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Social participation of deaf youth in school
Predictors and consequences of acceptance and popularity of deaf early adolescents before and after a major school transition

Nina Wolters
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Dr. P.C.J. Segers
“With enough courage, you can do without a reputation”

Clark Gable
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Introduction
Going through adolescence means facing cognitive, psychological, biological, and social changes (Blakemore, 2008; Steinberg, 2008). Biologically, there are hormonal and physical changes, even on the neurobiological level (Blakemore, 2008), reflecting the difference between a young adolescent and an adult (van Lijenhorst & Crone, 2009). For example, brain regions involved in social cognition, particularly in understanding other people, undergo structural development during adolescence (Blakemore, 2008). Another well-known example is the increase in risky behavior by adolescents, which is related to slow development of the brain region responsible for cognitive control and understanding long term consequences, combined with a peak in sensitivity for rewards (van Lijenhorst & Crone, 2009).

Regarding social changes, there is a shift with increased contact with peers and decreased contact with adults. This is signified by an intensification of peer interest and interaction with peer relations becoming more important and dyadic in nature. Today’s teenagers spent twice as much time in company with peers than with adults, even if we exclude time in the classroom, with about half of an adolescent’s waking hours being spent with peers as opposed to 15 percent with adults. Additionally, there is a decrease in adult supervision and becoming less emotionally dependent on parents (Bukowski, Hoza, & Boivin, 1993; Steinberg, 2008).

In early adolescence, the school classroom is a very important context in which they spend a vast amount of time with peers. Relationships with these peers are a person’s first true experience with dyadic relationships and acceptance and closeness (Rubin, Bukowski, & Parker, 2006). Building up a network of peer relations is even a greater challenge after school transition.

Thus, in early adolescence (ages 10-14), while dealing with inevitable mental and physical changes, social life considerably changes as well, especially in the area of peer relationships. Facing adolescence is therefore a challenge for all children, but what is it like for someone who can not hear well? In the current thesis, this question is addressed in the context of deaf early adolescent peer relations in the school class before and after school transition.

**Hearing Loss and Social Relationships**

Interaction is a prerequisite for healthy relationships to emerge, but deaf
and hard-of-hearing\(^1\) children’s communicative skills are often less well developed compared to hearing peers (Antia, Kreimeyer, Metz, & Spolsky, 2011; Stinson & Antia, 1999; Suárez, 2000), and therefore interaction is at risk. Language is a central aspect of interaction and communication and is often taken for granted. Communication is complex though, and constitutes more than just speech perception and production. It also entails recognizing subtle social aspects of communication. Whereas young children might fare with relatively simple language, early adolescents need to be equipped with much more complex language to function in social interactions with peers. Direct communication plays an increasing important role in the life of adolescents compared to childhood (Preisler, Tvingstedt, & Ahlström, 2005). Not just the communication problems create challenges in establishing healthy social relationships for deaf children. The communication barrier deaf children face often affects the learning of social behavior (Antia & Dittillo, 1998). Deaf children indeed often show less developed social skills (Suárez, 2000).

The above illustrates that a hearing loss notably affects social experiences with peers. This is of concern since these social experiences are extremely important for the overall development of children. It affects social, emotional and cognitive development as well as academic growth (Flook, Repetti, & Ullman, 2005; Hartup, 1992; Rubin et al., 2006), which reacts on an early adolescents’ well-being on the short and long term (e.g., Parke et al., 1997; Parker & Asher, 1987; Roff & Wirth, 1984, in Östberg, 2003; Rubin et al., 2006; Shaffer, 2005). In peer relationships, children acquire behavior, skills and attitudes that have a long-term effect on adaptation in life (Rubin et al., 2006). Poor peer relations in childhood and adolescence predict maladjustment, academic disengagement and poor well-being (Flook et al., 2005; Parker & Asher, 1987; Steinberg, 2008). Position in the classroom hierarchy is both directly and indirectly related to well-being, since children are well aware of their status and high social status creates social support, friends, self-confidence, and buffers against stress (Bukowski et al., 1993; Östberg, 2003). One study even found acceptance by hearing peers to be the best predictor of deaf peers’ academic success (Coyner, 1994).

\(^1\) Throughout the dissertation, deaf and hard-of-hearing youth will be referred to as deaf youth
CHAPTER 1

Peer Status: Acceptance and Popularity

During teenage years, peer groups change in significance and structure, with the emergence of cliques and crowds (Rubin et al., 2006; Steinberg, 2008). Cliques commonly are composed of 2 to 12 peers of the same sex and age and are the main social context in which adolescents spend time with each other. The clique is based on friendship and is an important setting for the learning of social skills. Crowds are large loosely groups of peers, composed of several cliques and organized around a shared activity. Crowds are based on similar image or reputation among peers, as for example “jocks” in American high schools, and are based mainly on reputation and stereotype but not friendship (Steinberg, 2008).

In studying peer relationships, sociometric popularity has long received much attention. Sociometric popularity refers to likeability or social preference and reflects success at the dyadic level in the classroom (e.g., Coie, Dodge, & Coppotelli, 1982; Gest, Graham-Bermann, & Hartup, 2001; Nangle, Erdly, Newman, Mason, & Carpenter, 2003). A standard procedure for assessing sociometric popularity is by asking children who they like most and least in their peer group. Based on these nominations, children are ascribed a sociometric status—accepted, average, rejected, controversial, neglected—or are ranked according to their social preference in the group (e.g., Cillessen, 2009). LaFontana and Cillessen (1998) and Parkhurst and Hopmeyer (1998) were among the first to clearly show that that sociometric popularity does not fully represent peer status in a peer group. They discovered that by asking children to nominate who they think are most and least popular in the peer group, different attributions and expectations were ascribed to children being perceived as popular, compared to one’s actual sociometric status. Perceived popularity reflects visibility and being a central and influential member of a peer group and thus is a measure of social success at the group level in the classroom (e.g., Cillessen, 2011). Both types of high status in the peer group represent ways of being socially successful or competent in relationships with peers, though at a different level. In line with Cillessen and Marks (2011), in the present thesis we use unambiguous terminology to refer to the two types of peer status; the term acceptance refers to sociometric popularity, and popularity to perceived popularity.

Some studies have addressed the stability of acceptance and popularity. In hearing children, popularity is more stable than acceptance, where acceptance is
more stable for boys, but popularity is more stable for girls (Mayeux, Houser, & Dyches, 2011). Also, acceptance has been found to be more stable for older than younger children, though generally there is lower stability over longer a longer period of time (Jiang & Cillessen, 2005).

What causes some adolescents to experience positive peer relations, whereas others feel alone and rejected? In the literature, three main domains of predictors of peer status can be identified; social behavior, personality, and communicative skills (e.g., LaFontana & Cillessen, 2002; Mervielde & De Fruyt, 2000; Place & Becker, 1991). On social behavior, a distinction is made between prosocial, antisocial and withdrawn behavior. Prosocial behaviors refer to socially desirable voluntary behaviors such as helping and caring (Eisenberg et al., 1999). Antisocial behavior includes being overtly or relationally aggressive, and disruptive or impulsive (Crick & Grotpeter, 1995; Junttila, Voeten, Kaukiainen, & Vauras, 2006; Warden, Cheyne, Christie, Fitzpatrick, & Reid, 2003). Passive withdrawn behavior refers to isolating oneself from a group (Rubin, Burgess, & Coplan, 2002). Acceptance consistently correlates positively with prosocial behavior, but negatively with antisocial behavior. In contrast, a mixture of prosocial and antisocial behavior correlates positively with popularity (Asher & McDonald, 2009). Withdrawn behavior has a negative association with both acceptance and popularity (e.g., LaFontana & Cillessen, 2002).

Regarding personality, extraversion and agreeableness are considered as positive predictors of social interaction (e.g., Jensen-Campbell et al., 2002; Van der Linden, Scholte, Cillessen, te Nijenhuis, & Segers, 2010). Agreeableness fosters relationships and represents a prosocial and shared orientation toward others, whereas extraversion reflects sociability, activity and assertiveness (Jensen-Campbell et al., 2002; John, Naumann, & Soto, 2008). In a normative population, a stronger role of extraversion than agreeableness in predicting acceptance or popularity is generally found (e.g., Mervielde & De Fruyt, 2000).

In the domain of communicative skills, in particular strategic and pragmatic communicative skills are important for positive and effective interaction (Nærland, 2011; Place & Becker, 1991). Pragmatic skills refer to the appropriateness of language use, or the appropriate interpretation of a message in relation to the current situation (Geurts, 2007; Place & Becker, 1991). Strategic skills involve meta-cognitive strategies for managing effective interaction (Verhoeven &
Pragmatic skills have been found to promote peer status in children (Nærland, 2011), although strategic communicative skills have been studied rarely in relation to peer status.

Studies into social behavior, personality, and communicative skills related to social relations in early adolescents are scarce, despite the increased importance of peer relations at this age. Neither have the three domains been studied together, and regarding communicative skills, the vast amount of studies focuses on young children. Known studies are unifactorial or bifactorial in nature, and moreover, many do not acknowledge the distinction between acceptance and popularity. To increase our understanding of peer status in early adolescence, given the relevance of peer relations for well-being and overall development, it is necessary to integrate multiple predictive factors of peer status in one integral design.

**Deaf Early Adolescents’ Acceptance and Popularity**

Considering peer status of deaf early adolescents, far less studies have been conducted compared to hearing peers. Summing up earlier findings, mainstreamed deaf children have been found to be accepted in some, but not in all studies (e.g., Antia, Kreimeyer, & Reed, 2010; Cambra, 2002; Kluwin, Stinson, & Colarossi, 2002; Stinson & Antia, 1999; Stinson & Kluwin, 2011). In the latter case, they are neglected (i.e., not nominated as either “liked” nor as “disliked”) or rejected (often nominated as “disliked”, but not as “liked”), and report feelings of loneliness. In studies where deaf peers are accepted, one study pointed toward the role of gender, with deaf girls being accepted but not boys (Coyner, 1994), and another found that accepted was mainly by younger female hearing peers in an adolescent sample (Cambra, 2002). Extent of contact between deaf and hearing peers might play a role, since deaf peers might judge their relationship with hearing peers as less satisfying, questioning the quality of the relationships (Kluwin et al., 2002).

The role of educational setting seems important, though conclusive findings do not appear here as well. Deaf children in segregated classrooms seem to have more positive social experiences, with fewer reports of loneliness and more friends than mainstreamed deaf peers (Brands, Elsendoorn, & Coninx, 2000; Stinson & Kluwin, 2011). In co-enrollment settings, in which deaf and hearing children are co-taught by a general and special education teacher, they have been found to be
accepted as well as neglected though (Bowen, 2008; Nunes, Pretzlik, & Olsson, 2001; Wauters & Knoors, 2007). These results are based on small samples however, of 5, 9 and 4 deaf children respectively, who were in actual elementary co-enrollment settings.

The current studies on deaf children’s acceptance in mainstream education thus show inconclusive results, with varying degrees of deaf children’s acceptance. They generally do not acknowledge the role of gender in peer acceptance, and mainly consider children in elementary school, and not adolescents. Developmental data on peer status is missing, though, stability of acceptance has been addressed by one study (Wauters & Knoors, 2007) in which acceptance in 11 deaf first- to fifth-grade children was relatively stable over a year. To conclude on peer status, popularity has not yet been studied concerning deaf children of any age.

Regarding the earlier mentioned probable predictors of acceptance and popularity (social behavior, communicative skills, personality), generally less age-appropriate or mature behavior in deaf than hearing peers is often found with also a more problematic behavioral profile in separate classes than mainstreamed classes (Kluwin et al., 2002; Musselman, Mootilal, & MacKay, 1996; Stinson & Kluwin, 2011). Specifically regarding prosocial-, antisocial-, and withdrawn behavior, less prosocial and more withdrawn behavior in mainstream and co-enrolled deaf children than in their hearing children was found (Wauters & Knoors, 2007). On communicative skills, deaf children’s pragmatic communication is less clear than that of hearing children, though comparable to younger children, and in direct dyadic communication deaf children experience difficulties (Jeanes, Nienhuys, & Rickards, 2000; Lederberg & Everhart, 2000; Nicholas & Geers, 2003). Clear findings concerning strategic skills are missing. Finally, on personality, Coren and Harland (1995) found that students with a mild hearing loss did not differ in either extraversion or agreeableness from their hearing peers.

Though the three described potential predictors of peers status have thus been studies to some extent in the deaf population, they have neither been in conjunction with each other, nor in relation to peer status. One exception arises (Wauters & Knoors, 2007), where no relation between social behavior in one year, and acceptance a year later was found for deaf children.

According to Antia et al. (2010), more research regarding deaf children’s
peer status is needed, because conclusions so far are often based on a small number of studies and concern small samples of deaf children, the majority of which also concerns elementary-age children. Though Antia and colleagues stated that varying results are obtained across locations, the majority of studies concern American children, requiring cross-cultural studies to be able to draw general conclusions. Furthermore, the question which factors cause the variation in peer status among deaf adolescents is also not explained (acceptance) in earlier studies or is missing (popularity). Neither is studied, how deaf children’s peer status develops over time. In sum, an integral longitudinal study seems required, reflecting deaf early adolescents’ acceptance and popularity as well as their predictors, the effect on well-being, and the developmental path.

**Role of Educational Context**

Regarding the educational context of deaf children, they increasingly attend mainstream schools. Often, they are the only child with a hearing loss in the classroom among hearing peers, since deafness is a relatively low-incidence disability\(^2\) (Antia et al., 2010; Stinson & Antia, 1999). Children with a hearing loss in special education schools in the Netherlands are typically educated in two different segregated settings. Children with profound losses are in schools for the deaf and children with severe losses and better speech perception in schools for hard-of-hearing children. In the special education schools for the hard of hearing, children with a hearing loss are often educated together with SLI children, some of whom also display autistic characteristics.

**Mainstream Versus Special Education**

Deaf mainstream children more often possess better developed spoken language skills compared to deaf peers in special education (Antia et al., 2010).

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\(^{2}\) The exact number of deaf and hard-of-hearing children and early adolescents in the Netherlands is unknown. The prevalence of a hearing loss of 60-70 dB or more in 0-19 year olds is 0.7-1.0 percent (De Graaf, Knippers, & Bijl, 1998; LUMC, 2012). On January 1, 2013, the CBS (Central Bureau of Statistics) estimated there were 3,877,669 children and youngsters aged 0-20 years. This results in about 2700-3900 severe to profoundly deaf children and adolescents in the Netherlands. This number does not include mild and moderate hearing losses though. Hearing losses of 30 dB and more are said to be found in on average 3% of school aged children, resulting in up to 12,000 mild to profoundly deaf children and adolescents in the Netherlands (LUMC, 2012).
These spoken language skills are considered to positively affect social experiences with hearing peers (Antia et al., 2010; Stinson, Whitmire, & Kluwin, 1996). However, a communication barrier cannot really be overcome. During for example formal classroom instructions, communication access for deaf children might be relatively good. However, in contrast, in other day-to-day school situations such as lunch and classroom discussions, that are multi-talker situations, problems may arise. All of these social exchanges are important for an early adolescent’s social growth. Even children with a mild hearing loss experience difficulties with rapid turn taking and interruptions. The latter two being normal features of group interactions (Stinson & Liu, 1999; Stinson & Kluwin, 2011). Some studies even found children with milder hearing losses in mainstream education to report lower well-being (Wake, Hughes, Collins, & Poulakis, 2004a; Wake, Hughes, Poulakis, Collins, & Rickards, 2004b) and self-confidence (Keilman, Limberger, & Mann, 2007), than children with a severe hearing loss. Potentially, hearing peers might underestimate the significance of this hearing loss on daily events, because a mild hearing loss is not as noticeable as a severe hearing loss. As a consequence, hearing peers may attribute atypical or negative experiences with deaf peers to the deaf child itself and not to the hearing loss. This negatively affects their relationship with this child, which may subsequently impact the deaf child’s well-being.

In some special education settings, deaf children also encounter hearing classmates, with, for example, Specific Language Impairment (SLI). The situation described above is thus also applicable to these children. Important to realize, is that relatively little is known about communication between deaf peers; they vary widely in use and proficiency of spoken and sign language, also complicating interactions. Thus, hearing loss, regardless of school setting, notably affects social experiences with peers through possible communication and social behavioral problems. This poses a threat to deaf early adolescents’ well-being in school (Hamre & Pianta, 2001; Parke et al., 1997; Stinson & Kluwin, 2011).

**Impact of School Transition**

During adolescence, mental and physical changes go hand in hand with social changes, such as a change in family functions. Here, an adolescent desires family to become supportive, guiding and directive as opposed to the earlier
functions of nurturance, protection and socialization, mainly in light of the increased value ascribed to peer relations (Steinberg, 2008). Relevant is that the social context in which an adolescent develops changes as well (Steinberg, 2008). One major social contextual change is school transition from a smaller elementary school into a larger secondary school, where the situation is more dynamic and complex. This tests all early adolescents, since they face a new social context with unfamiliar peers and a larger social system than the one in elementary education (Brown, 2011; Reddy, Rhodes, & Mulhall, 2003).

Elementary school represented a well-known context with familiar classmates, since children often share classrooms with the same peers for several years. In contrast, at the start of secondary school, the majority, if not all, of the classmates are unfamiliar peers at the beginning of the school year. Thus, new peer relations have to be formed and a place in the class hierarchy has to be conquered. Generally, the new peer group is used to assess what is “normal” and being different, even if it just means you can not hear well, is simply not valued by peers (Coyner, 1994). In mainstream education, it is likely that peers are inexperienced with communicating with a deaf classmate and additionally, there is a general lack of understanding about hearing loss among hearing peers as well as a relative negative attitude toward it (Hung & Paul, 2006; Stinson & Kluwin, 2011). In special settings, adapting to new hearing classmates with SLI or new deaf classmates coincides with having to familiarize oneself with a new diversity in spoken and signed language skills of classmates. The challenge that comes with adolescence and school transition thus has an extra problematic dimension for deaf children, in a time in life where peer relations increase in frequency and importance.

**The Present Thesis**

Early adolescence is a challenging phase for all children, during which peer relations increase in importance. School transition constitutes a major change in social context during early adolescence. Because of potential communication problems, this may lead to extra challenges for deaf children. Studies about deaf early adolescents’ peer status and its predictors (social behavior, communicative skills, and personality) are scarce though, especially in the developmental area. Longitudinal studies are almost entirely lacking.
Research Questions and Design

The main aim of the present thesis was to shed light on the development of deaf early adolescents’ peer status in the classroom (acceptance, popularity), its behavioral, communicative and personality predictors, and its effect on well-being in school. The study included Grade 6 to Grade 8 classrooms with deaf, hard-of-hearing and hearing children, located in schools in all parts of the Netherlands. In the Netherlands, elementary school encompasses six grades (Grades 1 to 6) after which children go to one high school that contains all subsequent grades, tracked by academic level, typically aged 12 to 18 years. During the first years of high school, students spend most of their school day with the same classmates.

Deaf participants were in either segregated special education settings, or mainstream education. In the latter case, deaf children were located via itinerant teacher services. Children with a hearing loss in special education are educated in two different segregated settings. Those with profound losses are in schools for the deaf, those with severe losses and better speech perception often in schools for hard-of-hearing children. In the latter ones, children with a hearing loss are sometimes educated together with SLI children in one class. Some of these children also display autistic characteristics. Approval for participation was obtained from itinerant school services, school directors, parents, and teachers, the latter consistent with the requirements per school.

The following research questions were addressed in this thesis:
1. Are acceptance and popularity predicted by social behavior, personality and communicative skills in a normative sample of hearing early adolescents, and do pragmatic skills and personality moderate the predictions by prosocial and antisocial behavior?
2. Do hearing status, gender and educational setting moderate the prediction of acceptance and popularity from social behaviors, personality and communicative skills? Additionally, what are the differences in acceptance, popularity, communicative skills, social behaviors, and personality, as a function of hearing status, gender, and educational setting?
3. How are deaf early adolescents’ classroom peer and teacher relationships associated with well-being in school, and how are these effects further qualified by gender and educational context during school transition? Also, what are differences in well-being in school and its predictors (acceptance,
popularity, teacher support) as a function of time (before and after school transition), hearing status, educational setting, and gender?

4. How stable are peer status and social behavior for deaf early adolescents in the first two years of secondary education, and what are the unique effects of social behavior on subsequent peer status for deaf students in mainstream and special education?

To answer the research questions, a longitudinal study was conducted. Three measurement points were the final months of a school year in Grade 6 (elementary school), Grade 7 and 8 (both secondary school). Deaf children, their classmates, parents and teachers participated by means of completing questionnaires.

**Outline of the Present Thesis**

The current thesis contains four different but related empirical papers, followed by a chapter containing general conclusions and discussion. The four studies were written as independent articles and have either been accepted or resubmitted earlier for publication in peer reviewed journals.

Chapter 2 (*Behavioral, personality, and communicative predictors of acceptance and popularity in early adolescence*) reports an exploratory study in which predictors of acceptance and popularity were studied in a (normative) sample of 608 hearing Grade 6 children from 30 mainstream classrooms. The chapter introduces behavioral (prosocial, antisocial, withdrawn), personality (agreeableness, extraversion) and communicative (pragmatics) predictors of acceptance and popularity in a classroom setting. Hierarchical regression analyses were performed to investigate predictor differences between the two types of peer status.

Chapter 3 (*Predicting acceptance and popularity in early adolescence as a function of hearing status, gender, and educational setting*) extends the preceding chapter to deaf children. Participants were 87 deaf and 672 hearing early adolescents of 52 6th-grade classrooms in mainstream and special education. The first research question focused on differences in acceptance, popularity, communicative skills (pragmatic, strategic), social behaviors (prosocial, antisocial, withdrawn), and personality (extraversion, agreeableness) as a function of hearing status (hearing vs. deaf), gender, and educational setting (mainstream and special
INTRODUCTION

differences. To answer the question, hearing children in mainstream education were compared with deaf children. Additionally, deaf mainstreamed children were compared with their hearing classmates, and with deaf peers in special classrooms. These three planned ANOVA contrasts were tested to reveal which group differences can be ascribed to hearing status or educational setting. In these contrasts, gender was also taken into account. The second research question was whether hearing status, gender and educational setting moderate the prediction of acceptance and popularity from communicative skills, social behaviors, and personality and thus addressed the prediction of peer status, on the one hand, as a function of hearing status (i.e., hearing versus deaf classmates in mainstream education) and gender, and, on the other hand, as a function of educational setting (deaf mainstreamed children versus deaf peers in special classrooms) and gender. This question was answered using correlations and hierarchical regressions.

Chapter 4 (Impact of peer and teacher relations on deaf early adolescents’ well-being: comparisons before and after major school transition) is comprised of two studies and focuses on the outcome of social relationships: well-being. The main objective of the study was to investigate deaf children’s classroom peer and teacher relationships and their effects on well-being in school, and how these effects are further qualified by gender and educational context during school transition to junior high school. In the first study, predictors (acceptance, popularity, and relationship with the teacher) were assessed in a representative sample of early adolescents in Grade 6 (672 hearing, 87 deaf, 52 classrooms) and Grade 7 (736 hearing, 104 deaf, 55 classrooms), using correlation and hierarchical regression analyses. In the regression analyses, hearing status, educational setting and gender were considered as possible moderators. In the second study, including a subset of the participants of the first study (n = 105), comparisons of well-being in school and its predictors (acceptance, popularity, teacher support) before and after school transition were conducted as a function of time (Grade 6 to Grade 7, or school transition), hearing status, educational setting and gender.

Chapter 5 (Social adjustment of deaf early adolescents at the beginning of secondary school: peer status and social behavior) examined the development of social behavior (prosocial, antisocial, withdrawn) and peer status (acceptance, popularity) in 74 deaf early adolescents from 45 classrooms, after the transition
from primary (mainstream versus special) education to secondary education (Grades 7 and 8). The main research questions were (a) How stable are peer status and social behavior of deaf early adolescents in the first two years of secondary school (Grade 7 and 8), and (b) To what extent is the effect of Grade 7 social behavior on Grade 8 peer status in deaf students from mainstream versus special education mediated by Grade 7 peer status and Grade 8 social behavior? Preliminary cross-sectional ANOVA contrasts were conducted in which deaf mainstream children were compared with hearing classmates, and with deaf peers in special education classrooms (total of 573 Grade 7 classmates, and 594 in Grade 8) on peer status and social behavior. Using Structural Equation Modelling (SEM), questions a and b were answered.

Finally, in Chapter 6, general conclusions and a discussion of the results of this thesis are presented, preceded by an overall summary of the research findings. Theoretical and practical implications are sketched. After discussing limitations of the study, some handles are given for the educational field as well as future research.
Behavioral, Personality, and Communicative Predictors of Acceptance and Popularity in Early Adolescence*

*This chapter has been resubmitted for publication
Abstract
This study examined the behavioral, personality, and communicative predictors of acceptance and popularity in 608 early adolescents. Data were collected with sociometric methods and ratings in 30 6th-grade classrooms. Hierarchical regressions were run to predict acceptance and popularity from prosocial, antisocial, and withdrawn behavior, agreeableness and extraversion, and pragmatic communicative skills. The low levels of antisocial behavior positively predicted peer acceptance. Popularity depended on a more complex profile of predictors. Both prosocial and antisocial behavior contributed positively to popularity, whereas withdrawn behavior contributed negatively. Extraversion and pragmatic skills also played a role in the prediction of popularity. Extraversion moderated the associations of prosocial and antisocial behavior with popularity. Popularity was highest when high levels of prosocial or antisocial behavior were combined with high levels of extraversion. Pragmatic skills moderated the association of prosocial behavior with popularity. Popularity was highest when both prosocial behavior and pragmatic skills were high.
Introduction

Peers are important for adolescent development (see, for a review, Hartup, 1992; Rubin et al., 2006). In interactions with peers, youths acquire behavior, skills, and attitudes that have a long-term effect on adaptation and well-being. Conversely, poor peer relations predict later maladjustment (Parker & Asher, 1987; Rubin et al., 2006). Positive peer relations also predict well-being (Parke et al., 1997).

Adolescents spend increasing amounts of time with peers, especially in the classroom (Bukowski et al., 1993). Here, concerns about social status in the classroom hierarchy rise and affect well-being (Bukowski et al., 1993; Bukowski, Pizzamiglio, Newcomb, & Hoza, 1996; Rubin et al., 2006).

Acceptance and Popularity

Two types of social status in the classroom are often distinguished; acceptance and popularity. Acceptance represents social preference and likability, whereas popularity symbolizes visibility and social impact (Cillessen, 2011). Consequently, popular peers have more influence in a group than accepted peers (Cillessen, 2011). Since the studies by Parkhurst and Hopmeyer (1998) and LaFontana and Cillessen (1998), there is a general consensus that “acceptance and popularity share some attributes [...], but they diverge in more ways than they converge” (Mayeux et al., 2011, p. 97). This is shown by their moderate correlation and their unique behavioral profiles; accepted youths are cooperative and prosocial, whereas popular youths have influence in a group and are prosocial but also aggressive and manipulative (e.g., Cillessen & Rose, 2005).

Popularity is relatively stable due to the hardiness of reputations, whereas acceptance, based on personal preference, can be affected by a small change in behavior or attribute of a person (Mayeux et al., 2011). Also, acceptance and popularity have different adjustment outcomes. Accepted youths experience positive social opportunities such as friendships and academic achievement (Cillessen, 2011). Popular youths have the same short-term benefits (Bukowski, 2011), but may be at risk for health risk behaviors and academic disengagement in the long-term (Mayeux et al., 2011; Schwartz & Gorman, 2011). Finally, characteristics that help to achieve popularity (e.g., physical attractiveness, athletic ability) also contribute to acceptance, but behaviors that help to maintain popularity (i.e., aggression) are negatively associated with acceptance (Dijkstra,
Acceptance and popularity can be considered indicators of social success in the peer group. Social behaviors, personality styles, and communicative skills all contribute to this success. Social behavior is a dominant predictor of acceptance and popularity in the literature (e.g., LaFontana & Cillessen, 2002), usually divided in prosocial, antisocial, and withdrawn behaviors (Hartup & Van LIESHOUT, 1995). Prosocial behavior is voluntary and intended to benefit another (Eisenberg et al., 1999), such as helping and caring. Antisocial behavior includes overt or relational aggression (e.g., Crick & GROTPETER, 1995; WARDEN et al., 2003), disruptiveness, or impulsivity (e.g., Junttila et al., 2006). Withdrawn behavior reflects passive behavior or isolation from a peer group (Burgess, Wojslawowicz, Rubin, Rose-KRASNO, & Booth-LaForce, 2006; Harrist, Zaia, Bates, Dodge, & Pettit, 1997; Rubin et al., 2002). Overt social behavior is easily perceived in peer interactions, making it an important determinant of peer status.

Consistently, acceptance correlates positively with prosocial behavior and negatively with antisocial behavior. In contrast, a mixture of both prosocial and antisocial behavior correlates positively with popularity (Cillessen, 2011). The latter also applies to positive peer-valued characteristics such as attractiveness and athleticism in combination with antisocial behaviors such as overt/physical and relational aggression (Dijkstra, Lindenberg, Verhulst, Ormel, & Veenstra, 2009; Vaillancourt & Hymel, 2006). Finally, withdrawn behavior is negatively associated with both acceptance and popularity (LaFontana & Cillessen, 2002).

Personality factors also predict acceptance and popularity (e.g., Jensen-Campbell et al., 2002). Two of the Big Five dimensions (e.g., John & Srivastava, 1999) are especially important: Extraversion and agreeableness. Extraversion implies an “energetic approach to the world and includes traits such as sociability, activity, assertiveness, and positive emotionality. Agreeableness contrasts a prosocial and communal orientation toward others with antagonism and includes traits such as altruism, tender-mindedness, trust, and modesty” (John et al., 2008, p. 120). Both extraversion and agreeableness are important for positive social interactions and relationships (Jensen-Campbell et al., 2002; Ozer & Benet-Martínez, 2006) and through that affect peer status.
In the study by Jensen-Campbell et al. (2002), both extraversion and agreeableness contributed positively to peer acceptance in early adolescence. Lubbers et al. (2006) found the same for extraversion, and to a less degree for agreeableness for girls. Among college students, extraversion, but not agreeableness, predicted popularity (Anderson, John, Keltner, & Kring, 2001; Paunonen, 2003). Mervielde and De Fruyt (2000) and Van der Linden et al. (2010) considered personality predictors of both acceptance and popularity at the same time. It should be noted that their measures of acceptance and popularity deviated from the standard peer nominations. Mervielde and De Fruyt (2000) used peer nominations of the Big Five personality characteristics to reflect peer status. In the study by Van der Linden and colleagues (2010), acceptance reflected nominations on likeability, a person one wants to be friends with, someone who is cooperative and has humor; popularity reflected relational and physical aggression, and nominations on popularity and leadership. Mervielde and De Fruyt (2000) found that agreeableness positively predicted acceptance in early adolescence, whereas extraversion positively predicted popularity. Van der Linden et al. (2010) found a positive effect of extraversion on both acceptance and popularity in adolescence. Agreeableness correlated positively with acceptance, but not when tested simultaneously with the other Big Five dimensions. Thus, it seems that stronger positive associations can be expected of extraversion with acceptance and popularity than of agreeableness. It is not clear whether there is a unique role of personality in gaining status in the classroom when social behavior is accounted for.

Pragmatic communicative skills are communicative skills especially important for peer interaction because they concern the effectiveness of interactions with others (e.g., Nærland, 2011). Pragmatic skills refer to the appropriate choice of communicative acts given the communicative context (Geurts, 2007; Place & Becker, 1991). Pragmatics skills include knowing how to make a request, appropriate initiation, and turn taking. It facilitates effective communication and represents language use in social interaction, mode of communication, or context. Pragmatic inefficiency has negative social consequences (Place & Becker, 1991).

Studies on pragmatic skills and peer relations often focus on special populations and almost exclusively on preschool or young children. Few studies
have investigated the association of pragmatic skills with acceptance or popularity in early adolescence, despite the fact that this is a period in which peer relations increase in scope and importance (Bukowski et al., 1993). In previous studies, limited language ability (i.e., children with speech and or language disorders) was associated with lower peer acceptance in preschoolers (Gertner, Rice, & Hadley, 1994), and less social integration (Guralnick, Connor, Hammond, Gottman, & Kinnish, 1996). Discourse skills were associated with the establishment and maintenance of peer acceptance (Place & Becker, 1991). Nærland (2011) concluded that pragmatic skills, and not formal language skills (i.e., syntactic skills, word classes), were the most important communicative predictors of popularity in preschoolers. Among 3rd and 4th grade girls, inappropriate pragmatic behavior indeed negatively affected acceptance (Place & Becker, 1991).

Previous studies with young children thus indicate that pragmatic communicative skills are associated with acceptance and popularity. Because they facilitate effective communication, pragmatic skills are likely important in interactions regardless of age. However, the nature of this association in early adolescence has not yet been examined. A further question of interest is whether the use of pragmatic communicative strategies is associated with acceptance and popularity after accounting for social behavior.

**Moderating Effect of Personality and Communicative Skills**

Earlier studies have found moderating effects, signifying the strength of certain combinations of behaviors or traits, in the prediction of status. In one study, the moderating role of academic achievement in the prediction of acceptance by social intelligence was studied at two educational levels (Meijs, Cillessen, Scholte, Segers, & Spijkerman, 2010). A three-way interaction between educational level, social intelligence and academic achievement was found; academic achievement moderated the effect of social intelligence on acceptance, but differently for each educational level. College-track high school students gained acceptance at high levels of both social and academic intelligence. In contrast, while vocational-track students gained acceptance by being either socially or academically intelligent. Pucket and colleagues (Puckett, Wargo Aikins, & Cillessen, 2008) found that the association between relational aggression and popularity was moderated by measures of social skillfulness. At high levels of social
skillfulness, the association between relational aggression and popularity was stronger than at low levels of social skillfulness.

The current study examined whether extraversion, agreeableness, and pragmatic communicative skills moderated the effects of social behavior on acceptance and popularity. Extraversion was expected to be more strongly associated with popularity than with acceptance. Earlier studies showed positive associations of both prosocial and antisocial behavior with popularity. Extraversion may strengthen these associations. Thus, we examined whether higher levels of extraversion strengthened the effects of prosocial and antisocial behaviors on popularity. Following a similar rationale, we expected that agreeableness would strengthen the positive effect of prosocial behavior on acceptance.

Pragmatic skills positively affect acceptance and popularity (e.g., Nærland, 2011; Place & Becker, 1991). Prosocial behavior complements pragmatic behavior. Thus, adolescents who are both prosocial and pragmatically effective may obtain higher levels of acceptance and popularity than adolescents who score high on one dimension. Pragmatic skills may also moderate the association between antisocial behaviors and popularity. Pragmatic skills may not only support prosocial behaviors, but may also support the manipulative behaviors that characterize popular youths. This raises the question whether pragmatic skills moderate the association of antisocial behavior with popularity as well.

Present Study

This study expanded research on the predictors of peer acceptance and popularity by including social behaviors, personality dimensions, and pragmatic communicative skills. There were two main research questions. First, we examined the degree to which social behaviors (prosocial, antisocial, and withdrawn), personality dimensions (agreeableness and extraversion), and pragmatic communicative skills predicted acceptance and popularity in the classroom. Second, we examined whether extraversion, agreeableness, and pragmatic skills moderated the effects of prosocial and antisocial behavior (independent variables) on peer status (dependent variable). By answering these research questions, this study makes a contribution to a more complete understanding of predictors of peer status in the classroom setting.

Regarding research question 1, we expected prosocial behavior, and the
absence of antisocial and withdrawn behavior to predict acceptance. In contrast, prosocial and antisocial behavior and the absence of withdrawn behavior were expected to predict popularity. Further, we expected pragmatic skills to positively predict both acceptance and popularity. We expected extraversion to positively predict popularity, but agreeableness was not expected to predict popularity or acceptance, in line with Van der Linden et al. (2010).

Regarding research question 2, we expected extraversion to moderate the associations of prosocial and antisocial behavior with popularity. Adolescents with higher levels of both antisocial behavior and extraversion were expected to be more popular than other adolescents. The same was expected for prosocial behavior in combination with extraversion. The interaction effect of agreeableness with prosocial behavior on acceptance was tested to see whether higher levels of both prosocial behavior and agreeableness predicted higher levels of acceptance, compared to high levels of prosocial behavior by itself.

Finally, we expected that pragmatic skills would moderate the effects of prosocial behavior on acceptance and popularity, and the effect of antisocial behavior on popularity. Adolescents who are prosocial and also effectively use pragmatics were expected to obtain higher levels of acceptance and popularity than adolescents who are just prosocial. The same was expected for adolescents who are antisocial and effectively use pragmatic skills.

**Method**

**Participants and Procedure**

Participants were 608 6th graders (302 girls, 306 boys; $M$ age = 12.05 years, $SD = .69$) from 30 classrooms of 29 schools in the Netherlands. All 653 students in the classrooms gave permission slips to their parents or guardians, resulting in parental consent for 608 students (93%). The study was approved in advance by school directors and teachers. The schools were located in various communities across the country. The ethnic composition of the sample was 90% Caucasian and 10% of Turkish or Moroccan descent.

The participants completed sociometric measures and peer ratings in their classrooms; participants’ parents and teachers completed questionnaires about personality and communicative skills at home and returned them via mail. Parent data were obtained for 411 of the 608 participants, teacher data for 486
participants, and both parent and teacher data for 328 participants. The regression analyses were run on the 328 adolescents with complete data (169 boys, 159 girls; \( M \) age = 12.05 years, \( SD = .74 \)). This group did not differ from the 280 adolescents with one or more study variables missing; acceptance, \( t(606) = .34 \), popularity, \( t(606) = -1.08 \), prosocial behavior, \( t(606) = 1.08 \), antisocial behavior, \( t(606) = -.39 \), withdrawn behavior, \( t(606) = -1.22 \), pragmatic skills, \( t(409) = -1.29 \), extraversion, \( t(484) = 1.04 \), agreeableness, \( t(484) = .56 \) (all \( p’s > .20 \)).

The sociometric and peer ratings were administered by the principal investigator or trained research assistants during regular classroom lessons. Students who did not participate were asked to read or draw at their desks; in some classrooms they were given permission by their teachers to study in another classroom or the library. Participants were explained that their responses were confidential and were encouraged to cover the answers when they were finished. Desks were situated so that students could not see each others’ questionnaires. To thank them for their participation, each classroom received a book for their collection.

**Measures**

The study was part of a larger study that included other measures completed by adolescents, parents, and teachers. Additionally, the questionnaires were planned to be used by clinical populations (i.e., children with Specific Language Impairment and deaf and hard-of-hearing children) in following work. Thus, to lower the workload for parents and especially teachers who completed questionnaires regarding all participating students, both parents and teachers completed questionnaires.

**Sociometric nominations.** An unlimited choice procedure was used with classroom as the reference group in which the adolescents could name as many or as few classmates as they wanted for each question. Both same-sex and other-sex nominations were allowed. Classmates who did not receive parental consent to participate, or who were absent on the day of testing, could be nominated. Four questions were used: *liked most* (“Who are the kids in your class who you like the most?”), *liked least* (“Who are the kids in your class who you like the least?”), *most popular* (“Who are the most popular kids in your class?”), and *least popular* (“Who are the least popular kids in your class?”). For each question, the number of
nominations received was counted and standardized to z-scores within classrooms to control for differences in classroom size.

A score for *acceptance* (i.e., social preference) was computed by subtracting the standardized liked most and liked least choices received, and again standardized the resulting difference scores within classrooms, which is in line with the generally used method of Coie, Dodge, and Coppotelli (1982). A score for *popularity* was computed by subtracting the standardized most popular and least popular choices received, and again standardizing the resulting scores (e.g., Cillessen & Marks, 2011).

**Social behavior ratings.** Peers also rated each other’s social behavior on 15 items which results in more complete data as opposed to using behavior nominations. The items were selected from or based on existing rating- and nomination questionnaires (Burgess et al., 2006; Crick & Grotpeter, 1995; Crick & Werner, 1998; Greener, 2000; Junttila et al., 2006; Warden et al., 2003; Warden & Mackinnon, 2003; Wauters & Knoors, 2007) to cover prosocial behavior (helping, inclusion, empathy/caring), antisocial behavior (aggressive instrumental, aggressive relational, disruptive), and withdrawn behavior (passive). There were 6 items for prosocial behavior (e.g., “Says nice things to other children”, or “Helps other children when they have a problem”), 7 for antisocial behavior (e.g., “Makes up mean stories about other children which are not true, or ‘Hits, kicks, or pushes other children”), and 2 for withdrawn behavior (e.g., “prefers to work alone in the classroom over working with other children”). The format of the questionnaire was adopted from Junttila et al. (2006), with items as rows and the names of classrooms peers in columns, resulting in a table layout. All behaviors were rated on a 5-point scale (1 = never; 5 = almost always).

A factor analytic pilot study of the same peer behavior ratings collected in a separate sample of 397 6th graders showed that these 15 items can be reduced to three factors, measuring prosocial, antisocial, and withdrawn behavior. The factor analysis was repeated on the current dataset and yielded the same three factors. Cronbach’s *α*s were .92, .94, and .68, respectively. For the purpose of this study, factor scores were computed for participants’ average ratings received from their peers on the items that loaded on each factor. These composite scores then formed the peer rated social behavior scores in the analyses.

**Pragmatic skills.** Children’s pragmatic skills were rated by their parents
using a 24-item rating scale. Of this scale, 23 items came from the Dutch version of Bishop’s (2006) Children’s Communication Checklist Second Edition (CCC-2-NL; see also Bishop, 1998; Geurts, 2007). One item came from the Nijmegen Pragmatic Test (Embrechts, Mugge, & van Bon, 2005). Originally, all scales of the CCC-2-NL were completed by the parents, but for the purpose of this study, only the four pragmatic subscales were of interest. In addition, two items per subscale were deleted to reduce the workload for parents and to adapt the items for participants not using speech (deaf adolescents using sign language). The remaining items were scored on a 4-point scale (0 = never; 3 = always.), consistent with the original CCC-2-NL. Factor analyses were conducted after adaptation of the questionnaires to ascertain internal consistency. After removal of eight items, the reliability of the pragmatic scale was good (Cronbach’s α = .82). The 16 items measured the following aspects of pragmatic skills: social initiation (5 items; e.g., “Asks people questions while already been given the answer”), scripted language (3 items; e.g., “Repeats what other people just said”), context (3 items; e.g., “The ability to communicate differs per situation”), and nonverbal communication (5 items; e.g., “Laughs at appropriate moments during conversation). A factor score was computed from children’s ratings received from their parents on all 16 items. This composite score was used as the parent rated pragmatic skills score.

**Extraversion and agreeableness.** Teachers completed the personality questionnaire of Verhoeven and Vermeer (2002), of which in this study the extraversion and agreeableness scale were of interest. Six bipolar items represented extraversion (e.g., “Likes to compete – avoids competition”; Cronbach’s α = .84) and six represented agreeableness (e.g., “Get’s along with others – does not get along with others”; Cronbach’s α = .88). The bipolar items were scored on a 5-point-scale. Scores were recoded so that high extraversion or agreeableness corresponded with a high score (5), and los extraverted or agreeableness with a low score (1). Factor scores for extraversion and agreeableness were used in the analyses.

**Results**

**Analysis Overview**

Preliminary analyses included correlations among the study variables and tests of gender differences. Next, regressions were run predicting acceptance and
popularity. First, acceptance was predicted from behavior (prosocial, antisocial, withdrawn), personality (agreeableness, extraversion), communicative skills (pragmatic skills), and the specified interactions among them, while controlling for popularity. Second, the same regression was run predicting popularity from behavior, personality, communication skills, and their interactions, while controlling for acceptance.

**Preliminary Analyses: Associations among Study Variables**

Table 2.1 presents Pearson’s correlations among the main study variables. Consistent with the literature, acceptance and popularity correlated positively but moderately with each other ($r = .42$). The correlations among the three behaviors were also as expected: Prosocial behavior correlated negatively with antisocial and withdrawn behaviors, whereas the latter two were not significantly related. The correlations of acceptance and popularity with the three behaviors also confirmed what is typically found. Both correlated positively with prosocial behavior and negatively with withdrawal, but their correlations with antisocial behavior were opposite: negative for acceptance, but positive for popularity.

<table>
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<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Acceptance</td>
<td>.42*</td>
<td>.56*</td>
<td>-.50*</td>
<td>-.35*</td>
<td>.18*</td>
<td>.17*</td>
<td>.42*</td>
</tr>
<tr>
<td>2. Popularity</td>
<td>.21*</td>
<td>.16*</td>
<td>-.58*</td>
<td>.18*</td>
<td>.45*</td>
<td>.19*</td>
<td></td>
</tr>
<tr>
<td>3. Prosocial behavior</td>
<td>-.70*</td>
<td>-.27*</td>
<td>.19*</td>
<td>.15*</td>
<td>.55*</td>
<td></td>
<td></td>
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<tr>
<td>4. Antisocial behavior</td>
<td>.02</td>
<td>-.15*</td>
<td>.18*</td>
<td>-.50*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Withdrawn behavior</td>
<td>-.04</td>
<td>-.38*</td>
<td>-.19*</td>
<td></td>
<td>.03</td>
<td>.17*</td>
<td>.26*</td>
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<tr>
<td>6. Pragmatic skills</td>
<td></td>
<td></td>
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<td></td>
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<td>7. Extraversion</td>
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<tr>
<td>8. Agreeableness</td>
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</table>

* $p < .01$.

Pragmatic skills and extraversion were unrelated, but pragmatic skills correlated positively with agreeableness. Pragmatic skills, extraversion, and agreeableness correlated significantly and positively with acceptance and popularity. Of these associations, the strongest were for popularity with extraversion and for acceptance with agreeableness. Pragmatic skills and
agreeableness correlated positively with prosocial behavior and negatively with antisocial behavior, but extraversion correlated positively with both prosocial and antisocial behavior. Finally, extraversion and agreeableness correlated negatively with withdrawal, whereas pragmatic skills were not associated with withdrawal.

Mean gender differences on the main study variables were examined using ANOVA. Girls scored significantly higher than boys on prosocial behavior, $F(1, 606) = 107.76, p < .001$, and significantly lower than boys on antisocial behavior, $F(1, 606) = 73.88, p < .001$, and extraversion, $F(1, 484) = 8.90, p < .010$. No gender differences were found for acceptance, popularity, withdrawn behavior, and pragmatic skills.

Hierarchical Regression Analyses

Two hierarchical regressions were run. Acceptance and popularity were the dependent variables in both analyses. Both were regressed on behavior (prosocial, antisocial, withdrawn), extraversion, agreeableness, and pragmatic skills, as well as the interactions of pragmatic skills and extraversion with antisocial and prosocial behavior, and the interaction of agreeableness with prosocial behavior. Multicollinearity was checked for both regression analyses. Multicollinearity is only an issue when there are correlations between variables higher than .80 (Field, 2009); this was not the case in the data. Additionally, all variance inflation factors (VIF) were well below 10 and the tolerance statistics all well above .20; therefore, collinearity was not an issue. With respect to the number of effects in one regression model, there was sufficient power in the regression analyses; 10 to 20 participants for each independent variable are required (Keith, 2006), or 130 to 260 participants with the 13 independent variables (main and interaction effects) of this study. The sample of 328 participants in the regression analyses thus provided sufficient power. Further, earlier studies have tested similar numbers of main effects and interactions. For example, Meijs and colleagues (2010) studied 16 variables in the regression analyses, testing 11 two-way or three-way interactions in the prediction of peer status. Another study interpreted nine effects, including three two-way and one three-way interaction in the prediction of peer status (Puckett et al., 2006).

Prediction of acceptance. In Step 1 of the analysis, the main effect of popularity was entered to control for the overlap between acceptance and
popularity. In Step 2, the three behaviors (prosocial, antisocial, withdrawn) were entered. Step 3 included the main effects of pragmatic skills, extraversion, and agreeableness. Step 4 tested whether extraversion and pragmatic skills moderated the effects of prosocial and antisocial behavior (independent variables) on acceptance, and whether agreeableness moderated the effect of prosocial behavior (independent variable) on acceptance, thus including five interactions. All constructs were centered prior to analysis and the computation of the interaction terms. Table 2.2 presents the results.

Table 2.2
Summary of Hierarchical Regression Analyses Predicting Acceptance and Popularity from Social Behavior, Pragmatic Skills, Extraversion, and Agreeableness

<table>
<thead>
<tr>
<th></th>
<th>Acceptance</th>
<th></th>
<th>Popularity</th>
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<tbody>
<tr>
<td></td>
<td>ΔR²</td>
<td>β</td>
<td>ΔR²</td>
<td>β</td>
</tr>
<tr>
<td>Step 1</td>
<td>.178***</td>
<td>.422***</td>
<td>.178***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Popularity</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Acceptance</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Step 2</td>
<td>.310***</td>
<td>.329***</td>
<td>.255***</td>
<td>.531***</td>
</tr>
<tr>
<td></td>
<td>Prosocial behavior</td>
<td>.046</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Antisocial behavior</td>
<td>-.513***</td>
<td>.531***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Withdrawn behavior</td>
<td>-.086</td>
<td>-.357***</td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td>.006</td>
<td>.029***</td>
<td>.123**</td>
<td>.032</td>
</tr>
<tr>
<td></td>
<td>Pragmatic skills</td>
<td>-.017</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extraversion</td>
<td>.030</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Agreeableness</td>
<td>.048</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 4</td>
<td>.003</td>
<td>.020**</td>
<td>.142*</td>
<td>.112*</td>
</tr>
<tr>
<td></td>
<td>Pragmatic x Prosocial</td>
<td>-.007</td>
<td></td>
<td>.142*</td>
</tr>
<tr>
<td></td>
<td>Pragmatic x Antisocial</td>
<td>-.045</td>
<td></td>
<td>.070</td>
</tr>
<tr>
<td></td>
<td>Extraversion x Prosocial</td>
<td>-.024</td>
<td></td>
<td>.130*</td>
</tr>
<tr>
<td></td>
<td>Extraversion x Antisocial</td>
<td>-.016</td>
<td></td>
<td>.112*</td>
</tr>
<tr>
<td></td>
<td>Agreeableness x Prosocial</td>
<td>-.034</td>
<td></td>
<td>.029</td>
</tr>
<tr>
<td>Total R²</td>
<td>.497***</td>
<td>.556***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total adjusted R²</td>
<td>.477***</td>
<td>.539***</td>
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</table>

* p < .05. ** p < .01. *** p < .001.

The overall model for the prediction of acceptance was significant, F(12, 315) = 25.83, p < .001, R² = .50. Popularity significantly and positively predicted acceptance. Low levels of antisocial behavior uniquely predicted higher
acceptance. No other effects were significant.

**Prediction of popularity.** The same regression was conducted to predict popularity, with the exception that in this case acceptance was the control variable in Step 1. The model for the prediction of popularity was statistically significant in each case and at each step, in total explaining 56% of the variance in popularity, $F(12, 315) = 32.81, p < .001$ (see Table 2.2).

In Step 1, acceptance significantly and positively predicted popularity. After controlling for the effect of acceptance, all subsequent steps were also significant. In Step 2, prosocial and antisocial behavior significantly and positively predicted popularity, whereas withdrawn behavior negatively predicted popularity. In Step 3, pragmatic skills and extraversion positively predicted popularity. In Step 4, the interactions of extraversion (moderator) with prosocial and antisocial behavior (independent variable) and of pragmatic skills (moderator) with prosocial behavior (independent variable) were significant.

The three significant interactions were probed by calculating the slopes for the effects of prosocial or antisocial behavior on popularity at high ($M + 1 SD$) and low ($M - 1 SD$) levels of the moderator (extraversion or pragmatic skills) using the program Modprobe (Hayes & Matthes, 2009). Post-hoc probing revealed that prosocial and antisocial behavior had stronger effects on popularity when extraversion was high ($b$’s = .30 and .60, $p$’s < .001 respectively) than when it was low ($b = .08$, $p = $ ns. for prosocial, and $b = .36$, $p < .001$ for antisocial). Also, popularity was highest when extraversion and prosocial behavior were both high. The same occurred for antisocial behavior (see Figure 2.1a and 2.1b).

Figure 2.1c shows how pragmatic skills moderated the association between prosocial behavior and popularity. Prosocial behavior had an effect on popularity at high levels of pragmatic skills ($b = .33$, $p < .001$), but not at low levels of pragmatic skills ($b = .04$, ns.), and popularity was highest when prosocial behavior and pragmatic skills were both high.

**Discussion**

This study aimed to predict acceptance and popularity in a representative sample of Grade 6 early adolescents in the Netherlands in a multifactor design. First, the degree to which social behaviors (prosocial, antisocial, and withdrawn), personality dimensions (agreeableness and extraversion), and pragmatic
communicative skills predicted acceptance and popularity in the classroom was examined. Second, it was examined whether extraversion, agreeableness, and pragmatic skills moderated the effects of prosocial and antisocial behavior on peer status. To answer both questions, hierarchical regressions were run, in which the effects of popularity and acceptance on each other were controlled, thus examining the effects of popularity per se, excluding variation explained by popular youth who are also well liked (and vice versa). By answering the research questions, this study made a further contribution to understanding indicators of peer status in school.

Figure 2.1
Moderation effect by extraversion (EV) of the association between prosocial behavior and popularity (A); Moderation effect by extraversion (EV) of the association between antisocial behavior and popularity (B); Moderation effect by pragmatic skills (PS) of the association between prosocial behavior and popularity (C).

Distinct Predictors of Acceptance and Popularity

Our findings support the distinction between acceptance and popularity as separate constructs. Consistent with previous research, acceptance and popularity were moderately and positively associated and had distinctive associations with social behavior, pragmatic communication skills and personality. Regarding popularity, our study replicated the significance of social behavior for attaining popularity in the classroom (e.g., Cillessen, 2011; LaFontana & Cillessen, 2002); prosocial and antisocial behavior were positively associated with popularity, but withdrawn behavior was negatively associated. The study shows that in addition to the behavioral profile, extraversion and pragmatic skills are positive indicators of
Antisocial behavior negatively predicted acceptance. Neither prosocial or withdrawn behavior, nor pragmatics, extraversion, or agreeableness predicted acceptance. This suggests that simply low levels of antisocial is the core prerequisite for peer acceptance. An explanation for the dominant role of antisocial behavior is that acceptance might be a measure of the classroom norm. Everyone is accepted, as long as one does not deviate too much or shows high levels of antisocial behavior. When predicting acceptance from extraversion, agreeableness, or pragmatic skills without controlling for social behavior and popularity, different results might have emerged considering our correlations and findings from other studies that did not control for popularity and behavior in predicting acceptance (see Anderson et al., 2001; Mervielde & De Fruyt, 2000; Place & Becker, 1991; Van der Linden et al., 2010).

An alternative explanation is that popularity combined with low levels of antisocial behavior is a good predictor of acceptance. This implies that visibility in the classroom is required for acceptance, although it seems to originate from being prosocial-popular and not antisocial-popular (Rodkin, Farmer, Pearl, & Van Acker, 2000). Prosocial-popular youth are considered cool, as well as helpful and, importantly, nonaggressive and liked. In contrast, antisocial-popular adolescents are cool, but also antisocial and aggressive.

**Moderating Effects**

Specific combinations of social behaviors with communicative skills and personality contributed to popularity. Prosocial behavior magnified popularity when combined with high levels of extraversion and/or higher pragmatic skills. At low levels of extraversion and/or pragmatic skills, prosocial behavior did not contribute to popularity. Antisocial behavior contributed to popularity regardless of level of extraversion, although higher levels of extraversion strengthened the association between antisocial behavior and popularity. Extraversion and pragmatic skills were important for popularity (e.g., Nærland, 2011; Van der Linden et al., 2010), regardless of the behavioral profile. However, extraversion and pragmatic skills do seem necessary in order for prosocial behavior to contribute to popularity. In other research, prosociality moderated the association between antisocial behaviour and popularity, where prosociality strengthened the effect of
antisocial behavior on popularity (Dijkstra et al., 2009). This likely points to antisocial-popular youth. Our findings imply that prosocial-popular youth need an elaborate display of behaviors to attain their popularity. Our study was not specifically designed to differentiate types of popular youth, so these conclusions must be interpreted with caution. However, understanding the social characteristics of subtypes of popular youth is important to understand adjustment outcomes and for preventive actions.

**Limitations and Future Directions**

This study had some limitations. We used new questionnaires for social behavior and pragmatic skills that have not been used in earlier studies. Future studies should replicate the present findings, at the same time recognizing that peer status must be considered in context. We considered the classroom, but status in the classroom does not imply acceptance or popularity in other contexts. Peer status is dynamic across contexts; one question is whether context can moderate the association between peer status and its behavioral, personality, and communicative predictors.

In this study, the perspective of classroom peers as evaluators of peer behavior and personality traits was logical given that we focused on early adolescent acceptance and popularity in school (Coie, Dodge, & Kupersmidt, 1990). After all, classrooms are a primary context in which social competence is expressed. A direction for future research is to examine the associations of this study longitudinally. Longitudinal data can shed more light on the causal relationship among peer status and personality and communicative skills, while controlling for social behavior.

This study took a step toward a further understanding of peer status in the early adolescent classroom. The results also have practical implications. Knowing what factors predict socially competent functioning is useful for intervention programs targeting the peer relations of unpopular or unaccepted students, and of clinical populations attending mainstream education. Pragmatic skills and behavior skills can be trained and changed, but this can be done more effectively when taking early adolescents’ personality into account, as suggested by the results of this study.
Predicting Acceptance and Popularity in Early Adolescence as a Function of Hearing Status, Gender, and Educational Setting*

Abstract

This study examined associations of communicative skills, social behavior, and personality with acceptance and popularity as a function of hearing status, gender, and educational setting. Participants were 87 deaf and 672 hearing early adolescents of 52 6th-grade classrooms in mainstream and special education. Acceptance varied as a function of hearing status by gender; popularity varied as a function of hearing status and educational setting. Deaf boys in mainstream education were less accepted and popular than their hearing classmates and than deaf peers in special education. Deaf girls in mainstream education were also less popular but not less accepted. Communicative skills varied as a function of hearing status, whereas social behavior varied as a function of educational setting. Deaf mainstreamed children showed less developed pragmatic and strategic communicative skills (monitoring, improvisation, initiating/maintaining) than their hearing classmates, but more social adjustment than deaf peers in special education (more prosocial behavior, less antisocial or withdrawn behavior, and more agreeableness). For acceptance, deaf girls in mainstream education compensated the lack of improvisation with higher levels of prosocial behavior, agreeableness, monitoring, and pragmatic skills, and lower levels of antisocial behavior than deaf boys. Monitoring and pragmatic skills negatively affected a deaf mainstream boy’s acceptance. In special education, gender differences in prosocial behavior explained deaf boys’ lower acceptance. Popularity was explained by pragmatic skills and improvisation as a function of hearing status. Voter population difference and different social behavior norms are considered as an explanation for popularity differences a function of educational setting.
Introduction

Acceptance and popularity are two dimensions of peer relations of which the members of a peer group are well aware and that affect their social life. Acceptance refers to social preference and likability and making friends (Gest et al., 2001; Nangle et al., 2003). Popularity represents visibility and social impact and it is related to achieving goals in social situations, if necessary through manipulation (Cillessen, 2011). It has been documented that there are noteworthy differences in peer relationships of boys and girls (Rose, Click, & Smith, 2011). Hearing status also plays an important role. Peer relations require interaction but communication barriers are always in the forefront for deaf children (Brown & Foster, 1991), especially when they attend mainstream education. Being physically present in a mainstream classroom with hearing peers does not guarantee social integration (e.g., Cambra, 2002; Minnett, Clark, & Wilson, 1994; Musselman et al., 1996; Stinson et al., 1996). Also, the social and communicative patterns of many deaf children seem relatively restricted (Suárez, 2000). This affects the social experiences that are of vital importance for children’s well-being (Parke et al., 1997; Shaffer, 2005) and overall development (for a review, see Hartup, 1992). Bearing in mind the increasing importance of peer relationships in (early) adolescence, and the increasing number of deaf children attending mainstream education (Stinson & Antia, 1999), the current study focused on predictors of acceptance and popularity as a function of hearing status, gender and educational setting.

Findings concerning the role of hearing status in popularity are as yet lacking, but hearing status plays an important role in attaining acceptance. Reviews reveal on the one hand that deaf children in mainstream schools are neglected or rejected, feel lonely, and have fewer friends, but on the other hand that deaf children are accepted (Kluwin et al., 2002; Stinson & Antia, 1999; Stinson & Kluwin, 2011). A recent overview mentioned that younger deaf children may be socially accepted by peers, but deaf adolescents have more difficulty feeling emotionally secure and making hearing friends, with social isolation as a possible consequence (Antia et al., 2010). Positive results, however, were obtained by Cambra (2002), who found a high degree of acceptance of 10 to 20 year-old deaf students by hearing peers, although mostly by female and younger hearing students. Coyner (1994) found that deaf girls were rated as more socially desirable
than deaf boys, thus pointing to the role of gender.

Educational setting seems to play a role in being accepted as well. Generally, deaf children in segregated classrooms report more positive social experiences than mainstreamed deaf peers (Brands et al., 2000; Stinson & Kluwin, 2011), and they appear to be more accepted. In co-enrollment settings, in which deaf and hearing children are co-taught by a general and special education teacher, mixed results occur. Bowen (2008) found that deaf co-enrolled Grade 3/4 children were equally accepted as their hearing classmates. However, this study included only five deaf children in one classroom. In a study by Wauters and Knoors (2007), deaf Grade 1-5 children were equally accepted as well, although only 4 out of 18 children in their study were in a co-enrollment program. In contrast, nine deaf children in a classroom with clear characteristics of a co-enrollment class were more often neglected than their hearing classmates (Nunes et al., 2001), even though there was no difference in peer ratings of play preferences.

Thus, studies on the peer acceptance of deaf children have shown mixed results. Additional research is needed, first because conclusions are generally drawn from a small number of studies with small samples of deaf children (Antia et al., 2010). Second, and more importantly, not much is known about what explains the variation in acceptance as a function of hearing status. Additionally, findings concerning popularity as a function of hearing status are lacking. What are possible predictors of acceptance and popularity? And do these predictors vary as a function gender and educational setting?

Three main groups of predictors of acceptance and popularity have been distinguished in the literature. A first, logical, predictor might be communicative skills. Strategic and pragmatic communicative skills are important for peer interaction (Nærland, 2011; Place & Becker, 1991; Schirmer, 2001). Both skills represent aspects of language use in interactions that are important regardless of the type of language or mode of communication. Strategic skills involve metacognitive strategies for managing effective interaction (Verhoeven & Vermeer, 1992). Pragmatic skills refer to the appropriateness of communicative acts in social contexts (Place & Becker, 1991). In hearing children, the role of pragmatic skills in attaining acceptance and popularity has been demonstrated (Nærland, 2011; Place & Becker, 1991).
Previous studies have not extensively studied strategic communicative skills in either hearing or deaf children. In general, deaf children’s interactions are relatively short, less frequent (Antia et al., 2011), and contain more nonlinguistic interaction than those of hearing children (Stinson & Antia, 1999). In an experimental study, Jeanes and colleagues (Jeanes et al., 2000) found that deaf children had difficulty with pragmatic behaviors in face-to-face dyadic interactions. However, the pragmatic skills studied contained aspects of strategic competence. Deaf children’s pragmatic communication is less clear than that of hearing children, but is comparable to younger normal hearing peers (Lederberg & Everhart, 2000; Nicholas & Geers, 2003).

Second, social behaviors contribute to acceptance and popularity. *Prosocial* behaviors are socially desirable behaviors such as helping and caring. *Antisocial* behaviors are for example overt and relational aggression (e.g., Warden et al., 2003). *Withdrawn* behavior refers to isolating oneself from a group (e.g., Rubin et al., 2002). In a hearing population, prosocial behavior positively predicts acceptance, whereas antisocial and withdrawn behaviors negative predict acceptance. Prosocial and antisocial behaviors positively predict popularity, whereas withdrawn behavior decreases popularity (Cillessen, 2011; LaFontana & Cillessen, 2002). Deaf children show less age-appropriate behavior than hearing peers (Kluwin et al., 2002), and less age-appropriate or socially adjusted behavior in separate classes than mainstreamed deaf children do (Musselman et al., 1996; Stinson & Kluwin, 2011). Wauters and Knoors (2007) found less prosocial and more withdrawn behavior in deaf mainstream and co-enrolled children than in their hearing classmates. In contrast, McCain and Antia (2005) found no difference in the social behaviors of deaf co-enrolled children and their hearing classmates. Thus, different behavioral profiles have been found for hearing and deaf children with typically a more problematic profile for deaf children.

Third, personality predicts acceptance and popularity. Starting from the Big Five, most studies focus on extraversion and agreeableness as predictors of positive social interaction (e.g., Jensen-Campbell et al., 2002; Van der Linden et al., 2010). In a hearing population, a stronger role of extraversion than agreeableness in predicting acceptance or popularity is usually found (e.g., Mervielde & De Fruyt, 2000). Research addressing variations in personality as a function of hearing status is scarce. Coren and Harland (1995) found that students with a mild hearing loss
did not differ in either extraversion or agreeableness from their hearing peers.

In conclusion, predictors of acceptance and popularity have been studied in normal hearing populations, but not deaf populations. The majority of these studies did not consider the three predictors (communicative skills, social behaviors, personality) in one design. Further, the possible role of hearing status, educational context, and gender, and their interactions, has been underexposed. Therefore, the current study addressed the following questions: (1) Are there differences in acceptance, popularity, communicative skills (pragmatic and strategic), social behaviors (prosocial, antisocial, withdrawn), and personality (extraversion, agreeableness) as a function of hearing status (normal hearing vs. deaf), gender, and educational setting (mainstream and special education)? (2) Do hearing status, gender and educational setting moderate the prediction of acceptance and popularity from communicative skills, social behaviors, and personality?

To answer Question 1, hearing children in mainstream education were compared with deaf children. Deaf mainstreamed children were compared with their hearing classmates, and with deaf peers in special classrooms. These three contrasts reveal which group differences can be ascribed to educational setting or hearing status. In these contrasts, gender was also taken into account. Based on previous studies, we expected deaf children to be less accepted than hearing peers. We also expected them to be less popular. Popularity equals visibility in the classroom and requires above average interactions in the classroom. We also expected deaf children in special education to be more accepted and popular than mainstreamed deaf children, because deaf children in special settings generally report more positive experiences.

Regarding the predictors of acceptance and popularity, we expected deaf children to show less prosocial behavior, but more antisocial and withdrawn behavior than hearing peers. However, we expected the effects of prosocial and antisocial behavior to be mainly due to deaf children in special education, and not to mainstreamed deaf children. Regarding personality, no difference was expected for extraversion. In contrast, we expected to find deaf children as a group to be less agreeable than hearing peers, in line with our previous reasoning that deaf children in special settings would show more antisocial behavior than mainstreamed deaf children. For communicative skills, we expected deaf children
in general to be less competent in strategic and pragmatic skills than hearing children, and deaf children in special settings to be less competent than mainstreamed deaf children.

Question 2 addressed the prediction of acceptance and popularity, on the one hand, as a function of hearing status (i.e., hearing versus deaf classmates in mainstream education) and gender, and, on the other hand, as a function of educational setting (deaf mainstreamed children versus deaf peers in special classrooms) and gender. The question was exploratory and therefore no specific predictions were formulated.

Method

Participants and Procedure

Participants were 87 deaf and hard-of-hearing Grade 6 children and their 672 hearing classmates (see Table 3.1). In the remainder of this article, the deaf and hard-of-hearing children will be referred to as deaf children. Peer data (nominations and ratings) on our deaf children were obtained from their classmates, who were hearing classmates in the mainstream classrooms or deaf, hard-of-hearing, or hearing classmates in the special education classrooms. In the latter, only judgments by classmates capable of completing the questionnaires were used. We excluded 25 children with Autism Spectrum Disorder (ASD, 6 deaf; 19 hearing), and 32 hearing SLI children in the special education classrooms from the analyses, yielding an analysis sample of 759 of the 816 original participants.

Participants were enrolled in 52 classrooms of 45 elementary schools in the Netherlands. The majority of students were Caucasian (89%); students from minority ethnic groups were mainly Turkish or Moroccan (11%). In most cases, the deaf children in mainstream education were the only deaf child among, on average, 23 hearing classmates; two deaf children were in one mainstream classroom. The deaf children in special education had classmates who were also deaf and in some cases hearing with Autism Spectrum disorder or Specific Language Impairment. Average classroom size in special education was 11 students.

Data were obtained from children, parents, and teachers. Children themselves completed peer nominations and ratings in their classrooms. Parents and teachers completed questionnaires about communicative skills and
personality at home and returned them via mail. Teacher data on communicative skills were obtained for 639 children and on personality for 636 children; parent data on communicative skills were obtained for 524 children.

Table 3.1
Participants

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<th>HM</th>
<th>DM</th>
<th>DS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>12.06</td>
<td>12.03</td>
</tr>
<tr>
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<td>.70</td>
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<tr>
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<td>380</td>
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<td></td>
<td></td>
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<td>-</td>
<td>672</td>
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<tr>
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<td>50</td>
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<td>37</td>
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<td>22</td>
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<tr>
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<td>55</td>
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<td>6</td>
<td>7</td>
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<td>0</td>
<td>1</td>
</tr>
<tr>
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<td>2</td>
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<tr>
<td>Total</td>
<td>672</td>
<td>35</td>
<td>52</td>
<td>759</td>
</tr>
</tbody>
</table>

Note. HM = hearing, mainstream education; MD = deaf, mainstream education; DS = deaf, special education.

- Hard of hearing: 25-80 dB hearing loss in the better unaided ear; deaf > 80 dB hearing loss in the better unaided ear.
- 2 children with two CI’s, one child with BAHA, one child with both CI and hearing aid.
- 9 children with additional induction loop system.

The study was approved in advance by the school directors and teachers. All children were given permission slips to be signed by parents or guardians; 86% of all children were given permission to participate in the study. The peer nomination and rating questionnaires were administered under supervision of the principal investigator or trained research assistants in children’s classroom during regular lessons. Children who did not participate were asked to quietly work for
themselves at their desks. Teachers of the deaf children were asked in advance by the principal investigator whether the children in their classroom preferred to communicate via Sign Language of the Netherlands (SLN); a trained SLN-interpreter assisted these children with the questionnaires. Children were explained that their responses were confidential and encouraged to cover the answers when they were finished. Also, children’s desks were situated so that they could not see each other’s questionnaires.

Materials

Sociometric nomination. An unlimited choice procedure was used with classroom as the reference group. Four questions were used: liked most (“Who are the kids in your class you like the most?”), liked least (“Who are the kids in your class you like the least?”), most popular (“Who are the most popular kids in your class?”), and least popular (“Who are the least popular kids in your class?”). Children could name as many or as few same-sex and other-sex classmates as they wanted. For each question, the number of nominations received was counted and standardized to z-scores within classrooms to control for differences in classroom size.

A score for acceptance was computed by subtracting the standardized liked most and liked least choices received, and again standardized the resulting difference scores within classrooms. A score for popularity was computed by subtracting the standardized most popular and least popular choices received, and again standardizing the resulting scores.

Social behavior ratings. Peers rated each other’s social behavior on 15 items. The questionnaire from Wolters and colleagues (Wolters, Knoors, Cillessen, & Verhoeven, 2012a) was used. Prosocial behavior was measured with 6 items (e.g., “Helps other children when they have a problem”; Cronbach’s $\alpha = .92$), antisocial behavior with 7 items (e.g., “Hits, kicks, or pushes other children at school”; $\alpha = .94$), and withdrawn behavior with 2 items (e.g., “Prefers to work alone in the classroom over working with other children”; $\alpha = .70$). The withdrawn behavior subscale thus measured passive withdrawal, rather than isolation by the peer group (Rubin et al., 2002). All behaviors were rated on a 5-point scale (1 = never; 5 = almost always). For each child, the average rating received from peers was determined for each item. A score for each behavior was then computed as
the weighted mean of these averages for the items for each behavior. The weights in this computation were derived from a previous factor analysis of the items.

**Pragmatic skills.** Pragmatic skills refer to the appropriate use of language, or the appropriateness of communicative acts in social contexts (Place & Becker, 1991), adapting language use to the conversation partner and situation. Children’s pragmatic skills were rated by their parents using the 16-item rating scale of Wolters et al. (2012a). Each item was scored on a 4-point scale (0 = never; 3 = always.). The items in this scale measured four aspects of pragmatic skills: appropriate social initiation (5 items; e.g., “Asks people questions while already been given the answer”), scripted language (3 items; e.g., “Repeats what other people just said”), context (3 items; e.g., “The ability to communicate differs per situation”), and nonverbal communication (5 items; e.g., “Laughs at appropriate moments during conversation”). A parent-rated pragmatic skills score was computed as the weighted average of each child’s parent ratings across the 16 items (α = .82). The weights in this computation were derived from a previous factor analysis.

**Strategic skills.** Strategic communicative skills are reflected in compensating for breakdowns and enhancing effectiveness of communication through giving or asking feedback or topic switching, for example (Verhoeven & Vermeer, 1992). Strategic skills were assessed using 16 5-point items rated by teachers. This measure was adopted from previous studies by Verhoeven and Vermeer (1992; 2002). Each item had two pairs of statements (e.g., “Corrects own errors during conversation” vs. “Never corrects own errors”), representing a communication-improving and communication-harming pole. All items were recoded so that the communication-improving pole was rated as 5 and the harming pole as 1.

A factor analysis yielded three factors (not including six items that were removed): monitoring the conversation (4 items, α = .73; e.g., “Corrects own errors during conversation”), improvising (2 items, α = .60; e.g., “Never makes jokes during conversation”), and initiating/maintaining a conversation (4 items, α = .78; e.g., “Comes up with new subjects for a conversation easily”). Teacher scores for strategic skills were then computed as the weighted average of the items for each skill, using the weights from the factor analysis.

**Extraversion and agreeableness.** Teachers also completed an extraversion and agreeableness scale. There were six bipolar items for extraversion (e.g., “Likes
to compete – avoids competition”; $\alpha = .84$) and six items for agreeableness (e.g., “Get’s along with others – does not get along with others”; $\alpha = .88$) derived from Verhoeven and Vermeer (2002). The items were scored on a 5-point scale. Scores were recoded so that a higher score meant more extraversion or agreeableness. A weighed composite score for extraversion and agreeableness was used in the analyses.

Results

Question 1 was answered with planned contrasts testing differences on acceptance and popularity, social behavior, communicative skills, and personality as a function of hearing status, gender, and educational setting. Question 2 was addressed by correlations and regressions.

Levene’s test for homogeneity of variances was significant in 5 of 11 group comparisons ($p < .05$ for acceptance, antisocial behavior, withdrawn behavior, monitoring, and pragmatic skills). In these cases, p-values not assuming equal variances were reported. Antisocial behavior, withdrawn behavior, and monitoring had higher variance in special education than in mainstream education, pragmatic skills had lower variance in mainstream education than in the other groups, and acceptance had higher variance for boys than for girls.

Group Comparisons

Acceptance and popularity as a function of hearing status, gender, and educational setting. Table 3.2 presents the means for the main study variables. Deaf children, regardless of educational setting, scored significantly lower than hearing children on acceptance, $t(116) = -2.17, p < .05$, and popularity, $t(785) = -2.45, p < .05$. Boys scored significantly lower than girls on acceptance, $t(116) = -2.23, p < .05$, but not on popularity. A significant group by gender interaction was found for acceptance, $t(116) = -2.04, p < .05$. Post-hoc comparisons revealed no gender differences for acceptance among hearing children, but significantly lower acceptance for boys than girls among deaf children, $t(83) = -2.32, p < .05$.

Planned contrasts showed that mainstreamed deaf children scored significantly lower than their hearing classmates on popularity, $t(783) = -3.28, p < .01$, but not on acceptance. There were no gender differences and there were no group by gender interactions. Deaf children in mainstream education scored
significantly lower than deaf children in special education on popularity, \( t(783) = -2.20, p < .05 \), but not on acceptance. Deaf boys scored significantly lower than deaf girls on acceptance, \( t(44) = -2.17, p < .05 \).

**Communicative skills, social behavior, and personality as a function of hearing status, gender, and educational setting.** Table 3.2 presents the means for the study variables. Planned contrasts revealed that deaf children scored significantly lower than hearing children on prosocial behavior, \( t(785) = -3.38, p < .05 \), agreeableness, \( t(630) = -2.05, p < .05 \), monitoring a conversation, \( t(95) = -2.15, p < .05 \), and pragmatics, \( t(59) = -6.83, p < .01 \). They scored higher on antisocial behavior, \( t(93) = 4.17, p < .01 \), and withdrawn behavior \( t(94) = 6.96, p < .01 \). No differences were found for extraversion, improvising during conversation, and initiating/maintaining a conversation.

Boys scored significantly lower than girls on prosocial behavior, \( t(785) = -6.80, p < .01 \), agreeableness, \( t(630) = -2.68, p < .01 \), and monitoring a conversation, \( t(95) = -2.47, p < .05 \). Boys scored higher than girls on antisocial behavior, \( t(93) = 4.23, p < .001 \), extraversion, \( t(630) = 2.69, p < .01 \), and improvising during conversation, \( t(633) = 3.30, p < .01 \). No gender differences were found for initiating/maintaining a conversation, and pragmatic skills. A significant interaction of group by gender was found for withdrawn behavior, \( t(94) = 2.59, p < .05 \). Deaf boys showed higher than deaf girls, \( t(84) = 2.20, p < .05 \).

In the analysis of hearing status, mainstreamed deaf children scored significantly lower than their hearing classmates on monitoring a conversation, \( t(28) = -2.17, p < .05 \), and pragmatic skills, \( t(26) = -4.08, p < .001 \). They tended to score lower on improvising during a conversation, \( t(631) = -1.75, p = .08 \), and initiating/maintaining a conversation, \( t(631) = -1.82, p = .07 \). There were no group differences for prosocial, antisocial, and withdrawn behavior, extraversion, and agreeableness. Additionally, in mainstream education, boys scored lower than girls on prosocial behavior, \( t(783) = -5.26, p < .001 \), agreeableness, \( t(628) = -2.24, p < .05 \), and monitoring a conversation, \( t(28) = -2.06, p < .05 \), and higher on antisocial behavior, \( t(36) = 2.99, p < .01 \). There were no other gender differences or group by gender interactions.
<table>
<thead>
<tr>
<th>Measure</th>
<th>Hearing Mainstream Education</th>
<th>Deaf Mainstream Education</th>
<th>Deaf Special Education</th>
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<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Boy</td>
<td>Girl</td>
</tr>
<tr>
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<td>.04</td>
<td>.95</td>
<td>.03</td>
</tr>
<tr>
<td>Popularity ( a_{123} )</td>
<td>.05</td>
<td>.96</td>
<td>.07</td>
</tr>
<tr>
<td>Prosocial ( a_{13}, b_{123} )</td>
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<td>.96</td>
<td>-.29</td>
</tr>
<tr>
<td>Antisocial ( a_{13}, b_{123} )</td>
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<td>.91</td>
<td>.18</td>
</tr>
<tr>
<td>Withdrawn ( a_{13}, b_{13}, c_1 )</td>
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<td>.81</td>
<td>-.24</td>
</tr>
<tr>
<td>Extraversion ( b_1 )</td>
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<td>.98</td>
<td>.18</td>
</tr>
<tr>
<td>Agreeableness ( a_{1}, b_{12} )</td>
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<td>1.00</td>
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<td>.94</td>
<td>-.05</td>
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<td>Improvisation ( a_{2} ), ( b_{13} )</td>
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<td>.15</td>
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</table>

**Note.** Significance is \( p < .05 \), unless specified \( \dagger \), then \( p < .10 \).

a = group difference, b = gender difference, and c = group x gender interaction.

1 = hearing mainstream versus deaf, 2 = hearing mainstream versus deaf mainstream, and 3 = deaf mainstream versus deaf special.
Deaf children in mainstream education showed significantly less antisocial behavior, \( t(69) = -5.45, p < .001 \), and withdrawn behavior, \( t(73) = -5.061, p < .001 \), than deaf children in special classrooms. Deaf mainstreamed children scored significantly higher on prosocial behavior \( t(783) = 3.31, p = .001 \). There were no group differences for extraversion, agreeableness, or the strategic communication variables. Deaf boys showed less prosocial behavior, \( t(783) = -3.36, p = .001 \), but more antisocial behavior, \( t(69) = 1.91, p = .06 \), withdrawn behavior, \( t(73) = 1.88, p = .06 \), and improvising during a conversation, \( t(631) = 1.82, p = .06 \), than deaf girls. A significant group by gender effect on pragmatic skills, \( t(49) = 2.01, p < .05 \), revealed that deaf boys in special education scored significantly lower on pragmatic skills than their deaf female classmates, \( t(24) = -2.32, p < .05 \). No gender difference appeared for deaf children in mainstream education.

**Predicting Acceptance and Popularity**

**Correlation analyses.** The correlations between the main study variables are presented in Table 3.3. Acceptance and popularity correlated positively but moderately with each other. Prosocial behavior correlated negatively with antisocial behavior and withdrawn behavior. The latter two were weakly positively correlated. Both acceptance and popularity correlated positively with prosocial behavior and negatively with withdrawal. Their correlations with antisocial behavior were opposite: negative for acceptance, and positive for popularity. Popularity correlated positively with extraversion, agreeableness, and pragmatic and strategic skills. The strongest association was between popularity and extraversion. Acceptance was also correlated with extraversion, agreeableness, monitoring, and pragmatics, but not with improvisation and initiating. Acceptance correlated most strongly with agreeableness.

Prosocial and antisocial behavior both correlated positively with extraversion and initiating/maintaining a conversation. Their correlations with agreeableness and pragmatic skills were opposite: positive for prosocial behavior and negative for antisocial behavior. Prosocial behavior correlated positively with monitoring a conversation but antisocial behavior did not. Antisocial behavior correlated positively with improvisation, but prosocial behavior did not. Withdrawn behavior correlated negatively with extraversion, agreeableness, and pragmatic and strategic skills.
Extraversion and agreeableness correlated positively with each other and with all three strategic skills (monitoring, improvising, initiating/maintaining). Agreeableness correlated positively with pragmatic skills, but extraversion did not. The three strategic communication skills correlated positively with each other. Monitoring and initiating/maintaining a conversation correlated positively with pragmatic skills, but improvising did not.

Table 3.3
Correlations Between Main Study Variables

<table>
<thead>
<tr>
<th></th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
<th>9.</th>
<th>10.</th>
<th>11.</th>
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<tbody>
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<td>-.31*</td>
<td>.13*</td>
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<td>.20*</td>
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<td>.49*</td>
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<td></td>
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<td>-.16*</td>
<td>-.18*</td>
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<td>8. Monitoring</td>
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<td>.14*</td>
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<td></td>
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<td>9. Improvisation</td>
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</table>

* p < .05.

Regression analyses. Four hierarchical regressions were run to examine the effects of social behavior, communicative skills, and personality on acceptance and popularity, as a function of hearing status, gender, and educational setting. Two group contrast variables were created: one for the contrast between hearing and deaf mainstream children (contrasting hearing status), and one for the contrast between deaf children in mainstream education and deaf children in special education (contrasting educational setting). For both contrasts, two regressions were run; one predicting acceptance and one predicting popularity. In Step 1 of all four regressions, group and gender were entered. In Step 2, the main effects of prosocial, antisocial, and withdrawn behavior were entered. In Step 3, the main effects of communication (pragmatic skills, and the strategic skills monitoring, improvisation, initiating) and the two personality traits (extraversion, agreeableness) were entered. Step 4 tested whether group and gender moderated
the effects of social behavior on the dependent variable (acceptance or popularity) by entering the six interactions of group and gender with prosocial, antisocial, and withdrawn behavior. Step 5 tested whether group and gender moderated the effects of communicative skills and personality on the dependent variables by entering the 12 interactions of group and gender with monitoring, improvising, initiating, pragmatic skills, extraversion, and agreeableness. Constructs that were not already centered were centered prior to analysis and the computation of interaction terms. Table 3.4 gives the results for the hierarchical regression analyses.

**Predicting acceptance as a function of hearing status.** The overall model explained 47% of the variance in acceptance, \( F(29, 346) = 10.55, p < .001 \). In Step 2, prosocial behavior positively predicted acceptance and antisocial and withdrawn behavior negatively predicted acceptance (\( \beta \)'s = .26, -.35, and -.27, respectively, \( p \)'s < .001). Agreeableness and improvising also positively predicted acceptance in Step 3 (\( \beta \)'s = .11 and .10 respectively, \( p \)'s < .05). No other effects were found.

**Predicting popularity as a function of hearing status.** The overall model for the prediction of popularity was significant, \( F(29, 346) = 10.41, p < .001, R^2 = .46 \). Group predicted popularity, \( \beta = -.11, p < .05 \). Deaf mainstreamed children were less popular than their hearing classmates. In Step 2, prosocial and antisocial behavior positively predicted popularity (\( \beta \)'s = .33 and .39, respectively, \( p \)'s < .01). Withdrawn behavior negatively predicted popularity (\( \beta = -.48, p < .001 \)). Pragmatic skills, improvising, and extraversion positively predicted popularity (\( \beta \)'s = .12, .11, and .15, respectively, \( p \)'s < .05). No main effects of gender, the other two strategic skills, or agreeableness was found. One interaction effect emerged. Group moderated the association of antisocial behavior with popularity. Post-hoc probing (Hayes & Matthes, 2009) revealed that antisocial behavior positively predicted popularity in both deaf and hearing mainstreamed children, but this effect was stronger for deaf than hearing children (\( b \)'s = 1.07 and .30 respectively, both \( p \)'s < .001).
Table 3.4
Summary of Hierarchical Regression Analyses Predicting Acceptance and Popularity from Group, Gender, Social Behavior, Pragmatic Skills, Strategic skills, Extraversion, and Agreeableness

<table>
<thead>
<tr>
<th></th>
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<th>Educational Setting: Deaf Mainstream and Special Acceptance</th>
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<td>-.11</td>
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<td>-.19</td>
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</tr>
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<td>-.03</td>
<td>-.23</td>
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</tr>
<tr>
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<td>0.21</td>
</tr>
<tr>
<td>Gender x Agreeableness</td>
<td>-.12</td>
<td>-.06</td>
<td>.25</td>
<td>-.01</td>
</tr>
<tr>
<td>Total $R^2$</td>
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<td>.84*</td>
<td>.79*</td>
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<tr>
<td>Total adjusted $R^2$</td>
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<td>.42*</td>
<td>.62*</td>
<td>.48*</td>
</tr>
</tbody>
</table>

* $p < .05$. † $< .10$. 

Table 3.4: Summary of Hierarchical Regression Analyses Predicting Acceptance and Popularity from Group, Gender, Social Behavior, Pragmatic Skills, Strategic skills, Extraversion, and Agreeableness.
Predicting acceptance as a function of educational setting. The overall model explained 84% of the variance in acceptance, $F(29, 20) = 3.70, p < .01$ (adjusted $R^2 = .62$). There was a main effect of prosocial behavior ($\beta = .60, p < .001$). In addition, 6 interactions were significant in Step 6. Group moderated the associations of monitoring, improvising, initiating, and pragmatic skills with acceptance, and gender moderated the associations of monitoring and pragmatic skills with acceptance. Post-hoc probing showed that pragmatic skills and monitoring a conversation negatively predicted acceptance for deaf mainstreamed children ($b'$s -.66 and -.65, respectively, both $p'$s < .01), but not for deaf children in special education. Deaf girls’ acceptance was positively predicted by pragmatic skills and monitoring ($b = .56, p < .01$, and $b = .41, p < .05$, respectively), whereas it did not affect deaf boys’ acceptance. Improvising positively predicted acceptance for deaf mainstreamed children ($b = .67, p < .05$), but not for deaf children in special education. The opposite was found for initiating/maintaining a conversation; a positive predictive value for deaf children in special education ($b = .59, p < .05$), but not for deaf mainstreamed children.

Predicting popularity as a function of educational setting. The overall model for the prediction of popularity was significant, $F(29, 20) = 2.58, p < .05, R^2 = .79$ (adjusted $R^2 = .48$). Withdrawn behavior negatively predicted popularity ($\beta = -.42, p < .01$). In addition, the group by antisocial behavior and gender by withdrawn behavior interactions were significant. Post-hoc probing revealed that antisocial behavior positively predicted popularity for deaf children in mainstream education, $b = .91, p < .05$, but not for deaf children in special education, $b = -.20$, ns. Withdrawn behavior negatively predicted popularity for deaf girls, $b = -.68, p < .01$, but not for deaf boys, $b = -.07$, ns. No other effects were found.

Discussion
This study addressed two research questions. The first focused on the role of hearing status, gender, and educational setting in attaining acceptance and popularity in the peer group, as well as on the role of predictors of acceptance and popularity, specifically communicative skills (pragmatic and strategic), social behavior (prosocial, antisocial, and withdrawn), and personality traits (extraversion and agreeableness). The second question addressed the predictive role of these skills, behaviors, and traits in predicting acceptance and popularity, as a function of
hearing status, gender, and educational setting. Participants were hearing Grade 6 children, and deaf Grade 6 children in special and mainstream education.

Acceptance, Popularity, and Predictors, as a Function of Hearing Status, Gender, and Educational Setting

Regarding the first research questions, results showed that deaf children, as a group, were less popular and less accepted than mainstreamed hearing peers. However, popularity varied as a function of hearing status and educational setting, whereas acceptance varied as a function of hearing status by gender. Specifically, mainstreamed deaf children were viewed by their hearing classmates as less popular than hearing peers, but they were also less popular than deaf peers in special education. Regarding acceptance, deaf boys were less accepted than deaf girls, whereas deaf girls were as accepted as hearing peers. Previous studies on acceptance have found mixed results, with deaf children being accepted in some, but not other studies (e.g., Stinson & Kluwin, 2011). A plausible explanation for this, besides small sample sizes (Antia et al., 2010), is whether gender was acknowledged. Only one study (Coyner, 1994) included gender in studying deaf children’s acceptance, and found similar results as our study. No study has considered popularity of deaf children, but it can be concluded that it is very important to acknowledge not only gender, but also educational setting in studying acceptance as well as popularity in deaf and hearing peers.

The question can be raised why differences in acceptance and popularity between hearing and deaf peers did not show the same pattern. The predictors of acceptance and popularity (communicative skills, social behavior, personality) may explain this. Understanding differences in these predictors as a function of hearing status, gender, and educational setting, as well as their predictive pattern, is important because both acceptance and popularity affect children’s social experiences, well-being (Parke et al., 1997; Shaffer, 2005), and development (Hartup, 1992).

In terms of communicative skills, hearing children were better at monitoring a conversation than deaf children, and possessed better pragmatic skills. In terms of social behavior, deaf children showed less socially desired behavior than hearing peers; they were less prosocial, but more antisocial and withdrawn. They were also less agreeable. Girls were more prosocial and agreeable, but less extraverted and
antisocial than boys. Girls were better at monitoring a conversation while boys improvised more during conversations.

It is interesting that this pattern is highly dependent on hearing status and educational setting. First, as expected, communicative skills varied as a function of hearing status: Deaf mainstreamed children showed less developed pragmatic and strategic skills than their hearing classmates. Contrary to our expectations, these differences did not appear as a function of educational setting. A possible explanation is the reference group of the teacher. Mainstream teachers used normal hearing children as the reference group for the assessment of strategic skills. The special education teachers may have used other deaf classmates or (hearing) classmates with ASD or SLI as a reference group. This might have led them to overestimate the strategic communicative skills of deaf students in special education.

Second, in line with previous studies, social behavior varied as a function of educational setting, with deaf mainstreamed children showing more socially adjusted behavior than deaf peers in special education. Social behavior did not vary as a function of hearing status. Previous studies have found mixed hearing status differences in prosocial and antisocial behavior. In line with a study that explicitly discriminated withdrawn behavior (Wauters & Knoors, 2007), we expected deaf mainstream children to show more withdrawn behavior than hearing classmates. This was not the case. A conceptual and situational explanation seems credible. Conceptually, in the study by Wauters and Knoors (2007), the withdrawal items on which deaf children scored higher than hearing peers represented active isolation (being bullied) and social ineffectiveness (seeking help), as indicated by the original questionnaire (see Abecassis, Hartup, Haselager, Scholte, & van Lieshout, 2002), and thus not passive withdrawn behavior, as our items did. The situational explanation regards age differences in children’s perceptions of withdrawn behavior and familiarity. Around 11 years of age, withdrawn behavior is increasingly considered deviant (Younger, Gentile & Burgess, 1993). In the Netherlands, some classes are combination classes that include children from more than one grade. This was the case in 18% of the mainstream classrooms in our study. The younger children in these classrooms might not have considered withdrawn behavior as negative behavior. Hearing children also may be less likely to think of their deaf classmate's behavior as
noticeable different, because they have often known this student for a number of consecutive years in their school.

Predicting Acceptance and Popularity

For the second research question, results showed that in mainstream education, regardless of hearing status, acceptance was positively predicted by prosocial behavior, agreeableness and improvising, and negatively by antisocial and withdrawn behavior. Within the group of deaf children, prosocial behavior positively affected acceptance, regardless of educational setting. Additionally, the prediction of acceptance by communicative skills was moderated by educational setting (for pragmatic skills and the three strategic skills monitoring, improvising, and initiating) and gender (for pragmatic skills and monitoring). For deaf mainstreamed boys, more pragmatic skills and monitoring resulted in less peer acceptance, but, for deaf girls, regardless of educational setting, more pragmatic skills and monitoring resulted in more peer acceptance. Also, higher levels of improvising lead to higher levels of acceptance for deaf mainstream children, whereas higher levels of initiating lead to higher levels of acceptance for deaf children in special education.

Thus, for deaf children in special education, the gender and educational setting differences in prosocial behavior accounted for deaf boys being less accepted than deaf girls. This can possibly be explained by considering acceptance as the classroom norm. In special education, there is a higher prevalence of antisocial behavior. The presence of high levels of prosocial behavior is a positive deviation from the norm.

The picture of deaf boys as less accepted is more complex in mainstream education. It seems that deaf mainstreamed girls compensate their lower levels of improvising with more prosocial behavior and agreeableness and less antisocial behavior than boys. Additionally, monitoring the conversation and pragmatic skills increased acceptance for mainstreamed deaf girls but not for deaf boys. Why are monitoring and pragmatic skills effective in attaining acceptance for deaf girls, but not deaf boys? Peer rated acceptance is gender related; children tend to interact mainly with and form dyadic relationships with same-sex peers (Rose & Smith, 2009). So, girls’ acceptance is mainly determined by female nominations, whereas boys’ acceptance is determined mainly by male nominations. Also, children are
more accepting of gender-typed behavior than gender atypical behavior (Rose et al., 2011). Our results showed that for girls, pragmatic skills and monitoring are a very effective tool in attaining acceptance. This is in line with girls being more communication and relation oriented, and with conversations being very common in girls’ interactions (Rose & Smith, 2009). Relational aggression is an effective tool for attaining popularity, but popular girls are not always liked (e.g., LaFontana & Cillessen, 2002; Rose et al., 2011). Neither are children who are different, even if it is just by being deaf. Positive communicative skills thus increase likeability for deaf girls in mainstream education. In a study by Murphy and Faulkner (2006) on communication effectiveness, accepted girls used more effective verbal communication tools (i.e., rule reminders, directives, disagreements, descriptors) in an interactive task than unaccepted girls. For boys, no differences were found. This is in accordance with our finding that for (deaf) boys, communicative skills such as monitoring and pragmatic skills are an ineffective tool to attain acceptance. For them, competition is an important aspect of peer relationships (Rose & Smith, 2009), and communicative skills may be considered unnecessary or even inappropriate in early adolescent boys’ relationships. For them, athletic ability and communicative skills related to competition such as initiating and improvisation seem more important (Rose et al., 2011). Clearly, for deaf mainstreamed children, gender is an important factor in the associations of social behavior and communicative skills with acceptance.

In mainstream education, popularity was positively predicted by prosocial behavior, antisocial behavior, extraversion, improvising, and pragmatic skills, but negatively by hearing status and withdrawn behavior. The effect of antisocial behavior on popularity was stronger for deaf than hearing mainstream children. Within the group of deaf children, popularity was negatively predicted by withdrawn behavior for deaf girls, and positively by antisocial behavior for deaf mainstream children.

Deaf mainstream children were less popular than hearing classmates. It appeared that being deaf in a hearing classroom is sufficient for a decrease in popularity. It also seems that the difference in communicative skills, specifically improvising and pragmatic skills, between deaf and hearing peers in mainstream education, contributes to deaf peers lower popularity. This is underscored by the fact that these communicative skills increase popularity on top of noticeable social
behavior (prosocial, antisocial, withdrawn).

Deaf mainstreamed children were also less popular than deaf peers in special education. As a function of educational setting, withdrawn behavior negatively predicted popularity, mainly for girls. Deaf children in special education, however, showed higher levels of withdrawn behavior than mainstreamed peers. It is reasonable to expect a different behavior norm in special settings though, in which withdrawn behavior is more accepted than in mainstream education. Also, the nominators are a special population (deaf children, children with SLI or ASD), in contrast to a normal hearing population, in which being deaf is a greater deviance from the surrounding population.

In conclusion, prosocial behavior positively affected acceptance, and withdrawn behavior negatively affected popularity, regardless of hearing status, gender, and educational setting. There were no other predictors with a straightforward predictive pattern; for these, hearing status, gender, and educational setting come into play. The importance of considering all three predictors in one design when studying acceptance and popularity seems evident. Especially in predicting acceptance from communicative skills for deaf children, gender and educational setting play a significant role.

Limitations

This study also had some limitations. First, it should be considered that the peers who provided acceptance and popularity nominations differ between the mainstream and special education classrooms. In mainstream classrooms, they are normal hearing peers. In special education, they are a relatively small group of deaf peers and hearing peers with SLI or ASD. Second, there are very likely qualitative differences between the deaf children in special education and deaf mainstreamed children, such as oral skills. Deaf children in mainstream education are expected to possess better oral skills than deaf peers in special education, because, on average, their hearing loss is less than in special education. However, the classmates in mainstream and special education are expected to vary according these differences as well. Third, when considering hearing status in the regressions, the group of hearing children was larger than the group of deaf children and therefore may have accounted for more variance in the dependent variables. When considering educational setting, the ratio of the number of
participants to the number of predictors was not ideal; there are relatively many predictors and a relatively small sample.

Clinical Implications

Is it more important to strive for deaf children to be accepted or popular? Both represent ways of being successful or competent in relationships with peers and affect social experiences. However, both have different long-term outcomes. Children who are accepted generally portend desirable adjustment outcomes and positive social opportunities such as making friends (Schwartz & Gorman, 2011), and low levels of risk taking (Mayeux et al., 2011). Popular as well as unpopular children are at risk, though. Unpopular children are considered misfits or isolates (LaFontana & Cillessen, 2002), and are often immature, passive, or withdrawn (Lease, Kennedy & Axelrod, 2002), which may result in internalizing problems, low self-esteem, or depression (Hymel, Bowker, & Woody, 1993). Popular children are at risk for substance use, risky sexual behavior, and academic disengagement (Mayeux et al., 2011; Schwartz & Gorman, 2011). Thus, it seems that high acceptance and average popularity indicate the most positive long-term outcomes.

This study showed that is not possible to create one simple straightforward intervention plan to increase deaf children’s acceptance and popularity by improving trainable social behavior and communicative skills. In becoming more popular, communicative skills are fruitful in mainstream education, but not by definition when one is deaf. Especially educational setting and gender are important factors in attaining acceptance; there are gender-specific communicative skills that facilitate acceptance. Also, different behavior profiles affect acceptance and popularity as a function of hearing status or educational setting.

LaFontana and Cillessen (2002) found that frequency of interaction is a strong discriminator between popular and unpopular peers. Thus, to increase popularity of deaf mainstream children, and through that positively affect their social experiences, it is important to increase the quantity of interaction between deaf and hearing peers. Increased interaction likely also affects acceptance because communication is a necessary prerequisite for friendships. Our study indicates the importance of also training gender related qualitative communicative aspects of peer relationships. This will very likely also enhance socially desired
behavior (prosocial behavior and the absence of antisocial and withdrawn behavior).

Previous intervention studies reported success in increasing interactions among deaf peers, but not between deaf and hearing peers (Antia et al., 2011). Familiarity with deaf peers seemed very important in these studies. Effective communicative skills likely increase social interaction and thus familiarity. Future intervention studies should build on findings of our study by considering which skills are important for deaf children to be accepted and more popular. Because improved communicative skills alone are insufficient to overcome the communication barrier between deaf and hearing peers, and to create familiarity, long-term intensive interventions may be more successful than short-term interventions. One long-term intervention that provides intensive contact between deaf and hearing peers is co-enrollment. In the present study we did not include a co-enrollment setting, because in the Netherlands, only one co-enrollment school exists so far (Wauters & Knoors, 2007). Although co-enrollment programs show promising results (Stinson & Kluwin, 2011) in preliminary studies, future studies of their effectiveness are necessary.
Impact of Peer and Teacher Relations on Deaf Early Adolescents’ Well-being: Comparisons Before and After a Major School Transition*

Abstract
This study focused on the peer and teacher relationships of deaf children and the effects of these relationships on well-being in school during the transition from elementary school to junior high school. Differences due to gender and educational context were also considered. In Study 1, the predictive effects of peer acceptance, popularity, and teacher support on well-being were examined cross-sectionally for early adolescents in Grade 6 (N = 759, 87 deaf) and Grade 7 (N = 840, 104 deaf). Study 2 examined the effects of the same predictors on well-being in school longitudinally during the transition to secondary school on a subsample of participants from Study 1 (N = 98). Well-being in school was stable during the transition for mainstreamed hearing children, but not for deaf children. In mainstream schools, school well-being increased for deaf boys but decreased for deaf girls. In contrast, in special education schools, school well-being increased for deaf girls but decreased for deaf boys. Peer acceptance, popularity, and relationship with the teacher had different effects on well-being for deaf early adolescents in mainstream schools compared to the effects on those in special education schools. Moderation by gender was also found.
Introduction

Social experiences have a crucial impact on a person’s well-being in the short and long term (e.g., Parke et al., 1997; Parker & Asher, 1987; Roff & Wirth, 1984, in Östberg, 2003; Rubin et al., 2006; Shaffer, 2005). In early adolescence, schools - in particular the classrooms - are important contexts for social experiences with peers who spend increasing amounts of time together (Rubin et al., 2006), especially after the transition to junior high school. Membership of a classroom is forced and not based on personal preferences. The peer relationships of a class are embedded in a group with defined boundaries (Rubin et al., 2006), and participation in this group is vital for integration (Östberg, 2003).

In addition to peer relationships, the teacher-student relationship has been found to affect well-being in the classroom (e.g., Hamre & Pianta, 2001). For deaf children, their communication skills have major implications for the quantity and quality of interactions with hearing peers and teachers (Antia et al., 2011) and, thus, for their relationships and social experiences (Stinson & Kluwin, 2011; Stinson & Liu, 1999). Deaf children increasingly attend mainstream schools (Antia et al., 2010; Stinson & Antia, 1999), and often, this child is the only deaf one in a classroom of hearing peers, because deafness is a relatively low-incidence disability (Stinson & Antia, 1999). Deaf peers in special education schools can also encounter hearing teachers and hearing classmates who have other disabilities, such as Specific Language Impairment (SLI).

Hearing loss affects social experiences, which threatens deaf early adolescents’ well-being in school, along with their academic progress (Hamre & Pianta, 2001). Bearing in mind gender differences in peer relations (Rose & Smith, 2009), the current study focused on social predictors of well-being in the classroom as a function of hearing status, educational setting and gender, both before and after the transition to junior high.

Deaf Early Adolescents’ Well-being

The term well-being is sometimes used interchangeably with happiness and represents a “positive affect, absence of negative affect, and a cognitive judgment of satisfaction with life as a whole” (Natvig, Albrektsen, & Qvarnstrøm, 2003, p. 167). Constructs related to well-being are mental health and health-related quality of life (QoL). A few studies have focused on well-being as a function of hearing
status. Moeller (2007) concluded in a review that deaf children’s well-being (health-related QoL) was poorer than that of hearing peers. The same was found for 85 Australian 7 to 8 year-old deaf children, whose QoL was judged by their parents (Wake et al., 2004a; Wake et al., 2004b). In a Dutch study, 238 4- to 18-year-old deaf students had higher parent-reported emotional problems than their hearing peers (Van Eldik, Treffers, Veerman, & Verhulst, 2004). In the same study, the deaf 12- to 18-year-old children also reported more anxiety and depression than the 4- to 11-year-old ones. Interestingly, deaf 11- to 18-year-old Dutch children reported more mental health problems than hearing youth (Van Eldik, 2005).

Support for differences in self-reported well-being as a function of educational setting has also been found. In a German study with 6- to 11-year-old deaf children, the children in mainstream schools reported higher well-being than those in segregated special education schools (Keilman et al., 2007). Interestingly, the older deaf mainstream children in this study reported less well-being than the younger deaf children. This is supported by the finding that deaf (early) adolescents probably experience more problems with feeling secure and making friends than younger deaf children (Antia et al., 2010). Similar results have been found in studies where deaf 11- to 18-year-old children in segregated special settings self-reported more mental health problems than did deaf mainstream peers in the Netherlands (Van Eldik, 2005), and deaf youth in special schools for the hard of hearing in Sweden (Mejstad, Heiling, & Svedin, 2009).

Gender effects on well-being seem apparent for hearing children, with girls being at higher risk for depression than boys (e.g., Hirsch & Rapkin, 1987). These studies point to the role of same-gender relational aspects, specifically social connectedness among girls, which can be a protective - but also a risk - factor for adolescent girls (Nolen-Hoeksema & Girgus, 1994). Girls are more communication and socially oriented than boys, for whom competition is important (Rose & Smith, 2009). This orientation is said to make girls more vulnerable to the social challenges of adolescence. Other studies, however, suggest an overall increase in depression with age for both boys and girls, with differences by gender appearing later in adolescence (Reddy et al., 2003). Thus far, few studies have investigated gender differences in deaf children’s well-being. In one study, Swedish deaf 11- to 18-year-old boys had more mental health problems than deaf girls (Mejstad et al.,
2009). In contrast, Van Eldik and colleagues found no gender difference (Van Eldik, 2005; Van Eldik et al., 2004).

A potential final and important factor for children’s well-being is the transition from elementary school to junior high school. Children move to an unfamiliar school at a time when they are also dealing with adolescent developmental issues, in particular pubertal changes and the search for identity (Reddy et al., 2003). The transition from elementary school to junior high is also marked by shifts from one primary teacher to multiple teachers and, often, larger classrooms. Increases in depression during the school transition have been found for hearing early adolescents (Hirsch & Rapkin, 1987; Reddy et al., 2003), though no transition-related studies have focused on deaf peers.

In summary, although previous cross-sectional studies on well-being in the Deaf population differ in the operationalization of well-being, sample size, age group, informants, and country, they consistently suggest less favorable well-being status for deaf children and adolescents than for hearing youths. Deaf children in special education schools seem to have lower levels of well-being or QoL. Gender differences are inconclusive. Finally, these studies have not focused on the school as a relational context for child and adolescent well-being. Differences in well-being between deaf children and hearing children may be explained by the fact that children with disabilities do not experience the relational context of school in the same way as hearing children do (Murray & Greenberg, 2001). Considering the gaps in the literature, there is a need for a longitudinal study on school well-being and its predictors among youth as a function of hearing status, educational setting, and gender.

**Well-being and Classroom Relationships**

In studying predictors of well-being during early adolescence, it is important to first realize that in early adolescence (ages 10 to 14), the nature of personal relationships changes. Relations become more important, deep, and dyadic in nature, and increase the sense of well-being (Bukowski et al., 1993). For early adolescents, the classroom is a very important context in which they spend a large part of their daily life (Rubin et al., 2006), and is a critical context for feelings of well-being. This is supported by the finding that high levels of stress in school reduce well-being (Natvig et al., 2003), as well as the consistent impact of school
connectedness on emotional health (Resnick et al., 1997). In a study on social relations in more than 500 classes from Grades 3 to 7, Östberg (2003) found that the more accepted a student is in the classroom, the less common is depression (i.e., being worried, miserable, or distressed). This effect appeared regardless of gender, number of friends, grade, type of school, and class size. Adolescence is a period in which children want to fit in, and not be different, for example due to their hearing loss.

The importance of relationships in the classroom for early adolescents’ well-being seems apparent. Deaf children increasingly attend mainstream schools (Antia et al., 2010; Stinson & Antia, 1999) where they share classrooms with hearing peers and hearing teachers. Deaf children in special settings may also encounter this situation because many teachers of the deaf are hearing enabled. Moreover, hard-of-hearing children are sometimes taught in a mixed-ability group (Knoors & Hermans, 2010), where they share classrooms with hearing children with Autism Spectrum Disorders (ASD) or SLI. In addition, relatively little is known about communication between deaf peers. Thus, generally, for deaf children, this means that their well-being in school will be affected by their relationships in the classroom with hearing peers and teachers. This places high demands on their communication skills, as is the case too when it comes to communication among deaf children, who vary widely in use and proficiency of spoken and sign languages.

Deaf children’s spoken language and communication skills, such as pragmatics, are often less well developed compared to the skills in hearing peers (Antia et al., 2011; Stinson & Antia, 1999; Suárez, 2000; Wolters, Knoors, Cillessen, & Verhoeven, 2011), though the same has also been found for the use of pragmatics in signed communication (Jeanes et al., 2000). The communication barrier between deaf and hearing peers significantly affects social experiences. For example, during formal classroom instructions, communication access for deaf children might be relatively good, whereas in contrast in other day-to-day school situations such as lunch and classroom discussions, which are multi-talker situations, problems arise. Even children with a mild hearing loss may have extreme difficulties with rapid turn taking and interruptions that are normal features of interactions in groups (Stinson & Kluwin, 2011; Stinson & Liu, 1999). Hearing children indeed mention communication difficulties as a serious problem.
in forming friendships with deaf children (Brown & Foster, 1991; Hung & Paul, 2006; Nunes et al., 2001), and some think that the communication barrier can not be overcome (Nunes et al., 2001). Considering the above, differences in social relationships in the classroom as a function of hearing status can be expected.

**Classroom relationships: peers.** Two types of relationships seem to be important predictors of well-being in the classroom. The first is the relationship with the classmates. During the years of early adolescence, the structure of peer groups changes from a relatively unified whole to a structure with cliques and social groups (Rubin et al., 2006). One’s position in this hierarchy is directly related to well-being; but it is also indirectly related because social status is related to social support, number of friends, self-confidence, and buffers against stress (Bukowski et al., 1993; Östberg, 2003). Peer relations are relations among equals as compared to child-adult relationships which are unequal. In early adolescence, peer relationships are a person’s first true experience with dyadic relationships, acceptance and closeness. The importance of peer relations increases in early adolescence and profoundly contributes to well-being (Bukowski et al., 1996) as status concerns rise sharply during these years (Rubin et al., 2006).

Acceptance and popularity are unique dimensions of peer status (Cillessen, 2011). Both are typically measured with peer nominations or ratings. Acceptance is a measure for likability and social preference and thus reflects dyadic relationships in the class (e.g., Gest et al., 2001). Popularity reflects the vision of a group toward an individual and is, thus, a reputation or measure of visibility and social impact (e.g., Cillessen & Marks, 2011).

A few reviews considering deaf children’s peer acceptance have been conducted (Antia et al., 2010; Kluwin et al., 2002; Stinson & Antia, 1999; Stinson & Kluwin, 2011); the overall conclusion from these reviews is that in some studies mainstreamed deaf children were accepted by hearing peers, though other studies found them to be rejected and neglected. Thus, inconclusive results have been found regarding deaf children’s peer acceptance. Contradicting results by earlier studies were possibly obtained because not all studies considered gender and educational setting as potential moderators of acceptance. The importance of gender is supported by two studies that found a hearing status by gender interaction for acceptance in mainstream education: deaf boys were less accepted than deaf girls (Coyner, 1994, in Kluwin et al., 2002; Wolters et al., 2011).
Differences in acceptance as a function of educational setting appear, but findings are inconclusive because deaf students in segregated special education schools seem more accepted than deaf children in mainstream education (Brands et al., 2000; Stinson & Kluwin, 2011), although thus is not so in all studies (Wolters et al., 2011). Findings concerning popularity of deaf students have generally been lacking. In one study, though, mainstream deaf Grade 6 children were less popular than their hearing classmates and their deaf peers in special education schools (Wolters et al., 2011).

Some studies have addressed the stability of acceptance and popularity in hearing children. One review showed that popularity is more stable than acceptance, that acceptance is more stable for boys, and that popularity is more stable for girls (Mayeux et al., 2011). A meta-analysis showed effect of age and time on stability of acceptance, with higher stability for older than younger children, and lower stability over longer a longer period of time (Jiang & Cillessen, 2005). Wauters and Knoors (2007) found acceptance in 18 first to fifth-grade deaf children to be relatively stable over a period of a year. Specific findings concerning school transitions are not available.

Thus, deaf children seem less accepted and popular than hearing peers, although there is support for a relevant role of gender in this context. Deaf children in special segregated settings have generally been found to be more accepted and popular than mainstreamed deaf peers. The effects of school transition on the acceptance and popularity of deaf children are unknown.

**Classroom relationships: teachers.** The second type of relationship predictive of well-being in the classroom is, potentially, the teacher-student relationship. The relationship a student has with the teacher is an adult-child relationship and creates unique experiences for early adolescents. It can have a healthy emotional dimension, can open communication and instructional support, which is comparable with a caregiver-child attachment and can affect a child’s emotional, behavioral, and mental health (Murray & Pianta, 2007; Natvig et al., 2003; Roeser, Eccles, & Sameroff, 2000). There is even support for the relationship with the teacher in kindergarten affecting academic and behavioral outcomes through eighth grade (Hamre & Pianta, 2001). Moreover, Reddy et al. (2003) found that an increase in the quality of the teacher-student relation for boys and girls from Grades 6 to 8 corresponded with decreases in levels of depression.
The relationship with the teacher is potentially especially important for the well-being of students with disabilities (i.e., emotional- or learning disability, mild mental retardation) (Murray & Greenberg, 2001; Murray & Pianta, 2007). For students in special education, Murray and Pianta (2007) state, there is a heightened risk for mental health problems such as depression, which stresses the importance of a supportive teacher. This is of great concern because students with disabilities have been found to have a greater dissatisfaction with their teacher relationship than students without disabilities (Murray & Greenberg, 2001). This has also been found for deaf children in segregated special and co-enrollment settings, in comparison to hearing children (Knoors & Hermans, 2010). Co-enrollment refers to “classrooms that include both deaf and hearing students, ideally in equal numbers, and a curriculum taught in both sign language and the vernacular” (Stinson & Kluwin, 2011, p.49).

Reddy and colleagues (2003) concluded that previous studies reported no consistent gender differences in the importance of the relationship a pupil has with the teacher. In a hearing population sample, they found, that Grade 6 girls experienced a better relationship with the teacher than did boys. In two studies, the quality of the relationship with the teacher decreased after a school transition (Midgley & Edelin, 1998; Reddy et al., 2003). However, when extra attention is given to the teacher-student relationship, fewer adjustment problems occur during a school transition (Midgley & Edelin, 1998).

The teacher-student relationship is thus a potentially important relationship in the classroom for the well-being of early adolescents, both with and without hearing loss, with lower levels of satisfaction being observed in this relationship for children in special education schools. This is also supported by the finding that the quality of the relationship with the teacher tends to decline after school transition. The role of pupils’ gender remains unclear in this regard.

In summary, questions thus rise about how deaf children’s classroom peer and teacher relationships are associated with well-being in school, and what the role of school transition is. Thus, the research questions were (a) How are deaf early adolescents’ classroom peer and teacher relationships associated with well-being in school, and how are these effects further qualified by gender and educational context during school transition; (b) What are the differences in both well-being in school and its predictors (acceptance, popularity, and relationship
with the teacher) as a function of time (before and after school transition), hearing status, educational setting, and gender?

**Methodology**

To address the research questions, two studies were conducted, one in Grade 6 and one in Grade 7. Grade 6 was the final grade of elementary school, and Grade 7 the first grade of junior high school. Grade 6 children often spent several years as classmates, whereas Grade 7 children were unfamiliar peers at the start of the school year. Children with a hearing loss in special education schools in the Netherlands are typically educated in two different segregated settings. Those with profound losses are in schools for the deaf, whereas those with severe losses and better speech perception are in schools for hard-of-hearing children. In our study, special education schools thus refer to segregated schools for either the deaf or hard of hearing. In the special education schools for the hard of hearing, children with a hearing loss are often educated together with SLI children, some of whom also display autistic characteristics. Most teachers are trained as teachers of the deaf, and some as teachers for special education schools. The latter category is most frequently found in schools for hard-of-hearing children. With reference to primary and secondary education, children go through six grades of elementary school (Grades 1-6, ages 6-12) and then, in line with their academic abilities, to one high school that contains all subsequent grades, typically for ages 12-18. Grade 7 thus corresponds with the first grade of junior high in the American system, and at the start of Grade 7, classmates are unfamiliar with each other.

Study 1 aimed to identify predictors of well-being in school in both grades, addressing the effects of peer (acceptance, popularity) and teacher relationships on well-being in school in a normative sample of early adolescents. The moderating effects of hearing status, gender, and educational setting were also tested. It was expected that acceptance, popularity, and relationship with the teacher affect well-being in Grades 6 and 7. The moderating roles of hearing status, educational setting, and gender were explored without specific predictions for them. Study 1 revealed the predictors that should be focused on in the second study.

In Study 2, comparisons of well-being in school and its predictors (acceptance, popularity, and relationship with the teacher) before and after school
transition were conducted as a function of time (Grade 6 to Grade 7, thus during school transition), hearing status (deaf or hearing), educational setting (mainstream or special), and gender. The independent variables in Study 1 (acceptance, popularity, and relationship with the teacher) became dependent variables in the repeated measures ANOVA in Study 2. Participants were a subset of the participants in Study 1, namely, hearing and deaf early adolescents who participated both before and after school transition. We expected deaf mainstream children to score lower on well-being than their hearing classmates; and deaf children in special education schools to score lower than deaf mainstreamed peers. It was also expected that deaf mainstream children were less popular than both their hearing classmates and than deaf peers in special education schools. Regarding acceptance, an earlier study (Coyner, 1994) showed that gender effects seem important. Finally, we expected hearing children to experience a more positive relationship with the teacher than deaf mainstream children and deaf mainstream children to have a more positive teacher-student relationship than deaf peers in special education schools. No expected longitudinal or gender effects were formulated.

Study 1

Method

Sample. Participants were 759 Grade 6 (672 hearing, 87 deaf or hard of hearing) and 840 Grade 7 (736 hearing, 104 deaf or hard of hearing) children (see Table 4.1). In the remainder of the study, deaf and hard-of-hearing children will be referred to as deaf children. In mainstream education, six deaf participants in Grade 6 and 4 in Grade 7 had additional disabilities (i.e., either dyslexia, ADHD, dyscalculia, hemihypertrophy, mild motor disability, Treacher Collins Syndrome, Spasm). In the special education schools, eight deaf children in Grades 6 and 7 had an additional disability (i.e., dyslexia, language learning problem, ADHD, epilepsy, Treacher Collins Syndrome). Forty-nine out of the 672 hearing participants in mainstream education Grade 6 and 85 out of 736 in Grade 7 had additional disabilities (i.e., dyslexia, ADHD, attention deficit disorder, visual impairment, dyscalculia, nonverbal learning disorder, and cleft palate).

Deaf children in Grade 6 in mainstream education shared classrooms with 23 hearing classmates on average, and with the exception of two deaf children,
were the only deaf child in their classroom. In Grade 7, the average classroom size in mainstream education was 21, and in five cases, there were two deaf children in one classroom.

Table 4.1

Participants in Study 1

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Grade 6</th>
<th>Grade 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>12.00</td>
<td>13.18</td>
</tr>
<tr>
<td>SD</td>
<td>.68</td>
<td>.50</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boy</td>
<td>332</td>
<td>379</td>
</tr>
<tr>
<td>Girl</td>
<td>340</td>
<td>380</td>
</tr>
<tr>
<td>Hearing status(^a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hearing</td>
<td>672</td>
<td>736</td>
</tr>
<tr>
<td>Hard of hearing</td>
<td>24</td>
<td>31</td>
</tr>
<tr>
<td>Deaf</td>
<td>-</td>
<td>11</td>
</tr>
<tr>
<td>Hearing equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CI(^b)</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>Hearing aid(^c)</td>
<td></td>
<td>26</td>
</tr>
<tr>
<td>None</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Induction loop</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Unknown</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>672</td>
<td>759</td>
</tr>
</tbody>
</table>

\(^a\) Hard of hearing: 25-80 dB hearing loss in the better unaided ear; deaf > 80 dB hearing loss in the better unaided ear.

\(^b\) In Grades 6 and 7, two children with two CIs, one child with BAHA, one child with both CI and hearing aid.

\(^c\) In Grade 6: nine children with additional induction loop system; in Grade 7: 11 children.

Classroom size in special education schools was, on average, 11 and 7 children in Grades 6 and 7, respectively. In Grade 6, the participating children were enrolled in 17 classrooms in 11 special education schools and 35 classrooms in 34 mainstream education schools in the Netherlands. In Grade 7, the children were
enrolled in 16 classrooms in 10 special education schools, and 39 classrooms in 37 mainstream education schools. In both Grades 6 and 7, the majority of the children were Caucasian. Children from ethnic minority groups were mainly Turkish or Moroccan.

**Procedure.** For the deaf children, peer data were obtained from their hearing classmates in the mainstream classrooms, and from their deaf or hearing classmates with ASD or SLI in the segregated special education classrooms. Peer judgments of classmates with ASD and SLI who were able to complete the questionnaires themselves or with a little help from a trained research assistant, were used in the analyses. Classmates’ judgments concerning children with ASD and hearing SLI children were excluded from the analyses, resulting in an analysis sample of 759 out of the 816 original participants in Grade 6, and 840 out of 901 children in Grade 7.

All data were obtained during the final three months of the school year from children, and parents provided background information. When background information questionnaires were incomplete, teachers were asked to complete the questionnaires where possible. Approval for participation was received from the school directors, teachers, and parents consistent with the requirements of each school; 86% of all children in Grade 6 and 95% of all children in Grade 7 consented to participate in the study. The peer nomination and rating questionnaires were administered under the supervision of the principal investigator and/or a trained research assistant in the children’s classrooms during regular lessons. Children who did not participate were asked to work quietly at their own desk. Deaf children who required a sign language interpreter to assist them to complete the questionnaires, worked with the interpreter in small groups of one to three children. Children with ASD or SLI also received extra assistance with completing the questionnaires, to assure understanding of the questionnaires. Confidentiality of the questionnaires was explained. Additionally, children were asked to cover their answers when finishing a questionnaire. Children’s desks were situated so that they could not see each other’s answers.

**Instruments.** All the reported internal consistency data (Cronbach’s $\alpha$) represent information from the scales in the current study. Well-being and teacher-student relationship were measured with several rating scales. Children rated their feelings in school, happiness in school, and relationship with their
teacher on three 6-item scales with a 3-point response format (1 = true for me, 2 = sometimes/I don’t know, 3 = not true for me). The scales were taken from the Dutch School Questionnaire (Smiths & Vorst, 1990). The original scales had eight items each. Two long items were removed from each scale and some other items were simplified considering possible reading difficulties among some children (i.e., deaf children in special education schools). Six items measured feeling acknowledged in the classroom (e.g., “I am often bullied by classmates”; \( \alpha = .80 \) and \( .76 \) in Grades 6 and 7, respectively). Six items measured happiness in school (e.g., “I am happy to be in this school”; \( \alpha’ = .74 \) and \( .65 \), respectively). Together, these 12 items measured well-being in school (\( \alpha’ = .78 \) and \( .68 \), respectively). Six items measured relationship with the teacher (e.g., “My teacher is nicer to classmates than to me”; \( \alpha’ = .76 \) and \( .68 \), respectively). In Grade 6, one classroom teacher was required to be rated. In Grade 7, the children were in rotating classes (same classmates, different teachers), and they rated their experience with all teachers as a whole. Composite scores for well-being in school and relationship with the teacher were computed by averaging the items.

Acceptance and popularity were measured with sociometric nominations. An unlimited choice procedure was used with classroom as the reference group. Four questions were asked: (a) liked most (“Who are the kids in your class you like the most?”); (b) liked least (“Who are the kids in your class you like the least?”); (c) most popular (“Who are the most popular kids in your class?”); and (d) least popular (“Who are the least popular kids in your class?”). Children were allowed to name an unlimited number of same-sex and different-sex classmates. Deaf mainstream children were rated by hearing classmates. Deaf peers in special education schools were rated by deaf classmates or hearing classmates with ASD or SLI. In special education schools classmates’ names were written on top of the questionnaire, such that children could easily see which names they could choose from. The nature of the nominations in mainstream schools and special education schools is not different, because in both settings, classmates are the true judges of acceptance and popularity; classmates’ vision and opinion determines one’s social status, regardless of the school type one attends. Classmates’ sociometric judgments reflect their daily judgments of each other during a normal school day (Cillessen, 2009).

The number of nominations received was counted for each question and
standardized to z-scores within classrooms to control for differences in classroom size. A score for acceptance was computed by subtracting the standardized liked-most and liked-least choices received and subsequently standardizing the resulting difference scores to z-scores within classrooms (Coie et al., 1982). A score for popularity was computed by subtracting the standardized most popular and least popular choices received, and standardizing the resulting scores (e.g., Cillessen & Marks, 2011).

**Results**

**Correlational analyses.** Table 4.2 presents the correlations between the main study variables in Grades 6 and 7. In both grades, well-being correlated positively with acceptance and popularity, although the correlation between well-being and popularity was less strong in Grade 7. From all aspects of classroom social relations, well-being correlated the strongest with relationship with the teacher in both grades. Acceptance and popularity were significantly and positively related in both grades. Acceptance correlated positively, but popularity correlated negatively, with relationship with the teacher in both grades. These correlations were small for acceptance, and the correlation for popularity in Grade 7, but not Grade 6, reached significance.

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>-</td>
<td>.31*</td>
<td>.22*</td>
<td>.49*</td>
</tr>
<tr>
<td>2.</td>
<td>.31*</td>
<td>-</td>
<td>.41*</td>
<td>.09*</td>
</tr>
<tr>
<td>3.</td>
<td>.14*</td>
<td>.43*</td>
<td>-</td>
<td>-.06</td>
</tr>
<tr>
<td>4.</td>
<td>.51*</td>
<td>.09*</td>
<td>-.21*</td>
<td>-</td>
</tr>
</tbody>
</table>

* *p* < .05.

**Regression analyses.** Two hierarchical regressions were run for each grade, one focusing on the contrast between hearing and deaf mainstream children (contrasting hearing status), and one focusing on the contrast between deaf children in mainstream education and deaf children in special education schools (contrasting educational setting). In all four regressions, well-being in school was
the dependent variable. Step 1 of each regression included the group contrast and gender. Step 2 included the main effects of acceptance, popularity, and relationship with the teacher. Step 3 examined whether group and gender moderated the effects of acceptance, popularity and relationship with teacher by including the six interactions of group and gender with acceptance, popularity, and relationship with the teacher. Variables that were not already centered were centered prior to the computation of interaction terms and the analyses. Tables 4.3 and 4.4 present the results for these hierarchical regression analyses.

Table 4.3
Regression Results Predicting Well-Being in Grade 6 from Group, Gender, Acceptance, Popularity, and Relationship with the Teacher

<table>
<thead>
<tr>
<th></th>
<th>Group Contrast: Hearing Status</th>
<th>Group Contrast: Educational Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ΔR²</td>
<td>β</td>
</tr>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>.02*</td>
<td>-.11*</td>
</tr>
<tr>
<td>Gender</td>
<td>.06</td>
<td>.05</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acceptance</td>
<td>.33*</td>
<td>.19*</td>
</tr>
<tr>
<td>Popularity</td>
<td>.17*</td>
<td>.21</td>
</tr>
<tr>
<td>Teacher Support</td>
<td>.49*</td>
<td>.38*</td>
</tr>
<tr>
<td>Step 3</td>
<td>.01</td>
<td>.09</td>
</tr>
<tr>
<td>Group x Acceptance</td>
<td>-.04</td>
<td>-.35</td>
</tr>
<tr>
<td>Group x Popularity</td>
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<td>.32</td>
</tr>
<tr>
<td>Group x Teacher</td>
<td>.03</td>
<td>.28</td>
</tr>
<tr>
<td>Gender x Acceptance</td>
<td>.03</td>
<td>-.08</td>
</tr>
<tr>
<td>Gender x Popularity</td>
<td>.05</td>
<td>-.25</td>
</tr>
<tr>
<td>Gender x Teacher</td>
<td>.07</td>
<td>-.08</td>
</tr>
<tr>
<td>Total R²</td>
<td>.35*</td>
<td>.32*</td>
</tr>
<tr>
<td>Total adjusted R²</td>
<td>.34*</td>
<td>.19*</td>
</tr>
</tbody>
</table>

* p < .05.

**Predicting Grade 6 well-being moderated by hearing status.** The overall model for the prediction of well-being was significant, F(11, 686) = 33.61, p < .001, and R² = .35. In Step 1, the group predicted well-being, β = -.11, p < .01, but gender did not. Deaf mainstream children scored lower on well-being in school than
hearing classmates. In Step 2, acceptance, popularity, and relationship with the teacher predicted well-being (βs = .19, .17, and .49, respectively, ps < .001). No interaction effects were found.

**Predicting Grade 6 well-being moderated by educational setting.** The overall model explained 32% (adjusted $R^2 = .19$) of the variance in well-being, $F(11, 54) = 2.40$, $p < .05$. In Step 2, relationship with the teacher predicted well-being, $\beta = .38$, $p < .01$. No other main or interaction effects emerged.

Table 4.4
Regression Results Predicting Well-Being in Grade 7 from Group, Gender, Acceptance, Popularity, and Relationship with the Teacher

<table>
<thead>
<tr>
<th></th>
<th>Group Contrast: Hearing Status</th>
<th>Group Contrast: Educational Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\Delta R^2$</td>
<td>$\beta$</td>
</tr>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
</tr>
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<td>Group</td>
<td>.02*</td>
<td>-.07*</td>
</tr>
<tr>
<td>Gender</td>
<td>.10*</td>
<td>-.04</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
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<td>.18*</td>
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<tr>
<td>Acceptance</td>
<td></td>
<td>.16*</td>
</tr>
<tr>
<td>Popularity</td>
<td></td>
<td>.52*</td>
</tr>
<tr>
<td>Teacher Support</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td>.03*</td>
<td>.13*</td>
</tr>
<tr>
<td>Group x Acceptance</td>
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<td>-.08</td>
</tr>
<tr>
<td>Group x Popularity</td>
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<td>-.67*</td>
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<tr>
<td>Group x Teacher</td>
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<td></td>
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<td>Gender x Acceptance</td>
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<td>.24</td>
</tr>
<tr>
<td>Gender x Popularity</td>
<td>-.02</td>
<td>-.13</td>
</tr>
<tr>
<td>Gender x Teacher</td>
<td>-.04</td>
<td>-.24</td>
</tr>
<tr>
<td><strong>Total $R^2$</strong></td>
<td>.38*</td>
<td>.52*</td>
</tr>
<tr>
<td><strong>Total adjusted $R^2$</strong></td>
<td>.37*</td>
<td>.42*</td>
</tr>
</tbody>
</table>

* $p < .05$.

**Predicting Grade 7 well-being moderated by hearing status.** The overall model was significant, $F(11, 737) = 40.18$, $p < .001$, and $R^2 = .38$. Both group and gender predicted well-being in Step 1, $\beta = -.07$, $p = .05$, and $\beta = .10$, $p < .01$ respectively. Deaf children scored lower on well-being in school than hearing children, and mainstream boys in general scored lower than mainstream girls. In
Step 2, acceptance, popularity, and relationship with the teacher each predicted well-being ($\beta$s = .18, .16, and .52, respectively, $ps < .001$). Finally, three interaction effects emerged in Step 3. Group moderated the association of both acceptance and relationship with the teacher with well-being. Post-hoc probing revealed that acceptance positively predicted well-being for mainstream deaf children in Grade 7 ($b = .46$, $p < .01$), but not for hearing children ($b = .04$, $p = ns$). In contrast, relationship with the teacher positively predicted well-being for hearing mainstream children ($b = .54$, $p < .001$), but not for mainstreamed deaf children ($b = .08$, $p = ns$). Finally, gender moderated the association of acceptance with well-being in Grade 7. Acceptance positively predicted well-being in Grade 7 for girls ($b = .30$, $p < .001$), but not for boys ($b = .04$, $p = ns$).

**Predicting Grade 7 well-being moderated by educational setting.** The model explained 52% of the variance in well-being, $F(11, 52) = 5.08$, $p < .001$, with an adjusted $R^2$ of .42. In Step 2, acceptance and relationship with teacher predicted well-being ($\beta = .34$, $p < .05$, and $\beta = .34$, $p < .01$, respectively). In Step 3, group moderated the association of relationship with the teacher with well-being. Post-hoc probing revealed that the relationship with the teacher positively predicted well-being for deaf children in special education schools ($b = 1.64$, $p < .001$), but not for mainstreamed deaf children ($b = .39$, $p = ns$).

**Conclusion**

For deaf children, the relationship with the teacher is the sole predictor of well-being in Grade 6, regardless of educational setting. However, when deaf children are placed in mainstream education, with generally more classmates, peer relations become important as well. In mainstream Grade 6, regardless of hearing status, acceptance and popularity predicted well-being in school, but the relationship with the teacher was the strongest predictor. In addition, to start with, deaf mainstream children experienced lower well-being than hearing peers to start with.

After the transition to junior high school, deaf mainstream children still had lower levels of well-being than hearing classmates, and mainstream boys had lower levels than girls. An interesting pattern occurs regarding the importance of the relationship with the teacher for children’s well-being in school. For deaf children, regardless of educational setting, higher levels of acceptance are
associated with higher levels of well-being in school. Interestingly, although the relationship with the teacher predicted well-being for deaf children in special education schools, it did not predict well-being for deaf mainstreamed children. For deaf mainstreamed children, peer relations (i.e., acceptance and popularity) predicted well-being, where acceptance was more important for girls than boys. For hearing mainstream children, both popularity and relationship with the teacher predicted well-being in Grade 7, and acceptance was important for hearing girls as well.

Thus, for deaf children in mainstream education, acceptance, popularity and relationship with the teacher were predictors of well-being in Grade 6, and acceptance and popularity were predictors of well-being in Grade 7. For deaf children in special education schools, the relationship with the teacher predicted well-being in Grade 6, and both acceptance and relationship with the teacher were predictors of well-being in Grade 7. The next question is whether there are differences in well-being in school and its predictors (acceptance, popularity, and relationship with the teacher) before and after school transition as a function of time (Grade 6 to Grade 7), hearing status (deaf or hearing), educational setting (mainstream or special), and gender. The independent variables in Study 1 (acceptance, popularity, and relationship with the teacher), thus became dependent variables. Possible differences in these variables over time, in the course of school transition, due to hearing status or educational setting are of relevance in explaining differences in well-being. This was examined in Study 2.

**Study 2**

**Method.** A subgroup of the students participating in Study 1 was studied longitudinally. Participants comprised 39 hearing and 59 deaf children (see Table 4.5) who participated in both Grades 6 and 7. Six deaf children were transferred from special education schools in Grade 6 to mainstream education schools in Grade 7, and one deaf child was transferred from mainstream to special education school; data from these children were discarded from the analyses, as well as data on four children with ASD, resulting in 98 out of 109 original participants. The relatively small number of participants in the longitudinal study compared to the cross-sectional data is due to the Dutch school system: Grade 6 is the final class in
primary education, and Grade 7 the first class in secondary education. When graduating from Grade 6, children are transferred to different schools, according to their intellectual and emotional abilities. Whereas Grade 6 represents a classroom with familiar classmates, in Grade 7, the majority, if not all, of the classmates are unfamiliar peers at the beginning of the school year due to the school transition system in the Netherlands.

**Procedure and instruments.** Study 2 contains data from a subsample of participants in Study 1. The procedure and instruments (nomination and rating questionnaires) were the same as in Study 1.

Table 4.5
*Participants in Study 2*

<table>
<thead>
<tr>
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<th>HM</th>
<th>DM</th>
<th>DS</th>
<th>Total</th>
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</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD A/B</td>
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<td>.49 / .49</td>
<td>.71 / .69</td>
<td>.59 / .58</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Boy</td>
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<td>14</td>
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<tr>
<td>Girl</td>
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<td>17</td>
<td>14</td>
<td>53</td>
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<td><strong>Hearing status</strong></td>
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<td></td>
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<tr>
<td>Hearing</td>
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<td>-</td>
<td>-</td>
<td>39</td>
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<td>Hard of hearing</td>
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<tr>
<td>Deaf</td>
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<td>17</td>
<td>25</td>
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<td><strong>Hearing equipment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CI</td>
<td>-</td>
<td>7</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>Hearing aid</td>
<td>-</td>
<td>23</td>
<td>20</td>
<td>43</td>
</tr>
<tr>
<td>None</td>
<td>-</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Induction loop</td>
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<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>39</td>
<td>31</td>
<td>28</td>
<td>98</td>
</tr>
</tbody>
</table>

*Note.* HM = hearing, mainstream education; DM = deaf, mainstream education; DS = deaf, special education; A = Grade 6; B = Grade 7.

*a* Hard of hearing: 25-80 dB hearing loss in the better unaided ear; deaf > 80 dB hearing loss in the better unaided ear.

*b* 2 children with two CIs, one child with BAHA, one child with both CI and hearing aid.

*c* 8 mainstream deaf children with additional induction loop system.
Results

A repeated-measures ANOVA was conducted on early adolescent peer (acceptance, popularity) and teacher relations, and well-being in the classroom with Time as a within-participants factor (Grades 6 and 7), and hearing status (deaf or hearing) and gender as between-participants factors. The same analysis was repeated with educational setting, and not hearing status, as a between-participants factor. Levene’s test for homogeneity of variance was significant for relationship with the teacher in Grade 6 and well-being in Grade 7. For relationship with the teacher, mainstream boys showed more variance than mainstream girls and children in special education schools. For well-being, hearing mainstream girls showed less variance than other children in the study. In a repeated-measures analysis, the Levene test is not available, but because separate cross-sectional effects on these two variables were significant in either assuming or not assuming equal variances, standard repeated-measure analyses are reported.

Time, hearing status and gender. Figure 4.1 illustrates the mean values of the main study variables (well-being, acceptance, popularity, and relationship with the teacher) as a function of time by hearing status and by gender. There was a main effect of time on acceptance, \( F(1,66) = 5.05, p < .05, \eta_p^2 = .07 \), popularity, \( F(1,66) = 5.98, p < .05, \eta_p^2 = .08 \), and relationship with the teacher, \( F(1,66) = 9.35, p < .01, \eta_p^2 = .13 \). In mainstream education, both acceptance and popularity decreased from Grade 6 to Grade 7, but the relationship with the teacher improved. A main effect of hearing status appeared on popularity, \( F(1,66) = 6.99, p < .05, \eta_p^2 = .10 \), and a marginally main effect of hearing status was found on acceptance, \( F(1,66) = 3.32, p < .10, \eta_p^2 = .05 \). Deaf mainstreamed children were less popular and somewhat less accepted than hearing classmates. Two main effects of gender appeared. Mainstream boys were less accepted than mainstream girls, \( F(1,66) = 5.69, p < .05, \eta_p^2 = .08 \), and they experienced a less positive relationship with the teacher than girls, \( F(1,62) = 13.77, p < .001, \eta_p^2 = .18 \). No other main effects emerged.
Figure 4.1. Change in well-being (A), acceptance (B), popularity (C) and relationship with the teacher (D) from Grade 6 to Grade 7 as a function of hearing status by gender, where DMB = deaf mainstream boys, DMG = deaf mainstream girls, HMB = hearing mainstream boys, and HMG = hearing mainstream girls.

There was a significant two-way time-by-gender interaction on relationship with the teacher, $F(1,62) = 5.70, p < .05, \eta_p^2 = .08$. Post-hoc analysis revealed that mainstream girls’ relationship with the teacher remained stable from Grade 6 to Grade 7, $F(1,62) < 1$, whereas boys’ relationship increased, $F(1,62) = 13.25, p < .01, \eta_p^2 = .18$. A marginal two-way hearing status-by-gender interaction on well-being emerged, $F(1,62) = 3.55, p = .06, \eta_p^2 = .05$, and a significant three-way time-by-hearing status-by-gender interaction was observed, $F(1,62) = 4.94, p < .05, \eta_p^2 = .07$. Post-hoc comparisons showed that there was a significant time by gender effect for deaf mainstream children, $F(1,62) = 7.18, p < .01, \eta_p^2 = .10$, but not for hearing mainstream children, $F(1,62) < 1$. Deaf mainstream boys’ well-being in
school increased from Grade 6 to Grade 7, $F(1,62) = 4.11, p < .05, \eta^2_p = .06$, whereas deaf girls’ well-being somewhat decreased, $F(1,62) = 3.08, p = .08, \eta^2_p = .05$. As a result, hearing classmates tended to experience more well-being than deaf classmates in Grade 6, $F(1,62) = 3.63, p = .07, \eta^2_p = .05$, but not in Grade 7, $F(1,62) < 1$, although deaf boys experienced higher well-being than deaf girls, $F(1,62) = 4.13, p < .05, \eta^2_p = .06$. Finally, a marginal three-way interaction emerged on acceptance, $F(1,66) = 2.22, p = .07, \eta^2_p = .05$. Post-hoc comparisons revealed a significant time-by-gender effect for deaf mainstream children, $F(1,66) = 3.99, p < .05, \eta^2_p = .06$, but not for hearing children, $F(1,66) < 1$. Deaf mainstream boys’ acceptance remained stable from Grade 6 to Grade 7, $F(1,66) < 1$, whereas deaf girls’ acceptance significantly decreased, $F(1,66) = 8.20, p < .01, \eta^2_p = .11$. Considering the importance of same-gender relationships in early adolescence, mainstream deaf girls’ acceptance was comparable to hearing girls’ in Grade 6, $F(1,66) < 1$, but was significantly less in Grade 7, $F(1,66) = 8.30, p < .01, \eta^2_p = .10$. No other effects emerged.

**Time, educational setting and gender.** Figure 4.2 presents the changes in well-being, acceptance, popularity, and relationship with the teacher by educational setting and gender. Only a main effect of time on relationship with the teacher emerged, $F(1, 48) = 11.09, p < .01, \eta^2_p = .19$. The relationship with the teacher improved from Grade 6 to Grade 7. Two main effects of educational setting appeared. Deaf mainstream children were less popular than deaf peers in special education schools, $F(1, 55) = 8.21, p < .01, \eta^2_p = .13$, and they experienced a better relationship with the teacher, $F(1, 48) = 8.61, p < .01, \eta^2_p = .15$. No other main effects were found.

On acceptance, there was a significant time-by-gender interaction, $F(1,55) = 5.48, p < .01, \eta^2_p = .17$. Post-hoc analyses revealed that acceptance was stable from Grade 6 to Grade 7 for deaf boys, $F(1,55) = 2.20, p = \text{ns}$, but decreased for deaf girls, $F(1,55) = 7.70, p < .01, \eta^2_p = .12$. Although deaf boys were less accepted than deaf girls in Grade 6 ($F(1,55) = 5.49, p < .05, \eta^2_p = .09$), they were not so in Grade 7 ($F(1,55) = 1.63, p = \text{ns}$). Finally, there was a significant three-way interaction for well-being, $F(1,48) = 8.62, p < .01, \eta^2_p = .17$. Post-hoc contrasts showed a significant time-by-gender effect for deaf mainstream children, $F(1,48) = 7.18, p < .01, \eta^2_p = .13$, and a marginal time-by-gender effect for deaf peers in special education schools, $F(1,48) = 3.33, p = .07, \eta^2_p = .07$. Deaf mainstream boys’ well-
being in school increased from Grade 6 to 7, $F(1,48) = 4.11, p < .05, \eta^2_p = .08$, whereas deaf mainstream girls’ well-being somewhat decreased, $F(1,48) = 3.08, p = .09, \eta^2_p = .06$. For deaf children in special education schools, the change in well-being was in opposite directions, positive for girls and negative for boys, but not significant for either gender, $F(1,48) = 2.29$, for girls, and $F(1,48) = 1.11$, for boys, both $p$’s $>.05$.

![Figure 4.2](image.png)

*Figure 4.2. Change in well-being (A), acceptance (B), popularity (C) and relationship with the teacher (D) from Grade 6 to Grade 7 as a function of educational setting by gender, where DMB = deaf mainstream boys, DMG = deaf mainstream girls, DSB = deaf special education boys, and DSG = deaf special education girls.*
Conclusion

Well-being in school was stable during the transition for hearing mainstream children, but not for deaf children, whether in mainstream or in special education schools. Deaf mainstream children tended to experience less well-being in Grade 6 compared to hearing classmates, but equal levels in Grade 7. Gender played an important role here. Deaf mainstream boys’ well-being in school increased from Grade 6 to Grade 7, whereas deaf mainstream girls’ well-being decreased to some extent, resulting in deaf boys experiencing better well-being in school than the deaf girls in Grade 7. For deaf children in special education schools, the change in well-being was in opposite directions, positive for girls and negative for boys, but not significant for either gender. In both grades, in general equal levels of well-being were found for deaf mainstream children compared to deaf children in special education schools.

In the context of peer relations, mainstream boys were less accepted than mainstream girls and deaf children in mainstream education were somewhat less accepted than hearing classmates. Regardless of hearing status and gender, there was a decrease in acceptance during school transition in mainstream education. Interestingly, this could be ascribed to a strong decrease in deaf mainstream girls’ acceptance, because deaf mainstream boys’ acceptance remained stable from Grade 6 to Grade 7. Overall, for deaf children, regardless of educational setting, boys’ acceptance remained stable, but girls’ acceptance decreased. The strong decrease in acceptance of deaf mainstream girls is of importance in light of the role of same-gender relationships in early adolescence; mainstream deaf girls’ acceptance was comparable to hearing female classmates’ in Grade 6 but was significantly less in Grade 7. With reference to popularity, in mainstream education, there was a general decrease from Grade 6 to Grade 7. In both grades, deaf mainstreamed children were less popular than hearing classmates, and deaf peers in special education schools.

There was an increase in the relationship with the teacher from Grade 6 to Grade 7 for all children, regardless of hearing status and educational setting. In mainstream education, this was mainly due to an improvement in teacher support for boys, though mainstream boys experienced a less positive relationship with the teacher than girls. Concerning the teacher-student relationship for deaf peers in special education schools, despite the improvement, they still experienced a less
positive relationship with the teacher than deaf peers in mainstream education.

**Discussion**

The present research focused on well-being in deaf early adolescents before (Grade 6) and after (Grade 7) the school transition from elementary to junior high school in the Netherlands. Study 1 aimed to predict deaf early adolescents’ well-being in school from classroom peer relationships (acceptance and popularity) and the teacher relationship, and how these predictions were qualified by gender and educational setting, in a sample of 759 Grade 6 (672 hearing, 87 deaf) and 840 Grade 7 (736 hearing, 104 deaf) early adolescents. This study identified the social predictors of well-being in school. Study 2 examined differences in school well-being and its predictors as a function of time (school transition from Grade 6 to Grade 7), hearing status (deaf or hearing), educational setting (mainstream or special), and gender, in a subsample of the participants in Study 1 (39 hearing and 59 deaf children).

In mainstream education, the relationship with the teacher was the strongest predictor of well-being in school for hearing children in both grades, which is in line with the results of Natvig and colleagues (2003). Interestingly, the relationship with the teacher was the strongest predictor of well-being in school for deaf mainstream children in Grade 6 as well, but was not important in Grade 7. Peer acceptance and popularity predicted well-being in school, regardless of hearing status, in Grade 6. In Grade 7, popularity decreased but remained important for all mainstream children. Acceptance decreased somewhat in importance for hearing girls, and lost importance for hearing boys. However, it remained important for deaf girls, and also, but to a lesser extent, for deaf boys.

For deaf children in special education schools, a more positive relationship with the teacher increased well-being in school in both Grades 6 and 7. Before school transition, in a familiar school context (Grade 6), peer relations in the classroom did not predict well-being. Considering the smaller class size, it is very likely that friendships with peers outside the classroom, but within the school, are of greater importance. When new classmates came into play in Grade 7, however, being accepted increased well-being in school, but not popularity. An explanation for this may be the relatively smaller class size in special education schools. School classes with few children are less likely to have favorites (Östberg, 2003).
Regarding well-being before the school transition (Grade 6), mainstreamed deaf children seem at risk for lower levels of well-being in school than their hearing classmates. After the transition (Grade 7), when children encounter new classmates, deaf mainstream girls are at risk for decreases in well-being, but not boys, whose well-being increased. In contrast, in special education schools, the change in well-being was in opposite directions, positive for girls and negative for boys. A gender-by-school transition effect has been found earlier in a hearing population (Hirsch & Rapkin, 1987). Of interest is which of the relevant predictors of well-being in school (i.e., peer and teacher relations) account for these contrasting changes in well-being before and after school transition.

The transition to junior high school marks the beginning of adolescence, with pubertal changes, the search for oneself, and an increase in the importance of dyadic peer relationships playing important roles in well-being (Bukowski et al., 1993; Reddy et al., 2003). Grade 6 was a well-known context with familiar classmates, but in Grade 7, the majority, if not all, of the classmates are unfamiliar peers at the beginning of the school year. Thus, new peer relations, which affect well-being, have to be formed and a place in the class hierarchy has to be conquered. This can be an extra challenge for deaf adolescents. In light of the significance of social relationships for well-being, it is important to appreciate that peer relationships at this age are mainly of the same-gender type. The relationship with the teacher can serve as a protective factor and positively affect well-being during school transition (Midgley & Edelin, 1998).

For deaf mainstream boys, the main determinant of well-being after school transition was popularity, followed by acceptance. Before the transition, the relationship with the teacher was most important, followed by popularity and acceptance. Popularity being important for boys aligns with competition being an important aspect of friendships between boys (Rose & Smith, 2009). Deaf mainstreamed boys were as equally accepted as hearing boys after the transition. For both, popularity decreased after school transition. The difference in popularity between deaf and hearing boys after school transition might be perceived as less apparent and sensitive due to the decrease in popularity for all children. Additionally, a classroom hierarchy as expressed by popularity among boys, based on striving for competition in boy-boy friendships, takes longer to settle than for example the acceptance hierarchy, because popularity expresses the vision of an
entire group toward an individual and represents a reputation (e.g., Cillessen & Marks, 2011). These factors seem to contribute to the increase in well-being in school for deaf boys.

For deaf mainstream girls, well-being after the transition to junior high was predicted by peer acceptance and popularity, whereas the relationship with the teacher lost significance. All early adolescents face challenges in a new school context. Girls, however, generally experience more challenges than boys and have been found to be especially at risk for a decrease in well-being compared to boys (Nolen-Hoeksema & Larson, 1992, in Nolen-Hoeksema & Girgus, 1994). The gender-typical feature of relationships between girls is communication and social connectedness (Rose et al., 2011; Rose & Smith, 2009). A lack of social connectedness, however, is a high-risk factor for girls (Nolen-Hoeksema & Girgus, 1994). Although this risk is generally expected somewhat later in adolescence (Reddy et al., 2003), specifically deaf mainstream girls seem at higher risk for a decrease in well-being when entering adolescence. They experience communication difficulties and a communication barrier affecting interaction, and along with that, social connectedness with female peers (Antia et al., 2011; Stinson & Kluwin, 2011; Wolters et al., 2011). The decrease in deaf mainstream girls’ well-being is associated with their strong decrease in peer acceptance, which is mainly determined by female classmates. A reasonable explanation for the decline in acceptance is that before transition, deaf mainstream girls’ communication skills may have become accepted by their classmates whom they knew for several years (Wolters et al., 2011). However, in a new classroom after a school transition, it takes longer for hearing adolescent girls to establish acceptance of girls with communication problems, either because the latter have difficulty in multi-talker situations, or because they have fewer communication skills (Wolters et al., 2011).

Regarding special education schools, the relationship with the teacher was a strong predictor of well-being in school. Of concern is that deaf adolescents are dissatisfied with this relationship. The latter is consistent with our expectations and earlier studies on teacher relationships in deaf children (Knoors & Hermans, 2010) as well as children with disabilities in general (Murray & Greenberg, 2001). Interestingly, a less positive relationship with the teacher in special education schools does not go hand in hand with lower levels of well-being in school than mainstream deaf peers. Here, the school context by definition is expected to
positively affect well-being; relationships with deaf peers are essential for deaf children’s well-being (Musselman et al., 1996), and deaf peers in special education schools meet these deaf peers in school. Important to recognize is that deaf girls had the most to gain in the quality of the relationship with the teacher. Considering our data, for these girls, their strong improvement in their relationship with the teacher after transition was associated with the positive development of their well-being in school. For the deaf boys, however, our data seem inconclusive. The general increases in the perceived teacher-student relationship and acceptance levels were insufficient for them to report higher levels of well-being in Grade 7 than in Grade 6. Additional studies are necessary here.

Implications

This study showed the importance of three issues when considering deaf early adolescents’ well-being during school transition. The first main clinical implication is that well-being in school was stable during school transition for hearing mainstream children, but not for deaf children. Deaf mainstream boys’ well-being in school increased, whereas deaf mainstream girls’ decreased to some extent. For deaf children in special education schools, the change in well-being was in opposite directions, positive for girls and negative for boys. Second, it is important to realize that acceptance, popularity, and the relationship with the teacher have a dissimilar importance for early adolescents’ well-being in mainstream versus special education schools. In addition, an earlier study pointed to different behavioral antecedents of acceptance and popularity for deaf peers in elementary mainstream versus special education schools (Wolters et al., 2011). Both the behavioral antecedents and implications of acceptance and popularity point toward a different meaning of peer status among a relative small group of peers with disabilities or a larger group of hearing peers. Small groups are less likely to have favorites and cliques (Östberg, 2003) and there is less chance to form friendships, simply because there are fewer children available. Moreover, the teacher relationship is likely to play a different role and might affect the group hierarchy more than the situation in a large classroom; in a small setting, all interactions are likely to be noticed by all peers as well as the teacher, where the teacher-student relationship might be more personal in smaller, than in large groups. Finally, gender is an important factor when considering well-being in
school and its predictors.

For deaf early adolescents in special education schools, the relationship with the teacher is important regardless of grade. The lower level of satisfaction with the teacher-student relationship in special education schools is a concern. Factors that positively contribute to the teacher-student relationship may be related to the organization of the school, the classroom, teacher beliefs and behaviors, or teachers’ skills for developing positive relations (Murray & Pianta, 2007).

For deaf mainstreamed early adolescents, even though the relationship with the teacher did not directly predict their well-being in Grade 7, teachers can help to promote a general positive attitude toward deaf classmates (Nunes et al., 2001), especially because both deaf and hearing children prefer to interact with same hearing-status peers (Antia et al., 2011; Kluwin et al., 2002; Stinson & Kluwin, 2011). In that way, teachers continue to play the role did in Grade 6 as a buffer against stress. Hearing classmates’ negative attitude toward deaf peers is caused by unfamiliarity and a lack of meaningful contact between deaf and hearing peers (Brown & Foster, 1991; Hung & Paul, 2006; Stinson & Liu, 1999).

Same-gender peer relations are important for adolescents. Intervention programs for deaf early adolescents should include same-gender friendships. Factors that positively affect children’s acceptance and popularity have been studied in general (e.g., Jensen-Campbell et al., 2002; LaFontana & Cillessen, 2002; e.g., Nærland, 2011), and specifically for deaf children (Wolters et al., 2011). The latter study points to the importance of developing gender-related communication and behavior intervention strategies. However, future studies should investigate how these gender-related communication and behavioral skills can be trained effectively.

Limitations and Future Studies

This study had some limitations. First, we did not account for qualitative differences between deaf children such as differences in oral skills and hearing loss. For example, better developed spoken-language skills have been found to positively affect relationships with hearing peers because they ease communication with their hearing peers (Antia et al., 2010; Stinson et al., 1996). In the same line of reasoning, differences as a function of degree of hearing loss
might play a role. The question here is whether children with different degrees of hearing loss experience the same problems in school. For example, differences in well-being as a function of degree of hearing loss, where children with milder hearing losses scored lower on well-being (Wake et al., 2004a; Wake et al., 2004b), and self-confidence in mainstream schools (Keilman et al., 2007), compared with children with severe hearing loss, have been reported. Even deaf mainstream children with a mild hearing loss are thus at risk for poorer well-being (Keilman et al., 2007). A possible explanation is that hearing children and teachers might underestimate the significance of this hearing loss on daily events, because a mild hearing loss is not as noticeable as a severe hearing loss. This is of relevance because there is a new generation of deaf children with cochlear implants; the social problems of these children and children with a mild hearing loss have been underestimated by professionals (Moeller, 2007).

Second, the statistical analyses from Study 2 may possibly be affected by the relatively smaller sample size, being prone to a Type-2 error. In order to find a significant effect, group differences have to be large. Third, although we assessed well-being and social predictors during the final three months of the school year, the school transition effects should be ascribed to forming new peer and teacher relations in an unfamiliar school setting. In order to examine true school-transition effects, and be able to draw causal conclusions, future studies should lengthen the longitudinal study by one year, into Grade 8. In Grade 8, peers will be familiar with each other after sharing classrooms in Grade 7, representing a situation similar to that before school transition (Grade 6).

Finally, one might argue that the peer nominations for acceptance and popularity being provided by different peer groups, hearing peers in mainstream education and a relatively small group of deaf peers and peers with SLI or ASD in special education schools, is a limitation. However, in this context, classmates really are the only true and reliable judges of status (Coie et al., 1990), regardless of who they are, they are the significant peer group.

In conclusion, the current study emphasizes the importance of peer and teacher relations in the classroom for an early adolescents’ well-being. Notably, for hearing early adolescents well-being stable was during school transition, but this was not the case for deaf early adolescents. School transition during adolescence challenges all children, but this study stresses the need for supervising deaf
adolescents’ school transition, in which the role of gender and school setting should be acknowledged. A guiding role by (itinerant) teachers might be of importance here, which is supported by the finding that when extra attention is given to the teacher-student relationship, fewer adjustment problems occur during a school transition (Midgley & Edelin, 1998).
Social Adjustment of Deaf Early Adolescents at the Beginning of Secondary School: Peer Status and Social Behavior*

*An adapted version of this chapter has been resubmitted for publication
Abstract

Deaf youths often encounter communication and behavior difficulties, creating challenges in establishing positive peer relationships, in particular with unfamiliar peers after a school transition. This study examined the peer relationships and social behaviors of deaf adolescents in the first two years of secondary school. Peer nomination and ratings of peer status and behavior were collected with 647 adolescents in Grade 7 and 668 adolescents in Grade 8 in 45 classrooms of mainstream and special education schools. The analyses focused on 74 deaf adolescents present in both measurement waves. Deaf mainstreamed peers showed higher levels of withdrawn behavior and lower levels of acceptance and popularity than their hearing classmates. Deaf students were less adjusted behaviourally, more popular, but equally accepted in special education classrooms than in mainstreamed classrooms. Deaf adolescents’ popularity was more stable in mainstream than in special education classrooms but peer acceptance was equally stable. Deaf adolescents’ peer status was predicted by different behavior profiles in mainstream education than in special education. Deaf early adolescents’ behaviors in the beginning of secondary school strongly predicted their peer status. For deaf mainstream students, withdrawn behavior was the main negative predictor of peer status. For deaf students in special education, prosocial behavior was the main positive predictor of peer status.
**Introduction**

Adolescence is marked by an increased importance of peer relations and increased concerns about peer status (Rubin et al., 2006), affecting adolescents’ social lives and well-being (see, for a review, Hartup, 1992). Developmentally, interactions with peers are seen as necessary for the development of healthy relationships. However, deaf youths face communication challenges (Brown & Foster, 1991) that make it difficult for them to establish relationships with peers. This is a concern because deaf youth increasingly attends mainstream schools with hearing peers (Antia et al., 2010). But in special education also, similar communication problems emerge with both hearing and other deaf classmates. Limitations of opportunities to interact with peers negatively impact the learning of social behavior and subsequent peer group status (Antia & Dittillo, 1998). This is a problem especially for early adolescence when they begin secondary school, when adolescents face a new and largely unfamiliar peer group. Given the importance of peer relationships at this time, this paper focuses on the social adjustment and peer relationships of deaf early adolescents in the first two years of secondary school.

**Peer Status and Social Behavior**

Acceptance and popularity are two unique types of peer status representing social success in peer relationships (e.g., Mayeux et al., 2011). Acceptance refers to liking by peers or social preference (e.g., Coie et al., 1982). Popularity reflects visibility and being an influential member of the peer group (e.g., Cillessen, 2011). Acceptance and popularity are predicted by unique profiles of prosocial, antisocial, and withdrawn behaviors (Asher & McDonald, 2009). Prosocial behaviors are positive and intended to benefit a peer such as helping and caring. Aggressive and disruptive behaviors reflect antisocial behavior (e.g., Eisenberg et al., 1999; e.g., Warden et al., 2003). Passive withdrawn behavior means isolating oneself *from* the peer group (Rubin et al., 2002). Acceptance correlates positively with prosocial but negatively with antisocial behavior. Popularity correlates with a mixture of prosocial and antisocial behaviors. Withdrawn behavior is negatively associated with both acceptance and popularity (Asher & McDonald, 2009; LaFontana & Cillessen, 2002). Stability studies have shown that popularity is more stable than acceptance (Mayeux et al., 2011), and moderate to high stabilities for prosocial,

Peer Status and Social Behavior of Deaf Early adolescents

Little work has addressed the behavioral correlates of peer status for deaf early adolescents. Reviews have concluded that mainstreamed deaf children are accepted but also rejected and neglected by hearing peers (e.g., Antia et al., 2010; Stinson & Kluwin, 2011). Gender and educational setting also play a role. Coyner (1994) found that deaf boys were less accepted than deaf girls among 13- to 17-year-old adolescents. In other work, deaf boys were also less accepted than deaf girls in mainstream 6th-grade classrooms (Wolters et al., 2011). Though, deaf girls’ acceptance decreased over the subsequent school transition, diminishing the gender difference (Wolters, Knoors, Cillessen, & Verhoeven, 2012b). Regarding educational setting, deaf students in special education schools or co-enrollment settings were more accepted than deaf children in mainstream education in some studies (Bowen, 2008; Stinson & Kluwin, 2011), but not in others (Wolters et al., 2011, 2012b). Contradicting results within one context have also been reported, with deaf children being more often neglected than hearing classmates, with equal levels of peer rated play preference (Nunes et al., 2001). Only two studies measured popularity (Wolters et al., 2011, 2012b), reporting that deaf students in mainstream 6th- and 7th-grade classrooms were less popular than their hearing classmates and also less popular than their deaf peers in special education classrooms.

Peers are important judges of peer behavior, because they take part in interactions outside the perception of adults (Coie et al., 1982). Peers rated co-enrolled deaf children as less prosocial and more withdrawn than their hearing classmates in mainstream classrooms (Wauters & Knoors, 2007). However, McCain and Antia (2005) found no difference in behavior between deaf co-enrolled and hearing peers. Wolters et al. (2011) found no difference between deaf and hearing mainstream children, but deaf peers in special education were rated as more antisocial and withdrawn, but less prosocial than deaf mainstreamed children. Thus, there is evidence for a less adjusted behavioral profile of deaf children (Stinson & Kluwin, 2011), although this evidence is somewhat mixed.

There are few studies on the behavioral correlates of peer status and the
stabilities of status and behavior for deaf early adolescents. Wolters et al. (2011) found the same behavioral correlates of acceptance and popularity for deaf children in mainstream 6th-grade classrooms as what is usually found for hearing children (Asher & McDonald, 2009). This study found a reduced profile for deaf children in special education, limited to a positive association between prosocial behavior and acceptance, and a negative association between withdrawn behavior and popularity. Wauters and Knoors (2007) found that peer acceptance was relatively stable over one year in 1st to 5th grade co-enrolled deaf children. They also found high stability coefficients for antisocial behavior, moderate to high for withdrawn behavior, but low for prosocial behavior. Wolters et al. (2012b) found high stability for popularity, lower stability for peer acceptance (in particular for deaf girls,) over the transition from elementary to secondary school.

**Educational Environment: Start of Secondary Education**

The transition to secondary school poses a challenge for all early adolescents. They face a new and larger social context with mainly unfamiliar peers at the same time as they are dealing with the changes of puberty (Brown, 2011). Adolescents have to find a new position in the classroom hierarchy which is stressful for hearing and especially for deaf early adolescents, considering their communication challenges that can affect their well-being (Hirsch & Rapkin, 1987; Reddy et al., 2003; Wolters et al., 2012b). There is also a lack of awareness about hearing loss among hearing peers and a negative attitude toward it (Stinson & Kluwin, 2011). After school transition, for example, a strong decrease in deaf girls’ peer acceptance was found, although less so for deaf boys’ (Wolters et al., 2012b).

**Current Study**

This study examined the social adjustment of deaf adolescents in the first two years of secondary school, after the transition from elementary to secondary school. Both mainstream classrooms and special education classrooms were included. The transition to secondary school is challenging for all adolescents, but particularly for deaf adolescents, who are more limited in their possibilities to communicate with peers and often face a lack of understanding from the peer group. There are no previous longitudinal studies on the social status and social behaviors of deaf early adolescents at the beginning of mainstream and special
education secondary schools. Thus, this study makes a unique and new contribution to the literature.

This study had four goals. First, it was examined whether peer status (acceptance, popularity) and social behavior (prosocial, antisocial, withdrawn) in the first two years of secondary education differed as a function of hearing status, gender and educational setting. Second, the stabilities of peer status and social behaviors for deaf early adolescents in the first two years of secondary mainstream and special education were examined. Third, and finally, the unique effects of social behavior on subsequent peer status was examined for deaf students in mainstream and special education.

Method

Participants and Procedure

The core sample consisted of 74 deaf and hard-of-hearing adolescents (referred to as deaf) in Grades 7 and 8 (see Table 5.1), the first two grades of secondary school, corresponding with junior high school in the U.S. system. The ethnic composition of the sample was 82% Caucasian (Dutch), and 18% primarily from Turkish or Moroccan descent. Average classroom size was 23 in mainstream, and 7 in special (segregated) education. Most mainstream classrooms had one deaf adolescent. Three mainstream classrooms included two deaf students.

This study was part of a larger longitudinal study on the development of hearing-impaired youth. This paper focuses on the data obtained from all classmates about 74 deaf participants who participated in both longitudinal secondary school waves. Deaf classmates who participated in only one year of the study and adolescents with ASD were not examined in this study. In Grade 7, the cross-sectional sample included 647 participants (out of 901), with 289 mainstream hearing boys, 284 mainstream hearing girls, and the 74 deaf adolescents. The cross-sectional Grade 8 sample included 668 participants (out of 739), with 317 mainstream hearing boys, 277 mainstream hearing girls, and 74 deaf adolescents. From the mainstream hearing group, 263 adolescents participated in both grades. Further details of the sampling and data collection procedure are described by Wolters et al. (2011, 2012b).
**Table 5.1**  
*Sample Description of Deaf Participants*

<table>
<thead>
<tr>
<th></th>
<th>Mainstream Education</th>
<th>Special Education</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boy</td>
<td>15</td>
<td>21</td>
<td>36</td>
</tr>
<tr>
<td>Girl</td>
<td>18</td>
<td>20</td>
<td>38</td>
</tr>
<tr>
<td><strong>Hearing status</strong>a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hard of hearing</td>
<td>23</td>
<td>15</td>
<td>38</td>
</tr>
<tr>
<td>Deaf</td>
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<td>26</td>
<td>36</td>
</tr>
<tr>
<td><strong>Cause of hearing loss</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Congenital</td>
<td>20</td>
<td>15</td>
<td>35</td>
</tr>
<tr>
<td>Meningitis</td>
<td>2</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Infection</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Premature birth</td>
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<td>2</td>
</tr>
<tr>
<td>Unknown</td>
<td>5</td>
<td>18</td>
<td>23</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><strong>Hearing equipment</strong>b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CI</td>
<td>7</td>
<td>12</td>
<td>19</td>
</tr>
<tr>
<td>Hearing aidc</td>
<td>23</td>
<td>25</td>
<td>48</td>
</tr>
<tr>
<td>None</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Induction loop</td>
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<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Unknown</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Additional impairment</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Dyslexia</td>
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<td>0</td>
<td>2</td>
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<tr>
<td>ADHD</td>
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<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Learning problem</td>
<td>2</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>Treacher Collins</td>
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<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Spastic</td>
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<td>0</td>
<td>1</td>
</tr>
<tr>
<td>None</td>
<td>27</td>
<td>20</td>
<td>47</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>33</td>
<td>41</td>
<td>74</td>
</tr>
</tbody>
</table>

*a* Hard of hearing: 25-80 dB hearing loss in the better unaided ear; deaf > 80 dB hearing loss in the better unaided ear.  
*b* 2 adolescents with two CIs, one adolescent with BAHA and one with both CI and hearing aid.  
*c* 9 adolescents with additional induction loop system.

**Measures**

*Sociometric nominations.* Students were asked to nominate the peers in their classroom they liked most, liked least, were most popular, and were least popular. Unlimited nominations was used with classroom as the reference group.
The number of nominations received was counted for each question and standardized to z-scores within classrooms to control for classroom size. A score for acceptance was computed by subtracting the standardized liked most and liked least choices received, and again standardizing the resulting difference scores within classrooms (Coie et al., 1982). A score for popularity was computed by subtracting the standardized most popular and least popular choices received, and again standardizing the resulting scores (Cillessen & Marks, 2011).

**Social behavior ratings.** Students rated each peer’s behavior on 15 items. There were 6 items for prosocial behavior (e.g., “Helps other children when they have a problem”; Cronbach’s α’s = .94 and .92 in Grades 7 and 8, respectively), 7 for antisocial behavior (e.g., “Hits, kicks, or pushes other children at school”; α’s = .95 and .93), 2 for passive withdrawn behavior (e.g., “Prefers to work alone in the classroom over working with other children”; α’s = .84 and .89 ). Each behavior was rated on a 5-point scale (1 = never; 5 = almost always). For each student, the average rating received from peers was determined for each item. A composite score for each behavior (prosocial, antisocial, withdrawn) was then computed as the weighted mean based on the results from an earlier large sample factor analysis (Wolters et al., 2012a).

**Results**

**Preliminary Group Comparisons in Grade 7 and 8**

Planned ANOVA contrasts tested group differences in social status and behavior as a function of hearing status, educational setting, and gender in Grades 7 and 8 separately (see Table 5.2 for means and standard deviations). Levene’s test for homogeneity of variance was significant for withdrawn behavior; in both grades, hearing students and deaf mainstream boys had smaller variances than the other three groups. For these two cases, t’s and p’s not assuming equal variances were reported.

**Hearing status.** There was a main effect of hearing status on acceptance in Grade 7, \( t(641) = -3.40, p < .01, d = .27 \), and Grade 8, \( t(662) = -2.84, p < .01, d = .22 \). Hearing mainstream adolescents were more accepted than deaf classmates. An interaction between gender and hearing status was found in Grade 7, \( t(641) = 2.17, p < .05, d = .17 \), but not Grade 8. Hearing boys were somewhat less accepted than hearing girls, \( t(641) = -1.87, p < .10, d = .15 \), but deaf mainstream boys were
Table 5.2
Descriptive Statistics of the Main Study Variables in the Preliminary Group Comparisons

<table>
<thead>
<tr>
<th>Measure</th>
<th>Deaf Mainstream Education</th>
<th></th>
<th></th>
<th></th>
<th>Deaf Special Education</th>
<th></th>
<th></th>
<th></th>
<th>Hearing Mainstream Education</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grade 7</td>
<td>Grade 8</td>
<td>Boy</td>
<td>Girl</td>
<td>Boy</td>
<td>Girl</td>
<td>Boy</td>
<td>Girl</td>
<td>Boy</td>
<td>Girl</td>
<td>Boy</td>
<td>Girl</td>
</tr>
<tr>
<td>Acceptance</td>
<td>- .23</td>
<td>1.06</td>
<td>-.83</td>
<td>1.20</td>
<td>-.30</td>
<td>1.12</td>
<td>- .59</td>
<td>1.14</td>
<td>-.16</td>
<td>.98</td>
<td>-.29</td>
<td>.79</td>
</tr>
<tr>
<td>Popularity</td>
<td>- .75</td>
<td>.72</td>
<td>-.73</td>
<td>1.05</td>
<td>-.59</td>
<td>.82</td>
<td>-.84</td>
<td>1.14</td>
<td>.13</td>
<td>.75</td>
<td>.04</td>
<td>.95</td>
</tr>
<tr>
<td>Prosocial</td>
<td>- .19</td>
<td>.72</td>
<td>.16</td>
<td>.97</td>
<td>-.19</td>
<td>.88</td>
<td>.29</td>
<td>.72</td>
<td>-.90</td>
<td>1.12</td>
<td>.08</td>
<td>.98</td>
</tr>
<tr>
<td>Antisocial</td>
<td>- .15</td>
<td>.62</td>
<td>-.29</td>
<td>.91</td>
<td>-.06</td>
<td>.86</td>
<td>-.43</td>
<td>.86</td>
<td>1.22</td>
<td>1.01</td>
<td>.47</td>
<td>1.08</td>
</tr>
<tr>
<td>Withdrawn</td>
<td>- .05</td>
<td>.72</td>
<td>.66</td>
<td>1.64</td>
<td>.17</td>
<td>.79</td>
<td>.50</td>
<td>1.31</td>
<td>1.26</td>
<td>1.12</td>
<td>1.21</td>
<td>1.11</td>
</tr>
</tbody>
</table>
somewhat more accepted than deaf mainstream girls, $t(641) = 1.78, p < .10, d = .14$. In Grades 7 and 8, deaf mainstream adolescents were less popular than hearing classmates, $t(641) = -4.62, d = .36$, and $t(662) = -4.34, d = .34$, both $ps < .001$, respectively. There was no main effect of gender or interaction with gender for popularity.

Deaf mainstream students showed more withdrawn behavior than hearing classmates in both grades, $t(25) = 2.72, p < .05, d = 1.09$, and $t(30) = 2.99, p < .01, d = 1.09$. There were no effects of hearing status on prosocial and antisocial behavior. There was an effect of gender. Mainstream boys were less prosocial than mainstream girls in both grades, $t(631) = -3.38, p < .01, d = .27$, and $t(641) = -3.71, p < .001, d = .29$, respectively, and more antisocial, $t(631) = 2.10, p < .01, d = .17$, and $t(641) = 3.28, p < .01, d = .26$.

**Educational setting.** There was no effect of educational setting on acceptance in either grade. Deaf students in mainstream education were equally accepted as deaf students in special education. However, deaf students were less popular in mainstream classes than in special education in Grade 7, $t(641) = -3.37, p < .01, d = .27$, and Grade 8, $t(662) = -4.03, p < .001, d = .31$. There were no gender differences.

Deaf adolescents were more prosocial behavior in mainstream classes than in special education in Grade 7, $t(631) = 3.49, p < .01, d = .28$, and Grade 8, $t(641) = 1.89, p = .06, d = .15$. Deaf adolescents were less antisocial in mainstream classes than in special education in Grades 7 and 8, $t(631) = -4.95, p < .001, and d = 1.32$, and $t(641) = -6.23, p < .001, and d = .39$, respectively. Deaf boys were more antisocial than deaf girls in both grades, $t(631) = 2.07, p < .05, d = .16$, and $t(641) = 2.03, p < .05, and d = .16$, respectively. Finally, deaf adolescents showed less passive withdrawn behavior in mainstream classes than in special education in Grade 7, $t(53) = -3.35, p < .01, d = .92$, and Grade 8, $t(66) = -2.12, p = .05, d = .52$.

**Predictors of Deaf Adolescents’ Social Status in Grade 8**

SEM analyses were conducted with LISREL (Jöreskog & Sörbom, 2006) to investigate: (a) the stability of status and social behavior of deaf adolescents from Grade 7 to 8, (b) the indirect effect of status and social behavior in Grade 7, plus the direct effect of social behavior in Grade 8, on status in Grade 8, and (c) the moderating role of educational setting in $a$ and $b$. Using SIMPLIS syntax, mediation
and moderation effects were tested in one SEM model. Two groups, mainstream education deaf and special education deaf, were defined. The corresponding correlation matrices are in Table 5.3. Figure 5.1 shows the hypothesized basic SEM model, illustrating the pathways of interest. In this model, no moderating effects are specified yet. To determine the fit of the estimated model, the standard $\chi^2$ test was used, as well as the Non-Normed Fit Index (NNFI), Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA). These showed that the basic SEM model fitted the data reasonable well, $\chi^2(59, N = 74) = 79.67, p = .04$, $\text{NNFI} = .86$, $\text{CFI} = .91$, $\text{RMSEA} = .10$.

Table 5.3

**Correlations Between Main Study Variables for Deaf Adolescents in Special (above the diagonal) and Mainstream (below the diagonal) Education for the Longitudinal Data**

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* $p < .05$. † $p < .10$.

To improve the model, interaction effects were identified first. A modification of the model was indicated by the data, based on the modification indices (MI), suggesting a moderating effect of educational setting. In the basic model, a pooled parameter is estimated, representing the parameter of both groups (mainstream and special education) together; an MI larger than 3.84 ($\chi^2$ distribution, 1 df with $\alpha = .05$) indicated that this pooled parameter did not fit the data for one or both groups. After identifying and adding an interaction effect to the model, the procedure was repeated until no other interaction effects emerged. Significant interactions were added to the model one at the time. After adding these interactions, it was checked whether the MI’s suggested additional direct
effects of social behavior in Grade 7 on status in Grade 8; but this was not the case.

The procedure resulted in the identification of five significant interactions. Educational setting moderated the associations of: (1) withdrawn behavior in Grade 7 and acceptance in Grade 7, (2) antisocial behavior in Grade 8 and popularity in Grade 8, (3) popularity in Grade 7 and popularity in Grade 8, (4) popularity in Grade 7 and withdrawn behavior in Grade 8, and (5) withdrawn behavior in Grade 7 and popularity in Grade 7. The stability of popularity from Grade 7 to 8 (interaction 3) was stronger for deaf adolescents in mainstream education than in special education. For the other interaction effects, each association was significant for deaf mainstreamed adolescents but not in special education.

![Diagram](image)

*Figure 5.1. Tested basic SEM model of the longitudinal relationships between prosocial-, antisocial-, and withdrawn behavior, acceptance and popularity for deaf adolescents.*

The addition of the five interactions improved model fit. Figure 5.2 shows the final SEM model with the ML estimates, separately for deaf students in mainstream education and in special education to represent the interactions.
Dotted grey lines represent non-significant direct effects, and the black dotted line a marginal effect. Specified estimates are all significant ($p < .05$). The fit of the model was good, $\chi^2(54, N = 74) = 59.74$, $p = .27$, NNFI = .93, CFI = .96, RMSEA = .06. The NNFI and CFI were larger than .90; the RMSEA was less then .08. Considering the relatively many variables in the model compared to the number of participants, this proved to be a strong model.

Figure 5.2. Final SEM model of the longitudinal associations among prosocial-, antisocial-, and withdrawn behavior, acceptance and popularity, from Grade 7 to 8. For each standardized estimate shown, in case of an interaction effects, the first estimate is for deaf adolescents in mainstream education and the second in special education. Dotted grey lines are nonsignificant associations, dotted black lines marginal effects. Errors are not shown for clarity of presentation.

Considering direct effects, all autoregressive effects (stability parameters) were significant. Prosocial behavior was most stable (see Figure 5.2), followed by antisocial and withdrawn behavior. Popularity was more stable than acceptance for deaf adolescents in mainstream education, and vice versa in special education. This indicated that social behavior and status in Grade 7 are good predictors of social behavior and status in Grade 8. Other direct effects showed that Grade 7 acceptance was positively associated with Grade 7 prosocial behavior for deaf
adolescents in general. Acceptance was also negatively associated with Grade 7 withdrawn behavior in mainstream education. Grade 7 popularity was positively associated with both prosocial and antisocial behavior in mainstream and special education, and negatively with withdrawn behavior in mainstream Grade 7. Grade 7 acceptance predicted Grade 8 acceptance, that was positively associated with Grade 8 prosocial behavior in both mainstream and special education. For deaf adolescents, Grade 7 popularity predicted Grade 8 popularity, that was positively associated with Grade 8 prosocial behavior and marginally negatively with Grade 8 withdrawn behavior. For mainstreamed deaf adolescents, popularity was also positively associated with antisocial behavior in Grade 8.

Regarding indirect effects, status in Grade 7 and behavior in Grade 8 were mediators of the effects of social behavior in Grade 7 on status in Grade 8. For deaf mainstreamed adolescents, there was a significant positive indirect effect of prosocial behavior (β = .38) and a negative effect of withdrawn behavior (β = -.27) in Grade 7 on acceptance in Grade 8. Also, prosocial, antisocial, and withdrawn behavior in Grade 7 predicted popularity in Grade 8 (β’s = .49, .53, and -.34, respectively). In special education, prosocial behavior in Grade 7 predicted deaf adolescents’ acceptance and popularity in Grade 8 (β’s = .37 and .38, respectively).

Considering status, for deaf mainstreamed adolescents, 53% of both Grade 7 acceptance and popularity was explained by Grade 7 behavior. For deaf adolescents in special education, this was 27% for Grade 7 acceptance and 22% for popularity. The variance explained of behavior in Grade 8 was higher for deaf adolescents in mainstream than in special education (prosocial: 52% vs. 33%; antisocial: 45% vs. 38%; withdrawn: 70% vs. 26%). Finally, for deaf mainstreamed students, 43% of Grade 8 acceptance and 67% of Grade 8 popularity was explained by Grade 7 status and Grade 7 and 8 behavior. For deaf adolescents in special education, the variance explained was 42% for acceptance and 39% for popularity.

Discussion

The behaviors of deaf early adolescents when entering secondary school strongly determine their later peer status. For deaf mainstream adolescents, withdrawn behavior in particular negatively affected their status; for deaf adolescents in special education prosocial behavior in particular positively affected their status. Mainstreamed deaf adolescents share a classroom with a relatively
large group of hearing peers, whereas deaf adolescents in special education have a small classroom of deaf peers or hearing classmates with SLI. These different contexts may create different norms for behaviors.

There are general risks for low accepted and unpopular youth (e.g., Hymel et al., 1993; Schwartz & Gorman, 2011). The type of low status is important to understand these risks. For deaf mainstreamed early adolescents, withdrawn-unpopular and withdrawn-unaccepted subtypes seem relevant. Junior high peers associate unpopularity most strongly with withdrawal (LaFontana & Cillessen, 2002). In our study, unpopular adolescents were seen as incompetent and socially isolated whereas popular peers had frequent peer interactions. With regard to low acceptance, rejected subtypes are either aggressive-rejected or withdrawn-rejected (Cillessen, van Ijzendoorn, van Lieshout, & Hartup, 1992; Hymel et al., 1993). This is an important clinical finding because withdrawn behavior is considered more age-inappropriate with increasing age (Younger et al., 1993) and peers who withdraw, or have few interactions with classmates, are at risk for a wide range of social-emotional problems such as low-self esteem and depression, problems with making friends, academic difficulties, and being bullied (Hymel et al., 1993; Rubin, Bowker, & Kennedy, 2009). Intervention strategies should, in addition to decreasing withdrawn behavior, target prosocial behaviors, as indicated by our study. Our model shows that prosocial behavior continues to positively affect acceptance and popularity once peer status has been set. Hymel and colleagues (Hymel et al., 1993) found that withdrawn-unaccepted peers did not deviate in terms of prosocial behaviors. They were cooperative and got along with adults. Addressing these strengths might help withdrawn deaf early adolescents gain positive peer status.

Overt prosocial and antisocial behavior are relatively straightforward to judge and easily observable by peers. Passive withdrawn behavior, however, includes a preference to spend time alone. The question is whether the mainstreamed deaf peers preferred to spend time alone, or were alone for another reason. It is the perception of the classmates that matters, but withdrawn peers could be made aware of how their behavior is seen by peers.

In special education, the less adjusted behavioral profile of deaf peers was not associated with lower but higher popularity. Their popularity corresponded with the prosocial-popular subtype more than the antisocial-popular subtype (De
Bruyn & Cillessen, 2006; Rodkin et al., 2000). Prosocial-popular early adolescents attained popularity through being helpful, cool, nonaggressive and liked, but not antisocial, as are antisocial-popular adolescents. Our study and earlier studies (e.g., Stinson & Kluwin, 2011; Wolters et al., 2011) found more antisocial behavior in special than mainstream education. Here, prosocial behavior can be considered a positive deviation from the norm, leading to prosocial-popularity. This type of popularity in special education is potentially more comparable to acceptance than in mainstream education, as suggested by the stronger correlation. Fostering prosocial actions in deaf early adolescents is thus important for the development of positive status in special education. It is important to notice that withdrawn behavior tends to become important in special education, as it started to affect popularity in Grade 8. One could argue that deaf adolescents in special education are doing fine, considering their peer status, despite their less adjusted behavior. However, school is not the only context where they interact with peers and these early adolescents will enter society with a variety of behavioral problems where their behavior will have negative consequences.

A limitation of this study was the relatively small sample size, mainly in the SEM analyses. Therefore, we were unable to include gender in the SEM model. Gender might have been relevant since acceptance has been found to be more stable for boys, but popularity for girls (Mayeux et al., 2011).

To conclude, an important clinical implication of this study is that the behavioral profile of deaf early adolescents, when entering secondary school, an unfamiliar school setting, strongly determines peer status in the first but also second year. After status is set, it is difficult to change. A context-adjusted positive profile seems very important. Considering the stability of peer status, deaf adolescents should be aware of how their behavior is perceived by classmates. A first impression is important and therefore it is important to help deaf adolescents acquire positive peer skills and behaviors before they enter secondary school.
During early adolescence peer relations increase in scope and importance and the peer group changes in structure; a peer group hierarchy emerges and adolescents’ concerns about their peer relations and peer status rise (Rubin et al., 2006). Positive peer relations are essential for overall development and well-being (Flook et al., 2005; Rubin et al., 2006). Considering potential communication and behavior problems (Antia & Dittillo, 1998; Antia et al., 2011), creating and maintaining positive peer relations encompasses extra challenges for deaf youth. Studies about deaf early adolescents’ peer relations and its indicators and consequences are relatively scarce and inconclusive though, especially in the developmental area, and are often based on small samples (Chapter 1).

For early adolescents, the school context is the main setting for relations with peers. Acceptance and popularity represent success regarding peer relations. Acceptance is defined as likeability or social preference (e.g., Coie et al., 1982) and reflects social success at the dyadic level, whereas popularity is a reputation and constitutes visibility and impact (e.g., Cillessen, 2011), or success at the group level. The main aim of the research reported in this thesis was to unravel deaf early adolescents’ development of acceptance and popularity and its predictors (behavioral, communicative and personality predictors; Chapters 2, 3, 5) as well as the consequences (well-being in school; Chapter 4) in both mainstream and special education, during school transition. Participants were deaf and hard-of-hearing early adolescents (which will be referred to as deaf in the remainder of the chapter) and their classmates, who were in Grade 6 of mainstream and special elementary school at the start of the longitudinal study. They were followed for three consecutive years, into Grade 7 and 8, the first and second school year of secondary education. Differences on peer status and its predictors and consequences as a function of hearing status (deaf mainstream versus hearing mainstream) and educational setting (deaf mainstream versus deaf special) were explored as well as its longitudinal associations.

**Deaf Youth’s Acceptance and Popularity**

In elementary school Grade 6, hearing and deaf youth’s peer status in school differed considerably; deaf youth were less accepted and less popular than hearing youth. Hearing boys and girls experienced the same acceptance and popularity levels. The same was true for deaf early adolescents’ popularity, but
deaf boys experienced lower acceptance than deaf girls (Chapter 3).

In early adolescence, being different from your peer group is generally not valued (Coyner, 1994); the overall peer status differences can as such be regarded as not surprising. Though, is it truly the hearing loss itself that explains peer status differences, or do other (associated) factors come into play? A first potential explaining factor is, as the type of status indicates, the peer group. The peer group determines the group’s norms and associated with that a classmate’s social status. Deaf youth’s peer groups, however, differ across educational contexts. Deaf youth in the Netherlands attend either mainstream education or special education. In the first context, deaf youth are often the only peer with a hearing loss in a classroom among a relatively large group of hearing peers (Antia et al., 2010). In special education, deaf peers have a small classroom of deaf peers or sometimes, at least in the Netherlands, hearing peers with SLI. Having a hearing loss is more deviant from the average peer in mainstream than special education. The question is thus whether deaf mainstreamed youth differ in peer status from their hearing classmates, as well as compared to deaf peers in special education?

In mainstream education Grade 6, on the dyadic level, deaf youth were at risk of lower levels of acceptance, though a gender effect appeared, in line with Coyner (1994); lower acceptance could be contributed to lower acceptance of deaf boys, but not deaf girls. On the group level, deaf early adolescents were less popular than their hearing classmates, regardless of gender (Chapter 3). In special education, deaf youth experienced equal levels of acceptance as in mainstream education, suggesting that their acceptance levels in the classroom are to some extent below average. Additionally, deaf boys were less accepted than deaf girls. Regarding their reputation, deaf peers in special education are more popular than mainstreamed peers; they are visible in the classroom and have influence in the peer group (Chapter 3).

Thus, the educational context explicates to some extent differences in acceptance and popularity between deaf and hearing youth. Acceptance varied as a function of hearing status by gender whereas popularity varied as a function of hearing status and educational context. This underscores that youth’s peer relationships must be considered in relation to their specific social context (Sheridan, Buhs, & Warnes, 2003). These contexts determine the peer group’s social norms and demands and can explain variations in peer status (Asher &
McDonald, 2009). The social context can for example make problem behavior become attractive behavior (Rodkin et al., 2000). In other words, predictors of both acceptance and popularity might further explain peer status differences as a function of hearing status and educational setting.

**Predictors of Acceptance and Popularity**

Potential predictors of acceptance and popularity in the Grade 6 classroom (Chapter 2) are social behavior (prosocial, antisocial, withdrawn), personality (agreeableness, extraversion) and communicative skills (pragmatic skills). Chapter 2 showed that visibility in the classroom is necessary for positive peer status, either acceptance or popularity. Also, in understanding the acquirement of peer status (acceptance, popularity), different behavioral, personality and communicative repertoires should be acknowledged.

**Hearing youth.** For hearing youth (Chapter 2 and 3), social behavior was the largest predictor of both acceptance and popularity, and the behavioral pattern was in line with earlier studies (Asher & McDonald, 2009). Acceptance was positively predicted by prosocial behavior, but negatively by antisocial and withdrawn behavior. Additionally, an agreeable personality and improvising (e.g., making jokes) during interaction with classmates facilitated acceptance. Popularity increased with higher levels of prosocial and antisocial behavior, but withdrawn behavior negatively predicted popularity. Extraversion, and, on communicative skills, pragmatics skills and improvisation also contributed to popularity. The contribution of personality and communicative skills on peer status was found on top of social behavior.

**Deaf youth in mainstream education.** In mainstream elementary education (Grade 6), the profile of predictors important for peer status for deaf youth is largely comparable to hearing youth’s (Chapter 3). As for hearing youth, behavior is the largest predictor of peer status for deaf youth; deviation from the classroom behavioral norm differentiates most strongly between lower and higher peer status. Though, deaf and hearing youth’s social behavior was comparable and thus did not explain deaf youth’s lower acceptance nor popularity. Communicative skills were the differentiating factor; in mainstream education, deaf youth’s strategic (monitoring a conversation, improvisation, initiating/maintaining a conversation) and pragmatic communicative skills were less developed compared to their
hearing classmates. These differences explained deaf early adolescents’ lower acceptance (deaf boys) and popularity.

Importantly, the predictor profile differed for acceptance on communicative skills between hearing and deaf youth; communicative skills were equally important for hearing boys’ and girls’ acceptance, but gender differentiated the predictive pattern for deaf mainstreamed youth, in line with gender-typical interaction styles (Maccoby, 1990; Rose & Smith, 2009). Early adolescents mainly have same-sex friendships with a highest frequency around Grade 6 (Maccoby, 1990). In these peer relations, gender-typical behavior (communication and connectedness for girls and competition for boys, Rose & Smith, 2009) is valued, but gender atypical behavior is not. Deaf mainstream girls’ polite and considerate use of language (monitoring a conversation, pragmatic skills) increased their peer acceptance, reflecting girls trying to bring about agreement, toning down dominance, and fostering cooperation (Maccoby, 1990). Deaf Grade 6 girls lag behind hearing girls in communicative skills, and seem to be able to make up for this difference by using considerate language. Along with their adjusted behavior (more prosocial and agreeable, less antisocial than [deaf] boys), they compensate enough for their lack of improvisation, resulting in acceptance. For deaf mainstreamed boys, considerate language use does not align with their competitive interaction style (Maccoby, 1990). Boys are concerned about dominance which underlies a restrictive interaction style (Maccoby, 1990). For them, communicative skills related to competition such as improvisation seem more important (Rose et al., 2011), but they lack at least these communicative skills, as well as the behavioral profile needed to be accepted by hearing peers. They can not address certain skills, as deaf girls can, to facilitate their friendship relations.

The behavioral profile for attaining popularity deviated for hearing and deaf youth merely on the impact of antisocial behavior on popularity. For deaf youth, antisocial behavior was a stronger predictor than for hearing classmates. When discussing popularity in mainstream education, it is important to recognize the solitary position of deaf youth in their classroom (Antia et al., 2010). In early adolescence, standing out in the peer group because you are different is not appreciated (Coyner, 1994). Having a hearing loss indeed by definition contributed to lower popularity among hearing peers. Additionally, deaf youth’s less developed
communicative skills (improvisation, pragmatics), compared to hearing classmates, decreased their popularity. Possibly, because it can make a larger difference, displaying antisocial behavior is considered a way of creating visibility in the classroom for deaf youth.

Popular peers, who are not necessarily likeable peers (Parkhurst & Hopmeyer, 1998), represent peers one wants to be associated with (Dijkstra et al., 2009). It can increase one’s own popularity and consequently peer influence, being a central and visible peer in the classroom resulting in admiration, envy and power and higher levels of self-esteem (Cillessen, 2011; De Bruyn & Cillessen, 2006). From a biological perspective, increase in antisocial behavior occurs during early adolescence as a result from specific brain maturation (van Lijenhorst & Crone, 2009). Developmentally, antisocial behavior reflects dealing with the maturity-gap, or the discrepancy between biological but not social maturation (Dijkstra et al., 2009). Antisocial behavior, though undesirable behavior through they eyes of adults, is effective in gaining peer popularity, and less complicated than through prosocial behavior (Chapter 2)

**Deaf youth in special education.** In special education, the overall picture is comparable to deaf youth in mainstream education, though less complex (Chapter 3). Social behavior is again the strongest predictor of peer status, but is limited to prosocial behavior increasing acceptance and withdrawn behavior decreasing popularity. On communicative skills, initiating a conversation is important for acceptance. Comparable to mainstream education, for deaf girls, to some extent, considerate language used increases acceptance, but it did not for boys. The key factor in explaining deaf girls’ higher acceptance than boys is girls’ higher levels of prosocial behavior and, to some extent, their better developed pragmatic skills.

The less adjusted behavioral profile of deaf youth in special compared to mainstream education did not lead to lower peer status in special education, but to equal levels of acceptance and a higher degree of popularity. The difference in educational context and the type of popularity are two potential explaining factors. First, considering context, higher prevalence of problem behavior in special education, as found in our and earlier (e.g., Stinson & Kluwin, 2011) studies, might create different norms regarding this behavior (Rodkin et al., 2000), compared to mainstream education. This problem behavior becomes the daily norm, to which other behavior is compared. Also related to the context is the
difference in voter population; the nominators in special education are deaf youth or youth with SLI. To them, being deaf is not as deviant from the surrounding population as is the case in mainstream education. Second, popularity in special education reflects prosocial-popularity (De Bruyn & Cillessen, 2006; Rodkin et al., 2000), with prosocial behavior being a positive deviation from the norm. It is more comparable to acceptance than in mainstream education (Chapter 5), where antisocial behavior contributes to popularity.

Acceptance and Popularity Predicting Well-being

Deaf youth experience challenges and difficulties considering their peer relationships (acceptance, popularity), but is this a concern? Relationships with peers are considered important for one’s well-being (Flook et al., 2005; Rubin et al., 2006). Youth are very aware of and concerned about their social status in the classroom (Rubin et al., 2006). Does deaf early adolescents’ lower peer status negatively affect their well-being in school (Chapter 4)?

Deaf youth in mainstream education. The solitary position of deaf youth in mainstream education, sharing classrooms with a relatively large group of hearing peers, creates a unique position. In the classroom, they can compare their social status with the hearing peer group as a whole, but also, in light of the high frequency of same-sex friendships (Maccoby, 1990), with hearing peers of the same sex. However, not with another deaf peer in the same group.

In Grade 6, deaf youth are at risk for lower levels of well-being than their hearing classmates. For mainstreamed deaf and hearing youth, both acceptance and popularity predict well-being. Deaf girls’ lower popularity places them at risk for lower levels of well-being, but deaf boys’ lower popularity as well as lower acceptance, places them at a higher risk than deaf girls.

The relationships with peers are not the only relationships in a classroom; the relationship with the teacher is to a certain extent comparable to a caregiver-child relationship (e.g., Murray & Pianta, 2007) and may serve a supporting or protective role in the classroom, potentially compensating for poor peer relationships (Chapter 4). The teacher-student relationship indeed proved to be more important for a students’ well-being in Grade 6 than peer status for both deaf and hearing youth. Deaf and hearing youth judge their relationship with the teacher as equally well, so this relationship is not the problem. The relationships
with peers are of concern though, negatively affecting deaf youth’s well-being in school.

**Deaf youth in special education.** In special education, the importance of the relationship with the teacher was evident as well, but, in contrast with mainstream education, neither acceptance nor popularity predicted well-being in school. The relevance of teacher support for well-being in school is of concern, since deaf early adolescents are less satisfied with this support than peers in mainstream education. But, lower levels of well-being than in mainstream education did not occur. Though, it implies that well-being levels are lower than those of hearing youth. The school context by definition is expected to positively affect well-being; relationships with deaf peers are essential for deaf children’s well-being (Musselman et al., 1996) and these peers are met in special education settings, compensating for the poorer teacher-student relationship.

**Stability of Acceptance and Popularity; Impact of School Transition on Well-being**

The previous shows, in summary, that deviation from the classroom behavioral norm is the strongest predictor of divergence from average classroom peer status for both hearing and deaf peers, irrespective of educational context. The educational context does seem to create different behavioral norms though. On top of social behavior, communicative skills are important in explaining variation in peer status. For deaf youth, girls’ communicative skills can make a larger difference. Concerning social success in peer relationships in the classroom at both the group (popularity) and the dyadic (acceptance) level, deaf early adolescents experience problems in mainstream education. This is a concern since it negatively affects their well-being in school. In special education, the picture is somewhat more positive; higher levels of well-being are reported, despite under average acceptance levels and less satisfying teacher-student relationships. Here, the school context seems of more importance than the actual classroom context.

Peer relations have been found to be relatively stable over time for hearing youth (Mayeux et al., 2011). How stable are deaf youth’s peer relationships? After completing Grade 6, these youth face school transition and enter secondary school. In early adolescence, peer relations increase in scope and importance and with that the sense of well-being increases (Bukowski et al., 1993). School transition, with the disruption of peer relationships, creates extra challenges for all
youth (Hardy, Bukowski, & Sippola, 2002), but especially for deaf youth.

**Deaf youth in mainstream education.** After school transition, in mainstream education a general decrease was found in acceptance and popularity, for both hearing and deaf youth (Chapter 4). Compared to hearing classmates, deaf youth remained to be less accepted and popular (Grades 7 and 8; Chapter 4 and 5). Interestingly, in contrast with elementary school, in the first year of secondary school, deaf girls were less accepted, but not deaf boys. Over school transition, their acceptance decreased strongly. Regarding popularity, the pattern suggested hearing boys’ popularity to decrease somewhat more than other youth’s. Once deaf early adolescents’ peer status is settled after school transition to secondary school, it is quite stable (Chapter 5).

In contrast with elementary school, after school transition, the behavioral profile, important for acceptance and popularity, of deaf early adolescents deviated from that of their hearing classmates (Chapter 5). The weight of social behavior as an indicator of peer status was underscored; deaf youth showed more withdrawn behavior than their hearing classmates, which negatively affected their acceptance and popularity in Grade 7, the first year of secondary education. This effect was also noticed on the longer term, into Grade 8 (Chapter 5). The weight of social behavior for social status is thus not so much an issue in mainstream elementary school for deaf youth, where communicative skills explain lower status, but becomes very important in mainstream secondary school. In the latter, deaf youth are withdrawn-unaccepted (Cillessen et al., 1992; Hymel et al., 1993) and withdrawn-unpopular (LaFontana & Cillessen, 2002). Acceptance and popularity thus remain a problem for deaf youth after school transition. In light of the increasing importance of peer relations, how does this affect their well-being?

After school transition, for deaf youth, acceptance, though mainly for girls, and popularity predicted well-being in school. Boys are more sensitive to the group they belong in, whereas for girls, their personal relationships are more important. The relationship with the teacher lost importance (while remaining more important for hearing youth). Peer relations increase in importance in early adolescence (Rubin et al., 2006) and deaf youth, in a hearing peer group, apparently are more concerned about having positive peer relations at the start of secondary school, than a positive relationship with the teachers. Possibly, having several different teachers in secondary school provides more difficulties for deaf
youth to develop stable and supporting relationships with these teachers.

A useful heuristic in understanding differences in peer relations before and after school transition is the emotional bank account principle (Covey, 1989, in Buckmaster, 1994). This is a metaphor, describing the amount of trust in a relationship. With anyone with whom we have a relationship, we maintain a personal emotional bank account. This account starts at a neutral balance, for example after school transition with new peers. At high balance in the emotional bank account, trust, confidence, and tolerance become greater and withdrawal from the account is possible without significantly harming the relationship. When the balance becomes low or even overdrawn, mistrust develops. We thus have to make a conscious effort to make regular deposits. Covey illustrates ways of making deposits into the emotional account, though in the current thesis, understanding that depositing and withdrawing emotional units affects relationships (acceptance and popularity) suffices. These relationships affect well-being in school.

Well-being in school was stable over school transition for hearing mainstream youth. This aligns with the increase in a positive teacher-student relationship compensating for a small decrease in peer status. In contrast, deaf youth’s well-being was not stable. After transition, deaf boys’ well-being increased. At the start of secondary school, the emotional bank account with classmates has a neutral balance. For deaf boys, competition and dominance, or popularity, are important aspects of relations with other boys (Maccoby, 1990; Rose & Smith, 2009). However, a popularity hierarchy takes a while to settle since it represents a group reputation (Cillessen & Marks, 2011). Deaf boys’ emotional bank account with classmates thus remained at least neutral in the first year after school transition; for deaf mainstreamed boys, less apparent popularity differences compared with hearing boys after school transition, plus equal levels of acceptance, was sufficient for an increase in their well-being in school. Also, a larger peer group outside the classroom with same aged-peers, might provide additional opportunities to affect one’s reputation.

To conclude on mainstream education, deaf girls’ well-being decreased to some extent. This aligns with school transitions being harder for girls than boys (Hardy et al., 2002). For (deaf) girls, communication and social connectedness are central aspects in peer relations (Rose et al., 2011; Rose & Smith, 2009). This is a risk factor for girls (Nolen-Hoeksema & Girgus, 1994), since school transition
disrupts peer relations (Hardy et al., 2002). Likely, due to unfamiliarity with each other after school transition, hearing and deaf female classmates experience instant communication difficulties (see the relevance of communication skills for acceptance for deaf girls in Chapter 3), decreasing interaction, and thus increasing withdrawn behavior. This forces these deaf girls to make immediate withdrawals from their initial neutral emotional bank account. Consequently, their acceptance, which is mainly determined by female hearing classmates, dropped after school transition. Deaf girls not only tend to be less accepted compared to deaf boys, but are considerably less accepted than hearing girls in their class, negatively affecting their well-being.

**Deaf youth in special education.** After transition to a secondary school, acceptance decreased for girls, but was stable for deaf boys; boys and girls were now equally accepted. Also, popularity was stable for deaf youth in general. Peer status differences remained the same: Deaf youth in special education remained more popular in the classroom than deaf peers in mainstream education, but equally accepted. Their popularity is somewhat more prone to change than in mainstream education though, in line with classrooms with fewer peers less often having favorites (Östberg, 2003).

Regarding predictors of peer status, prosocial behavior was a positive determining factor for peer acceptance and popularity on both the short and long term (Chapter 5). Additionally, antisocial behavior was important, in Grade 7, to attain popularity, though not to maintain it in Grade 8.

The relationship with the teacher for deaf youth’s well-being remained important in special education. On peer relations, acceptance was now additionally important. The relevance of teacher support for well-being in school is of concern, since deaf early adolescents are still less satisfied with this support than peers in mainstream education. Though, as in elementary school, lower levels of well-being than in mainstream education did not occur.

The change in well-being was in opposite directions compared to mainstream education; positive for girls and negative for boys. Deaf girls had the most to gain in the relationship with the teacher. Considering our data, for these girls, their strong increase in perceived teacher support after transition, was associated with the positive development of their well-being in school. For the deaf boys, our data seems inconclusive though. The general increase in teacher
support and acceptance was insufficient for them to report higher levels of well-being in Grade 7 than Grade 6. Potentially, due to small classroom sizes in special education, with fewer classmates after school transition, their need for competition and dominance in peer relations is not met.

**Clinical Implications**

The current study showed that in designing an intervention strategy to improve deaf early adolescents’ acceptance and popularity, and through that their well-being, one and the same strategy for boys and girls, or deaf peers in mainstream and special education, will likely be ineffective. Both the predictors and consequences of acceptance and popularity point toward a different meaning of acceptance and popularity for deaf youth among a relative small group of peers with disabilities (special education), and a larger group of hearing peers (mainstream education). Nevertheless, in both situations, social behavior is the most relevant predictor of peer status, followed by communicative skills. Subtypes of unaccepted or unpopular youth differ in their developmental trajectories. “In helping researchers clarify the meaning of (...)” low status “and in tailoring interventions to the distinctive profiles and needs of different children, the recognition of heterogeneity has been critical (Rodkin et al., 2000, p.14).

**Deaf Youth in Mainstream Education**

Deaf youth in mainstream education are at risk of lower acceptance as well as lower popularity. Obviously not all deaf youth in mainstream education experience lower peer status, but for the ones that do, it is a concern. They may increasingly be aware of a lack of intimate peer relationships when entering adolescence (Antia et al., 2010).

The antecedents of deaf youth’s lower peer status in mainstream education are higher levels of withdrawn behavior and less developed communicative skills. Diminishing withdrawn behavior and improving communicative skills by deaf early adolescents in mainstream education seems a cumulative process; reducing withdrawn behavior means increasing interaction with peers which creates opportunities to practice and develop communicative skills. Ideally, diminishing withdrawn behavior, increasing interaction and improving communicative skills of deaf youth should take place before the start of secondary school, where peer
relationships increase in importance and withdrawn behavior is increasingly seen as deviant behavior by peers.

Successful intervention techniques targeted at diminishing withdrawn behavior in hearing youth hold promise (e.g., Lewis & Sugai, 1993; Marchant et al., 2007). Such studies regarding deaf youth reported success in increasing interactions among deaf peers, but not between deaf and hearing peers though (Antia et al., 2011). Deaf youth will always face challenges in relationships with hearing classmates since a hearing loss inevitably means difficulties in perceiving spoken communicative acts, especially in a multi-talker situation. Both hearing and deaf youth prefer to interact with peers of the same hearing status (Antia et al., 2011; Kluwin et al., 2002; Stinson & Kluwin, 2011). In mainstream education, this leaves deaf youth in a solitary position in which withdrawn behavior can occur. Antia and colleagues (2011) opt that most interventions are not sufficiently intense to overcome the communication barrier between deaf and hearing peers. They state that familiarity with deaf peers is very important in increasing contact between deaf and hearing peers and thus tackling withdrawn behavior by deaf peers. Co-enrollment settings are fruitful educational context to create familiarity, since they represent long-term intensive interventions. Though, such an intensive intervention is not always available and for now, only one such setting (elementary school) exists in the Netherlands. Single-subject intervention studies though, are promising in testing intervention effectiveness for deaf youth (Antia et al., 2011).

To increase familiarity, or mutual understanding, between deaf and hearing youth, the interpretation of behavior is of relevance. A constant pattern of withdrawn behavior for example, can create social expectations and prejudice by classmates, and may even result in a self-fulfilling prophecy (LaFontana & Cillessen, 1998). Not only should youth be made aware of their own biases when interpreting others’ behaviors, but they should also realize that their own behavior is subjected to others’ interpretation. Do deaf peers indeed prefer to spend time alone, possibly pointing to internalizing problems, or is there another reason for their withdrawn behavior? It is reasonable to expect the communication barrier or lack in communicative skills to (co)create the situation where deaf youth in mainstream education are considered withdrawn by their hearing classmates.

Unfamiliarity and a lack of meaningful contact between deaf and hearing peers may strengthen the negative perception about deaf youth’s withdrawal and
communicative skills. This fosters hearing classmates’ negative attitude toward deaf peers (Brown & Foster, 1991; Hung & Paul, 2006; Stinson & Liu, 1999). In this perspective, teachers can help to promote a positive attitude toward deaf classmates in helping hearing classmates understand the perspective of their deaf classmate and vice versa (Nunes et al., 2001). The teacher can serve as a protective factor and positively guide school transition (Midgley & Edelin, 1998) by means of fostering mutual understanding and a positive attitude toward peers with disabilities at the start of secondary school. Fostering these positive attitudes should be a teacher’s focus as soon as a school year starts, considering the fact that the social climate in a classroom remains the same throughout the school year (Mainhard, Brekelmans, Den Brok, & Wubbels, 2011). Teachers can also change peer perceptions through classroom arrangements; a decrease in physical distance (i.e. classroom seating) between classmates who dislike each other, leads to an increase in acceptance and a decrease in perceived withdrawn behavior (Van den Berg, Segers, & Cillessen, 2012).

Regarding deaf youth, important to realize is that withdrawn-unaccepted youth have a better chance of positively changing their peer status than aggressive unaccepted youth do (Cillessen et al., 1992). Classmates do attribute positive characteristics to withdrawn classmates such as cooperative behavior, getting along with teachers, and being academically competent, all comparable to average youth (Hymel et al., 1993). Withdrawn youth display negative self evaluations in attributing peer relationship difficulties to themselves (Hymel et al., 1993). They should be aware of positive social qualities ascribed to them by classmates, increasing their self-esteem. Being self-conscious about a hearing loss creates withdrawal and difficulty in establishing healthy peer relationships (Martin & Bat-Chava, 2003). Being open about and fully accepting of your hearing loss starts at the home environment. A parents’ positive attitude toward their child’s hearing loss, which is on its turn affected by health professionals’ and educators’ attitude, and their beliefs about being able to communicate with their deaf child are critical for a deaf child’s self-esteem (Bat-Chava, 1993). Openness and self-esteem also start with self-knowledge and understanding what a hearing loss means for you as a child or adolescent. Itinerant services might provide not only a deaf child, but also the parents (and classmates and teachers), with this information. This increases understanding about what it means to have a hearing loss in the entire
social environment of deaf youth.

Concerning communicative skills, withdrawn youth are said to lack a sense of humor (Hymel et al., 1993), which in the current study was a part of strategic communicative skills (improvisation). This indeed significantly lowered both deaf youth’s acceptance and popularity in mainstream education, regardless of gender. Role playing situations in school might help deaf youth to develop their improvisation skills. It likely remains challenging for them though, since improvisation requires quick responses in interaction with peers.

Boys and girls socializing in settings with unique gender-related communication requirements should be acknowledged in intervention programs targeted at improving deaf youth’s communicative skills. For girls, interaction fostering collaboration (asking questions, directives and elaborations, request for repetition in situations of communication difficulties; Martin & Bat-Chava, 2003; Murphy & Faulkner, 2006), or considerate language use in our study, has indeed been found to increase their acceptance. These communicative skills should be addressed in improving deaf girls’ communicative skills. Actively participating in interaction with hearing peers facilitates establishing friendships for deaf girls (Martin & Bat-Chava, 2003). For deaf boys, such interaction characteristics made no difference in their peer relations. The nature of their interactions is competitive and their socialization often revolves around activities such as sport. Deaf boys’ relationships indeed benefit from their ability in sports (Martin & Bat-Chava, 2003) which puts less emphasis on verbal communication but requires competitive communication (Maccoby, 1990); boys more often use commands, boasts of authority, provide information, tell jokes or exciting stories.

To conclude, in tackling lower peer status by deaf youth, teachers and itinerant services should pay caution to deaf youth not reaching for antisocial behavior in trying to attain popularity. Antisocial behavior makes a larger, compared to hearing youth, contribution to deaf youth’s popularity in mainstream education. It helps to ensure high popularity in the peer group (Cillessen & Mayeux, 2004), especially relational aggression, even among new peers (Cillessen, 2011). Nevertheless, antisocial behavior is undesirable behavior; in addition to adjustment problems for antisocial youth, antisocial behavior is detrimental to being accepted.
Deaf Youth in Special Education

For deaf youth in special education settings, prosocial behavior is most important in attaining positive peer status, for both acceptance and popularity, and both on the short and long term. Prosocial behavior is a dominant norm when present in the classroom (Asher & McDonald, 2009). Positive initiations of interaction should be fostered. Social skills training in the classroom setting should focus on the relative high prevalence of antisocial behavior by promoting prosocial behavior. Relationships with deaf peers are essential for deaf youth’s well-being (Musselman et al., 1996); the school context provides these relationships. The current study showed that peer relations in the classroom are less important for deaf youth’s well-being in special education, potentially because small classrooms limit the number of possible friendships. Deaf peers are more likely to have best friends outside the classroom. Increased prosocial behavior fosters relationships in the classroom and might have a positive effect on peer relations in the classroom.

Prosocial skills are also needed when leaving the school environment. Though deaf youth in special education seem to do fine in school, school is not the only context where deaf youth interact with peers. These deaf early adolescents are at risk of entering society with a variety of behavioral problems where this behavior will have negative consequences.

The relationship with the teacher is a strong determiner of well-being in special education. In line with Knoors and Hermans (2010), it is desirable if the teacher-student relationship in special education improves. In the study by Knoors and Hermans the communication barrier with the teacher was an important factor in deaf youth negatively judging their relationship with the teacher. Deaf youth also mentioned lack of encouragement and clarification during lessons. These matters are likely subjected to the previous. In special education, the communicative needs of youth vary considerably, with some deaf youth requiring sign language and others preferring spoken language. The presence of hearing classmates with SLI in some settings complicates this situation. It is thus difficult for teachers to meet all needs of students. Nevertheless, it is important to concentrate on. Increasing deaf youth’s and teachers’ knowledge about what their hearing loss comprises, might be beneficial in special education as well.
Suggestions for Future Research

Issues for future research addresses additional topics potentially important when studying deaf youth’s peer relationships in school. One area concentrates on peer-valued characteristics in attaining acceptance and popularity. Positive qualities ascribed to withdrawn youth are not enough to ensure higher peer status; withdrawn youth lack peer valued characteristics such as appearance and a sense of humor, in addition to their withdrawn behavior (Hymel et al., 1993). Appearance is a strong discriminator of acceptance and popularity (De Bruyn & Cillessen, 2006; Hymel et al., 1993; LaFontana & Cillessen, 2002). Deaf youth generally are considered socially immature compared to hearing peers of the same age (Kluwin et al., 2002). This is potentially an important feature of their overall appearance and how they come across to hearing peers. Interestingly, low accepted deaf adolescents have been found to use self-enhancement strategies in the area of physical appearance (Van Gent, Goedhart, Knoors, Westenberg, & Treffers, 2012). Future studies should address whether immature appearance of deaf youth is indeed a factor contributing to their lower peer status, potentially strengthening the effect of withdrawn behavior on peer status. Peer-valued characteristics have, for example, been found to moderate the relation between aggression and peer status, with aggressive youth who possessed peer-valued characteristics being less disliked that aggressive youth without these characteristics (Vaillancourt & Hymel, 2006).

The current thesis focused on peer relation inside the classroom. The secondary school though, has a larger social system than elementary school. Here, youth likely have important peer relations in school, but outside the classroom. These relations might serve as a protective factor for potential peer problems or lack of friendships in the classroom. Thus, future studies should also consider deaf youth’s social system outside the classroom.

Longitudinal data concerning communicative skills were not available in the current study. This was unfortunately due to a decrease in response of parents and teachers over the three years of data collection. Too little information was available to study the development of communicative skills. Future studies should try to address this and more explicitly study the role of communicative skills in secondary school.

The attitude of hearing peers toward having deaf classmates is another
point of interest. Though the attitude of classmates toward having deaf classmates had been found to be relatively negative, the current study did not take these attitudes into account. The degree of hearing loss might play a role here. Additionally, classmates’ attitudes regarding same-sex and cross-sex friendships should be considered, the latter mainly emerging when youth move from early adolescence into adolescence. In cross-sex relationships in adolescence, girls’ communication styles put them at a disadvantage (Maccoby, 1990).

To conclude, intensive intervention strategies as co-enrollment settings are not easily accessible for all deaf youth but are also difficult to establish. Future intervention studies should target less invasive programs, preferably with classroom participation; establishing positive peer relationships in mainstream education, but also in special education, is not just a matter of the deaf peer, but of all classmates.
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Summary

The main aim of the present thesis was to shed light on the development of deaf early adolescents’ peer status in the classroom. Peer status is expressed by acceptance and popularity. Acceptance reflects likability and social preference; popularity reflects visibility and influence in the peer group. Due to potential communication and behavior problems, deaf youth may experience challenges in establishing positive peer status. The transition from elementary to secondary school may, when students move from a familiar school setting to a new one with mostly unfamiliar peers, further challenge deaf youth. After the transition, a new place in the classroom hierarchy has to be conquered.

We studied potential predictors (behavioral, communicative, personality) of acceptance and popularity before the school transition (elementary school Grade 6; Chapters 2 and 3) as well as after the transition (secondary school, Grades 7 and 8; Chapter 5). In a hearing sample (Chapter 2), the distinction between acceptance and popularity as separate constructs was underscored. In this sample, prosocial and antisocial behaviors were positively associated with popularity. In contrast, withdrawn behavior was negatively associated with popularity. In addition, extraversion and pragmatic skills were positive indicators of popularity. However, extraversion moderated the associations of prosocial and antisocial behavior with popularity, and pragmatic skills moderated the association of prosocial behavior with popularity. Popularity was highest when high levels of prosocial or antisocial behavior were combined with high levels of extraversion, and when both prosocial behavior and pragmatic skills were high. For acceptance, the pattern was less complex; simply not being antisocial was the core prerequisite for peer acceptance. These findings imply that popularity combined with low levels of antisocial behavior is a good predictor of acceptance, and that prosocial-popular youth need an elaborate display of behaviors to attain their popularity.

In Chapter 3, predictors of peer status were addressed for deaf youth in Grade 6 of elementary school. We examined the associations of communicative skills (pragmatic, strategic), social behavior (prosocial, antisocial, withdrawn), and personality (extraversion, agreeableness) with acceptance and popularity, as a function of hearing status, gender, and educational setting. Acceptance varied as a
function of hearing status and gender, whereas popularity varied as a function of hearing status and educational setting. Deaf boys in mainstream education were less accepted and popular than their hearing classmates and than deaf peers in special education. Deaf girls in mainstream education were also less popular but not less accepted.

Regarding the predictors, communicative skills varied as a function of hearing status, whereas social behavior varied as a function of educational setting. Deaf mainstreamed children showed less developed pragmatic and strategic communicative skills (monitoring, improvisation, initiating/maintaining) than their hearing classmates, but more social adjustment than deaf peers in special education (more prosocial behavior, less antisocial or withdrawn behavior, and more agreeableness).

The data showed that for acceptance, deaf girls in mainstream education compensated the lack of improvisation with considerate language use (monitoring, and pragmatic skills) and more adjusted behavior (higher levels of prosocial behavior and agreeableness, lower levels of antisocial behavior) than boys. Deaf boys could not compensate; for them, communicative skills were ineffective to attain acceptance. In special education, gender differences in prosocial behavior explained deaf boys’ lower acceptance. Popularity was explained by pragmatic skills and improvisation as a function of hearing status. Differences in the voter population and social behavior norms were considered as an explanation for differences in popularity as a function of educational setting.

Chapter 5 addresses the peer relationships and social behaviors of deaf adolescents after the school transition, in the first two years of secondary school. Deaf mainstreamed students showed higher levels of withdrawn behavior and lower levels of acceptance and popularity than their hearing classmates. Deaf students were less adjusted behaviorally, more popular, but equally accepted in special education classrooms than in mainstreamed classrooms.

Deaf adolescents’ peer status was predicted by different behavior profiles in mainstream education than in special education. Regardless of school setting, deaf early adolescents’ behaviors in the beginning of secondary school strongly predicted their peer status at the end of the following grade. For deaf mainstream students, withdrawn behavior was the main negative predictor of peer status. For deaf students in special education, prosocial behavior was the main positive
predictor of peer status.

In addition to predictors of peer status, well-being in school as a consequence of peer status was studied. Chapter 4 addressed the peer and teacher relationships of deaf youth and the effects of these relationships on well-being in school during the transition from elementary to secondary school. Chapter 4 included two studies. In Study 1, the predictive effects of peer acceptance, popularity, and teacher support on well-being were examined cross-sectionally for early adolescents in Grades 6 and 7. Study 2 examined differences between deaf and hearing youth on the same set of predictors and well-being longitudinally during the transition to secondary school.

Study 1 showed that in mainstream education, peer and teacher relationships were associated with well-being in Grade 6 for both deaf and hearing youth; the relationship with the teacher was most important. For hearing youth, their relationship with their teacher and peer group popularity were important for their well-being after the transition in Grade 7. For deaf youth, peer relationships only were important for well-being in school, with acceptance more important for deaf girls and popularity for boys. For deaf early adolescents in special education, their relationship with their teacher predicted well-being in Grade 6, but when new classmates came into play in Grade 7, both acceptance and the teacher relationship predicted well-being in Grade 7.

In Study 2, well-being in school remained stable during the transition for mainstreamed hearing children, but not for deaf children. In mainstream schools, school well-being increased for deaf boys but decreased for deaf girls. In contrast, in special education schools, school well-being seemed to increase for deaf girls but to decrease for deaf boys. For deaf mainstream boys, the difference in popularity between deaf and hearing boys after the school transition might be less apparent and sensitive due to the decrease in popularity for all classmates, positively affecting their well-being. For deaf mainstream girls, their strong decrease in acceptance aligned with their decrease in well-being. For deaf girls in special settings, a strong improvement in their relationships with their teacher after the transition was positively associated with well-being in school. The data were inconclusive for deaf boys. For them, the general increases in peer acceptance and perceived teacher-student relationships were insufficient for improved well-being in Grade 7 compared to Grade 6. Potentially, their need for
competition and dominance in peer relations was not met due to the small classroom sizes with fewer classmates in special education after the school transition.

In summary, deaf youth were less accepted and less popular than hearing youth, but this effect was qualified by gender, educational setting, and the school transition. Deaf mainstreamed boys were less accepted before the transition, but deaf girls directly after the transition. Deaf mainstreamed youth were less popular than hearing classmates regardless of gender and grade. Deaf youth in mainstream education were equally accepted but less popular than deaf youth in special education. In mainstream education, deaf youth’s lower peer status was preceded by less well-developed communicative skills before the transition, especially for girls. This is in line with gender typical interaction styles where communication is an important aspect of relationships among girls, but not among boys. After the transition, withdrawn behavior explained deaf youth’s lower peer status both the short-term and the long-term. Deaf mainstreamed youths’ well-being was at risk as a result of their lower peer status; deaf mainstream boys were at risk before the school transition, but deaf girls after the transition. The results imply that different norms for acceptable behavior explain the relatively positive peer status of deaf youths in special education. The teacher-student relationship was most important for well-being in this setting. The dissertation ended with suggestions for future research and clinical implications in Chapter 6.
Samenvatting

Steeds meer dove en slechthorende (hierna DSH) kinderen en jongeren in Nederland gaan naar het reguliere onderwijs. Slechts 3% van alle schoolgaande jeugd heeft een gehoorverlies van 30 dB of meer. Dit betekent dat een DSH leerling meestal de enige leerling in de klas is met een gehoorverlies, vaak zelfs op school. De communicatiebarrière tussen DSH en horende klasgenoten, en het gedrag dat daar soms mee gepaard gaat, kunnen voor afwijzing door klasgenoten zorgen. Sociaal isolement kan dan op de loer liggen. Dit kan negatieve gevolgen hebben voor het welbevinden van DSH leerlingen.

De puberteit is voor alle kinderen een uitdaging met fysieke en mentale veranderingen. Ook op het sociale vlak zijn er veranderingen, zoals schooltransitie. Leerlingen gaan van een relatief kleine basisschool naar een middelbare school met een groter en nieuw sociaal systeem. Hier wordt een sociale hiërarchie belangrijk waarbij sociale status in de klas (acceptatie, populariteit) een belangrijke rol speelt. Acceptatie geeft de mate waarin een leerling aardig gevonden wordt door klasgenoten weer. Populariteit geeft aan of een leerling aanzien en invloed heeft in de klas. Jongeren zijn zich zeer bewust van hun positie in de groep.

Het doel van de huidige dissertatie was om de sociale status in de klas van DSH jongeren in kaart te brengen; welke factoren beïnvloeden acceptatie en populariteit en wat is de invloed van acceptatie en populariteit op welbevinden op school? Er deden 155 DSH leerlingen uit regulier en speciaal (cluster 2) onderwijs mee en meer dan 1500 horende leerlingen, van groep 8 tot de 2e klas van het middelbaar onderwijs. Om te bepalen hoe het gaat met de DSH leerlingen in het regulier onderwijs werden zij vergeleken met hun horende klasgenoten, maar ook met DSH leeftijdgenoten in het speciaal onderwijs.

Acceptatie en populariteit van dove jongeren

Voor schoolgaande DSH jongeren in het regulier onderwijs in Nederland bestaat de klas uit een relatief grote groep horende klasgenoten. In het speciaal onderwijs is er daarentegen sprake van een relatief kleine groep DSH klasgenoten. Soms zitten DSH leerlingen hier in de klas met horende klasgenoten die een taalontwikkelingsstoornis (ESM) of een autisme spectrum stoornis (ASS) hebben.
Het hebben van een gehoorverlies komt in het regulier onderwijs veel minder vaak voor dan in het speciaal onderwijs en valt daardoor veel meer op.

Regulier onderwijs


Speciaal onderwijs

In het speciaal onderwijs worden DSH jongeren in dezelfde mate geaccepteerd als in het regulier onderwijs, maar ze zijn populairder dan DSH leerlingen in het regulier onderwijs. Dit geldt voor groep 8 tot en met de 2e klas. In groep 8 worden DSH jongens wel wat minder geaccepteerd dan de DSH meisjes.

Factoren die acceptatie en populariteit beïnvloeden

Regulier onderwijs


Wat betreft populariteit blijkt dat alleen al het ‘anders zijn’ (DSH in een groep horende leerlingen) er al voor zorgt dat DSH jongeren minder populair zijn. Ook de minder ontwikkelde communicatieve vaardigheden (pragmatische, improvisatie) dragen hier aan bij. Dit geldt voor DSH jongens en DSH meisjes.

Gedrag kon de verschillen in acceptatie en populariteit in groep 8 niet verklaren, maar het speelt een grote rol na de schooltransitie in het regulier voortgezet onderwijs. DSH jongeren laten meer teruggetrokken gedrag zien in de brugklas en 2e klas. Hierdoor worden zij minder geaccepteerd, met name DSH meisjes. Ze zijn hierdoor ook minder populair dan hun horende klasgenoten. Het blijkt zelfs dat wanneer DSH jongeren teruggetrokken zijn in de brugklas, dit er nog in de tweede klas voor zorgt dat ze minder geaccepteerd én minder populair zijn.

Een mogelijke verklaring voor de daling in acceptatie van DSH meisjes in de brugklas is dat zij in de omgang met nieuwe klasgenoten (horende meisjes) direct tegen problemen aan lopen, omdat communicatie in hun vriendschapsrelaties zo belangrijk is. De DSH meisjes kunnen onvoldoende deelnemen aan gesprekken met horende meisjes en worden als teruggetrokken beschouwd. DSH jongens ervaren dit niet. Voor hen duurt het tot stand komen van een pikorde op basis van competitie, wat belangrijk is voor jongens, vermoedelijk langer. Zij ervaren dus minder snel moeilijkheden in contact met nieuwe klasgenoten. Uiteindelijk gaat
teruggetrokken gedrag voor hen echter ook een grote rol spelen.

**Speciaal onderwijs**

DSH jongeren in het speciaal onderwijs laten minder wenselijk gedrag zien dan DSH jongeren in het regulier onderwijs. Ze tonen meer antisociaal en meer teruggetrokken gedrag. Ook zijn ze minder vaak aardig tegen elkaar. Opvallend is dat dit niet leidt tot grotere problemen in de sociale positie in de klas. Hiervoor kan de volgende verklaring worden gegeven. In het algemeen leidt simpelweg aardig zijn tot acceptatie door klasgenoten. Wat betreft populariteit is het iets ingewikkelder; er zijn twee soorten populaire jongeren te onderscheiden. Ten eerste kan je populair zijn omdat je aardiger bent dan de gemiddelde klasgenoot. Ten tweede kun je populair zijn omdat je juist meer antisociaal gedrag laat zien, in combinatie met prosociaal gedrag. In het speciaal onderwijs blijkt het om de prosociale variant te gaan; aardig zijn zorgt ervoor dat je opvalt en populair wordt. Daarnaast is het ook belangrijk voor acceptatie door klasgenoten. De positieve invloed van aardig zijn op acceptatie en populariteit in het speciaal onderwijs bestaat op de korte maar ook de lange termijn (na de schooltransitie).

Alhoewel DSH meisjes ook in het cluster 2-onderwijs wel gebruik kunnen maken van attent taalgebruik, spelen communicatieve vaardigheden een veel minder grote rol dan in het regulier onderwijs, mogelijk omdat het minder opvalt binnen deze groep leerlingen (doof, ESM) als je een (communicatieve) fout maakt. Een gesprek beginnen met klasgenoten is wel belangrijk.

**Welbevinden op school**

Positieve sociale ervaringen zijn belangrijk voor het welbevinden, of je gelukkig voelen. Deze ervaringen worden opgedaan binnen sociale relaties. In de puberteit is school een belangrijke omgeving voor sociale relaties, en daarmee ook voor het welbevinden van jongeren. De sociale relaties op school kunnen worden onderscheiden in de relatie met de klasgenoten (acceptatie en populariteit) en de relatie met de leerkracht.

**Regulier onderwijs**

Op de basisschool in groep 8 lopen DSH jongeren risico op een lagere mate van welbevinden op school dan hun horende klasgenoten. Dit komt doordat zij
zich minder sociaal aanvaard voelen in de klas, niet omdat ze minder plezier hebben op school. Dit geldt wat meer voor DSH jongens (in hun relatie met horende jongens) dan voor DSH meisjes. Zowel relaties met klasgenoten als met de relatie met de leerkracht zijn belangrijk voor het welbevinden. De relatie met de leerkracht vormt geen probleem; zowel horende en DSH leerlingen beoordelen deze als positief. De sociale positie ten opzichte van horende klasgenoten vormt wel het probleem; de lagere acceptatie voor met name DSH jongens, en de lagere populariteit voor DSH jongens en meisjes zorgen ervoor dat zij zich minder gelukkig voelen in groep 8.

Na de overgang naar het voortgezet regulier onderwijs (brugklas) verandert er weinig voor horende klasgenoten. Voor DSH jongeren vinden er echter wel veranderingen plaats. De relatie met de leerkracht is niet meer belangrijk voor hun welbevinden, maar de relatie met hun klasgenoten juist wel. DSH leerlingen lijken op een nieuwe school meer bezorgd over hun relaties met klasgenoten dan met de (verschillende) leerkrachten. Hierbij is voor DSH meisjes met name acceptatie belangrijk en voor DSH jongens vooral populariteit. Voor meisjes zijn persoonlijke vriendschappen over het algemeen belangrijk, maar jongens zijn gevoeliger voor de groep waartoe zij behoren.


**Speciaal onderwijs**

In het speciaal basis- en middelbaar onderwijs valt het op dat de relatie met de leerkracht het belangrijkst is voor het welbevinden van de DSH leerlingen. De relatie met de klasgenoten (acceptatie) is pas belangrijk voor hun welbevinden wanneer zij nieuwe klasgenoten tegen het lijf lopen in de brugklas. De DSH jongeren in het speciaal onderwijs ervaren dezelfde mate van welbevinden als in het regulier onderwijs. Dit veronderstelt echter ook dat hun welbevinden verbeterd kan worden, in vergelijking met horende jongeren in regulier onderwijs.
Het welbevinden van DSH leerlingen in het speciaal onderwijs verandert, net als in het regulier onderwijs. Het grote verschil is dat er het omgekeerde lijkt plaats te vinden; voor DSH meisjes lijkt het welbevinden te gaan groeien, maar voor DSH jongens lijkt het juist te dalen na schooltransitie. Er moet wel opgemerkt worden dat deze veranderingen nog heel klein zijn. Toch strookt deze verandering voor DSH meisjes met hun verbeterde relatie met de leerkracht na schooltransitie. Voor DSH jongens is het gissen; mogelijk kunnen de kleine klassen niet voldoen aan hun behoefte aan competitie met andere jongens (rol van populariteit).

Het belang van de relatie met de leerkracht voor het welbevinden van DSH leerlingen in het speciaal onderwijs is enigszins zorgelijk. Ten eerste omdat hier DSH jongeren een minder positieve relatie met hun leerkracht ervaren dan DSH leerlingen in het regulier onderwijs. De communicatiebarrière tussen DSH leerlingen en de vaak horende leerkracht is hier mogelijk een probleem. Voor de leerkracht in het cluster 2-onderwijs is het moeilijk om aan de verschillende communicatieve behoeften van DSH en horende leerlingen (met ESM, ASS) in één klas te voldoen. Ten tweede neemt het belang van vriendschappen met leeftijdgenoten toe in de vroege puberteit, en willen jongeren zich losmaken van volwassenen; afhankelijkheid van volwassenen kan mogelijk de ontwikkeling van deze vriendschapsrelaties in de weg staan.

Conclusie

DSH jongeren in het regulier onderwijs ervaren vaker problemen in geaccepteerd worden of populair zijn dan hun horende klasgenoten. Vanzelfsprekend geldt dit niet voor alle DSH leerlingen, maar voor wie dit wel geldt, is het een probleem en kan het negatieve gevolgen hebben voor het welbevinden. Als we de acceptatie van horende leerlingen in het regulier onderwijs als richtsnoer aanhouden, dan kunnen we concluderen dat ook in het speciaal onderwijs de acceptatie van DSH leerlingen beter zou kunnen. De belangrijkste redenen voor mogelijke sociale problemen in de klas zijn het teruggetrokken gedrag en de minder ontwikkelde communicatieve vaardigheden in het regulier onderwijs, waarbij ook het geslacht van de leerling een belangrijke rol speelt. In het speciaal onderwijs blijkt dat meer prosociaal gedrag tussen leerlingen onderling een positieve effect kan hebben op de sociale acceptatie van leerlingen. Daarnaast speelt ook de relatie met de leerkracht een belangrijke rol.
Nina Wolters was born in Boxmeer, the Netherlands, on May 15, 1979. She attended secondary education (VWO) at the Elzendaal College in Boxmeer, after which she studied Language, Speech, and Computers at Radboud University Nijmegen. After completing the first bachelor year ('propaedeuse') she enrolled in the Cognitive Science program at Radboud University. In this program, Nina's main interest was atypical development. She choose to change studies, following this interest. She received her Bachelor's degree in Pedagogical Science (specialty Learning & Development, Sensory Handicaps) in 2004. Following this, she completed the two-year research master program in Behavioural Science cum laude in 2006, again at Radboud University. For her master thesis she conducted an experimental study on cross-language interaction and individual variability among deaf students learning a foreign (written and signed) language. She tested participants from Gallaudet University (Washington, DC) before their summer school and at the end of the summer program (in Aranjuez, and Paris). Nina’s master thesis received the Best Thesis Award 2007 from the Behavioural Science Institute. During her university training, Nina worked as a research assistant for projects on deaf youth’s reading and writing skills and blind children’s early development in the Department of Pedagogical Sciences. In March 2007 she started the PhD research reported in this thesis in the Learning and Plasticity research group of the Behavioural Science Institute (BSI). As of September 2012, she is a senior researcher at Royal Dutch Kentalis, Department of Expertise & Innovation (PonTeM R&D). Kentalis is a national Dutch organization providing diagnostic, care, and educational services to people with hearing or communication disabilities.
Publications

International Publications
Wolters, N., Knoors, H., Cillessen, A.H.N., & Verhoeven, L. (resubmitted). Behavioral, personality, and communicative predictors of acceptance and popularity in early adolescence.

National Publications
Dankwoord

Is het af? Ja, mijn proefschrift is af! Ik noem het dan wel *mijn* proefschrift, maar het is ook van jullie, allen zonder wie me dit niet gelukt was. Als eerste wil ik alle jongeren, ouders, scholen en ambulante diensten bedanken voor hun inzet:

Bedankt
DANKWOORD

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The aim of this series is to advance insight into the processes of communication within and across children and adults with special needs, including with learning disabilities, cognitive, physical and sensory impairments and persons from culturally and linguistically diverse backgrounds. It combines interest in sociolinguistic and psycholinguistic accounts of the acquisition and transmission of language and communication in these populations, and in the educational solutions to help individuals overcome or reduce communication disabilities and to support their participation in society.

1. Multimedia support of language learning in kindergarten. *Eliane Segers*
2. Reading comprehension in deaf children: The impact of the mode of acquisition of word meanings. *Loes Wauters*
3. Language and literacy development in children with Specific Language Impairment. *Marjolijn van Weerdenburg*
5. Variation of language, cognition, and behavior in children with Specific Language Impairment. *John van Daal*
7. Emergent literacy in children with cerebral palsy. *Marieke Peeters*
8. Neurocognitive markers of phonological processing: A clinical perspective. *Nina Davids*
9. The nature of pragmatic language impairment. *Mieke Ketelaars*
10. Enhancing early language development in children with intellectual disabilities. *Margje van der Schuit*
12. Social participation of deaf youth in school: Predictors and consequences of acceptance and popularity of deaf early adolescents before and after a major school transition. *Nina Wolters*