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# The Self-Concept of Deaf/Hard-of-Hearing and Hearing Students

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## Abstract

The present study investigated the self-concept of deaf and hard-of-hearing (DHH) students in different educational settings compared with those of hearing students in Ethiopia. The research involved a sample of 103 Grade 4 students selected from 7 towns in Ethiopia. They were selected from a special school for the deaf, a special class for the deaf, and a regular school. The Self-Description Questionnaire I (Marsh, 1990) was used to measure the children's self-concept. The study results indicated that, in comparison with their hearing peers, DHH students had a lower self-concept in the areas of general self, general school, reading, and parental relations. The DHH students in the special school showed a higher self-concept in regard to their physical appearance than the hearing and DHH students in the special class. There were no statistically significant differences between the groups in the self-concept dimensions of peer relations, mathematics, and physical abilities.

There is noticeable interest in the study of the self-concept of DHH children because it is a dimension of psychological development in which there is interaction between the socio-affective, cognitive, communicative, and linguistic aspects, and the DHH children may exhibit significant differences compared with the hearing children (Bat-Chava, 1993; Hintermaier, 2008; Kluwin, Stinson, & Colarossi, 2002; Obrzut, Maddock, & Lee, 1999; van Gent, Goedhart, Knoors, Westenberg, & Treffers, 2012). Earlier studies (Powers, 1990) showed that DHH children had more negative self-concept than their hearing counterparts in terms of communication and social competence due to the developmental delay resulting from early language deprivation. Other studies comparing the self-concept of DHH children and their hearing peers have shown inconsistent results. Some studies have established a higher incidence of low self-concept in DHH individuals than in hearing individuals (Bat-Chava, 1994; Schlesinger, 2000), whereas others have found no difference (Cates, 1991). It has also been suggested that one must examine this complex phenomenon more closely to understand how deafness influences self-concept and self-esteem (Bat-Chava, 2000; Foster, 1998). Most studies in this field have focused on

the communication challenges that DHH individuals face in developing positive self-concept and have noted that conducive communicative conditions in the early years and related experiences of acceptance are significant factors in the development of self-concept. Some researchers have found that DHH children who have DHH parents showed better self-concept than DHH children who have hearing parents (Bat-Chava, 2000; Crowe, 2003; Obrzut et al., 1999; Woolfe and Smith, 2001). DHH parents act as positive role models for their DHH children and share the same identity, culture, and language; therefore, the children are more likely to develop similar concepts of the other and the self. However, about 90–95% of DHH children are born to hearing parents who often have little experience with individuals who are DHH and who, therefore, face challenges in raising children with hearing loss in a world in which the majority of the surrounding population is typically hearing. Moreover, despite the development of advanced amplification devices, the ability of deaf children to learn spoken language remains limited (Marschark, 2007). This is primarily due to the availability of these devices, especially for children living in the rural parts of the country. The global trend in recent years has been to educate DHH

children in mainstream settings, and this is also likely to be the case in Ethiopia in the future.

To provide an appropriate learning environment for DHH students, the socio-emotional and academic impacts of educational settings on DHH students need to be examined. Self-concept is considered an important construct within education because of its links to students' motivation, achievement, confidence, and psychological well-being (Hay, 2005). Many studies on self-concept have addressed the academic domain. This has likely resulted from the relationship found between students' academic self-concept, academic achievement, and academic behavior (Marsh & Craven, 1997, 2006).

The purpose of this study was to examine the differences in the self-concept domains among DHH students who attend two different educational settings (special schools and special classes) compared with their hearing peers in Ethiopia. In Ethiopia, although DHH students in both settings (special schools and special classes) follow the regular curriculum of the country, we assumed that the achievement of the students in the special classes would be lower as compared to those in the special schools. This is because the special classes lack the relevant educational materials, resources, and skilled teachers needed to serve DHH students. The special schools, on the other hand, tend to have teachers with better sign language skills, more resources and materials, and DHH adults who can serve as role models for students. In addition, the special schools serve larger populations of DHH students, thus increasing the probability for creating better communication and social interaction.

## Self-concept and Self-esteem

According to Harter (1999), self-concept is defined as the perception that individuals have of themselves regarding the different aspects of their personalities and who they are. Self-concept is the cognitive thinking aspect of the self (related to one's self-image), and it generally refers to the totality of a complex, organized, and dynamic system of learned beliefs, attitudes, and opinions that each person holds to be true about his or her personal existence and where he or she belongs in the world (Purkey, 1988). Self-esteem is often used to refer to the affective or emotional aspect of the self, generally refers to how one feels about or values himself or herself, and refers to particular measures about the components of self-concept. Some authors even use the two terms interchangeably (Huitt, 2004).

Current investigators tend to view self-concept as multidimensional, involving different aspects of oneself. In fact, Shavelson, Hubner, and Stanton (1976) developed a theoretical model of a multidimensional, hierarchical self-concept, in which the general self appears at the apex and is divided into academic and nonacademic components that are further divided into more specific components. Historically, a unidimensional perspective in which self-concept is typically represented by a single score, which is variously referred to as general self-concept, total self-concept, global self-worth, or self-esteem (these terms are treated as synonymous; Marsh, 1993), has dominated the self-concept research. In many psychological disciplines (e.g., psychology in education, sport, and development), the multidimensional perspective of self-concept is now widely accepted and used.

Self-concept theory emphasizes that perceptions of the self cannot be adequately understood if the role of frames of reference is ignored (Marsh, 1991). The same objective characteristics and accomplishments can lead to disparate self-concepts, depending on the frames of reference or standards

of comparison that individuals use to evaluate themselves, and these self-beliefs have important implications for future choices, performance, and behaviors. In their original proposal of a hierarchical, multidimensional self-concept structure, Shavelson et al. (1976) also suggested that individuals have multiple frames of reference against which to evaluate their accomplishments. Two widely researched frame-of-reference effects in the self-concept literature are the internal/external and big-fish-little-pond-effects (BFLPE) models. According to Marsh (1991), academic self-concept is affected by both an internal and an external frame of reference. In the external frame of reference, students compare their self-perceived performances in a particular school subject with the perceived performances of other students in the same school subject and other external standards of actual achievement levels. If they perceive themselves to be able in relation to other students and to these objective indicators of achievement, they should have a high academic self-concept in the school subject. In the internal frame of reference, students compare their own performance in one particular school subject with their own performance in another school subject. If, for example, mathematics is their best school subject, they should have a positive math self-concept that is higher than their verbal self-concept. In the BFLPE model, Marsh (1991) hypothesized that students also compare their own academic abilities with those of their classmates and use this social comparison impression as one basis for forming their own academic self-concept. According to Marsh (1991), the BFLPE effect predicts that equally capable students have lower academic self-concepts when attending schools in which the average ability levels of classmates is high and higher academic self-concepts when attending schools in which the average ability is low. Hence, academic self-concept depends not only on a student's educational setting but also on the accomplishments of those at the school that the student attends. An implication of this effect is that low- or medium-ability students might prefer to attend low-ability schools instead of high-ability ones, as this would be better for their self-concept. These pupils can receive additional motivation from low- or medium-ability pupils in their classes because their own achievements appear more significant. They may feel more honored and may be motivated to maintain their edge over the other pupils.

## Self-concept and Deafness

The factors that affect a DHH individual's self-concept have been identified as poor parental communication skills, inadequate maternal bonding, feelings of mistrust due to a sense of inequality and negative attitudes toward DHH people, poor acquisition of sign language skills, lack of appropriate role models, social isolation, negative body image, lack of a strong cultural identity, and rejection from family members and society in general (Bat-Chava, 1993, 1994, 2000; Hintermair, 2008; Schlesinger, 2000).

In a meta-analytical study of self-esteem, Bat-Chava (1993) examined the effects of family and school factors and the influence of DHH group identification. Among other findings, being a DHH child of DHH parents and using sign language were associated with higher self-esteem. Bat-Chava (2000) also found that people with culturally Deaf and bicultural identities could be expected to have higher self-esteem. In a recent study, Hintermair (2008) examined 629 DHH people and showed that those with marginal acculturation collectively have lower self-esteem and show less satisfaction with life than those with who have a stronger cultural identity. This result was in keeping with the findings of other studies (Bat-Chava, 2000; Maxwell-McCaw, 2001),

and with regard to one's psychosocial well-being, it heightens the significance of having a cultural anchor. Overall, although these studies address diverse groups and settings of DHH individuals and include different variables, they indicate that good communicative conditions in the early years and related experiences of acceptance are significant factors in the development of self-concept.

The development of self-concept is a continuous process with the ongoing assimilation of new ideas and the rejection of old ones, although self-concept is likely to become more stable during adulthood. Given that the development of self-concept is based on the accumulation of experiences and the individual's interpretation of them from infancy onward, we might predict that language plays a central role in its formation (Edwards & Crocker, 2008). It is well established that DHH children lag behind their peers in their understanding and use of vocabulary related to emotions (Knoors & Marschark, 2014), and this is likely to have an impact on the development of a multifaceted self-concept. An awareness of other people's thoughts, feelings, and experiences makes it easier for children to understand their own experiences and emotions. In DHH children, the language defects and communication difficulties that are typically experienced, particularly in early childhood, will affect their awareness of what other people experience and, hence, their understanding of their own internal worlds (Edwards & Crocker, 2008).

In the literature, no consensus has been reached regarding the effect of type of education on DHH children's self-concept: some researchers have shown the existence of a higher self-concept in DHH children who are enrolled in mainstream education than those who are enrolled in special schools, whereas others have found no difference (Leigh, Maxwell-McCaw, Bat-Chava, & Christiansen, 2009). Possibly, DHH children evaluate their abilities differently in varied school contexts. Although DHH children who attend special schools evaluate themselves within a compatible peer group, DHH children in the mainstream setting will compare themselves with their hearing peers (van Gorp, 2001). Conversely, it could also be argued that DHH children who attend mainstream schools actually feel higher self-worth because they are able to fit in with their hearing peers, which can be perceived as a major achievement. van Gorp's (2001) research on the self-concept of deaf secondary students in different educational settings in Canada found that although students who were educated at integrated centers tended to have a higher academic self-concept, those who attended special schools had a higher social self-concept. Her studies showed that being in segregated settings (special schools) had social advantages over being in integrated settings (congregated and resource settings) with regard to feelings about one's physical appearance, peer relations, and self-worth, whereas general school self-concept was better at integrative schools than in units or special schools. The children who attended the integrated schools also had better self-perception with regard to their reading skills than those

at special schools. In van Gorp's (2001) study, there was no difference between self-concept and the form of communication used by the children.

The purpose of the present study was to investigate the specific self-concepts of DHH students in two educational settings (special school and special class) and compare these to those of hearing students in Ethiopia. This research will allow professionals and teachers to design appropriate self-concept enhancement intervention programs to maximize the academic and social self-concepts of DHH children. Moreover, it reflects the African perspective of DHH education for the wider audience.

## Methods

### Participants and School Settings

In Ethiopia, placement options for DHH children can be categorized into three broad types: (a) schools exclusively for DHH students, which include day/residential schools; (b) special classes within the regular public schools, allowing social interaction among DHH and hearing students during their free time and extracurricular activities; and (c) regular public schools, typically with limited DHH peers integrated with hearing students (often referred to as inclusive). The special classes provide education for DHH children up to Grade 4 by teachers of the deaf before integrating them with regular hearing students beginning in Grade 5. The determination of the child's educational placement is made by parents. In Ethiopia, unlike Western countries, there is no team of professionals working with parents to make placement decisions, early screening tests, or appropriate early intervention programs.

The participants were 103 Grade 4 students representing 3 types of groups in different school settings: DHH students in special classes attached to regular schools, DHH students in special schools, and hearing students in regular schools. The characteristics of the students who participated in this study are described in Table 1. They were from the Southern Nations, Nationalities, and Peoples' Region (from the Hossana, Arbminch, and Hawassa Town Administrations); Oromia Region (from the Asella and Adama Town Administrations); Amhara Region (from the Bahir Dar Town Administration); and Addis Ababa City Administration. The participants were selected purposefully due to the small number of Grade 4 DHH students in special classes. Among the participants, 29 were DHH students from special classes (mean age = 15.4, *SD* = 2.9; range from 10 years to 22 years), 31 were DHH students from special schools (mean age = 13.1, *SD* = 1.7; range from 9 years to 17 years), and 43 were hearing students from regular schools (mean age = 12.1, *SD* = 1.7; range from 10 years to 18 years) where special classes were attached (Table 1). All Grade 4 DHH students from selected special schools and special classes participated in the study. The

Table 1. Participants of the study

School setting	N	Age (Mean [SD])	Hearing level		Gender		Percentage (%)
			<70 dB	>70 dB	Male	Female	
DHH in special class	29	15.4 (2.9)	1	28	13	16	28.2
DHH in special school	31	13.1 (1.7)	1	30	16	15	30.1
Hearing in regular school	43	12.1 (1.7)	43	0	21	22	41.7
Total	103	13.3 (2.5)	45	58	50	53	100

Note. N = 103. DHH = deaf and hard of hearing; SD = standard deviation.

hearing participants were selected randomly from the same school where the special classes were attached.

Almost all the students in the special classes and special schools had severe to profound bilateral hearing loss, with the exception of one hard-of-hearing student from each setting. There were 58 DHH participants with profound hearing loss whose hearing levels were measured 90–130dB, 5 participants with severe hearing loss (75–87dB), and 2 hard of hearing (27 and 29 dB). The remaining 43 participants were hearing Grade 4 students from the same school where the special classes were located (Table 1). The first researcher measured the hearing levels of the DHH students using the pure tone audiometer. All DHH participants relied on sign communication, and none of them used amplification. The average age of the participants in the different groups varied, and especially students in special classes were somewhat older. However, the age range in all groups was quite wide (8 years in hearing classes and in special schools and 12 years in special classes), which reflects a common situation in Ethiopian elementary schools. Some DHH students commonly join school late in their age because parents may not be aware that the child could actually learn and thus miss the normal school entry age. Moreover, schools/classes for the DHH children are typically far from the homes of DHH students that may postpone school entry as it may be difficult for the younger ones to walk long distances, for example, 2–3 hr one way.

The special classes selected for this study were located in Adama, Asella, Bahir Dar, and Hawassa, whereas the special schools were in Hossana (residential school), Arba Minch (day school), and in Addis Ababa (day school; Table 2).

## Procedure

The Self-Description Questionnaire I (SDQ-I), developed by Herbert W. Marsh (1990), was used to measure self-concept of children in primary school age. It contains 76 items designed to tap into 8 different aspects of self-concept. The SDQ-I is one of the most extensively used instruments for measuring the multiple dimensions of self-concept in preadolescent children. It is also the most validated self-concept instrument and has been the target of well-planned research strategy to firmly establish its construct validity of interpretation based on the responses to its multidimensional sensitive items (Byrne, 1996).

The SDQ-I comprises eight scales for measuring different components of academic and nonacademic self-concept. The SDQ-I assesses three areas of academic self-concept (reading, mathematics, and general school), nonacademic physical self-concept (physical appearance and physical ability), and non-academic social self-concept (peer and parent relations) with preadolescent children aged 8–14 years. In addition to the academic and nonacademic self-concept scales, the SDQ-I consists of a scale for measuring students' self-esteem or self-worth (often labeled as general self-concept), which depicts the degree of self-appreciation or self-respect.

The English version of the SDQ-I was translated into Amharic, the official language of Ethiopia. The translation was done by the first researcher whose mother tongue is Amharic and who is fluent in English and Ethiopian sign language. The Amharic translation was checked by a language expert in Addis Ababa University who had experience in translation.

Tests were carried out in the students' own classrooms; thus, the number of participants per selected school was not many, not exceeding 20 students in number. With the consent of the school director, practical arrangements were made with the students' main teacher. The 76 items for the SDQ-I measures were distributed to each child for him or her to fill out while the first researcher presented them on an overhead projector both in writing and in Ethiopian sign language. The researcher explained all the questions and instructions in sign language for the DHH students and read them aloud for the hearing students. They were presented in separate sessions for the hearing and DHH groups to avoid mixing sign and spoken languages. If the children did not understand a certain word, they were assisted using paraphrasing. In completing the SDQ-I, the children were asked to respond to simple declarative sentences (e.g., "I am good at mathematics" and "I make friends easily") with one of five responses: false, mostly false, sometimes false/sometimes true, mostly true, or true. The reliabilities of the SDQ-I subscales were all acceptable with the Cronbach  $\alpha$  ranging from .63 to .77 (physical abilities = .72, physical appearance = .74, reading = .67, mathematics = .67, peer relations = .64, parent relations = .71, general self = .63, and general school = .63). In peer relations subscale, 2 items were removed and in general-self subscale, 3 items were removed, as their correlation with the scale was low and deleting increased reliability.

In addition, the students' grades in all subjects (percentages provided annually) assessed by the teachers, as recorded in the latest school reports, were used as indicators of the students' academic achievement.

## Analysis

All statistical analyses were performed using SPSS version 18.0. One-way analysis of variance (ANOVA) was used to compare differences in the scores of the DHH and non-DHH students in the three groups. Post hoc tests were done using the Tukey method to find out which groups differed from each other statistically and significantly. In all analyses, effect sizes were estimated with the  $\eta^2$  statistics of ANOVA. Effect size is important in estimating the practical importance of any differences found. In this estimation, a rule of thumb for the interpretation of  $\eta^2$  statistics suggested by Cohen (1988) was used, where  $\eta^2$  values above .01 indicate a small effect size, values above .06 a medium effect size, and values above .14 a large effect size. Finally, analysis of covariance was used to control for the effect of school grades on the academic self-efficacy subscales, as performance in school is a known predictor of self-efficacy. The effect of gender and age

**Table 2.** Location and number of participants by the school setting

School setting	Arbminch	Adama	Asella	Hawassa	Bahir Dar	Hossana	Addis Ababa Victory	Total
DHH in special class	0	10	5	9	5	0	0	29
DHH in special school	9	0	0	0	0	17	5	31
Hearing in regular school	1	12	10	8	12	0	0	43
Total	10	22	15	17	17	17	5	103

Note. DHH = deaf and hard of hearing.



across all the scales was also controlled by adding it as a covariate in the models respectively.

## Results

The results indicated that the groups differed in the dimensions of self-concept related to physical appearance, parent relations, general school, reading, and general self. In the post hoc test, there were pair-wise differences between the DHH in the special class and the DHH in the special school in the areas of physical appearance. In this study, there were no statistically significant differences between the three groups in the dimensions of self-concept of physical abilities, peer relations, and mathematics (Table 3).

There was a statistically significant difference in the physical appearance self-concept between the three groups ( $p \leq .031$ ,  $F = 3.59$ ), and the effect size of this difference was moderate ( $\eta^2 = .07$ ). The post hoc tests revealed that the DHH students in the special school showed a more positive self-concept with regard to physical appearance than the DHH students in the special class ( $p = .043$ ).

In regard to the parent relations self-concept, a significant difference was observed between the three groups ( $p \leq .000$ ,  $F = 8.47$ ,  $\eta^2 = .15$ ), as indicated by the large effect size of the differences. The post hoc tests indicated that the DHH students in the special class scored less on the parent relation self-concept than the hearing students ( $p = .000$ ). The difference in the parent relation self-concept between the DHH in the special school and the hearing students was not significant ( $p = .062$ ). Interestingly, the DHH students in the special school showed better parental relations (mean = 4.19,  $SD = .62$ ) than the DHH in the special class (mean = 3.94,  $SD = .73$ ), although the difference was not statistically significant (Tukey  $p = .216$ ).

There was a significant difference in the general school self-concept between the hearing and the DHH students ( $p \leq .008$ ,  $F = 5.04$ ) with a medium effect size ( $\eta^2 = .09$ ). The post hoc test showed that regardless of their educational settings, the DHH students had a lower general school self-concept than their hearing counterparts ( $p = .027$  for the DHH in the special class and  $p = .022$  for the DHH in the special school), but there was no significant difference between the DHH groups ( $p = 1.00$ ).

In regard to the reading self-concept, a significant difference existed between the three groups ( $p \leq .001$ ,  $F = 7.77$ ,  $\eta^2 = .13$ ), as indicated by the medium effect size. The DHH students in the special class (Tukey  $p = .001$ ) and special school (Tukey  $p = .016$ ) showed a lower reading self-concept than the hearing students. There was no statistically significant reading self-concept difference between the DHH groups in the two settings ( $p = .678$ ).

A statistically significant difference was also found in the general self-concept dimension between the hearing and DHH students ( $p \leq .005$ ,  $F = 5.65$ ), and the effect size of the difference was moderate ( $\eta^2 = .10$ ). The post hoc test revealed that the DHH students in the special class scored significantly lower on general self-concept than their hearing counterparts ( $p = .004$ ); however, the difference between the DHH in the special school and the hearing students was not significant ( $p = .154$ ). Moreover, there was no significant general self-concept difference between the DHH groups ( $p = .354$ ).

In the general school self-concept areas, we wanted to test whether academic performance as a known covariate of self-concept explains the differences in the three groups and added academic performance as a covariate to the three models. In the model predicting general school self-concept, academic performance was a significant covariate ( $p = .000$ ;  $F = 14.38$ ;  $\eta^2 = .13$ ), whereas the main effect of placement was no longer significant ( $p = .203$ ;  $F = 1.62$ ;  $\eta^2 = .032$ ). In the model predicting the self-concept of reading, adding the covariate ( $p = .010$ ;  $F = 6.83$ ,  $\eta^2 = .07$ ) reduced the effect size of placement ( $\eta^2 = .082$ ), but placement remained a significant predictor of self-concept ( $p = .014$ ;  $F = 4.43$ ). In the mathematics self-concept, the covariate was not significant and did not change the result in any way. Furthermore, gender and age differences had no impact on the self-concept domains within this sample.

## Discussion

The present study examined the self-concept of DHH students who attended different educational settings compared with hearing students in Ethiopia. The data were collected through a survey administered to a sample of 103 Grade 4 students who attended a special school for the deaf, a special class for the deaf, and a regular school for hearing. The SDQ-I (Marsh, 1990) for preadolescents was used as a survey instrument.

In the self-concept domain of physical appearance, the DHH students in the special school had advantages over the DHH students in the special class and the hearing students. This result supports findings from earlier studies that have investigated the self-concept development of DHH children and found higher scores for the physical appearance self-concept among DHH students in special schools (van Gent et al., 2012; van Gurp, 2001). The explanation for the results of the current study might be that at the special school, all the students are DHH, use the same method of communication, and appear to make comparisons among themselves. In this study, the DHH students in the special class and the hearing students were from the same school; therefore, DHH students in

**Table 3.** Dimensions of self-concept differences as perceived by the students

Items of self-concept	Hearing students ( $n = 43$ )		DHH students in special class ( $n = 29$ )		DHH students in special school ( $n = 31$ )		F	Sig.	$\eta^2$
	Mean	SD	Mean	SD	Mean	SD			
Physical appearance	3.65	0.82	3.58	0.67	4.04	0.63	3.59	0.031	0.07
Physical abilities	3.50	0.79	3.67	0.73	3.62	0.77	0.47	0.626	0.01
Parent relations	4.51	0.41	3.94	0.73	4.19	0.62	8.47	0.000	0.15
Peer relations	3.53	0.37	3.65	0.57	3.87	0.78	2.09	0.129	0.04
General school	4.33	0.37	3.99	0.65	3.99	0.57	5.04	0.008	0.09
Reading	4.43	0.43	3.97	0.65	4.08	0.64	7.77	0.001	0.13
Mathematics	4.22	0.62	3.84	0.69	4.04	0.69	2.87	0.061	0.05
General self	4.19	0.53	3.66	0.77	3.90	0.71	5.65	0.005	0.10

Note.  $N = 103$ . DHH = deaf and hard of hearing; SD = standard deviation.

the special class had a much larger population of hearing students in their immediate environment with whom to compare their appearance than those DHH students who attended the special school. The lesser degree of competition in regard to "looking good" may have been the factor that contributed to the higher scores for physical appearance at the special school. However, the DHH students in both settings scored lower in the self-concept domain of the general self than the hearing students, thereby indicating that self-concept domains other than physical appearance were the major factors contributing to the students' feelings of self-worth.

In this study, there was a significant difference in regard to the self-concept domain of parent relations between the hearing and DHH students. The DHH students in the special class scored significantly lower in the self-concept domain of parent relations than the hearing students. Self-concept is affected by interactions with significant others and by social comparison (Marsh, 1991). An essential aspect of social interaction is linguistic communication. If an individual has difficulty communicating with significant others, this factor may affect his or her self-concept, particularly in the social dimensions (peer and parent relations). When we compared the degree of the parent relations self-concept between the DHH groups, the students in the special school appeared to have more positive scores than those in the special class; however, this was not statistically significant. The reason could be that in Ethiopia, the special schools have much better resources and more qualified teachers than the special classes. Therefore, parents' first choice is to ensure that their deaf children are registered at the special school to enable them to receive a better education, and parents may pay greater attention to their DHH children during the short time they have together at home. Usually, the special schools also offer sign language training for parents, which could favor better communication at home.

The formation of a healthy, positive self-image may pose significant challenges for a child when family, peers, community, or societal evaluations of the individual are perceived by him or her as being negative or inaccurate. According to Desselle (1994), deafness does not directly cause poor self-esteem; rather, the degree to which the child is able to communicate contributes to the development of his or her self-worth. If parents view deafness as a defect or disability and this is conveyed to the child over time, we might expect negative consequences for the child's development of self-concept.

In the present study, there was no significant difference in the self-concept dimension of peer relations between the hearing and DHH students. The reason for this could be that for the DHH students in both settings (special school and special class), their friends were other DHH students in the school/class with whom they could communicate freely and deeply in sign language. Therefore, at school, they had better opportunities to socialize on a day-to-day basis with other deaf people than they did at home.

In the academic self-concept areas, the DHH students in both settings had significantly lower self-concepts in the general school and reading domains compared with the hearing students. When the covariate academic performance was added to the general school self-concept, the main effect of placement was no longer significant. This means that the differences in the general school self-concept between the hearing students and the two groups of DHH students were explained by the better school achievement of the hearing students. Therefore, it is not deafness, as such, that leads to lower school self-concept, but the fact that the DHH students do less well in school, and, thus, have lower self-concepts. In the reading self-concept, adding the covariate reduced the effect size of placement, but placement remained a significant predictor. This suggests that unlike with the overall school self-concept, the

self-concept in reading is not explained fully by the lower achievement of the DHH students in school, but rather that deafness is a language-specific challenge that is also reflected as the lower self-concepts of the DHH students. Interestingly, there was no statistically significant difference in mathematics self-concept between the DHH and hearing students. Mathematics skill depends less on linguistic competence (the primary area of difficulty for the DHH students) than skill in reading (van Gorp, 2001). These sample DHH students in Ethiopia had no access to language (signed or spoken) in their early years before they began to attend school. In Ethiopia, early diagnosis, screening tests, and appropriate early intervention are not available; consequently, deaf children are subjected to painful traditional practices to address their deafness in their precious early childhood, and this is done without communication and language learning. By the time they come to school, which is usually at 9–15 years of age, they are beyond the age at which they could have learned the fundamental basic skills more quickly and easily (Mulat, Savolainen, Lehtomäki, & Kuorelahti, 2015), which might have contributed to their low scores on the general school self-concept.

## Limitations

In addition to the possible delays in language development among the DHH students, the translation of the SDQ-I from another culture and from the English language to Amharic, and then to Ethiopian sign language, might have had an effect on the DHH children's ability to understand. The possibility that the communication competence of the pupils may have affected the results is a limitation in this study. However, the DHH students' limited language skills, particularly in the special classes, were addressed as much as possible by the assistance of the teachers and the researcher. For example, the researcher showed the questionnaire with an overhead projector and provided explanations as needed with sign language and oral language (Amharic). These children usually started to learn Ethiopian sign language after they began to attend school, which has an effect on their communication competence. Therefore, it is important that future studies translate the SDQ-I self-report into Ethiopian sign language using a rigorous iterative process of translation and back translation. Another limitation of this study would be the small sample that consisted only of Grade 4 students. Future research should include larger sample sizes and longitudinal studies.

## Conclusion

This study, to our knowledge, is the first to investigate the differences in the self-concept between DHH and hearing children in a sub-Saharan African country. Results suggest that the comparatively lower self-concept of DHH children in the areas of general school, reading, general self, and parent relations requires the joint attention of teachers, parents, and professionals. There is mounting evidence that self-concept enhancement intervention programs would help to improve the self-concepts of adolescents in educational settings (O'Mara, Green, & Marsh, 2006) and contribute to improved academic performance. We can improve self-concept through appropriate encouraging comments, praise, and/or feedback strategies, especially if the strategies are contingent upon performance that is attributional in nature and goal relevant. According to O'Mara et al. (2006), interventions need to focus on specific dimensions of self-concept and then assess the effects of the intervention in relation to that particular self-concept domain instead of, or in addition to, other specific and global components of self-concept (e.g., math self-concept outcomes in

an intervention intended to enhance math self-concept). Hence, teachers and professionals need to design appropriate self-concept enhancement intervention programs to enhance the academic and social self-concepts of DHH children.

## Conflicts of Interest

No conflicts of interest were reported.

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