Social-emotional factors underlying internalizing problems and peer relations in deaf or hard of hearing youth

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Chapter 1

Introduction

Providing a context

In world, take a dominant place. For example, sound plays a large role in our with others and it provides the means by which we receive . Taking a deaf or hard of hearing (DHH) person's in this -dominated world is challenging for individuals. At general psychology few studies on the or hard of hearing are presented. To illustrate the hearing how it would be to receive while you cannot fully , I imagined starting a presentation just by moving my (with no or soft sound). reading will not be an optimal , as only a small of sounds are distinguishable by alone. A recent study revealed that only approximately 12% of the words were correctly identified in a recognition task in which no sounds were (Altieri, Pisoni, & Townsend, 2011). Furthermore, individuals do not always the person(s) they speak to, and DHH people are missing out on the more social information that is transferred through . In this thesis I had to find another way of how difficult it is to receive when you do not have full access. In this I used limited access to the , but for deaf or hard of hearing it means they have limited access to information. Consequently, these children have fewer to (incidentally) acquire social- knowledge.

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In our world, sounds take a dominant place. For example, sound plays a large role in our communication with others and it provides the means by which we receive information. Taking a deaf or hard of hearing (DHH) person's perspective in this sound-dominated world is challenging for hearing individuals. At general psychology conferences, few studies on the deaf or hard of hearing are presented. To illustrate the hearing audience how it would be to receive information while you cannot fully hear, I imagined starting a presentation just by moving my mouth (with no or soft sound). Lip reading will not be an optimal solution, as only a small percentage of sounds are distinguishable by sight alone. A recent study revealed that only approximately 12% of the words were correctly identified in a sentence recognition task in which no sounds were used (Altieri, Pisoni,

& Townsend, 2011). Furthermore, individuals do not always face the person(s) they speak to, and DHH people are missing out on the more subtle social information that is transferred through intonation. In this thesis I had to find another way of reflecting how difficult it is to receive information when you do not have full access. In this paragraph I used limited access to the text, but for deaf or hard of hearing children it means they have limited access to auditory information. Consequently, these children have fewer opportunities to (incidentally) acquire social-emotional knowledge.

Scope

About 1 per 1000 children is born deaf or hard of hearing (DHH) (Korver, Konings, Dekker, Beers, Wever, Frijns, & Oudesluys-Murphy, 2010; Watkin & Baldwin, 2011). During childhood the prevalence increases to 1.65 (and may even double to 2.00) per 1000 children (Fortnum, Summerfeld, Marshall, Davis, & Bamford, 2001; Watkin & Baldwin, 2011). In DHH children who are healthy except for their hearing loss, psychopathological problems are more common than in hearing children. DHH children have been found to experience more internalizing (e.g., depression) and externalizing problems (e.g., aggression) than hearing children (e.g., Konuk, Erdogan, Atik, Ugur, & Simsekyilmaz, 2006; Van Eldik, Treffers, Veerman, & Verhulst, 2004; Van Gent, Goedhart, Hindley, & Treffers, 2007). Also, elevated levels of social difficulties, for example manifested in peer problems, have been noticed in DHH children (e.g., Remine & Brown, 2010; Van Gent, Goedhart, Knoors, Westenberg, & Treffers, 2012; Wolters, Knoors, Cillessen, & Verhoeven, 2011).

These internalizing, externalizing and social problems have often been associated with DHH children's language and communication difficulties (e.g., Dammeyer, 2010; Moeller, 2007; Stevenson, McCann, Watkin, Worsfold, & Kennedy, 2010). Language and communication provide the means by which social and emotional knowledge can be acquired, and relationships with the social surrounding can be formed and maintained. DHH children are living in a sound-dominated world, and 95% of these children are born into hearing families (Mitchell & Karchmer, 2004). Their (in)direct environment (e.g., family and peers) is therefore not always adjusted to DHH children's auditory and visual requirements with regard to communication (Leigh, Maxwell-McCaw, Bat-Chava, & Christiansen, 2008).

Consequently, it is more challenging for DHH children than it is for hearing children to learn (spoken) language, acquire communication skills and, in turn, social and emotional knowledge. For example, it could very well be that DHH children's limited means to communicate with their environment renders them unaware of the significance of social behaviors, such as empathy, in relationships. This implies that, besides the assumption that DHH show less empathy than hearing children, it can be hypothesized that the ones who do express empathy apply this behavior less in peer relations. In sum, DHH children's limited access to their social surrounding could alter associations between DHH children's functioning in certain domains (e.g., peer relations) and related factors typically found in hearing children (e.g., social behaviors). This thesis aims to identify factors underlying internalizing problems and peer relations in DHH children and young adolescents compared to their hearing peers.

There are various reasons to focus on internalizing problems and peer relations in DHH youth, and particularly during late childhood and early adolescence. First, at this age, multiple physical, social and cognitive changes occur at a high pace, making young people more vulnerable to internalizing problems (Graber & Sontag, 2009). Additionally, the perceived importance of social interactions with peers increases during late childhood and early adolescence (Rubin, Bukowski, & Parker, 2006). Best friends become more and more important while, unfortunately, being bullied by peers also reaches peak prevalence (Spence, De Young, Toon, & Bond, 2009). DHH children may be more vulnerable to peer problems due to possible communication difficulties with their overall hearing peers, and them being different from the majority (McCrone, 2004). Second, in addition to having an impact on these young peoples lives, problems emerging at this age can persist into adulthood (e.g., Kubzansky, Martin, & Buka, 2009). Gaining knowledge about potential problem areas at an early stage in life may provide the opportunity to prevent them from turning into more severe problems later on. A third and final reason for this research is that, although children are increasingly able to report on their own functioning during late childhood and early adolescence (Harris, 1989), previous research with DHH children often used proxy reports. Yet, particularly internal states of children, but also interactions with peers, often go unnoticed by parents and teachers (Keller, Lavori, Beardslee, Wunder, & Ryan, 1991). This may even be a bigger issue for hearing parents of DHH children, because it is thought to be difficult for them to share their DHH children's experiences and feelings by means of language (Preisler, Tvingstedt,

& Alström, 2002). Therefore, the majority of studies included in this thesis involve children's self-reports. All in all, there are ample arguments to justify the research reported in this thesis. Before describing the specific objectives of the various studies, a brief introduction on the heterogeneity of the population of DHH children, and the methodological and theoretical approaches will be provided.

Characteristics of DHH children and adolescents

Referring to DHH youth as a single group does not do them justice. DHH children can differ on various characteristics that are typical for being deaf or hard of hearing, such as their **degree of hearing loss**. Moreover, the threshold levels of degree of hearing loss differ across countries. Common classifications in the Netherlands are 41-60 dB for moderate, 61-90 dB for severe and > 90 dB for profound hearing loss in the best hearing ear, which is measured by averaging unaided hearing thresholds at 500, 1000 and 2000 Hertz. To provide a context: the range of conversational speech lies approximately between 30 and 70 dB (Lamoré, Kapteyn, & Franck, 2000). Although one could expect that children with a greater degree of hearing loss have poorer psychosocial[1] outcomes as compared to children with a lesser degree of hearing loss (due to more auditory deprivation of the former group), past studies have shown that children with all degrees of hearing loss experience problems (e.g., Antia, Jones, Luckner, Kreimeyer, & Reed 2011; Dammeyer, 2010; Stevenson et al., 2010).

Nowadays, many young DHH children who have severe to profound hearing loss receive a **cochlear implant (CI)**. A CI is a hearing device that consists of an externally worn microphone and microprocessor converting sound into electrical pulses. Internally, an electrode array implanted in the cochlea transmits the electrical pulses to the auditory nerve. The brain then perceives signals from the auditory nerve as sounds. Although CIs provide part of the population of DHH children with access to sound, these children still do not have the same quality of sound perception as children with normal hearing. Numerous studies have documented the advantages and benefits of CI for children's linguistic and academic development (e.g., Beadle, McKinley, Nikolopoulos, Brough, O'Donoghue, & Archbold, 2005; Fagan, Pisoni, Horn,

1 Psychosocial is used in this context as an umbrella term for psychopathological and social problems.

& Dillon, 2007; Yoon, 2011), but knowledge about these children's psychosocial functioning is only burgeoning.

Another factor causing heterogeneity within the DHH population is attendance to **mainstream or special education**. The percentage of DHH children that is educated in mainstream schools is increasing in the Netherlands (Knoors, 2007), a phenomenon that is seen in many countries (Nikolaraizi & Hadjikakou, 2006; Reed, Antia, & Kreimeyer, 2008). Children in mainstream schools show academic performances similar to hearing peers, but their functioning in the psychosocial domain remains less clear (cf. Eriks-Brophy, Durieux-Smith, Olds, Fitzpatrick, Duquette, & Whittingham, 2006). For example, some results indicate that DHH children in mainstream schools are more often excluded and neglected (Brunnberg, 2005; Wolters et al., 2011), while others suggest that these DHH children are doing well socially (e.g., Eriks-Brophy et al., 2006).

DHH children can furthermore differ in their preferred **mode of communication**; sign, sign supported or spoken language. A sign supported language uses the syntax (i.e., rules that govern the order of words) of the spoken language, and is supported with signs from the sign language of a country. Sign languages are natural languages with their own syntax and semantics (Bavelier, Newport, & Supalla, 2003). It remains a matter of debate whether the use of sign (supported) language is associated with DHH children's psychosocial outcomes (e.g., Kushalnagar, Topolski, Schick, Edwards, Skalicky, & Patrick, 2011; Polat, 2003; Stevenson et al., 2010; Van Gent et al., 2007). Moreover, communication mode is not an isolated aspect from the other DHH-related characteristics. School choice, for example, affects communication mode, and vice versa. To illustrate: schools for DHH children in the Netherlands have a bilingual teaching philosophy in which children are educated in spoken language supported by sign and in sign language (Knoors, 2007). Furthermore, DHH children with higher spoken language levels have been found to attend mainstream education more often (Fellinger, Holzinger, Beitel, Laucht, & Goldberg, 2009). Many DHH-related characteristics are, to some extent, related to each other and should therefore be examined simultaneously.

As mentioned previously, the majority of DHH children has hearing parents (Mitchell & Karchmer, 2004). However, approximately 5% of DHH children is born from one or two DHH parent(s). So, DHH children can vary on having **hearing or DHH parents**. In some domains of functioning the group of DHH children from DHH parents is found to function equal as compared to hearing children

from hearing parents. For example on perspective taking skills (Peterson, 2009; Woolfe, Want, & Siegal, 2002) or reading ability (Goldin-Meadow & Mayberry, 2001). The reason behind this equality is that DHH children from (signing) DHH parents have the opportunity to share language, experiences and feelings with their parents from an early age onwards. Due to the low prevalence it is difficult to include these children in research. In the current research, one DHH child born from DHH parents was included.

Finally, approximately 25 to 30% of the DHH population has **disabilities in addition** to their hearing loss, such as specific learning disabilities or a developmental delay (Fellinger, Holzinger, & Pollard, 2012; Fortnum, Marshall, & Summerfield, 2002; Punch & Hyde, 2011). In the current thesis these children were excluded from the sample. The aim was to examine the influence of hearing loss on internalizing problem behaviors and peer relations without undue influence of diagnosed disabilities. This reduces the possibility that any dissimilarity found between hearing and DHH children could be explained by these other disabilities.

Methodological approach

The developmental psychopathology framework

Four key principles of the developmental psychopathology framework (Cichetti & Toth, 2009; Cummings, Davies, & Campbell, 2000) guided the research on DHH youth's internalizing problems and peer relations described in this thesis. First, according to this framework both typical and atypical or at-risk samples should be examined. The study of typically developing samples enhances our understanding of atypical development, and vice versa (Halberstadt, Denham, & Dunsmore, 2001). The population of DHH children is assumed to develop dissimilar from hearing children due to sustained auditory deprivation from birth or from an early age onwards. Comparing the functioning of hearing (i.e., typically developing) and DHH children can help identifying possible hurdles for DHH children.

Second, the developmental psychopathology framework emphasizes examination of a range of outcomes, as well as studying multiple underlying or related factors. Examination of a single outcome and underlying factor might lead to spurious

conclusions if generalizations are made exclusively based on that outcome and/or factor (Cicchetti & Toth, 2009).

In line with the second principle, a third principle of this framework is to move beyond descriptive facts (i.e., means or mean differences) to a process level of studying psychosocial functioning. The process(es) underlying the same outcome can be quite different for different individuals. In the case of hearing and DHH children this implies that mean outcome scores may be equal for both groups, but the factors leading to that outcome can be different. Moreover, these differences are not necessarily maladaptive for DHH youth, but could just be different from the hearing norm. Differences may even reflect an adaptive way of dealing with their auditory deprivation.

Fourth, the developmental psychopathology framework emphasizes the study of dynamic interactions between social contexts and individuals (over time). This final principle is consistent with the social-ecological theory of Bronfenbrenner (1979). Multiple factors and outcomes occur across multiple contexts, for example, at the child-level (e.g. children's emotional functioning), the family-level (e.g., parental behaviors), or at the peer-level (e.g., friends or the larger peer group). The child is at the center and is surrounded by these social contextual layers with which they interact.

Assessment approach

As described above, the exploration of both typically and atypically developing samples is theoretically informative. However, the study of an atypical sample involving children who are deaf or hard of hearing does entail methodological issues concerning assessment. Not all DHH children can be presented with assessment tools in an equal fashion as typically developing, hearing children. For example, many DHH children have reading problems (cf. Ganek, McConkey Robbins, & Niparko, 2012). When ignored, these reading problems are likely to invalidate results obtained by means of written questionnaires. DHH children might not understand the questions and give random or incorrect answers. Questionnaires should therefore be short and have relatively simple syntactic and semantic structures. Particularly the DHH children who prefer to use sign (supported) language may have problems with questionnaires in written form. To assess these children's self-reported internal states and peer relations, questionnaires should also be offered in sign language. These and other

methodological considerations that have been accounted for in conduct of this research will be presented in chapter 2.

Statistical approaches

Comparing two groups of children on associations between internalizing problems, peer relations and their underlying factors carries with it statistical implications as well. First, one can fit models for each group separately and examine which factors contribute to internalizing problems or peer relations in each group separately (Figure 1). In this case, two regression analyzes are performed; one for the DHH sample and one for the hearing sample.

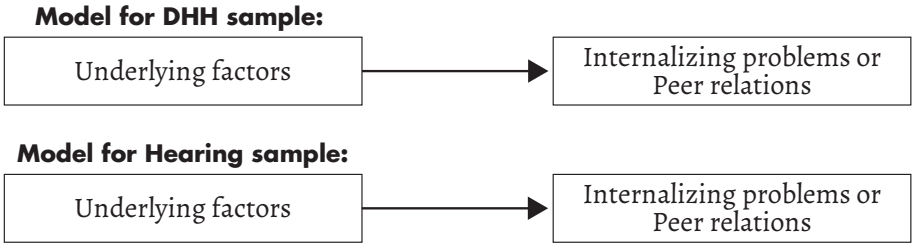

Figure 1. Two separate models: one for the DHH sample and one for the hearing sample

However, by using this approach, possible group differences in the associations between internalizing problems / peer relations and their underlying factors cannot be statistically tested. To reach the aim of comparing groups directly with each other, a second method is to carry out one multiple regression analysis with interaction terms. These interaction terms entail the interactions between group membership (i.e., either DHH or hearing) and the underlying factors (Figure 2). Basically, in this multiple regression analysis the so-called 'moderating effect' of group membership on the relation between internalizing problems / peer relations and their underlying factors is examined. Recall the example in which social behaviors have an effect on peer relations in hearing children. The moderating effect of group membership implies that the hearing sample and the DHH sample (i.e., the two groups) are directly compared with each other on the association between social behaviors and peer relations. This second method offers the possibility to draw stronger conclusions about group differences (or equalities) than the first method.

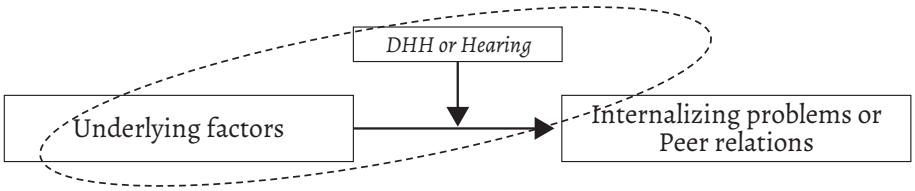

Figure 2. Schematic representation of the interaction effect of group membership (i.e., being DHH or hearing) and underlying factors on internalizing problems or peer relations

Theoretical approach

This research seeks to identify factors underlying internalizing problems and peer relations in DHH children. The presumed relations between these factors and internalizing problems / peer relations are grounded on theoretical models gained from research with typically developing children. In these models, emotional functioning is thought to be an important mechanism underlying both internalizing symptoms and peer relations (Denham et al., 2003; Zeman, Shipman, & Suveg, 2002). Children who are aware of their emotions and have the ability to manage and express their emotions in an appropriate manner, are less prone to develop internalizing problems and more likely to have successful peer interactions.

DHH children have been found to show various problems within the domain of emotional functioning (cf. Rieffe, 2012). For example, DHH children are less capable of distinguishing between different negative emotions. Additionally, they are limited in their strategies to regulate their negative emotions. DHH children's problems within the emotional domain do not appear to be peculiar, given the fact that the social surrounding plays an important role in acquiring emotion knowledge. Hearing children, whose parents frequently discuss emotions with them, have been found to display enhanced levels of emotion understanding when compared to children of parents who discuss emotions less frequently (Denham, Renwick-DeBardi, & Hewes, 1994). Previous results with hearing parents and their DHH children suggest that their interactions lack conversational depth and detail (Lederberg & Everhart, 2000; Preisler et al., 2002). Possibly, these conversations do not contain many exchanges between parent and child about abstract topics like emotions. Moreover, DHH children have fewer opportunities than their hearing peers to acquire emotion

understanding by incidental learning, for example by overhearing other people's conversations (Calderon & Greenberg, 2003).

In the next sections, underlying factors under study will be explained in more detail. This will be done separately for each of the internalizing problem behaviors and peer relations explored in this thesis.

Internalizing problems

Somatic complaints The first form of internalizing problems that is focused on in this thesis, is somatic complaints. Somatic complaints are physical complaints (e.g., headache and stomach ache), which cannot be explained medically (Croffie, Fitzgerald, & Chong, 2000). Past studies on the prevalence of these complaints in DHH children compared to their hearing counterparts, revealed mixed results (Kent, 2003; Van Eldik, 2005; Van Eldik et al., 2004). Knowledge about the prevalence and mechanisms underlying these problems in DHH children is vital, because somatic complaints are a problem in themselves, and have been found to cause social and academic difficulties (Torsheim, Aaroe, & Wold, 2001).

Emotional functioning is thought to contribute to the development of somatic complaints, because emotions have a physiological component. Consider the increased breathing-, hearth rate, and muscle tension you experience when you are angry. When anger (but also other negative emotions) is not adequately managed, the emotion and its physiological elements linger and negative mood states can arise (Scherer, 2000). These negative mood states can amplify and prolong the physiological stress reactions, and can ultimately lead to somatic complaints (Segerstrom & Miller, 2004). As mentioned before, DHH children have been found to be limited in their (negative) emotion regulation strategies and, consequently, they experienced prolonged negative mood states (Rieffe, 2012).

Another factor that is thought to increase somatic complaints in hearing children is their competence in dealing with daily stress situations (i.e., so-called sense of coherence, Antonovsky, 1993). Children with a low sense of coherence evaluate possible negative situations as hopeless to control. Subsequently, these children experience enduring stress levels, which can turn into potentially harmful tension (Torsheim et al., 2001). There are indications that DHH children experience lower levels of sense of coherence than their hearing counterparts (Rieffe, Meerum Terwogt, & Smit, 2003). The question remains whether their sustained negative mood states and low levels of sense of coherence are causing increased levels of somatic complaints in DHH children.

Depressive symptoms Emotional functioning has also been assumed to be at the root of another form of internalizing problems, i.e., depressive symptoms (Rieffe & De Rooij, 2012). Depressive symptoms are characterized by a persistent feeling of anhedonia and sadness or despair. In previous studies, DHH children reported increased levels of depressive symptoms compared to hearing children (Konuk et al., 2006; Van Eldik et al., 2004). Regarding this form of internalizing problems, particularly the awareness of emotions has been found to be crucial. Emotion awareness refers to the ability to identify and differentiate between emotions, and to understand the causes of emotions (Rieffe, Oosterveld, Miers, Meerum Terwogt, & Ly, 2008). There are indications that DHH children have lower levels of emotion awareness (Rieffe, 2012). Lacking the ability to identify which emotion you are feeling or what causes it, hampers you in the regulation of the emotion and, in the long run, can lead to depressive symptoms.

Besides their problems within the domain of emotional functioning, DHH children are experiencing many social difficulties. For example, DHH children reported a lower understanding of other individuals' actions and feelings (Peterson & Wellman, 2009), and showed more peer problems than hearing children (cf. Remine & Brown, 2010). It is not hard to imagine that the misunderstanding of others and/or peer difficulties can lead to children showing withdrawn, internalizing behaviors. In fact, social maladaptation has been hypothesized to be an important factor underlying children's development (Pritchard & Woollard, 2010). This means that children's social interactions, combined with their own active participation, can determine the development of internalizing problems, such as depressive symptoms. Because DHH children are known for their multiple social problems, social factors may play a key role in the development of depressive symptoms. Therefore, in this thesis, both emotional- and social factors are examined in relation to depressive symptoms in DHH and hearing children.

As described above, social factors may play a key role in the development of internalizing problems in DHH children. We are also interested in social functioning as an outcome and which factors underlie it. In this thesis we focus on peer relations as an index of social functioning.

Peer relations

Victimization The first peer relation that is examined in this thesis is victimization. Victimization occurs when a child receives negative attention or behavior from one or more other children repeatedly over time (Crick, 1995). DHH children

are thought to be particularly vulnerable for being targets of victimization (McCrone, 2004). However, thus far inconclusive findings have been found, with some studies reporting that DHH are more often victimized than hearing children and others failing to find a difference (Bauman & Pero, 2010; Kent, 2003; Wauters & Knoors, 2008).

The emotional problems underlying victimization in hearing children are the dysregulation of emotions and, in turn, the expression of heightened levels of anger and sadness (Camodeca & Goossens, 2005; Spence et al., 2009). In this respect, sadness is associated with withdrawn behavior and anger with provocative, aggressive behavior; behavioral patterns that decrease the chance of successful peer interactions. DHH children have been found to express their anger more openly than hearing children, and to show more internalizing, withdrawn behavior (Hosie et al., 2000; Rieffe & Meerum Terwogt, 2006; Theunissen, Rieffe, Kouwenberg, De Raeve, Soede, Briaire, & Frijns, 2012).

Besides children's own emotional functioning, social factors, such as parental behaviors are also thought to be important in relation to children being victimized (Swearer & Espelage, 2004). For example, parents who treat children as younger than their age, and parents who are less sensitive and responsive to their children's needs enhance the change of their children being victimized (Bowers, Smith, & Binney, 1994; Ladd & Kochenderfer-Ladd, 1998). Research on the interactions between parents and their DHH children when these children are in their teens is scant. Research with preschool DHH children found that parents of DHH children are less sensitive and responsive to their children's needs than parents of hearing children (Meadow-Orlans & Steinberg, 1993). However, other studies did not find this difference (Pressman, Pipp-Siegel, Yoshinaga-Itano, & Deas, 1999). It is plausible that communication barriers between hearing parents and DHH children get in parents' way from acting as they would with hearing children. The first question we set for ourselves is whether children's hearing loss alters the usual parental behaviors as seen with hearing children (i.e., mean levels). Second, whether these parental behaviors are differently associated with DHH children's chance of being targets of victimization as compared to hearing children.

Friendships The second peer relation that is examined in this thesis is a child's best friendship. A best friendship is defined as a strong and affective connection between two individuals (Hartup & Stevens, 1997). Best friendships may be

particularly significant for the increasing number of DHH children that is being educated in mainstream schools, because a close friend increases DHH children's inclusion with hearing peers (Punch & Hyde, 2011). Evidently, this peer relationship is important for all children, because it is thought to protect against psychopathology and victimization (La Greca & Harrison, 2005; Vitaro, Boivin, & Bukowski, 2009). However, some studies have shown that DHH have fewer friends than hearing children (Kluwin, Stinson, & Colarossi, 2002; Nunes, Pretzlik, & Olsson, 2001). Moreover, there are indications that the friendships that DHH children have formed are of lower quality as compared to friendships between two hearing children (Gilman, Eastbrooks, & Frey, 2004; Van Gent et al., 2012).

In a close friendship, it is vital to understand and incorporate others' emotional signals (Halberstadt et al., 2001). If these signals from others are not noticed, children can have difficulties adjusting their own emotional messages, are less capable to follow the social interaction process, and are less likely to react appropriately. The ability to accurately perceive and understand another person's emotions and to react to these emotions with appropriate prosocial behavior is known as empathy (Eisenberg & Strayer, 1987). DHH children are frequently found to be impaired in their ability to take another person's perspective (Peterson & Wellman, 2009), while also problems in their prosocial abilities have been reported (Wauters & Knoors, 2008; Wolters et al., 2011).

Whereas empathic abilities increase the quality of friendships, expression of the own anger in an overtly aggressive manner is likely to cause a decrease in friendship quality (Cillessen, Jiang, West, & Laszkowski, 2005). Findings regarding overt aggressive behavior displayed by DHH children as compared to hearing children are mixed (Remine & Brown, 2010; Van Eldik, 2005; Van Gent et al., 2007; Wolters et al., 2011). Yet, in light of the current thesis, more important than absolute mean levels of certain (anti)social behaviors are the associations between empathy, aggression and friendship quality. Past research indicated that DHH children have limited understanding of the significance of empathy and low levels of aggression in peer interactions (Rieffe & Meerum Terwogt, 2006). Therefore, the relations between empathy, aggression and friendship quality are explored in DHH children as compared to their hearing counterparts.

Notes on terminology

Psychopathological and social problems have been denoted 'psychosocial functioning' in this introduction. The underlying factors have been called social- or emotional functioning. These catch-all terms are used to facilitate the differentiation between outcomes (i.e., internalizing problems and peer relations) and their underlying factors, but we are aware that all can fall under the terms 'psychosocial'- or 'social-emotional' functioning. Furthermore, we are aware that the differentiation between truly 'emotional' or 'social' factors is complex, because emotions receive their meaning in social interactions (Halberstadt et al., 2001). Though, we hypothesize that (understanding) the emotions of oneself does not involve other individuals directly and is viewed as an emotional factor, while understanding the emotions and thoughts of others does involve other individuals and is seen as a social factor. This thesis represents independent manuscripts, and therefore some discrepancy on terminology throughout the thesis is unavoidable. For example, the emotional factors are categorized as individual or intrapersonal factors, and the social factors as social environmental or interpersonal factors. Though, in each chapter the exact factors are explained in detail. Finally, the distinction between factors and outcomes is controversial, because what is considered an outcome in one process can very well be a predictive factor in another process, depending on which variables and relations are being examined. Nonetheless, for clarity reasons we stick to the terms factors and outcomes, because in each study they are operationalized as such.

Objectives of this thesis

Our aim was to investigate how social-emotional factors are associated with internalizing problems and peer relations in DHH youngsters as compared to their hearing counterparts. Additionally, we aimed to investigate how certain DHH-related characteristics influenced DHH children's internalizing problem behaviors and peer relations. Understanding these associations is important with respect to the enhancement of intervention and prevention options, predicting the developmental prospects, but also to provide directions for future research.
Internalizing problems and peer relations were investigated as dimensions of

functioning and not as dichotomous constructs by dividing the sample in, for example, 'those with problems' and 'those without problems'. This was motivated by the fact that some children may be at the brink of having problems, but just fall outside selected criterion-levels. By examining dimensions of functioning we can study a community population in which children with little or no problems, but also those experiencing more problems are included.

Outline of the chapters

Chapters 2 until 7 represent independent manuscripts. Some content overlap between them is therefore inevitable. **Chapter 2** describes the various methodological issues and concerns that should be considered when conducting research with children and adolescents who are DHH. Chapter 3 and 4 describe two studies that focus on internalizing problems in DHH children as compared to hearing children. **Chapter 3** investigates somatic complaints and associations with mood states and sense of coherence, while **Chapter 4** describes prevalence of depressive symptoms and associations with emotion awareness, self-esteem, Theory of Mind, being victimized, and delinquent behavior. The main objective of chapters 5, 6, and 7 is the peer relations of children and young adolescents. In **Chapter 5** it is examined how parental behaviors and children's own mood states are associated with them being victimized by peers. **Chapter 6** presents the development of a short and balanced Best Friend Index in typically developing children. This Best Friend Index is used in **Chapter 7** in which friendship quality, friendship stability and (longitudinal) associations with empathy and aggression are investigated in DHH children as compared to hearing children. Finally, outcomes from these independent manuscripts are integrated in **Chapter 8**. In this chapter, the key findings and suggestions for future research will be discussed.