

Hearing Aid Effect on Self and Peer Perception in Children With and Without Hearing Loss

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ABSTRACT

Purpose: The perceived social stigma of wearing amplification (i.e., hearing aid effect) on self and peer perception in children with normal hearing (NH) from an urban public school and children with hearing loss (HL) from a school for the Deaf and hard of hearing was investigated. *Method:* Twenty-four children participated in the study. Twelve children with NH and 12 children with HL, fitted with amplification, were surveyed online. Participants were shown images of age-matched children fitted with amplification and asked to answer questions which targeted self and peer perception on items related to intelligence, social acceptance, and perceived differences from those pictured wearing behind-the-ear hearing aids or cochlear implants. *Results:* A Fisher's Exact Test revealed no significant differences in children with HL ($p>0.05$) on self-perception of intelligence or social acceptance of other children wearing amplification. Significant differences ($p<0.05$) were found in children with NH on items related to the social acceptance of and perceived differences from their peers fitted with amplification, suggesting the existence of the hearing aid effect in this group. *Conclusions:* The stigma of wearing amplification in children relative to differences in peer perception may exist among children with NH in an urban public-school setting.

INTRODUCTION

Effects of wearing amplification not only influence the child with hearing loss (HL) but the children with whom they interact. Peers can make judgments, sometimes negative, about a child wearing amplification. Judgments are made in regards to appearance, personality, and intellect (Harter, 1998; Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002). Negative judgments made by normal hearing (NH) peers can lead to diminished self-esteem and self-perception in the child with HL that wears amplification (Haley & Hood, 1986). Negative self-judgments can be based on the stigma of wearing hearing aids or from feeling different or inferior to children not wearing amplification.

The stigma associated with wearing hearing aids was termed the "hearing aid effect" by Blood, Blood, and Danhauer in 1977. The investigators reported that adults rating images of young children with and without hearing aids assigned negative attributes to the children depicted with hearing aids (Blood, Blood, & Danhauer, 1978). Since then, numerous studies confirmed the hearing aid effect in young to elderly adults that judged images of their peers, or other age groups ranging from children to adults and the elderly (e.g., Blood & Blood, 1982; Danhauer, Blood, Blood, & Gomez, 1980; Johnson & Danhauer, 1982; Johnson, Danhauer, & Edwards, 1982; Johnson, Danhauer, Gavin, Karns, Reith, & Lopez, 2005; Mulac, Danhauer, & Johnson, 1983). Later studies in adults suggested that the hearing aid effect had decreased, in

part due to the technological advances in hearing instruments that created more cosmetically appealing amplification styles (e.g., Cienkowski & Pimentel, 2001; Rauterkaus & Palmer, 2014).

Research has also shown the hearing aid effect to be present in school-age children rating images of their peers wearing amplification. Dengerink and Porter (1984) surveyed students 10 to 12 years of age who judged images of five age-matched peers shown either wearing one of three different types of hearing aids (body aid, BTE, in-the-ear, eyeglasses) or without any devices. The children wearing hearing aids were rated significantly more negatively on intelligence, achievement, and personality than children not wearing any devices. The size of the hearing aid was found to be a factor in influencing perceptions; fewer negative ratings were observed with the smaller sized hearing aid. The authors concluded that in-service training should be provided to teachers as well as educational programs for student peers in the mainstreaming of children with HL (Dengerink & Porter, 1984).

Haley and Hood (1986) evaluated perceptions of 12 to 15-year-old adolescents with either NH or HL, from different school types (inner city, rural, suburban, school for the hearing impaired). The students rated videotapes of two age-matched peers speaking, one with NH and one with HL shown wearing a body aid, BTE, or no hearing aid. Support for the hearing aid effect was found in that the adolescents with and without HL rated the hearing-impaired peer more negatively on speech quality, intelligence, and willingness to interact socially with. However, students from the school for the hearing impaired were less critical when rating speech characteristics in the peer with HL. Two studies on indigenous Australian populations of children (5 to 12 years of age; Ryan, Johnson, Strange, & Yonovitz, 2006) and adolescents (12 to 18 years; Strange, Johnson, Ryan, & Yonovitz, 2008) rating images of peers wearing different hearing aid styles confirmed the presence of a strong hearing aid effect.

In contrast, Silverman and Largin (1993) did not find support for the hearing aid effect in elementary school-age children from a parochial school, who evaluated images of peers wearing hearing aids. It was surmised that the insular nature of the educational environment versus that of a public-school education might have fostered greater empathy and acceptance of those with disability.

The stigma associated with hearing aids may strain social interactions for children with HL. All children can experience low self-perception, but the contributing factors of self-perception are different for NH children than for children with HL (Eccles, Wigfield, Harold, & Blumenfeld, 1993). The child can experience lower self-esteem due to the differences in communication skills, social skills, and appearance after receiving a hearing aid or cochlear implant. Past research has demonstrated that Deaf children mainstreamed in hearing schools are more often overlooked for friendships (Stinson & Anita, 1999), and persons with visible disabilities, such as those with HL wearing aids, may have their abilities underestimated by their peers (Phemister & Crewe, 2004).

A child's perception plays a large role in his or her overall self-esteem (Haley & Hood, 1986). As children age, they begin to understand themselves and develop feelings about themselves.

Increases in age can lead to more feedback and criticisms from parents, teachers and peers based on different sources such as academics and social skills (Eccles, et. al., 1993; Harter, 1993, 1998; Robins, et. al., 2002).

A goal of this investigation was to determine if there is a difference in self-perception between children without HL and those with HL fitted with amplification. The study also examined whether there is a difference in how children with NH or HL perceive their peers with HL, fitted with amplification. Based on these perceptions, this research sought to determine if the hearing aid effect, in terms of self and peer perception still exists, forty years later, in children with and without HL.

METHODS

A total of 24 adolescent children ages 9 to 18 years were included in this study. Twelve children with NH were recruited from the Queens, New York public-school system, and 12 children with HL, fitted with amplification were recruited from Mill Neck School for the Deaf, Mill Neck Center for Hearing Health, Mill Neck, New York, and the St. John's University Speech and Hearing Center. Of the children surveyed with HL, 6 wore BTE hearing aids and 6 used cochlear implants. The Institutional Review Boards at St. John's University, Queens, New York and Adelphi University, Garden City, New York approved this study.

All participants completed the same survey which was done online for convenience in data collection. Questions were developed by the researchers to target both self and peer perception on items related to intelligence, social acceptance (i.e., securing friendships and willingness to interact socially) and perceived differences from those pictured wearing behind-the-ear hearing aids or cochlear implants. Participants were initially asked their age, gender, and hearing status. They were then asked two survey questions aimed to understand self-perception. The self-perception questions focused on perception of intelligence (i.e., *Are you smart?*) and ability to secure friendships (i.e., *Do you make friends easily?*). Participants were then shown a collage of six images of children wearing either BTE hearing aids or cochlear implants. The images were grouped in a 3x2 table with the top three images showing the profile of two boys and one girl wearing cochlear implants. The bottom three images in the table showed the profile of two girls and one boy wearing visible BTE hearing aids. Survey participants were then asked four questions about the children pictured wearing hearing aids and cochlear implants. These questions were about perceived intelligence (i.e., *Are the kids in the pictures smart?*), willingness to secure friendships (i.e., *Would you be friends with any of the kids in the pictures?*) and to interact socially (i.e., *Would you hang out with the kids in the pictures?*), and perceived differences from (i.e., *Do you think the kids in the pictures are different than you?*) those pictured wearing visible hearing aids and cochlear implants. Survey participants answered 'yes', 'maybe' or 'no' to each question. A Fisher's Exact Test was performed to determine relationships in self and peer perception among children with NH and those with HL wearing amplification.

RESULTS

Table 1 presents the demographics of the participants by age, gender, hearing status, and amplification device.

Table 1. Demographic information for participants in the study; 12 children with normal hearing and 12 children with hearing loss.

a. Age Distribution

Age	<i>n</i>
9 to 12 years	9
13 to 15 years	8
16 to 18 years	7

b. Gender, Hearing Status, and Amplification Device

Hearing	Male <i>n</i>	Female <i>n</i>	Total <i>n</i>
Normal Hearing	7	5	12
Hearing Aid	2	4	6
Cochlear Implant	3	3	6

Table 2 presents the outcomes to the survey questions according to the NH and HL groups. No significant differences ($p > 0.05$) were found between the groups of children with NH and HL on the self-perception items on intelligence and ability to secure friendships. Peer perception outcomes showed some differences in the children with NH. The outcomes for the peer-perception question on willingness to secure friendships revealed that significantly more ($p = 0.04$) of the children with HL would seek friendships with other children with HL than would children with NH. Outcomes for the peer-perception question on perceived differences revealed that significantly more ($p = 0.04$) of the children with NH perceived children with HL as different from them as compared to the perceptions of the children with HL. No significant differences ($p > 0.05$) were found between the groups of children with NH and HL in the other peer-perception survey items on perceived intelligence or willingness to socialize with children with HL.

Table 2: Results from the survey on self and peer perception in 12 children with normal hearing and 12 children with hearing loss.

Survey Questions		Yes	Maybe	No
1. Are you smart?	NH	9	3	0
	HL	9	3	0
2. Do you make friends easily?	NH	6	6	0
	HL	7	5	0
3. Are the kids in the pictures smart?	NH	7	5	0
	HL	8	4	0
4. Would you be friends with any of the kids in the pictures?	NH	7	4	1
	HL	12	0	0
5. Would you hang out with the kids in the pictures?	NH	5	6	1
	HL	10	2	0
6. Do you think the kids in the pictures are different than you?	NH	2	3	7
	HL	0	0	12

DISCUSSION

Survey outcomes revealed no significant differences in terms of self-perception for survey participants with NH and participants wearing hearing aids or cochlear implants. Both groups considered themselves to be intelligent and sociable. These are positive findings for both groups of children during an important period of development.

There were also positive findings in terms of peer perception between the two groups for the question relating to intelligence. There was no significant difference in the judgement of children wearing hearing aids and cochlear implants as being intelligent, with both groups of children with NH and HL judging those pictured as “smart”.

However, significant differences were found for two questions of peer perception. Normal-hearing children were less willing to seek friendships with the children pictured wearing BTE hearing aids or cochlear implants, and they were more likely to think those children were different from themselves. These findings, which exhibit the hearing aid effect, are similar to those reported decades earlier (Dengerink & Porter, 1984; Haley & Hood, 1986; Ryan et al., 2006; Strange et al., 2008) and suggest that the stigma of hearing aids and cochlear implants in children, relative to perceived differences and social interaction, may still continue to exist.

These findings have implications for the main-streaming of children with HL in an urban, public high school setting. Challenges could include discrimination or exclusion by normal-hearing peers. The negative reactions toward wearing amplification could affect childhood self-esteem during an important period of growth and self-awareness (Phemister & Crewe, 2004; Stinson & Anita, 1999).

To address these challenges, Ryan et al. (2006) developed an intervention segment on HL for children with NH. A 10-minute educational session was developed to inform study participants about the use and importance of amplification. Discussion points aimed to minimize the stigma of wearing amplification were also included. A booklet with images of hearing-impaired peers in various social situations was used for focus points and accompanied a discussion. This intervention was found to significantly reduce the negative perceptions associated with wearing hearing aids. Study results indicated there is the potential to change children’s attitudes towards HL (Ryan et al., 2006). These findings are important because they indicated that greater awareness, counseling, and the mainstreaming of children with HL could help to normalize the appearance of wearing amplification and diminish the hearing aid effect in childhood and adolescence.

To help support mainstreamed children with HL, in-class information sessions about HL and hearing technologies should be developed. Informational counseling could help minimize the effects of the bias and ease the transition for teenagers with HL entering a mainstream public-school setting.

LIMITATIONS

The sample size of this study was small and may explain why these findings differ from past studies in adults, which indicate the hearing aid effect is decreasing (e.g., Cienkowski & Pimentel, 2001; Rauterkaus & Palmer, 2014). In addition, the data were collected from groups of students in two very different school settings. Had the children with HL wearing amplification been in the same classrooms as the public-school students surveyed, the results may have been different. However, despite these weaknesses, the results of this study are important. A hearing aid effect was found in an urban public-school setting. Informational sessions about hearing and hearing technologies could improve mainstreaming outcomes.

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