

EMPIRICAL MANUSCRIPT

Friendship and Emotion Control in Pre-Adolescents With or Without Hearing Loss

Carolien Rieffe^{*1,2}, Evelien Broekhof^{1,3}, Adva Eichengreen¹,
Maartje Kouwenberg^{1,4}, Guida Veiga^{5,6}, Brenda M.S. da Silva^{1,5}, Anneke van
der Laan¹, and Johan H.M. Frijns¹

¹Leiden University, ²Institute of Education, UCL, ³Dutch Foundation for the Deaf and Hard of Hearing Child, ⁴Royal Dutch Auris Group, ⁵Departamento de Desporto e Saúde, Escola de Ciências e Tecnologia, Universidade de Évora, and ⁶Research Center in Sports Sciences, Health Sciences and Human Development (CIDESD)

*Correspondence should be sent to Carolien Rieffe, PO Box 9555, 2300 RB Leiden, The Netherlands (e-mail: crieffe@fsw.leidenuniv.nl)

Abstract

Emotional functioning plays a crucial role in the social development of children and adolescents. We examined the extent to which emotion control was related to the quality of friendships in pre-adolescents with and without hearing loss. We tested 350 pre-adolescents (75 deaf/hard of hearing in mainstream education (DHHm), 48 deaf/hard of hearing in special education (DHHs), and 227 hearing) through self-report. Outcomes confirmed a positive association between emotion control and positive friendships for all groups, with one notable exception: more approach strategies for emotion regulation were associated with more negative friendship features in the DHHs group. In addition, the DHHm group demonstrated high levels of emotion control, while their levels of positive friendship features were still lower compared to the hearing group.

Forming and maintaining friendships are crucial developmental tasks in early adolescence. Positive friendships confer strong protective factors for mental health. Having stable and reciprocal friendships was found to predict higher self-esteem over a 12-year period (Bagwell, Newcomb, & Bukowski, 1998), and related to lower incidence of internalizing and externalizing problems (Bagwell et al., 1998; Blachman and Hinshaw, 2002; Strauss, Forehand, Smith, & Frame, 1986). Friendships in childhood are characterized by sharing pleasurable leisure activities with peers (Aboud and Mendelson, 1996), but friendships in adolescence gain more intimacy and depth. Starting around the teenage years, friends increasingly engage in emotional self-disclosure and provide emotional and social support to one another (Hartup, 1993; Rose and Asher, 1999). These more sophisticated activities require higher levels of emotion control and social attunement. In other words, the capacity to appreciate and regulate emotions becomes increasingly important in these relationships (Kim and Cicchetti, 2010).

Friendship does not come easily to all adolescents, and staying attuned to peers is more challenging for adolescents who face communication challenges such as hearing loss or deafness. Most studies on adolescents who are deaf or hard of hearing (DHH) emphasize that DHH children and adolescents have fewer close friendships than their hearing peers (Kluwin, Stinson, & Colarossi, 2002; Nunes, Pretzlik, & Olsson, 2001; PISO, Knoors, & Vervloed, 2009; van Gent, Goedhart, Knoors, Westenberg, & Treffers, 2012), and that these friendships are of lower quality (PISO et al., 2009). DHH adolescents obviously face practical communication difficulties on a daily basis, but other factors key to maintaining friendships may pose additional barriers to friendship for DHH adolescents. For example, emotion control is a key factor in the development of intimate, high-quality friendships (von Salisch, Lüpschen, & Kanevski, 2013), but it is known to be impaired in DHH children and adolescents, as studies have indicated they show more disruptive and aggressive behaviors than hearing peers (Theunissen

Received July 28, 2017; revisions received March 20, 2018; editorial decision April 1, 2018; accepted 0, 0

© The Author(s) 2018. Published by Oxford University Press. All rights reserved. For Permissions, please email: journals.permissions@oup.com.

et al., 2014). It is also known that adolescents with low emotion control are less liked by their peers, and are trusted or confided in less often (Mavroveli, Petrides, Sangareau, & Furnham, 2009).

This study aimed to examine the extent to which emotion control (emotion awareness and regulation) (Eisenberg and Spinrad, 2004; Rieffe, Dirks, Van Vlerken, & Veiga, 2017) is associated with friendship quality in DHH adolescents as compared to their hearing peers, while controlling for their socioeconomic status, gender, non-verbal IQ, and level of language skills.

Social and Emotional Learning, Emotion Control, and Friendship in Deaf and Hard of Hearing Pre-Adolescents

Emotional development depends largely on children's access to their social environment, as this access provides opportunities for social and emotional learning (Rieffe, Netten, Broekhof, & Veiga, 2015). The social context teaches children when to feel what emotion, how to express it, with which intensity, and to what purpose (Saarni, 1999). This emotional learning requires the necessary social opportunities for children, to engage and practice. Yet, hearing loss limits this access for children and adolescents in non-signing environments (Rieffe et al., 2015). For example, non-verbal emotion recognition, as is assessed by tasks comparing and selecting different facial emotional expressions (i.e., positive versus negative facial emotional expressions), is learned in a social context. And even this non-verbal capacity was found to be impaired in young deaf children with a cochlear implant (CI) compared to hearing children (Wiefferink, Rieffe, Ketelaar, De Raeve, & Frijns, 2013).

Technological developments over the last 20 years in hearing aid technology and CI have enabled DHH children and adolescents to catch up with their hearing peers in many developmental domains. However, engaging in social interactions is still more difficult for DHH pre-adolescents who are using a hearing aid or CI, especially in groups and in noisy environments (Vonen, 2007). In addition to practical difficulties following group conversations and timing one's comments appropriately, other kinds of situations limit DHH children's and adolescents' access to the social world around them, and therefore to opportunities for social learning. Subtitles on television may go too quickly for reading comprehension, due to slower reading speeds (Lederberg, Schick, & Spencer, 2013) and limited vocabulary (Hermans, Wauters, Willemsen, & Knoors, 2016), and DHH children and adolescents cannot benefit from overhearing social information, such as overhearing when family members have an argument and make up again (Gray, Hosie, Russell, Scott, & Hunter, 2007; Wiefferink et al., 2013). These are just a few examples of the kinds of daily situations where hearing children can access a wealth of social experiences and opportunities for social learning that DHH youth may not be able to access.

High-quality friendships in adolescents are characterized by intimacy and reciprocity, including emotional self-disclosure (Bauminger, Finzi-Dottan, Chason, & Har-Even, 2008). But for this to be successful, adolescents need emotion awareness: awareness of their own and others' emotions. Awareness of one's own emotions fosters positive and constructive interaction, because it helps to shed light on what one finds important (Rieffe, Dirks, Van Vlerken, & Veiga, 2017). Awareness of a friend's emotions and their antecedents, which are part of the theory of mind capacity to attribute mental states to other people and take their perspectives, fosters adequate emotional

support, and this emotional support is important to strengthen the interpersonal bond (Chow, Ruhl, & Buhrmester, 2013).

In studies on emotion awareness in youth with hearing loss, DHH pre-adolescents displayed no differences in awareness of their own basic emotions, compared to hearing peers (Gray et al., 2007; Rieffe, 2012). However DHH pre-adolescents' emotion awareness did appear to be more global in nature. More often than their hearing peers, DHH pre-adolescents stopped evaluating their emotional reactions after identifying just one negative emotion ("I feel bad"), and they failed to identify different negative emotions simultaneously (e.g., feeling angry and sad at the same time) (Rieffe, 2012). This raises the question if this global level of emotion awareness is enough to support the ability to engage in self-disclosure and establish reciprocal, intimate friendships?

In addition to emotion awareness, emotion regulation is another key factor for constructive emotional self-disclosure. Emotion regulation involves lowering the intensity and duration of an emotion (Eisenberg and Spinrad, 2004). Friends usually have multiple disagreements, and conflicts with friends are one of the most significant daily stressors for adolescents (Seiffge-Krenke, 1995). But managing a conflict with a friend requires negotiation and emotion regulation (Laursen and Hafen, 2010): bluntly expressing anger to a friend may have detrimental consequences, and could ruin or end a friendship. Adolescents who are better able to regulate their emotions can better resolve their conflicts, and this results in more positive friendship features. In a study by Rose and Asher (1999), adolescents who used fewer hostile or aggressive strategies in disputes with friends had more best friends and more supportive friendships.

Emotion regulation can take different forms. One form is to approach the situation and either try to solve it (by problem solving) or re-evaluate it (by using reframing self-talk statements such as, "Actually it wasn't that bad," or, "I know she didn't mean it like that"). Another form is to avoid the conflict situation by seeking distraction to shift one's focus (e.g., going to play a computer game or play football outside, to try and forget about an unpleasant event). Avoidant strategies can provide valuable time to calm down, and prevent children from acting out too strongly.

To date, emotion regulation in DHH pre-adolescents has received little attention. One study conducted by Rieffe (2012) examined 26 deaf and 26 hearing pre-adolescents (mean age 11 years) through a structured interview. The deaf participants were recruited from a special school for the deaf. Participants were presented with various hypothetical peer conflict scenarios and asked what they could do to feel better, if they encountered such a scenario. DHH pre-adolescents almost exclusively used approach strategies to decrease the intensity of negative emotions, i.e., approaching the stressor in order to calm down (e.g., confronting the peer or trying to solve the problem directly), and seemed unaware of the possibility for using avoidant strategies, i.e., distancing themselves from the emotion-evoking situation (e.g., distracting their attention or minimizing the importance of the situation) (Rieffe, 2012). In addition, the hearing group reported a strong decrease in the intensity of their negative emotions, unlike the deaf group. In other words, the emotion regulation strategies used in this study appeared to be less effective in the deaf group. It is also possible the deaf group approached conflict situations less constructively, given that deaf pre-adolescents are known to act out their anger more bluntly

than their hearing peers in peer conflict situations (Rieffe and Meerum Terwogt, 2006), and that approach strategies applied by deaf pre-adolescents may intensify a peer conflict situation rather than calm it.

The Social Environment of School: DHH Students in Mainstream Versus Special Education

School life plays an important role in the development of friendships. The school environment is a privileged context for social exchanges with peers, and occupies an increasing amount of time as children pass throughout adolescence (Rubin, Bukowski, & Parker, 2006). Over the past 20 years, the number of DHH students receiving their education in regular schools with hearing peers has increased substantially (Leigh, Maxwell-McCaw, Bat-Chava, & Christiansen, 2009; Wauters and Knoors, 2008). However, mainstreaming DHH students does not necessarily ensure full social integration. DHH students do not engage in social activities as easily as their hearing peers in public schools (Remine and Brown, 2010; Scheetz, 1993; see also the reviews of Batten, Oakes, & Alexander, 2014 and Xie, Potměšil, & Peters, 2014), and they are more likely to be neglected, unaccepted or have no friends compared to hearing peers (Nunes et al., 2001; Wolters, Knoors, Cillessen, & Verhoeven, 2011). Even when they participate in social activities with their hearing classmates, DHH adolescents do not necessarily feel that they establish close and secure friendships (Punch & Hyde, 2011; Stinson, Whitmire, & Kluwin, 1996; van Gent et al., 2012). When compared to DHH students in special educational settings, some studies have found no difference in levels of loneliness (Leigh et al., 2009; Most, 2007), whereas other studies have found that mainstreamed DHH students were less popular, less accepted and had less close friendships comparing to DHH students in special education (Wolters et al., 2011) or to DHH students in special education who had no additional disabilities (van Gent et al., 2012). It has been suggested that social difficulties can stem from different reasons in special versus mainstreamed educational settings (Most, 2007). Mainstreamed students face communication barriers and negative attitudes of hearing peers (Xie et al., 2014; Zaidman-Zait and Dotan, 2017). However, DHH students who are assigned to special schools tend to have lower IQ, come from lower socioeconomic background, have more additional disabilities, and present lower levels of social competence comparing to mainstreamed DHH peers (van Gent et al., 2012; Wolters et al., 2011), all of which can contribute to the formation of social difficulties.

Hypotheses

The aim of this study was to examine the extent to which emotion control (emotion awareness and regulation) is related to friendship quality in three groups of pre-adolescents: DHH pre-adolescents in mainstream education (DHHm), DHH pre-adolescents in special education (DHHs), and hearing peers. First, we predicted that a higher awareness of one's own and others' emotions would be associated with higher friendship quality, as measured by more positive and fewer negative friendship features in all three groups (DHHm, DHHs, Hearing). Second, we predicted that use of both avoidant and approach regulation strategies would be associated with higher ratings of friendship quality in all three groups, with one exception: we predicted approach strategies to be negatively correlated with friendship quality in DHHs pre-adolescents, because these strategies were less effective in DHHs pre-adolescents in a

former study (Rieffe, 2012). Since we have no information about the use of approach strategies in the DHHm population, we cannot make predictions in this respect. We also accounted for gender differences, and expected girls to show more positive friendship features than boys, because previous studies showed that girls were more likely to demonstrate socially desired behaviors such as peer competence, prosocial behaviors, and social acceptance (Coyner, 1993; Martin, Bat-Chava, Lalwani, & Waltzman, 2010; Wolters et al., 2011).

Method

Participants

The current study was part of a large ongoing research project investigating the social-emotional development of typically developing children and children with less access to the social environment (deaf and hard of hearing adolescents, adolescents with an Autism Spectrum Disorder; Bos et al., 2018; Netten et al., 2015; Pouw et al., 2013).

A total of 350 pre-adolescents participated in this study ($n = 48$ DHHs, $n = 75$ DHHm and $n = 227$ hearing controls). The mean age of the total group of pre-adolescents was 139 months ($SD = 17.06$, range 108–180 months). Hearing pre-adolescents were recruited from mainstream schools, and DHH pre-adolescents were recruited from both mainstream schools and special education settings. Inclusion criteria for DHH pre-adolescents were pre- or perilingually detected hearing loss ranging from moderate (40–60 dB) to severe (60–90 dB) to profound (>90 dB) in both ears. All DHH pre-adolescents had hearing parents. A group of hearing peers was matched with the DHH group for age, gender, socioeconomic status and non-verbal IQ. Hearing peers were excluded when they had additional disabilities. Parents were asked to report on additional diagnoses. Also children were not included when the teacher noted cognitive problems or the indices for non-verbal IQ were below 80.

Socioeconomic status was measured through parents' self-reported educational level and net income. Age-corrected norm scores for non-verbal IQ were obtained by administering two non-verbal subtests (picture arrangement and block design) of the Wechsler Intelligence Scale for Children—Third Edition (WISC-III; Wechsler, 1991). Language skills were measured for hearing and DHH children who used spoken language by administering two subtests (understanding spoken paragraphs and semantic relationships) of the Clinical Evaluation of Language Fundamentals—Fourth Edition (CELF-4; Semel, Wiif, & Secord, 1987). DHH children who used sign or sign-supported language received the subsets from the Assessment instrument for the Sign Language of the Netherlands (ASLN; Hermans, Knoors & Verhoeven 2009). For different reasons (school absence on the day of testing, missing information in the medical files), language skills were not administered in 16 DHHs, 1 DHHm, and 28 hearing participants.

Independent t-tests indicated that DHHs pre-adolescents had lower non-verbal IQ scores, lower language skills, and lower socioeconomic status, as compared to DHHm and hearing pre-adolescents. In addition, a chi-square analysis revealed that DHHs pre-adolescents indicated Dutch Sign Language or Sign Supported Dutch more often as their preferred language than DHHm, while the majority of DHHm pre-adolescents preferred spoken language, $\chi^2(1, N = 123) = 53.71, p < .001$. No other group differences were found. Table 1 shows descriptive characteristics for the DHHs, DHHm, and hearing pre-adolescents.

Table 1. Characteristics of the participants

	DHHs	DHHm	Hearing
Number of participants	48	75	227
Mean age in months (SD)	139.13 (17.86)	140.51 (18.32)	139.15 (16.51)
Age range in months	110–180	112–178	108–176
Social economic status*† (SD)	3.34 ^b (0.90)	3.80 ^a (0.96)	3.71 ^a (0.83)
Non-verbal IQ* (SD)	9.62 ^b (2.53)	10.61 ^a (2.85)	10.59 ^a (2.49)
Language skills* (SD)	6.01 ^b (2.93)	10.76 ^a (3.20)	10.31 ^a (2.36)
Gender— <i>n</i> (%)			
Male	23 (47.9)	36 (48.0)	96 (42.3)
Female	25 (52.1)	39 (52.0)	131 (57.7)
Type of amplification— <i>n</i> (%)			
Hearing aid	28 (58.3)	45 (60.0)	
CI	20 (41.7)	30 (40.0)	
Communication mode— <i>n</i> (%)			
DSL/SSD	31 (64.6) ^a	3 (4.0) ^b	
Spoken language only	17 (35.4)	72 (96.0)	
Degree of hearing loss— <i>n</i> (%)			
Moderate (40–59 dB)	6 (12.5)	25 (33.3)	
Severe (60–89 dB)	11 (22.9)	14 (18.7)	
Profound (≥90 dB)	26 (54.2)	33 (44.0)	
Unknown	5 (10.4)	3 (4.0)	

Note. DSL = Dutch Sign Language; SSD = Sign Supported Dutch.

When character superscripts differ (e.g., ^{a,b}), this indicates differences between groups at $p < .05$ for that particular variable. When character superscripts are the same (e.g., ^{a,a}), these groups do not differ on that variable.

*SES consists of maternal and paternal educational level (1 = no/primary education, 2 = lower general secondary education, 3 = higher general secondary education, 4 = college/university) and net household income (1 = < €15,000, 2 = €15,000–€30,000, 3 = €30,000–€45,000, 4 = €45,000–€60,000, 5 = > €60,000).

*For non-verbal IQ and language skills age-corrected norm scores are presented. The grand population mean is set to 10 (SD = 1.5).

Materials

To measure Friendship Quality, the *Best Friend Index* (BFI) (Kouwenberg, Rieffe, & Banerjee, 2013) was administered to indicate the presence of both Positive and Negative Friendship features experienced in the context of actual friendships by DHHm, DHHs, and hearing pre-adolescents, respectively. The questionnaire starts by asking whether the participant has a best friend, and to fill in the friend's name. This encouraged respondents to keep a specific friend in mind while completing the questionnaire. For further analyses, information was gathered also with regards to the hearing status of the best friend. The BFI consists of 11 items representing a Positive Friendship Features scale (companionship, reliable alliance, disclosure, support and affection/admiration) and nine items representing a Negative Friendship Features scale (jealousy, dominance, conflict, betrayal and competition). An example item for Positive Friendship Features is "I turn to my friend for social support with personal problems," and an example item for Negative Friendship Features is, "My friend and I argue together". Participants rated their responses on a 3-point scale (1 = almost never, 2 = sometimes, and 3 = often). Note that it is more common and appropriate to use a 3-point scale instead of a 5-point scale with children and young adolescents in order to avoid empty categories (Rieffe, Oosterveld, Miers, Meerum Terwogt, & Ly, 2008). The internal validity of the questionnaire is rated as acceptable (Table 2).

To measure emotion awareness, two parts of the Dutch version of the *Emotion Awareness Questionnaire Revised* (EAQ-R 30) were administered (Rieffe et al., 2008). The EAQ is a self-report questionnaire whose original form consists of 30 items representing six subscales that measure emotion awareness. For the purpose of this study, we used two scales of the original EAQ-R in this study: Awareness Own Emotions (the scales

Differentiating and Bodily Awareness), and Attending Others' Emotions. Examples of statements included: "When I am upset, I don't know if I feel angry or sad," (recorded, Own Emotions) and, "If a friend is upset, I try to understand why" (Others' Emotions). Twenty items were reverse coded. Higher scores indicated better emotion awareness. Following the original scale's format participants were asked to rate their responses to EAQ-R items on a 3-point scale (1 = not true, 2 = sometimes true, and 3 = often true). Four DHHs and five DHHm participants had missing data due to nonresponses. The internal validity of both scales is rated as acceptable (Table 2).

To measure emotion regulation, the Dutch version of the *Coping Scale* was administered to indicate which emotion regulation strategies would be used in hypothetical problematic peer scenarios. The *Coping Scale* (designed by Wright, Banerjee, Hoek, Rieffe, & Novin, 2010) consists of six emotion regulation strategies, which fall into three subscales: Approach (seeking social support & problem solving), Avoidant (distraction from the problem & trivializing through cognitive restructuring), and Maladaptive (externalizing & internalizing) (Rieffe, De Bruine, De Rooij, & Stockmann, 2014). Approach strategies involved approaching the stressor in order to calm down, whereas avoidant strategies involved creating distance from the emotion-evoking situation to calm down. Maladaptive coping involved both internalizing strategies such as worry or rumination (e.g., thinking about something bad happening again) and externalizing strategies such as acting out (e.g., screaming, hitting, or destroying something). Examples of statements included, "I try to think of different ways to solve the problem" (approach strategies), "I do something else to help me forget about it" (avoidant strategies), and "I get angry and throw or hit something" (maladaptive strategies). The total *Coping Scale* consists of 34 statements. Participants first received a short introduction in which they were asked to imagine they had a problem or that something

Table 2 Psychometric properties and mean scores of friendship quality, emotion awareness, and emotion regulation

	Number of items	Min–Max	Cronbach alpha	Mean (SD)		
				DHHs	DHHm	Hearing
Friendship quality				n = 45	n = 68	n = 215
Positive friendship features	11	1–3	.72	2.38 ^c (.33)	2.56 ^b (.28)	2.66 ^a (.25)
Negative friendship features	9	1–3	.67	1.46 ^a (.31)	1.25 ^b (.23)	1.20 ^b (.20)
Emotion awareness				n = 44	n = 70	n = 227
Own emotions	12	1–3	.75	2.23 ^a (.33)	2.19 ^a (.38)	2.16 ^a (.36)
Others' emotions	5	1–3	.67	2.12 ^b (.40)	2.34 ^a (.45)	2.47 ^a (.42)
Emotion regulation				n = 48	n = 75	n = 227
Approach	12	1–3	.82	1.93 ^a (.43)	2.21 ^a (.36)	2.13 ^a (.41)
Avoidant	12	1–3	.82	1.88 ^a (.39)	1.94 ^a (.43)	1.89 ^a (.39)
Maladaptive	10	1–3	.66	1.47 ^a (.33)	1.45 ^a (.27)	1.43 ^a (.28)

Note. When character superscripts differ (e.g., ^{a,b,c}), this indicates differences between groups at $p < .05$ for that particular variable. When character superscripts are the same (e.g., ^{a,a}), these groups do not differ on that variable.

bad had happened. Then they were asked to answer what they would do, rating their response to each statement on a 3-point scale (1 = *almost never*, 2 = *sometimes*, and 3 = *often*). The internal validity of these subscales ranged from acceptable to good (Table 2).

Procedure

The study was approved by the ethics committee of Leiden University, the Netherlands. Prior to data collection, written parental consent was obtained for all participants and anonymity was guaranteed. Participants were informed that their responses would be treated confidentially and that we would not give individual outcomes to anyone. Assessment of all hearing and DHH participants took place at school or at home, and all participants were assessed individually in a private and quiet room. All the children were first administered the IQ and language measures in spoken or signed Dutch according to their mode of communication. Following that they received the social-emotional questionnaires. All the questionnaires were presented at the same order on a laptop in written Dutch, where items were presented one-by-one and answers were given by clicking on the presented three response buttons using a computer mouse. For DHH pre-adolescents proficient in sign language or sign-supported Dutch, a video clip of the item in Dutch sign language was presented one-by-one, in addition to the written Dutch version. Researchers that were able to use sign language were present throughout data collection, so participants could request clarification when needed.

Statistical Analyses

To examine differences between DHHs, DHHm, and hearing pre-adolescents on friendship quality, emotion awareness, and emotion regulation, we conducted three mixed analyses of covariance. Subsequently, to correct for the influence of socioeconomic status, gender, non-verbal IQ, and language skills, these variables were added as covariates. Since these mixed analyses of covariance did not produce different results concerning the effect of socioeconomic status and non-verbal IQ on emotion control and friendship quality, these outcomes were not reported for the sake of brevity.

We computed Pearson's correlation to examine relationships between friendship quality, emotion awareness, and emotion regulation. Fisher's r -to- Z transformations were used

to assess whether the strength of the correlations differed between the three groups (hearing, DHHm, and DHHs).

Results

Friendship Quality

Table 2 shows the mean scores per group (DHHs, DHHm, Hearing) on all variables included in this study (see Appendix for mean scores separated for DHH participants with CI or HA). Three DHHs (6.3%), 7 DHHm (9.3%), and 12 Hearing pre-adolescents (5.3%) could not name a best friend (note: no group difference, χ^2 ($df = 2$) = 1.57, $p = .475$). Data from these participants were not included in the analysis of Friendship Features.

A 3 (Group: DHHs, DHHm, Hearing) \times 2 (Friendship: Positive Friendship Features, Negative Friendship Features) mixed analysis of covariance was carried out, and language skills and gender were added as covariates. This analysis revealed a main effect for Friendship ($F(1, 280) = 151.58$, $p < .001$, $\eta_p^2 = .35$) and for Gender ($F(1, 280) = .61$, $p = .001$, $\eta_p^2 = .05$), which were qualified by a Group \times Friendship interaction ($F(2, 280) = 14.66$, $p < .001$, $\eta_p^2 = .10$) and a Gender \times Friendship interaction ($F(1, 280) = 24.50$, $p < .001$, $\eta_p^2 = .08$). Language skills were unrelated to Friendship Features.

Post-hoc t -tests showed that DHHs pre-adolescents reported more Negative Friendship Features than DHHm and Hearing pre-adolescents. For Positive Friendship Features, we found DHHs $<$ DHHm $<$ Hearing pre-adolescents (Table 2).

Outcomes indicated that girls reported more Positive Friendship Features than boys ($M_{\text{girls}} = 2.68$, $M_{\text{Hboys}} = 2.51$, $t(326) = -5.65$, $p < .001$, $d = .62$). No differences were observed in Negative Friendship Features. $M_{\text{girls}} = 1.24$, $M_{\text{Hboys}} = 1.25$, $t(326) = .48$, $p = .630$, $d = .05$.

Emotion Awareness

A 3 (Group: DHHs, DHHm, Hearing) \times 2 (Emotion Awareness: Own Emotions and Others' Emotions) mixed analysis of covariance was carried out, and language skills and gender were added as covariates. The outcomes showed main effects for Emotion Awareness ($F(1, 293) = 8.95$, $p = .003$, $\eta_p^2 = .03$), Gender ($F(1, 293) = 11.62$, $p = .001$, $\eta_p^2 = .04$), and Language skills ($F(1, 293) = 12.83$, $p < .001$, $\eta_p^2 = .04$), which was qualified by an interaction effect for Language skills \times Emotion Awareness ($F(1, 293) = 8.52$, $p = .004$, $\eta_p^2 = .03$). Language skills were positively related to Others' Emotions, but unrelated to Own Emotions. In addition, an interaction was found for Group \times Emotion Awareness ($F(2, 293) = 4.43$,

$p = .013$, $\eta_p^2 = .03$) and Gender \times Emotion Awareness ($F(1, 293) = 30.84$, $p < .001$, $\eta_p^2 = .10$).

Post-hoc t-tests showed no differences between groups for Own Emotions. However, DHHs pre-adolescents paid less attention to Others' Emotions compared to DHHm and hearing peers (Table 2). Regarding Gender, no differences were observed between boys and girls in Own Emotions ($M_{\text{girls}} = 2.14$, $M_{\text{boys}} = 2.21$, $t(339) = 1.76$, $p = .079$, $d = .19$), but boys reported less attention to Others' Emotions compared to girls, $M_{\text{girls}} = 2.51$, $M_{\text{boys}} = 2.24$, $t(339) = -5.94$, $p < .001$, $d = .65$.

Emotion Regulation

A 3 (Group: DHHs, DHHm, Hearing) \times 3 (Emotion Regulation Approach, Maladaptive, Avoidant) mixed analysis of covariance was carried out, and language skills and gender were added as covariates. The outcomes showed a main effect for Emotion Regulation ($F(2, 600) = 131.14$, $p < .001$, $\eta_p^2 = .04$), which was qualified by an interaction of Gender \times Emotion Regulation ($F(2, 600) = 6.05$, $p = .002$, $\eta_p^2 = .02$).

Post-hoc t-tests showed that the highest scores were reported for Approach > Avoidant > Maladaptive. Girls reported use of Approach Strategies more often than boys, $M_{\text{girls}} = 2.16$, $M_{\text{Hboys}} = 2.07$, $t(348) = -2.05$, $p = .041$, $d = .22$. No differences were found for Avoidant ($M_{\text{girls}} = 1.86$, $M_{\text{Hboys}} = 1.94$, $t(348) = 1.93$, $p = .054$, $d = .21$) and Maladaptive strategies ($M_{\text{girls}} = 1.41$, $M_{\text{Hboys}} = 1.46$, $t(348) = -1.60$, $p = .110$, $d = -.17$).

Associations between Friendship Quality, Emotion Awareness, and Emotion Regulation

Pearson correlations were computed for associations between Friendship Quality, Emotion Awareness, and Emotion Regulation. Positive Friendship Features were related to higher levels of awareness of Others' Emotions and to more frequent use of Approach Strategies. Negative Friendship Features were related to lower levels of Own Emotions and Others' Emotions, less use of Approach Strategies, and higher levels of Maladaptive Strategies (Table 3).

Further correlational analyses through Fisher's r -to- Z transformations revealed significant differences in the strength of the correlations for DHHs pre-adolescents versus DHHm and hearing pre-adolescents (Table 3). The strength of these correlations was higher in the DHHs group for positive friendship features with own emotions and avoidant strategies, and for negative friendship features with own emotions, approach strategies, and maladaptive strategies. Strikingly, approach strategies were related to more negative friendship features in the DHHs group, whereas in the DHHm and hearing groups they

were related to fewer negative friendship features. Partial correlations correcting for the influence of socioeconomic status, gender, non-verbal IQ, and language skills did not produce different results.

Discussion

Having close friends is of great importance during childhood and adolescence. Friends rely increasingly on each other for emotional support, especially during the early teenage years (Hartup, 1993), and having at least one best friend is a strong protective factor for preventing symptoms of psychopathology (Deater-Deckard, 2001). But unlike parent-child relationships, friendships are voluntary (Von Salisch, 2001), and this makes friendships more vulnerable. It puts a stronger demand on adaptive skills for emotion control (Rose and Asher, 1999), and based on previous studies, DHH children and adolescents are known to struggle in this area.

The outcomes of the present study confirmed the importance of emotion control (emotion awareness and emotion regulation) in positive, constructive friendships. Higher levels of emotion awareness, with greater use of emotion regulation strategies involving approach (such as problem solving) and less use of internalizing and externalizing maladaptive strategies (e.g., keep worrying or slamming a door, respectively) were associated with friendships with more positive and fewer negative features. Our findings showed that regardless of hearing status girls were more aware of others' emotions, used more approach strategies and had more positive friendship features. This comes with no surprise as previous literature has shown that girls, deaf or hearing, displayed better social understanding, prosocial behaviors, and social competence (Bosacki, 2000; Martin et al., 2010; Wolters et al., 2011).

When hearing status was examined, DHH pre-adolescents in mainstream education (DHHm) and hearing pre-adolescents showed no significant differences in emotion awareness and emotion regulation. Also when mean scores were compared, DHHm and hearing pre-adolescents showed similar levels in all aspects of emotion control and friendship features, except for a lower level of positive friendship features in the DHHm group.

In contrast, we found differences between DHH pre-adolescents in special education (DHHs) and both other groups on many outcomes in our study. Lower awareness in DHHs participants' of their own emotions for emotion regulation was more strongly correlated with negative friendship features in this group than in the DHHm pre-adolescents. Most strikingly, and opposite to the outcomes of the other two groups, the use of approach strategies for emotion regulation among DHHs participants were correlated with more, instead of fewer, negative

Table 3. Pearson correlation for friendship quality, emotion awareness, and emotion regulation

		PFF		NFF
Emotion awareness		DHHs/DHHm/H [†]		DHHs/DHHm/H [†]
Own emotions	-.01	.38 ^a /.13 ^{ab} /.-10 ^b	-.25	-.53 ^a /.-07 ^b /.-31 ^{a,b}
Others' emotions	.45		-.21	
Emotion regulation				
Approach strategies	.40		-.12	.36 ^a /.-26 ^b /.-14 ^b
Avoidant strategies	.03	.28 ^a /.-13 ^b /.04 ^{ab}	.01	
Maladaptive strategies	-.02		.30	.56 ^a /.26 ^{ab} /.21 ^b

Note. PFF = Positive Friendship Features; NFF = Negative Friendship Features. Text in bold indicates significant correlation at $p < .05$.

[†]Differences between groups only presented when significant differences were found ($p < .05$). When character superscripts differ (e.g., ^{a,b}), this indicates differences between groups at $p < .05$ for that particular variable. When character superscripts are the same (e.g., ^{a,a}), these groups do not differ on that variable.

friendship features. This particular outcome aligns with a previous study by Rieffe (2012) in which DHHs teenagers also reported less positive effects from their use of approach strategies in peer conflict situations. Moreover, the intensity of their negative emotions did not decrease to the same extent as in their hearing peers after the use of approach emotion regulation strategies. It is possible that DHHs' well-known theory of mind difficulties (Ketelaar, Rieffe, Wiefferink, & Frijns, 2012; Peterson, 2004; Schick, De Villiers, De Villiers, & Hoffmeister, 2007)—also reflected in their lower levels of awareness of others' emotions in the present study—prevent members of the DHHs group from developing theory of mind-based emotion regulation strategies that calm the situation (e.g., by imagining another's perspective).

In the context of friendships in special education settings, it is possible that even when one partner approaches the situation constructively it can be interpreted or reacted upon aggressively by the other DHH peer due to difficulties in social understanding and emotional control, thus contributing to the higher rates of negative friendship features founded in this group. Furthermore, approach strategies also involve seeking social support. Due to communication barriers with hearing family members and peers (Berkowitz and Jonas, 2014), DHHs pre-adolescents may share their feelings with other DHH classmates, which may in turn increase the intensity of emotions and peer conflicts in an already small classroom micro-community.

But then the question remains, why do DHHm pre-adolescents show similar skills in emotion control as their hearing classmates, while their friendships hold fewer positive features, as was also found previously (Gilman, Easterbrooks, & Frey, 2004; Piso et al., 2009)? If lower levels of emotion control cannot explain the fewer positive friendship features for the DHHm group, then what does explain this discrepancy in the quality of friendships of DHHm pre-adolescents, as compared to hearing pre-adolescents?

Several studies have shown that DHH adolescents feel more emotionally secure with DHH peers and value those friendships more highly than friendships with hearing peers (Musselman, Mootilal, & MacKay, 1996; Stinson et al., 1996). But DHH adolescents in mainstream classes are often the only ones in their class with hearing loss. Moreover, acceptance by hearing peers may present an additional challenge (Kluwin et al., 2002). Although one study found no differences between nine-year-old children with and without hearing loss on peer acceptance in elementary school (Wauters and Knoors, 2008), studies on DHH adolescents in high schools showed they were less socially accepted, less popular, more socially withdrawn, and lonelier than their hearing classmates (Schorr, 2006; van Gent et al., 2012; Wolters et al., 2011). The increased feelings of loneliness with age could be due to the changing nature of social interactions during pre-adolescence and adolescence, involving more conversations, group gatherings and noisy environments in after-school activities, such as loud music venues (Punch and Hyde, 2011). Whereas one-on-one contact in a quiet setting could work well for DHHm pre-adolescents, group participation or interacting in noisy environments are more likely to be difficult for these adolescents who are trying to engage socially with others. These kinds of situations could put DHHm pre-adolescents at a social disadvantage as compared to their hearing peers.

Limitations of This Study and Future Directions

All outcomes in this study were based on self-report measures. Future studies could gather additional information based on peer and teacher reports. This study could also gain additional

value by including levels of reciprocity in peer friendships among DHH children and pre-adolescents, as reciprocity is an essential feature in high-quality friendships.

Note that we can only draw limited conclusions about any causal mechanisms involved in the correlations, we found since this study involves cross-sectional data.

Finally, we can only speculate about the different outcomes that we found between DHH pre-adolescents in special versus mainstream education. Most likely, adolescents with less developed skills for emotion control were more often assigned to special education because of the nature of the selection process. Yet, the smaller classes and unique culture of special education could help DHHs pre-adolescents catch up with their peers. In other words, we want to stress the fact that different factors could have been affecting the placement of DHH children in mainstream or special schools, and that students have not been randomly assigned to either school context. Therefore, we should not draw any conclusions based on our outcomes on possible development trajectories within the different school settings. Yet, future studies should monitor the respective speed of the social and emotional development in pre-adolescents attending mainstream or special education.

Conclusion

The outcomes of this study confirmed the importance of emotion control in relation to high-quality friendships for pre-adolescents with and without hearing loss. Concern is warranted by the finding that DHH pre-adolescents in special education (DHHs) showed lower levels of emotion control and lower friendship quality than both their DHH and hearing peers in mainstream education, and benefited less from the same emotion regulation strategies that were helpful for the DHHm and hearing participants. However, DHH pre-adolescents in mainstream education (DHHm) faced challenges too, as this study found their friendships had fewer positive features.

Challenges faced by DHHs and DHHm groups alike may be explained by their limited access to their social environment, despite their use of hearing aids and/or CI's; or by hearing peers being less accepting of classmates with special needs. The more protected environment of elementary school, with one teacher supervising an entire class fulltime, is missing in high school, and this may make DHH pre-adolescents more vulnerable to peer rejection or ostracism. The changing nature of social interactions during adolescence, becoming more centered on group conversations and noisy environments, add to the formation of social difficulties in mainstreamed settings. Schools that want to improve quality of life and academic performance for DHH students might want to address both DHH and hearing students, creating awareness of each-others' unique situation and position in the group, in their efforts to promote social inclusion. Furthermore, more research is needed on environmental factors that can promote social inclusion of DHH students, such as attitudes of hearing peers or acoustical accessibility in schools.

Supplementary Data

Supplementary data is available at *Journal of Deaf Studies and Deaf Education* online.

Funding

This research was supported by the Innovational Research Incentives Scheme (a VIDI grant) by The Netherlands

Organization for Scientific Research (NWO), no. 452-07-004 to Carolien Rieffe.

Conflict of interest

No conflicts of interest were reported.

Acknowledgments

The authors thank all participating children, parents, and schools. In addition, we thank Jennifer Schoerke for correcting our English and suggestions to further improve the clarity of this manuscript.

References

- About, F. E., & Mendelson, M. J. (1996). Determinants of friendship selection and quality: Developmental perspectives. In Bukowski W. M., Newcomb A. F., & Hartup W. H. (Eds.), *The company they keep: friendship in childhood and adolescence* (pp. 87–112). New York, NY, USA: Cambridge University Press.
- Bagwell, C. L., Newcomb, A. F., & Bukowski, W. M. (1998). Preadolescent friendship and peer rejection as predictors of adult adjustment. *Child development*, 69, 140–153. doi:10.1111/j.1467-8624.1998.tb06139.x.
- Batten, G., Oakes, P. M., & Alexander, T. (2014). Factors associated with social interactions between deaf children and their hearing peers: a systematic literature review. *The Journal of Deaf Studies and Deaf Education*, 19, 285–302. doi:10.1093/deafed/ent052.
- Bauminger, N., Finzi-Dottan, R., Chason, S., & Har-Even, D. (2008). Intimacy in adolescent friendship: The roles of attachment, coherence, and self-disclosure. *Journal of Social and Personal Relationships*, 25, 409–428. doi:10.1177/0265407508090866.
- Berkowitz, M. C., & Jonas, J. A. (2014). *Deaf and hearing siblings in conversations*. Jefferson, North Carolina: McFarland & Company Inc.
- Blachman, D. R., & Hinshaw, S. P. (2002). Patterns of friendship among girls with and without attention-deficit/hyperactivity disorder. *Journal of Abnormal Child Psychology*, 30, 625–640. doi:10.1023/A:1020815814973.
- Bosacki, S. L. (2000). Theory of mind and self-concept in preadolescents: Links with gender and language. *Journal of Educational Psychology*, 92, 709–717. doi:10.1037/0022-0663.92.4.709.
- Bos, M. G. N., Diamantopoulou, S., Stockmann, L., Begeer, S., & Rieffe, C. (2018). Emotion control predicts internalizing and externalizing behavior problems in boys with and without an autism spectrum disorder. *Journal of Autism and Developmental Disorders*. doi:10.1007/s10803-018-3519-8.
- Chow, C. M., Ruhl, H., & Buhrmester, D. (2013). The mediating role of interpersonal competence between adolescents' empathy and friendship quality: A dyadic approach. *Journal of Adolescence*, 36, 191–200. doi:10.1016/j.adolescence.2012.10.004.
- Coyner, L. S. (1993). Comparison of the relationship of academic success to self-concept, social acceptance, and perceived social acceptance for hearing, hard-of-hearing and deaf adolescents in a mainstream setting. Unpublished doctoral dissertation. Tucson, AZ: University of Arizona.
- Deater-Deckard, K. (2001). Annotation: Recent research examining the role of peer relationships in the development of psychopathology. *Journal of Child Psychology and Psychiatry*, 42, 565–579. doi:10.1017/S0021963001007272.
- Eisenberg, N., & Spinrad, T. L. (2004). Emotion-related regulation: Sharpening the definition. *Child development*, 75, 334–339. doi:10.1111/j.1467-8624.2004.00674.x.
- Gilman, R., Easterbrooks, S. R., & Frey, M. (2004). A preliminary study of multidimensional life satisfaction among deaf/hard of hearing youth across environmental settings. *Social Indicators Research*, 66, 143–164. doi:10.1023/B:SOCI.0000007495.40790.85.
- Gray, C., Hosie, J., Russell, P., Scott, C., & Hunter, N. (2007). Attribution of emotions to story characters by severely and profoundly deaf children. *Journal of Developmental and Physical Disabilities*, 19, 145–159. doi:10.1007/s10882-006-9029-1.
- Hartup, W. W. (1993). Adolescents and their friends. *New Directions for Child and Adolescent Development*, 1993, 3–22. doi:10.1002/cd.23219936003.
- Hermans, D., Knoors, H., & Verhoeven, L. (2009). Assessment of sign language development: The case of deaf children in the Netherlands. *Journal of Deaf Studies and Deaf Education*, 15, 107–119.
- Hermans, D., Wauters, L. N., Willemsen, M., & Knoors, H. E. T. (2016). Vocabulary acquisition in deaf and hard-of-hearing children: Research and interventions. In Marschark, M., & Spencer, P. E. (Eds.), *The Oxford handbook of deaf studies in language* (pp. 161–180). New York, NY: Oxford University Press.
- Ketelaar, L., Rieffe, C., Wiefferink, C. H., & Frijns, J. H. (2012). Does hearing lead to understanding? Theory of mind in toddlers and preschoolers with cochlear implants. *Journal of Pediatric Psychology*, 37, 1041–1050. doi:10.1093/jpepsy/jss086.
- Kim, J., & Cicchetti, D. (2010). Longitudinal pathways linking child maltreatment, emotion regulation, peer relations, and psychopathology. *Journal of Child Psychology and Psychiatry*, 51, 706–716. doi:10.1111/j.1469-7610.2009.02202.x.
- Kluwin, T. N., Stinson, M. S., & Colarossi, G. M. (2002). Social processes and outcomes of in-school contact between deaf and hearing peers. *Journal of Deaf Studies and Deaf Education*, 7, 200–213. doi:10.1093/deafed/7.3.200.
- Kouwenberg, M., Rieffe, C., & Banerjee, R. (2013). Developmetrics a balanced and short Best Friend Index for children and young adolescents. *European Journal of Developmental Psychology*, 10, 634–641. doi:10.1080/17405629.2012.707780.
- Laursen, B., & Hafen, C. A. (2010). Future directions in the study of close relationships: Conflict is bad (except when it's not). *Social Development*, 19, 858–872. doi:10.1111/j.1467-9507.2009.00546.x.
- Lederberg, A. R., Schick, B., & Spencer, P. E. (2013). Language and literacy development of deaf and hard-of-hearing children: Successes and challenges. *Developmental Psychology*, 49, 15–30. doi:10.1037/a0029558.
- Leigh, I. W., Maxwell-McCaw, D., Bat-Chava, Y., & Christiansen, J. B. (2009). Correlates of psychosocial adjustment in deaf adolescents with and without cochlear implants: A preliminary investigation. *Journal of Deaf Studies and Deaf Education*, 14, 244–259. doi:10.1093/deafed/enn038.
- Martin, D., Bat-Chava, Y., Lalwani, A., & Waltzman, S. B. (2010). Peer relationships of deaf children with cochlear implants: Predictors of peer entry and peer interaction success. *Journal of Deaf Studies and Deaf Education*, doi:10.1093/deafed/enq037.
- Mavroveli, S., Petrides, K. V., Sangareau, Y., & Furnham, A. (2009). Exploring the relationships between trait emotional intelligence and objective socio-emotional outcomes in childhood. *British Journal of Educational Psychology*, 79, 259–272. doi:10.1348/000709908x368848.
- Most, T. (2007). Speech intelligibility, loneliness, and sense of coherence among deaf and hard-of-hearing children in

- individual inclusion and group inclusion. *Journal of Deaf Studies and Deaf Education*, 12, 495–503. doi.org/10.1093/deafed/enm015.
- Musselman, C., Mootilal, A., & MacKay, S. (1996). The social adjustment of deaf adolescents in segregated, partially integrated, and mainstreamed settings. *Journal of Deaf Studies and Deaf Education*, 1, 52–63. doi:10.1093/oxfordjournals.deafed.a014281.
- Netten, A. P., Rieffe, C., Theunissen, S. C. P. M., Soede, W., Dirks, E., Briare, J. J., & Frijns, J. H. M. (2015). Low empathy in deaf and hard of hearing (pre)adolescents compared to normal hearing controls. *PLoS ONE*, 10, e0124102. doi:10.1371/journal.pone.0124102.
- Nunes, T., Pretzlik, U., & Olsson, J. (2001). Deaf children's social relationships in mainstream schools. *Deafness & Education International*, 3, 123–136. doi:10.1179/146431501790560972.
- Peterson, C. C. (2004). Theory-of-mind development in oral deaf children with cochlear implants or conventional hearing aids. *Journal of Child Psychology and Psychiatry*, 45, 1096–1106. doi:10.1111/j.1469-7610.2004.t01-1-00302.x.
- Piso, F., Knoors, H., & Vervloed, M. (2009). Vriendschapsrelaties van dove en slechthorende adolescenten. *Van Horen Zeggen*, 50, 10–17. <http://hdl.handle.net/2066/77176>.
- Pouw, L. B. C., Rieffe, C., Oosterveld, P., Huskens, B., & Stockmann, L. (2013). Reactive/proactive aggression and affective/cognitive empathy in children with ASD. *Research in Developmental Disabilities*, 34, 1256–1266.
- Punch, R., & Hyde, M. (2011). Social participation of children and adolescents with cochlear implants: A qualitative analysis of parent, teacher, and child interviews. *Journal of Deaf Studies and Deaf Education*, 16, 474–493. doi:10.1093/deafed/enr001.
- Remine, M. D., & Brown, M. P. (2010). Comparison of the prevalence of mental health problems in deaf and hearing children and adolescents in Australia. *Australian & New Zealand Journal of Psychiatry*, 44, 351–357. doi:10.3109/00048670903489866.
- Rieffe, C. (2012). Awareness and regulation of emotions in deaf children. *British Journal of Developmental Psychology*, 30, 477–492. doi:10.1111/j.2044-835x.2011.02057.x.
- Rieffe, C., De Bruine, M., De Rooij, M., & Stockmann, L. (2014). Approach and avoidant emotion regulation prevent depressive symptoms in children with an Autism Spectrum Disorder. *International Journal of Developmental Neuroscience*, 39, 37–43. doi:10.1016/j.ijdevneu.2014.06.003.
- Rieffe, C., Dirks, E., Van Vlerken, W., & Veiga, G. (2017). The empathic mind in children with communication impairments: The case of children who are Deaf or Hard of Hearing (DHH); children with an Autism Spectrum Disorder (ASD); and children with Specific Language Impairments (SLI). In Slaughter V., & Rosnay M. d. (Eds.), *Theory of mind development in context*. London: Routledge.
- Rieffe, C., & Meerum Terwogt, M. (2006). Anger communication in deaf children. *Cognition and Emotion*, 20, 1261–1273. doi:10.1080/02699930500513502.
- Rieffe, C., Netten, A. P., Broekhof, E., & Veiga, G. (2015). The role of the environment in children's emotion socialization; The case of deaf or hard-of-hearing (DHH) children. In Marschark M., & Knoors H. E. T. (Eds.), *Educating deaf learners: Creating a global evidence base* (pp. 369–388). London, UK: Oxford University Press.
- Rieffe, C., Oosterveld, P., Miers, A. C., Meerum Terwogt, M., & Ly, V. (2008). Emotion awareness and internalising symptoms in children and adolescents: The Emotion Awareness Questionnaire revised. *Personality and Individual Differences*, 45, 756–761. doi:10.1016/j.paid.2008.08.001.
- Rose, A. J., & Asher, S. R. (1999). Children's goals and strategies in response to conflicts within a friendship. *Developmental Psychology*, 35, 69. doi:10.1037/0012-1649.35.1.69.
- Rubin, K. H., Bukowski, W., & Parker, J. (2006). Peer interactions, relationships, and groups. In Eisenberg N. (Ed.), *Handbook of child psychology: Social, emotional, and personality development* (pp. 571–645). Hoboken, New Jersey: John Wiley & Sons.
- Saarni, C. (1999). *The development of emotional competence*. New York, NY: The Guilford Press.
- Scheetz, N. (1993). *Orientation to deafness*. Needham Heights: Allyn & Bacon.
- Schick, B., De Villiers, P., De Villiers, J., & Hoffmeister, R. (2007). Language and theory of mind: A study of deaf children. *Child Development*, 78, 376–396. doi:10.1111/j.1467-8624.2007.01004.x.
- Schorr, E. A. (2006). Early cochlear implant experience and emotional functioning during childhood: Loneliness in middle and late childhood. *The Volta Review*, 106, 365.
- Seiffge-Krenke, I. (1995). *Stress, coping, and relationships in adolescence*. Mahwah, NJ: Erlbaum.
- Semel, E., Wiif, E. H., & Secord, W. (1987). *CELF: Clinical Evaluation of Language Fundamentals—revised*. San Antonio, TX: The Psychological Corporation.
- Stinson, M. S., Whitmire, K., & Kluwin, T. N. (1996). Self-perceptions of social relationships in hearing-impaired adolescents. *Journal of Educational Psychology*, 88, 132. doi:10.1037/0022-0663.88.1.132.
- Strauss, C. C., Forehand, R., Smith, K., & Frame, C. L. (1986). The association between social withdrawal and internalizing problems of children. *Journal of Abnormal Child Psychology*, 14, 525–535. doi:10.1007/BF01260521.
- Theunissen, S. C., Rieffe, C., Kouwenberg, M., De Raeve, L. J., Soede, W., Briare, J. J., & Frijns, J. H. (2014). Behavioral problems in school-aged hearing-impaired children: the influence of sociodemographic, linguistic, and medical factors. *European Child & Adolescent Psychiatry*, 23, 187–196. doi:10.1007/s00787-013-0444-4.
- van Gent, T., Goedhart, A. W., Knoors, H. E., Westenberg, P. M., & Treffers, P. D. (2012). Self-concept and ego development in deaf adolescents: a comparative study. *Journal of Deaf Studies and Deaf Education*, 17, 333–351. doi:10.1093/deafed/ens002.
- Von Salisch, M. (2001). Children's emotional development: Challenges in their relationships to parents, peers, and friends. *International Journal of Behavioral Development*, 25, 310–319. doi:10.1080/01650250143000058.
- von Salisch, M., Lüpschen, N., & Kanevski, R. (2013). Wer hat Freundschaften und wer verliert sie?—Notwendige sozial-emotionale Kompetenzen im frühen Jugendalter. *Praxis der Kinderpsychologie und Kinderpsychiatrie*, 62, 179–196. doi:10.13109/prkk.2013.62.3.179.
- Vonen, A. M. (2007). Bilingualism—a future asset in the education of socially deaf children. In Hyde M., & Hoie G. (Eds.), *Constructing educational discourses on deafness* (pp. 108–118). Oslo, Norway: Norwegian Government Printers, Skadalen Resource Centre.
- Wauters, L. N., & Knoors, H. (2008). Social integration of deaf children in inclusive settings. *Journal of Deaf Studies and Deaf Education*, 13, 21–36. doi:10.1093/deafed/enm028.
- Wechsler, D. (1991). *The Wechsler intelligence scale for children* (3rd ed). San Antonio, TX: The Psychological Corporation.
- Wiefferink, C. H., Rieffe, C., Ketelaar, L., De Raeve, L., & Frijns, J. H. (2013). Emotion understanding in deaf children with a cochlear implant. *Journal of Deaf Studies and Deaf Education*, 18, 175–186. doi:10.1093/deafed/ens042.

- Wolters, N., Knoors, H. E., Cillessen, A. H., & Verhoeven, L. (2011). Predicting acceptance and popularity in early adolescence as a function of hearing status, gender, and educational setting. *Research in Developmental Disabilities, 32*, 2553–2565. doi:10.1016/j.ridd.2011.07.003.
- Wright, M., Banerjee, R., Hoek, W., Rieffe, C., & Novin, S. (2010). Depression and social anxiety in children: Differential links with coping strategies. *Journal of Abnormal Child Psychology, 38*, 405–419. doi:10.1007/s10802-009-9375-4.
- Xie, Y. H., Potmėšil, M., & Peters, B. (2014). Children who are deaf or hard of hearing in inclusive educational settings: a literature review on interactions with peers. *Journal of Deaf Studies and Deaf Education, 19*, 423–437. doi:10.1093/deafed/enu017.
- Zaidman-Zait, A., & Dotan, A. (2017). Everyday stressors in deaf and hard of hearing adolescents: The role of coping and pragmatics. *The Journal of Deaf Studies and Deaf Education, 22*, 257–268. doi:10.1093/deafed/enw103.