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

Kouwenberg, M.

Citation

Kouwenberg, M. (2013, April 18). *Social-emotional factors underlying internalizing problems and peer relations in deaf or hard of hearing youth*. Retrieved from <https://hdl.handle.net/1887/20757>

Version: Not Applicable (or Unknown)

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Note: To cite this publication please use the final published version (if applicable).

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Author: Kouwenberg, Maartje

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Issue Date: 2013-04-18

Chapter 8



Discussion



“The outcomes showed higher levels of self-reported depression in the DHH than in the hearing sample.” (Chapter 4 this thesis, p. 63)

“DHH children reported fewer invitations to parties, received more mean comments, and being more often ignored than hearing children.” (Chapter 5 this thesis, p. 98)

“DHH children reported lower friendship quality, but equal friendship stability as compared to hearing children.” (Chapter 7 this thesis, p. 117)

The above statements indicate that the current research on internalizing problems and peer relations of children and adolescents who are deaf or hard of hearing (DHH) was grounded. Even though past studies found elevated levels of psychosocial difficulties in DHH children as compared to hearing children (e.g., Dammeyer, 2010; Fellingner, Holzinger, & Pollard, 2012; Hintermair, 2006), a lot remained unknown. We particularly knew little about the underlying social-emotional factors, and children’s own perceptions thus far. The goal of this thesis was to enhance our understanding about internalizing problems and peer relations in a large sample of DHH youth. This was done along the principles of the developmental psychopathology framework in which DHH children were compared to hearing counterparts and in which multiple (underlying) social-emotional factors were examined.

In this research, DHH children reported a higher prevalence of depressive symptoms as compared to hearing children (chapter 4), similar to previous findings (e.g., Konuk, Erdogan, Atik, Ugur, & Simsekyilmaz, 2006). A positive finding was that DHH and hearing children reported an equally (low) prevalence of somatic complaints (chapter 3). Regarding peer relations, DHH youth reported lower friendship quality, and some forms of victimization more often than their hearing peers (chapter 5 and 7). These particular victimization forms included feelings of being ignored and receiving fewer invitations to parties than hearing children. This underscores past findings of DHH children to feel more neglected and more alone than hearing children (e.g., Kent, 2003; Nunes, Pretzlik, & Olsson, 2001).

Exploration of the underlying factors revealed no differences between DHH and hearing children on emotional functioning. That is, DHH and hearing children reported equal mean levels of emotional awareness and of the various mood states (i.e., anger, sadness, fear, and happiness) (chapter 3, 4 and 5). Differences between

the groups were predominantly found regarding underlying factors from the social functioning domain, meaning that DHH children showed lower Theory of Mind abilities (chapter 4) and less empathy (chapter 7) than hearing children. These findings support the general conclusion of Kluwin, Stinson, and Collarissi (2002) that DHH children are socially less mature than hearing children.

Yet, no difference between the two groups of children was reported on overt aggression (chapter 7). This behavior was also viewed as a social factor, provided that it entailed aggressive acts towards other children. However, this equal score on aggression should be slightly nuanced, as a related study with the same sample did find DHH children to report one particular form of aggression more often than hearing children, i.e., proactive aggression⁴ (Theunissen, Rieffe, Kouwenberg, De Raeve, Soede, Briaire & Frijns, *submitted*). All in all, these findings highlight the importance of carefully exploring and reporting about DHH children's functioning within various domains (e.g., different forms of internalizing problems) or even within a form (e.g., different forms of being victimized), rather than catching their functioning in overall terms as 'problematic' or 'not problematic'. Also refer to Table 1 for an overview of the (dis) similarities in mean prevalence scores.

If we add up all these findings, the list of similar mean scores between DHH and hearing children is actually longer than the list of dissimilar mean scores. Furthermore, the dissimilarities were found mainly regarding peer relations and the underlying factors coming from the social functioning domain, and not the factors coming from the emotional functioning domain. It should be noted that these results were based on the complete samples of both groups of children. Exploration of subsamples of DHH children showed that some of them were doing less well than others. This will be addressed in more detail in the next section.

Moreover, while some mean prevalence scores were equal, associations between internalizing problems, peer relations and their underlying social-emotional factors differed for DHH children as compared to their hearing age-mates. Knowledge about these different associations has large potential for improvement of prevention- and intervention programs. This knowledge provides the possibility to develop DHH 'custom-made' programs. Before we focus on the associative patterns between internalizing problems, peer relations,

4 Proactive aggression is viewed as planned and instrumental in order to intimidate others or dominate social interactions. This is opposed to reactive aggression, which is seen as a defense mechanism against provocation, frustration or threat (Dodge & Coie, 1987).

and social-emotional factors, the influence of DHH-related characteristics on DHH children's functioning will be summarized and discussed.

Table 1 (Dis)similarities between DHH and hearing children on mean prevalence scores

Chapter	Social-Emotional factors	Internalizing problems	Peer relations
3	Mood states (DHH = H)	Somatic complaints (DHH = H)	
	Sense of coherence (DHH = H)		
4	Emotion awareness (DHH = H)	Depressive symptoms (DHH > H)	
	Self-esteem (DHH = H)*		
	Theory of Mind (DHH < H)		
	Delinquency (DHH = H)		
5	Victimization (DHH = H)*		Victimization (DHH = H)*
	Mood states (DHH = H)		
	Parental behaviors (DHH ≠ H) ^a		
7	Empathy (DHH < H)		Friendship quality (DHH < H)
	Aggression (DHH = H)*		

* On composite scores no mean differences were found between DHH and hearing children, but on specific forms or specific scales mean differences were found. On self-esteem these differences came from research with the same sample (Theunissen, Rieffe, Briaire, Soede, Kouwenberg, & Frijns, *submitted*).

^a Parental sensitivity (both parent-report and child-report), Parents' expectations and Parental Emotional Intelligence were assessed. Differences in mean scores were found on child-reported Parental sensitivity.

Characteristics of DHH children and adolescents

Throughout this thesis, a recurring DHH-related characteristic causing variability in DHH children's functioning was **type of education** (i.e., special or mainstream). DHH children who were educated in special schools reported more symptoms of depression, more occurrences of victimization, and a lower friendship quality than DHH children in mainstream schools. Furthermore, DHH children in special schools reported less happy mood, less empathic concern, and more aggressive behavior than DHH children in mainstream schools. So, DHH children in special schools showed more internalizing-, peer relation-, and social-emotional difficulties than DHH children in mainstream schools. Wolters, Knoors, Cillessen and Verhoeven (2011) recently reported similar differences between DHH children in special schools and DHH children in mainstream schools. This does not indicate that special education impedes DHH children in their functioning. It could as well be that the problems these DHH children experience placed them into special schools, while those DHH children who

are achieving well are educated in mainstream schools (Fellinger et al., 2012; Van Gent, Goedhart, Hindley, & Treffers, 2007). DHH children's functioning could therefore be viewed as being at the root of educational placement. Moreover, many of the problems mentioned are interrelated. For instance, less emphatic concern and more aggressive behavior caused lower friendship quality (chapter 7). So, these children in special schools are experiencing a network of difficulties, many of which affect each other.

It should be noted that the current findings that DHH children in special education are victimized more often than DHH children in mainstream education, appear to contradict past findings that DHH children in special schools have more positive peer experiences than DHH in mainstream schools (cf. Stinson & Kluwin, 2011). In the present study, children's peer relations within all environmental contexts were explored, i.e., not exclusively on school grounds. It may well be that DHH children in special schools are a target for victimization outside school in their own neighborhood. Future studies can unravel this by making a distinction between peer relations within schools or outside of schools. Results of previous studies were inconclusive, or even contradictory, about the relation between DHH children's preferred **communication mode** (i.e., sign, sign supported or spoken language) and their psychosocial functioning (e.g., Kushalnagar, Topolski, Schick, Edwards, Skalicki, & Patrick, 2011; Polat, 2003; Van Gent et al., 2007; Stevenson, McCann, Watkin, Worsfold, & Kennedy, 2010). For the majority of internalizing problems, peer relations and their underlying factors explored in this thesis (except for fear feelings), DHH children's preferred communication mode did not have an influence. This result was obtained when we controlled for other DHH-related characteristics, such as type of education. When the influence of communication mode was examined without other DHH-related characteristics, or when only fear feelings were examined, we could have spuriously concluded that the use of sign (supported) language was having an (negative) influence on DHH children's functioning. This underscores the importance of the developmental psychopathology principle (#2) of examining multiple factors and outcomes to avoid false generalizations (Cicchetti & Toth, 2009). Noteworthy to mention is that this finding pertains mainly to children using sign *supported* language, because only two children in this study preferred to use sign language. To conclude, for the majority of findings in this thesis, sign supported language did not have an influence on DHH children's functioning over and above other DHH-related characteristics, like education type.

The effect of **type of hearing device** (i.e., cochlear implant or conventional hearing device) on DHH children's internalizing problems and peer relations requires some consideration. The children with a cochlear implant (CI) included in the current research all had profound hearing loss⁵. When this group of profoundly hearing impaired children with CI was compared to a group of profoundly hearing impaired children with conventional hearing devices, the former attained better psychosocial outcomes than the latter (Theunissen et al., 2012). Thus, when CI children were matched on degree of hearing loss with children with conventional hearing devices, CI children appeared to reach better adjustment scores.

In the studies comprising this thesis, children with CI were compared to the complete sample of children with conventional hearing devices (i.e., those with moderate to profound hearing loss). These two groups reported equal scores on internalizing problems and peer relations. Additionally, no sample differences were reported on mood states and sense of coherence. Though, because profoundly hearing impaired children with CI function better than profoundly hearing impaired children with conventional hearing devices, CI does appear to aid DHH children in their functioning.

Furthermore, the absence of a difference between children with CI and children with conventional hearing devices in the studies reported in this thesis could also be due to the fact that our CI sample is generally implanted late (mean age of almost four years). Past research has found that the prediction of post-implantation outcomes becomes harder when age at implantation increases (McConkey Robbins, Burton-Koch, Osberger, Zimmerman-Philips, & Kishon-Rabin, 2004). Additionally, it has been reported that children go through a sensitive period at which cochlear implantation should take place to improve children's (language) functioning (see Ganek, McConkey Robbins, & Niparko, 2012, for review). A recent study found this period to end when children reach the age of two years (Boons et al., 2012), which is much earlier than our sample's mean age of four years. Future studies will automatically include a sample of CI children that is implanted at an earlier age, because nowadays children are usually implanted before the age of two (De Raeve, 2010).

5 Cochlear implantation used to be performed only on individuals with a profound hearing loss, but recently the inclusion criteria have been expanded and also children with severe hearing losses are eligible for the procedure.

Finally, in the current studies, DHH children with a higher **degree of hearing loss** were not found to experience more internalizing or peer relation problems as compared to DHH children with a lower degree of hearing loss. This is in line with the majority of findings reported previously (Antia, Jones, Luckner, Kreimeyer, & Reed 2011; Dammeyer, 2010; Stevenson et al., 2010). There is, however, a pitfall when examining links between degree of hearing loss and psychosocial functioning. Children's degree of hearing loss measured *without* their hearing devices differs from their degree of hearing loss *with* their hearing devices. In this research, the unaided (i.e., *without* hearing device) hearing thresholds were used. Only from a minority of the sample ($n = 34$; about $\frac{1}{4}$ th of the group of DHH children), the aided hearing thresholds were known. This number was too small to use in analyzes. Future studies should include children's aided degree of hearing loss to provide a more accurate measure of their everyday level of hearing loss. Also recall the finding that children who are profoundly hearing impaired (unaided), functioned differently depending on the type of hearing device they were wearing (i.e., a CI or a conventional hearing device). Furthermore, children's speech perception is an important aspect of their daily hearing. Speech perception is a vital channel through which children connect with their social surrounding, and could therefore be an important factor to focus on in future psychosocial research.

In sum, DHH-related aspects should be explored, both in-depth and simultaneously, to unravel their actual influences on DHH children's internal states, peer relations and social-emotional functioning. In the current research, education type appeared to be the foremost characteristic related to dissimilarities regarding DHH children's internalizing problems, peer relations and social-emotional functioning.

Methodological strengths of this research

Besides exploration of DHH-related characteristics causing variability within the DHH sample, this research explored differences between the complete samples of DHH and typically developing, hearing children. This was based on the (#1) principle of the developmental psychopathology framework to examine both atypically and typically developing samples. As not all DHH children could be presented with self-report questionnaires in an equal manner as hearing

children, various methodological considerations were taken into account (chapter 2). For example, it was ensured as much as possible that both the grammar of the items as the semantic structures (e.g., excluding items concerning sounds) were appropriate for the DHH participants. Adaptations that were made to testing materials for DHH participants were also carried through in testing materials for hearing participants. Additionally, items were translated from Dutch into Sign Language of the Netherlands (SLN) for those DHH participants who preferred to use sign (supported) language. Overall, this resulted in satisfactory psychometric properties of the questionnaires for both the DHH and hearing samples. Satisfactory psychometric properties, in turn, are a prerequisite for reliable and valid findings.

The differences between DHH and hearing children regarding mean scores of internalizing problems, peer relations, and social-emotional factors have been addressed previously in this discussion. However, a focal point of attention in the studies included in this thesis, and one which made this research original compared to earlier research, was to go beyond mean difference scores and consider possible group differences in social-emotional pathways leading to internalizing problems and peer relations. This approach of studying children's functioning on a process level was principle #3 of the developmental psychopathology framework. The studied associations between internalizing problems, peer relations and their underlying social-emotional factors were based on theoretical models adapted from research with hearing children (e.g., Denham et al., 2003; Zeman, Shipman, & Suveg, 2002). In the next section, the key findings concerning the underlying factors of internalizing problems and peer relations in DHH children as compared to hearing children will be discussed.

Factors underlying internalizing problems and peer relations

A first key finding was that **emotional (dys)functioning** is an important factor underlying the development of internalizing problems and peer relations in both DHH and hearing children. In other words, in the current thesis we found the associations between emotional (dys)functioning and internalizing problems and peer relations in DHH children to be comparable to those in hearing children. A second key finding of the studies included in this thesis was that the influence

of social factors on children's internalizing problems and peer relations caused a discrepancy between DHH and hearing children. DHH children's poor **social understanding** (i.e., Theory of Mind) was uniquely related to the development of depressive symptoms. This relation was not found in the hearing sample (chapter 2). DHH children's lower social understanding has been reported repeatedly in past research (e.g., Meristo & Hjelmquist, 2009; Peterson & Wellman, 2009; Peterson, Wellman, & Slaughter, 2012). The fact that this form of social understanding directly affects DHH children's internalizing problems is, to the best of our knowledge, a new finding; one that should receive more attention in future research.

Furthermore, the social factor '**parental behavior**' was differently related to victimization in DHH children when compared to hearing children (chapter 7). DHH children, whose parents had higher expectations concerning their competencies, and parents who were sensitive to their DHH children's needs, were less prone to be targets of victimization. In hearing children, these relations between parental behaviors and victimization were more complex or absent.

This association between parental behavior and DHH children's functioning requires some additional discussion on its interpretation. Parental sensitivity in the current thesis was assessed from both parents' and children's perspectives. The parental sensitivity from children's perspectives can be interpreted as a more *reactive* parenting style, because this refers to, for example, children turning to their parents to discuss their problems. Parents who scored high in this domain of parental sensitivity also scored high on being sensitive to their children's communicative needs (e.g., to look at their child before starting to communicate), which underscored that parents behave in reaction to their children.

In turn, the parental sensitivity from parents' perspectives can be interpreted as a more *directive* parental behavior, in which the parents take the initiative to turn to their children. Past studies frequently mentioned the directive parenting style of hearing parents of DHH children (cf. Vaccari & Marschark, 1997; Quittner et al., 2010), but this was predominantly based on research with preschoolers, while findings on young adolescents were lacking. Furthermore, directive parenting frequently has a negative undertone, implying that parents are not responsive or sensitive to their children. However, it has also been proposed that some directive parenting behaviors are, in fact, an appropriate adaptation to DHH children's linguistic development (Lederberg & Everhart, 2000). In the current thesis, parental directivity appeared adaptive for DHH children's peer

relations. In sum, in this thesis both directive as well as reactive parenting behaviors were found to be functional for DHH children when they are in their early teens.

Practical implications

An evident question following the current research on DHH children's internalizing problems and peer relations, is how the results can be translated into practice. In this perspective, the peer relations and social understanding of DHH children should receive focal attention. For example, while normally hearing children acquire the Theory of Mind abilities we addressed in chapter 4 of this study around the age of 4 or 5 (e.g., Wellman, Cross, & Watson, 2001), our DHH sample aged between 9 and 16 years still faced difficulties with regards to these abilities. Moreover, these abilities were related to children's friendships and their mental health (i.e., depressive symptoms), which underscores the need to boost DHH children's social understanding.

Children's social abilities could be enhanced through specific programs (e.g., Providing Alternative THinking Strategies or PATHS; Greenberg & Kusché, 1993). Parents and teachers (in special education) could also make a habit of explicitly mentioning the thoughts behind their behaviors. Previously it has been suggested that individuals acquire language / knowledge the 'easiest' when others explicitly mention what they are doing during an activity or in their daily routines (Pike, 1989). Performing an action and, at the same time, naming the action appeared to be better absorbed and remembered than, for example, reading a book together. This is also a principle of the 'The Hanen' program (cf. Girolametto & Weitzman, 2007), in which daily activities between parents and their children are used to enhance the communication and language skills of children. The 'The Hanen' program was developed to improve children's (aged up until five years) communicative skills, or the social skills of children with autism spectrum disorder. This way of incidentally, yet purposely, acquiring knowledge during interactions between parents and children can be expanded to the acquisition of social abilities by DHH children, specifically when they are in their teens.

Furthermore, family-counseling programs in the Netherlands could be expanded to include parents of young adolescents. Parents of DHH children

receive sign (supported) language courses and support with raising a DHH child until their children are five or six years of age. Because the current results show that parental behaviors are directly linked to children's victimization and children's negative mood states⁶, and previous research has shown that DHH adolescents' self-esteem was positively associated with home communication (Leigh, Maxwell-McCaw, Bat-Chava, & Christiansen, 2008; Van Gent, Goedhart, Knoors, Westenberg, & Treffers, 2012); parents should be able to receive support when children are in their (early) teens. Parents of older DHH children may be offered to attend parent evenings and workshops, and meetings in which personal counseling on raising a DHH adolescent can be provided.

For DHH children in special education, the role of teachers should not be underestimated. Wolters and colleagues (2012) found that the relationship between students and their teachers is an important factor regarding DHH children's well-being. Because in the current research, particularly DHH children in special education were found to experience most problems, teachers could play a key role in their adjustment. Moreover, as social-emotional development is also an important determinant of academic development (cf. Zins, Weissberg, Wang, & Walberg, 2004), children's social-emotional functioning is an area that requires sustained attention in education programs.

Future research

One research project often forms the base for subsequent research projects, and findings from the current thesis also inspired future research ideas. Many of these ideas have been provided in each chapter and throughout this discussion. A returning, yet very important, direction for future research is that associations should be explored over time. This way of analysis would provide the opportunity to unravel causal directions of associations.

Furthermore, in the current research, a strong relationship was found between parental sensitivity and communication between DHH children and their parents. Past results revealed that communication at home was strongly related to DHH children's self-esteem and satisfaction with life (Leigh et al., 2008; Van Gent et al., 2012). Other studies showed that sharing the same language

⁶ More parental sensitivity was related to less anger and less sadness in chapter 5.

(Wallis, Musselman, & MacKay, 2004), or more specifically the communicative competence of parents and children in that shared language (Hintermair, 2006; Kushalnagar et al., 2011), is important for DHH children's development. So, communication between DHH children and their parents appears to play an important role for children's development, but a lot remains unknown to date. For example, how does home communication influence parental behaviors and (in turn) children's functioning in a wide range of domains? Or, how is home communication related to other domains of children's functioning, besides self-esteem and satisfaction of life? Future multi-informant and multi-method research may unravel these questions in DHH children when they reach late childhood and early adolescence.

In the current research, children's functioning was assessed by means of self-report questionnaires, as this is the recommended method for examination of youth's (subjective) internal processes (Betts, Gullone, & Allen, 2009). Yet, knowledge about children's functioning experienced by others is lacking. These other-reports would result in an overall picture of children's functioning. For example, self-reports mostly reflect subjective experiences; whereas peer-reports reflect more of an individual's social reputation (Juvonen, Nishina, & Graham, 2001). Divergence between self- and other-reports has also been shown in the current study on parental behaviors; i.e., child-reports revealed a difference between parents of DHH children and parents of hearing children, whereas parent-reports did not. To provide the most complete picture of children's (but also parental and peers') functioning, future research could include both self-reports and other-reports.

Related to this self-report methodology is the fact that we failed to find a difference regarding mean scores of emotional functioning in DHH children as compared to their hearing counterparts. The high interrelations between negative mood states, such as fear and anger (chapter 3 and 7) did indicate, however, that DHH children experience problems differentiating between emotions within the negative domain (also refer to Rieffe, 2012). Because self-report questionnaires may be less able to reveal emotional difficulties in DHH children, future research on DHH children's emotional functioning could include other methodologies, such as experiments and observations.

Highlight of the research

A frequently asked question in a research project concerns its highlight(s). Although generalizations must be made with caution, as the present findings varied according to different forms of functioning or different subsamples explored, a general pattern (or highlight) can be identified. This is that DHH children differed most from their hearing peers in aspects or associative patterns that involved a social facet. However, at a deeper level, also problems with emotional functioning became apparent. It is of the utmost importance to examine DHH children's functioning thoroughly, and to take - besides the mean scores - associative patterns into account.

