur in noisy and unstructured playgrounds. Play is recognized as a fundamental right for children and is essential for their development (Montessori, 1989; Pellegrini, 2009; Piaget, 1951; Vygotsky, 1967). However, DHH children seem to avoid certain types of play particularly those that require strong communication skills, such as pretend play (Brown et al., 2001; Levine & Antia, 1997). Physical play, which involves less verbal communication, may be more accessible to DHH children and could help them develop social skills and maintain interactions (Higginbotham & Baker, 1981). Despite these assumptions, there is limited research on play and playground behaviours of DHH preschoolers with most existing studies dating from more than 25 years ago (Antia et al., 2012).

More up-to-date is research on social emotional developmental of DHH children, which has consistently shown that DHH children face more social and emotional difficulties compared to their hearing peers (Kouwenberg, 2013; Rieffe, 2012; Stevenson et al., 2015). DHH children are often reported to struggle with identifying and regulating emotions, but also acquiring social norms and showing prosocial behaviours which are important for navigating social relationships in everyday life. These difficulties can lead to behavioural problems such as aggression or social withdrawal (Ketelaar et al., 2013; Rieffe et al., 2005; Rieffe & Terwogt, 2006). All these different challenges seem to occur due to limited opportunities for social learning that DHH children face in their daily lives, which are crucial for developing social-emotional competence.

RESEARCH AIM

Considering the importance of early social interactions, particularly in preschool age, the current work seeks to understand DHH children's social-emotional functioning compared to their hearing peers. By focusing on play and playground behaviours, social-emotional competence, the thesis wants to contribute to the theoretical body of work regarding DHH preschoolers social functioning and its interrelated factors. **The practical aim of the current work is to provide insights and strategies aimed to promoting social integration and equity for DHH children.**

SUMMARY OF FINDINGS

DHH preschoolers in the current study showed more solitary behaviours on the playground than their hearing peers, in line with previous studies (Levine & Antia, 1997; Vandell & George, 1981). However, contrary to our initial expectations, these non-social behaviours were unrelated to their overall competencies, as these were comparable to their hearing peers. Specifically, outcomes related to externalizing problems, aggression, and prosocial behaviours showed no differences between DHH preschoolers and their hearing peers of the same age (Chapters 5 and 8). Furthermore, both groups showed similar levels of empathy (Chapter 5), shame, and guilt (Chapter 8), and were equally capable of decoding others' emotions and regulating their own (Chapter 5). The positive

outcomes in social and emotional development for deaf and hard-of-hearing (DHH) preschoolers in this study may be attributed to several factors. Most DHH children in the sample used cochlear implants (CIs), which offer more auditory access than conventional hearing aids. These children also received early, bilateral intervention, unlike those in previous studies who were treated later or in only one ear (e.g., Ketelaar et al., 2013, 2015; Netten et al., 2015; Wiefferink et al., 2012). Early and bilateral treatment allows better speech perception and reduces reliance on visual cues, leading to improved communication, neurocognitive development, and most likely facilitated social learning and emotional development (Geers & Nicholas, 2013; Naik et al., 2021; Nikolopoulos et al., 1999).

The only aspect where DHH and hearing children were not comparable was regarding language skills, with DHH children showing lower general language skills (comprehension, production, and pragmatics) and lower emotional language skills than their hearing peers (Chapters 5 and 8). However, our findings show that language skills do not play a major role in DHH children's social-emotional competence (Chapters 5 and 8), and these difficulties do not hinder DHH preschoolers from engaging in conversations with their peers, which was one of their most prevalent playground activities (Chapter 3).

Altogether, the current findings suggest that the difference in playground behaviours between DHH and hearing children stems from the influence of extrinsic factors within their microsystem, rather than intrinsic characteristics. Inspired by Bronfenbrenner's (1979) social-ecological model, we discussed how the intrinsic characteristics of DHH children and extrinsic factors in their environment influence their social functioning.

The physical-social environment

All DHH children in the current study attended mainstream preschools, where their classmates were all hearing children. Furthermore, majority of the DHH children in this study used cochlear implants (CIs), which are devices that help them hear better than traditional hearing aids (Basura et al., 2009; Naik et al., 2021; Rich et al., 2013). Despite these advanced devices, DHH children still interacted less with their peers than children with normal hearing, similarly to findings from studies conducted 25 to 45 years ago, when CIs were not widely available (Antia et al., 2012).

Thus, this should make us aware that it is not just about having more sophisticated technology, the environment may also play a key role. As previously mentioned, playgrounds are one of the main contexts for peer interactions however, they often have poor acoustics that make it hard for DHH children to hear and understand others. This can make them feel overwhelmed and lead them to play away from the main group of children (Brunnberg, 2005; NDCS, 2015).

Besides the physical characteristics, peer attitudes also can make an impact. Previous research shows that DHH children often feel isolated or left out during play (Deluzio & Girolametto, 2011; Guralnick et al., 2006; Levine & Antia, 1997). Some hearing children may not understand how to communicate effectively with DHH children, especially in noisy environments like playgrounds, and may unintentionally exclude them. To improve interactions, it is important for everyone involved—like teachers and caregivers—to understand these challenges and actively help DHH children participate more fully in play and social activities.

FINAL CONSIDERATIONS AND PRACTICAL IMPLICATIONS

In summary, despite DHH children often facing barriers, both intrinsic (like difficulties with speech perception) and extrinsic (such as noisy environments), their resilience – together with progress in regards to educational and rehabilitation policies – allow for comparable emotional development with their hearing peers. Our findings highlight the unique social challenges faced by DHH preschoolers, and the need to look beyond intrinsic aspects, and further consider the weight that the physical social environment plays on access to social learning opportunities of DHH children.

The research emphasizes the need for better-designed playgrounds and targeted interventions in the preschool setting, with the peer groups but also teachers to improve DHH children's social participation. Practical implications include restructuring physical environments, promoting inclusive social practices among peers, and enhancing language support through play-based interventions. Future studies should include more diverse representation of DHH preschoolers (e.g. who primarily use sign language; whose caregivers are also DHH; who attend special education schools) which may bring more awareness into how nuances regarding rehabilitation and communication mode may

impact social functioning of DHH preschoolers. Furthermore, longitudinal research and the inclusion of DHH children's own perspectives on their social experiences in the playground setting, and school in general are also aspects to be considered in the future. For example, a study conducted throughout the duration of the school year - or even the duration of preschool years - could inform about how social behaviours with peers evolve across time. Additionally gathering information about how children feel while at the playground, could inform us about how connected they feel with the peer group.

Lastly, the current thesis presented alternatives for improving data collection with young children, by combining traditional methods with technology to improve data collection and validating new assessment tools for caregivers (chapters 3 & 6). More specifically, playground behaviours were observed using a software specifically designed for studies who aim to understand these interactions (chapter 3), while peer preferences were assessed with a computerized sociometric assessment tool (Endedijk & Cillessen, 2015). Furthermore, caregivers reports were used to validate an existing empathy questionnaire (original language Dutch) for Portuguese children **(chapter 4**), and to develop and validate a questionnaire that measures three moral emotions distinctively (i.e., shame, guilt, and pride; **chapter 7**) in the preschool age. The validation of these questionnaires, and the suggested methodologies not only contributed to the current body of work by ensuring that the measures used were both reliable and valid, but are also an important contribution for future research that targets social emotions within a similar age group.

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