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

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Chapter **2**

Methodological issues in the psychosocial assessment of children and adolescents who are deaf or hard of hearing.

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hard of hearing youth
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Abstract

Children and young adolescents who are deaf or hard of hearing (DHH) have been found to experience more psychosocial problems when compared to their hearing counterparts. These results are often obtained by using assessment tools that have been validated for use with hearing children. Using these tools in a similar fashion with DHH children, while ignoring certain deaf-related characteristics, may lead to unreliable or invalid results. Researchers and educational- and clinical psychologists could benefit from an in-depth overview of methodological issues, examples, and recommendations in conducting psychosocial research with DHH youth. Thus far, such an overview has not been provided. Based on our longitudinal research with this particular group, the current article aims to address this gap in the literature and offers guidelines for self-reports for use with DHH youth.

Psychosocial research with children and young adolescents who are deaf or hard of hearing (DHH) has increased rapidly over the past few decades (e.g., Hintermair, 2011; Leigh, Maxwell-McCaw, Bat-Chava, & Christiansen, 2008; Van Gent, Goedhart, Knoors, Westenberg, & Treffers, 2012). Various methodological issues and concerns should be considered when conducting psychosocial research with this particular group. Such concerns have already been reported back in 1964 by Vernon and Brown, who published a “guide to the basic intelligence and personality tests found to be most suitable for assessment of deaf children” (p. 414). Besides the fact that this guide is almost 50 years old, the authors limit themselves to considerations of case history data, and the use of sign language interpreters familiar with psychology and testing. Two other considerations they put forward are whether norms for hearing children are appropriate for DHH children, and possible communication problems experienced by DHH children. More recent articles and book chapters regarding accommodations or concerns in the assessment of DHH participants’ functioning address intelligence tests (cf. Maller, 2003), language tests (e.g., Cawthorn, Winton, Garberoglio, & Gobble, 2011; Enns & Herman, 2011; Lollis & LaSassa, 2009), or mathematic tests (Cawthorn and Online Research Lab, 2006, 2008). Others have considered the examination of more severe psychological problems, such as hallucinations, delusions and thought disorders, in deaf adults with severe language deprivation (Glickman, 2007). Recommendations from these sources are valid, but we aim to illustrate, in a more detailed fashion, the methodological issues in developing and adjusting psychosocial assessment tools that are suitable for a community sample of DHH youth. With the present article we intend to provide a practical reference for researchers, but also for psychologists interested in assessing the psychosocial functioning of their young DHH clients. First, we will outline various frequently used methods to assess psychosocial functioning. Second, we will provide recommendations for developing and presenting self-report questionnaires to DHH youth. Third, a step-by-step guide to achieve an assessment tool that is suitable for DHH youth is given. These considerations and recommendations are derived from our own longitudinal research on the psychosocial functioning of DHH children and young adolescents.

Various assessment tools

Different methods can be used to gather knowledge about psychosocial functioning of (DHH) youth. Frequently used methods are child interviews, peer ratings and nominations, observations and questionnaires. Each of these methods and its (dis)advantages is addressed separately below.

Child interviews provide the opportunity to gather information about children's functioning in their own words (Sattler, 1992). An advantage of obtaining information in the participants' own words is the increased accuracy of answers (Morrison & Anders, 2001). Additionally, with this method unforeseen information may be gathered, as answers are not restricted to requests for specific information (Morrison & Anders, 2001). However, a limitation of relatively unstructured interviews is that certain domains of functioning may be overlooked (Meyer et al., 2001). Furthermore, during the turbulent years in which (pre)adolescents become increasingly aware of themselves, they are reluctant to share their private feelings directly with an unfamiliar adult researcher or psychologist (Orr & Ingersoll, 1988). Particularly for DHH children who are using sign or sign supported language, a further drawback of the interview methodology is the necessity of a researcher fluent in sign (supported) language or an interpreter. The reflection of a DHH individual's affect by an interpreter is a somewhat subjective process (Pollard, 1998), which can alter outcomes.

In *peer ratings and nominations*, children are asked to rate all of their peers or to nominate three to five peers on certain characteristics and behaviors. An advantage of ratings and nominations is that they give a reflection of children's social reputation or social functioning in class (Juvonen, Nishina, & Graham, 2001). Yet, this limits research outcomes to children's functioning *within* class, while their functioning outside school grounds remains unknown. We hypothesize that there is a discrepancy between 'inside' and 'outside' school, particularly for DHH children in special education, due to their inexperience interacting with (overall) hearing peers outside school. Furthermore, DHH children in special schools are often educated in classes with few children, making results from peer ratings and nominations questionable and difficult to compare to those obtained from children in mainstream education.

In mainstream education, in turn, DHH children's hearing classmates may misinterpret DHH children's behaviors or characteristics (Stinson & Liu, 1999). For example, DHH children are more easily distracted and need more visual prompts to react than hearing children (Corina & Singleton, 2009). When, as a result of these characteristics, DHH children do not respond to cues from their social surrounding, this may be interpreted by hearing classmates as being less (pro)social.

Observations refer to watching and analyzing children's naturally occurring behavior (cf. Banister, Burman, Parker, Taylor, & Tindall, 2011). An advantage of observations is that they have a more objective nature than children's own reports, because observations represent the normative perspective of phenomena (Vernberg & Biggs, 2010). Though, this method is limited by low occurrence rates and reactivity of many behaviors, as well as the covert nature of internal states such as depressive feelings (Achenbach, McConaughy, & Howell, 1987). Furthermore, it fails to measure interactions between children and their peers, such as being bullied (Vernberg & Biggs, 2010).

When *questionnaires* are used as an assessment tool, the first subject to consider is the choice of informant (i.e., parent-, teacher- or self-reports).

- An advantage of *parent- and teacher-reports* is that the parent or the teacher knows the child for a longer period of time. Therefore, it can be hypothesized that these informants provide a more balanced picture of the child's daily functioning than, for example, an unfamiliar observer. However, it has also been assumed that teachers' knowledge of the child is limited, for instance, with regards to the child's home situation (Dammeyer, 2010). Moreover, a large study has shown that parents overestimate the health and well-being of their (hearing) children (Waters, Stewart-Brown, & Fitzpatrick, 2003) and consequently, underdiagnose problems. Underdiagnosis might be a particular point of concern in research with DHH children, due to communication barriers between them and their overall hearing parents (Connolly, 2006). Parents of DHH children with a cochlear implant (CI) have indeed been found to rate their children's social functioning too positive (e.g., Dammeyer, 2010; Percy-Smith, Caye-Thomasen, Gudman, Jensen, & Thomsen, 2008).
- *Self-reports* are the primary method for assessing children's subjective experience of their own well-being (Hays et al., 1995). Yet, this subjective

experience can be viewed as a disadvantage, as well as the fact that self-reports can be tedious to answer for children, the plausible response biases and memory errors. Moreover, many DHH children experience reading difficulties (cf. Ganek, McConkey Robbins, & Niparko, 2012), which may invalidate the results of written self-reports. On the other hand, particularly subjective experiences have been found to be related to future psychosocial functioning (Ma & Bellmore, 2012). Furthermore, self-reports provide the opportunity to collect data about children's functioning in domains that are unknown or invisible for parents and teachers. In fact, past research has shown that self-reports are the recommended method for examination of the (subjective) internal processes of children and adolescents (Betts, Gullone, & Allen, 2009).

It is quite evident to use multiple data collection methods simultaneously to obtain a comprehensive view of children's functioning. For one of these methods, that is, self-reports, we will outline methodological issues and recommendations for use with DHH youth. It should be noted that the self-report methodology cannot be applied to children with language or intellectual disabilities (e.g., Hays et al., 1995). For alternative assessment methodologies for use with DHH children, refer to Cawthon and colleagues (2006; 2008).

Presenting self-reports to DHH youth

1. *Mode of language.* When developing a psychosocial self-report questionnaire, one ought to bear in mind that the main aim is examination of psychosocial functioning. So, DHH participants' mental health problems should not be confused with, or confounded by, their frequently occurring language problems (Pollard, 1998). The likelihood that participants misinterpret a question due to language problems should therefore be minimized. The first issue to consider is the language or communication mode in which a questionnaire should be presented (Cawthon & Online Research Lab, 2006, 2008). Some DHH children are fluent in spoken language, and some in sign language. Others use sign supported language in which the syntax (i.e., rules that govern the order of words) of spoken language is used, which is supported with signs from the sign language. However, this mixed form does not have official language rules, whereas sign languages are natural languages with their own syntax and

semantics (Bavelier, Newport, & Supalla, 2003). It is recommended to establish for each individual participant which language they are most proficient in, and to present the questionnaire in that particular language. This is underscored by results of increased reliability of a signed version of the Youth Self Report compared to the written version, in a sample of signing DHH children (Cornes, Rohan, Napier, & Rey, 2006).

Moreover, language tests can be administered to DHH children to determine whether their level of (sign) language proficiency is sufficient to understand the psychosocial questionnaires. Although these tests are not available for all sign languages, sign language proficiency tests have been developed for some; e.g., British Sign Language (BSL; Herman, Holmes, & Woll, 1999) or Sign Language of the Netherlands (SLN; Hermans, Knoors, & Verhoeven, 2010). A list and summary of sign language assessment measures has been developed by Tobias Haug (see www.signlang-assessment.info).

2. *Translation of the items.* A second, related to the first, issue is translation of the items from the spoken language into the sign language. Hambleton, Merenda, and Spielberger (2005) published a book on the theoretical and methodological issues in translating psychological tests from a spoken language of one country into the spoken language of another country. However, they do not address different modalities of a language within one country. When items from a spoken language are translated into a sign language, researchers should first be aware of the fact that different sign-variants (often based on different regions) may exist within one country. It is advised to use the sign-variant that is known by the research sample. Second, researchers should understand the complexity of literal translation from a spoken into a sign language. In reality, they have to go beyond a literal translation and find concepts, words and expressions that are culturally, psychologically and linguistically equivalent in the other language (Hambleton et al., 2005). This is called adaptation. For example, the Dutch spoken language is less specified as compared to SLN. Items from written versions of psychosocial questionnaires frequently include the terms ‘something’ or ‘things’ (e.g., ‘My friend and I do nice *things* together’). We suggest adapting these phrases into more specific terms or wording (e.g., ‘My friend and I do nice *activities* together’). Additionally, the structure of the original sentence must be followed as closely as possible in the translation into the sign language structure; i.e., not the word order of the spoken language should be used (cf. Livingston,

Singer, & Abrahamson, 1994). Third, we propose to carry out translations by a qualified sign language interpreter, after which back translation by another interpreter must confirm that original and translated items show convergence. Subsequently, it should be statistically tested whether the translated questionnaire measures the same construct(s) in the same way as the original questionnaire (cf. Sireci, Patsula, & Hambleton, 2005). This measurement equivalence (or difference) can, for example, be established at the item level or at the structural level of the questionnaire. At the item level, Differential Item Functioning (DIF) analysis can reveal whether an item functions differently across language groups (Osterlind & Everson, 2010). The translated item may be easier, harder, or measure a different construct than the original item. Therefore, these so-called 'DIF items' should be removed from the questionnaire. Establishment of structural equivalence of different language versions can be done with Confirmatory Factor Analysis or Multidimensional scaling (cf. Sireci et al., 2005). With these two techniques the factorial structure from multiple (language) groups can be compared directly.

3. *Grammar of the items.* A third issue concerns the grammar of the questionnaire items. It has been well reported that DHH children in general experience language problems. For example, the majority of DHH children score below grade level on reading comprehension tests (see Musselman, 2000, for review; Traxler, 2000). This issue is particularly valid for DHH children who are presented with written versions of questionnaires. Although DHH children with a CI are generally better readers than DHH children with regular hearing aids, and a few studies report that some of these CI children even achieve age-appropriate reading scores, many do not (e.g., Fagan, Pisoni, Horn, & Dillen, 2007; Ganek et al., 2012). Therefore, complicated vocabulary and linguistic structures, such as conditionals (e.g., sentences with 'if'), passive sentence structures, words with multiple meanings and lengthy sentences, ought to be avoided as much as possible (cf. Cawthon, 2011; Lollis & LaSasso, 2009).

An additional advantage of avoiding lengthy sentences is the reduction in working memory resources, since working memory has been found to be shorter in DHH children as compared to hearing children (cf. Banks, Gray, & Fyfe, 1990; Cleary, Pisoni, & Geers, 2001). An example from our own research to reduce working memory resources concerns the adaptation of a questionnaire for measuring depressive symptoms, i.e., the Child Depression Inventory (CDI; Kovacs, 1985).

In the original questionnaire each question consists of three sentences. These three sentences reflect the degree by which the symptom is experienced (e.g., 'I feel like crying sometimes'; 'I feel like crying many days'; 'I feel like crying every day'). In the adapted version, these three sentences were converted to one sentence with three response categories, i.e., 'I feel like crying', with the response categories: *'sometimes, many days, or every day'* (refer to Kouwenberg, Rieffe, & Theunissen, 2011). Applying this to an entire questionnaire considerably reduces both reading time and the need for working memory.

4. *Semantic content of the items.* A fourth issue worth considering is the semantic content of the questionnaire items. Existing questionnaires may incorporate items inappropriate for DHH children. For example, a questionnaire on coping with problems includes an item about 'distracting oneself by reading a book'. As mentioned previously, DHH children often experience reading difficulties (cf. Fagan et al., 2007; Ganek et al., 2012). When a DHH child answers this question negatively, a researcher or psychologist is not able to discern whether this negative answer derives from children not searching for distraction as coping strategy, or because DHH children dislike reading in general. These ambiguous questions could lead to invalid conclusions and should be avoided in questionnaire development. Nonetheless, with the aforementioned DIF analysis it can be statistically established whether an item functions differently for DHH children as compared to hearing children. Finally, the use of idioms, proverbs and expressions should be excluded in questions, because these are the most difficult language aspects to learn (Glickman, 2007). Moreover, previous research has shown that DHH children do score lower on these figurative language aspects than their hearing peers (Paul, 2003). When adapting the items of a questionnaire because of these issues concerning semantic content, but also translations and grammar, beware that the intended meaning of the items is not altered, thereby invalidating the test outcomes (Crawford & Tindal, 2004).

5. *Presentation of the items.* After all the above-mentioned issues have been dealt with, a fifth issue concerns the *manner* in which the self-report questionnaires are presented to the children. Self-reports in typically developing children are frequently presented in written form, in which children can choose from multiple response categories. This enables children to read, consider, and answer the questions at their own pace and with a sense of anonymity. To guarantee

these aspects in DHH children who are proficient in sign (supported) language, questionnaires can be presented in short movies on a computer screen. In our studies (e.g., Kouwenberg and colleagues, 2011, 2012; Theunissen et al., 2011) each item was presented one at a time with response buttons beneath. Children were able to repeat the movies as many times as they desired. After an answer was given, the next item appeared automatically. This method offers a great potential for standardization, reduced error, and minimizes the influence of a test administrator (Enns & Herman, 2011). Furthermore, it has been found that (hearing) adolescents perceived more anonymity, and had a more positive attitude toward computerized data collection than those who completed paper forms (Supple, Aquilino, & Wright, 1999). Presenting questionnaires to children by means of a computer addresses also the need for an interpreter and its associated problems. Nonetheless, to answer possible questions of DHH children proficient in sign (supported) language, the presence of a person with sign language skills is preferred during questionnaire completion. Finally, computerized data collection offers the possibility of testing children at home through an internet connection. In that case children could ask questions by way of (video) chat.

Step-by-step guide to achieve self-report questionnaires suitable for DHH youth

We have identified seven steps that need to be taken into account when developing a psychosocial self-report questionnaire suitable for DHH children and adolescents. Points 3 through 6 are necessary only when items are translated into sign language.

1. Ensure the questionnaire has a relatively easy syntactic and semantic structure.
2. Check the content with professionals working with DHH children. If necessary, make adaptations to the questionnaire, such as replacing inappropriate (parts of) items. Though, beware that these adaptations do not alter the intended meaning of the item. These adaptations should be carried through in the spoken/written language versions.
3. Have a qualified sign language interpreter translate the items to (standardized) sign language. Check the content, the suitability of test vocabulary and the

- presence of regional sign alternatives with native signers (cf. Enns & Herman, 2011). If necessary, make adaptations to the questionnaire, but make sure these adaptations do not alter the intended meaning of the item. These adaptations should be made to the spoken/written language versions as well.
4. Videotape the items signed by a native signer. The so-called 'sign-space' should be visible. The background, but also clothing of the signer should have a discrete color.
 5. Carry out back translation and verify convergence between the original and translated version. This 'back translator' should be unfamiliar with the questionnaire to avoid influence of existing knowledge.
 6. Statistically establish measurement invariance, for example, through Differential Item Functioning analysis, multigroup Confirmatory Factor Analysis or Multidimensional scaling.
 7. Develop a computer program in which the items can be presented one by one. Accordingly, both the written- and the signed versions of the items should be presented in similar fashion.

Conclusions and Discussion

Various methods can be used to explore the psychosocial functioning of DHH youth. In this overview, we outlined the considerations researchers should take when using self-reports as assessment tools. These considerations include language mode, translation from a spoken to a sign language, grammar, semantic content, and the manner in which questionnaires are presented.

We are aware that the resulting assessment tools lack firmly established psychometric properties or standard norms for DHH children (Knoors, 2006; Maller, 2003). Reliability (i.e., consistency in measurement) and validity (i.e., the questionnaire measures what it aims to measure) should be established. Little research on the validity of assessment accommodations used with DHH children is conducted thus far (e.g., Cawthon & Online Research Lab, 2006, 2008). To reach the requirements concerning reliability and validity, we believe the recommendations that have been outlined in the present article are a good starting point. Reliability of our adapted questionnaire for measuring depressive symptoms in the DHH sample was $\alpha = .75$, which is indicative of good internal consistency and comparable to the hearing sample ($\alpha = .73$) (Kouwenberg et al.,

2011). To address concurrent validity (i.e., demonstrate the accuracy of a questionnaire by comparing it with a questionnaire that has been proven valid), other standardized and valid questionnaires must be present. From a pilot study incorporated in our research, we found high associations between the original and adapted version of the depressive symptoms questionnaire ($r = .75, p < .001$; refer to Kouwenberg et al., 2011). This validation was in a hearing sample. To fulfill validity requirements within the DHH sample, research groups should validate and present questionnaires to large(r) samples of DHH children. This is a challenging task for one research group and therefore the exchange of questionnaires and their psychometric properties should occur between research groups. This way, standardized questionnaires and norms could be established for DHH children.

There is an unmet need for valid and reliable psychosocial assessment tools suitable for DHH children and adolescents. With the recommendations provided here, we hope to have made a large step in achieving this goal.

