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Predictors of flourishing among children with hearing loss

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ABSTRACT

Objectives: To examine parent report of flourishing in children with hearing impairments compared to children without hearing impairments, and to explore whether school engagement and bullying related to child flourishing.
Methods: Participants were 655 children with hearing impairments and 44, 618 children without hearing impairments who were 10–17 years of age. Caregivers completed telephone interviews about their child's functioning for the National Survey of Children's Health.
Results: Children without hearing loss had higher parent-reported flourishing compared to children with hearing loss when controlling for child demographics (i.e., race, age, sex). School engagement was positively related to flourishing of children with hearing loss. Bullying behaviors were not related to flourishing of children with hearing loss.
Conclusion: Improving school engagement may increase flourishing of children with hearing loss, which is critical given that children with hearing loss experience lower flourishing than children without hearing loss. Examining the relationships among other risk and resilience factors and flourishing for children with hearing loss will provide information for interventions to enhance the adaptation of these children.

1. Introduction

Hearing impairment is a common congenital abnormality in children, occurring in about 2–3 children per 1000 in the United States [1]. Other estimates suggest about 2–3 children per 1000 are considered clinically deaf, with approximately 1–6 per 1000 having more mild levels of hearing loss [2]. Children with hearing impairments have reported lower levels of self-esteem and quality of life and higher levels of stress compared to children who do not experience hearing impairments [2,3]. Keilmann et al. [4] assessed the resilience of children with hearing impairments and found that children's self-perceptions declined as age increased. Children with hearing impairments are at risk for long-term problems with their behavioral and emotional functioning, which can negatively impact their development [5,6]. Ching et al. [7] discovered that among younger children, the severity of hearing loss predicted poor outcomes, and resilient functioning needs to be examined in samples with older children with hearing loss.

Although children with hearing impairments may experience gains in verbal language and performance on tests of cognitive abilities as they age, their academic performance may not keep pace with their changing abilities. Poor school performance may be related to not feeling engaged at school. For example, Dalton [8] reported that if children with mild or moderate hearing impairments feel disenfranchised at school, it may negatively impact their functioning. School may also be difficult for children with hearing loss due to peer interactions. Children with hearing loss may experience bullying by others [9]. No information is available on whether they engage in bullying of others, which also might negatively impact their functioning.

The current study examined parent report of flourishing (i.e., resilience in child functioning) in children with hearing impairments compared to children without hearing impairments, between the ages of 10–17 years, enrolled in the National Survey of Children's Health [NSCH 2011/2012; 10, 11]. It was hypothesized that parent report of child flourishing would be greater for children without hearing impairments than children with hearing

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impairments. Additionally, the relationships among bullying behavior and flourishing, and school engagement and flourishing among children with hearing impairments were explored. It was anticipated that severity of hearing loss, bullying or being cruel to others, and not being engaged in school would be related to lower flourishing.

2. Methods

2.1. Participants

Participants included in the present study from the 2011–2012 NSCH were 655 children with hearing impairments and 44,618 children without hearing impairments who were 10–17 years of age. Among children with hearing impairments, 354 (54%) had mild impairments, while 297 (45%) had moderate/severe impairments. Parents did not report on the severity of hearing impairments for four children (<1%). Additional demographic information is presented in Table 1.

2.2. Data source

Parents were recruited using cross-sectional, list-assisted random digit dial samples of both landline and cellular telephone numbers from all 50 states in the U.S., the District of Columbia, and the U.S. Virgin Islands. The legal guardian or parent most knowledgeable about the child's health completed the interview about one child. If there was more than one child in the home, then a child was randomly selected to be the subject of the interview. The NSCH 2011–2012 resulted in 95,677 interviews. Average interview length was about 33 min. The completion rate for interviews was approximately 54% for the landline sample and about 41% for the cellular telephone sample. Parents provided information about their health and their child's health and mental health as well as providing information about their child's functioning. A thorough description of the telephone interview procedures has been described by the Child and Adolescent Mental Health Measurement Initiative [10,11]. The current study was approved by the primary authors' university-based institutional review board and permission was received by the Data Resource Center for Child and Adolescent Health to analyze NSCH data.

2.3. Study variables

A composite variable representing parent report of youth flourishing was the dependent variable. An expert panel developed questions to assess flourishing in the NSCH sample and three questions were selected to represent flourishing, a proxy for resilient functioning in children. For these questions, parents and guardians provided information about: (1) the child's interest and curiosity in learning new things; (2) the child's ability to remain calm and in control when faced with a challenge; and (3) whether the child followed through with what he or she said he or she would do. Interviewers recorded parent responses to the flourishing questions on a five-point scale ("never, rarely, sometimes, usually, or always"). A composite score from "0" (no flourishing items endorsed) to "3" was created from the three aforementioned questions. A score of "3," indicating high flourishing, meant that the parent had provided a response of "usually" or "always" for all three flourishing questions and a score of "2" indicated the same responses were provided for two of the questions, and a score of "1" indicated a "usually" or "always" response was provided for one of the questions. Parent report of child engagement in school and bullying behavior were independent variables. Parents provided information about whether their child bullied on a five-point scale (never, rarely, sometimes, usually, or always). A school engagement variable was computed using two variables assessing how often children cared about doing well in school ("never, rarely, sometimes, usually, always") and how often children did all required homework in the previous month (never, rarely, sometimes, usually, always). Both of these variables were then collapsed to have three response categories: "never/rarely/sometimes," "usually," or "always." If children engaged in either caring about school or completing required homework "never," "rarely, or "sometimes," then they were categorized as "never/rarely/sometimes" engaging in school. Children who engaged in both caring about school and completing required homework "always" were coded as "always" engaging in school. All other children were coded as "usually" engaging in school.

Children were classified as having a hearing impairment based on parent responses to the question "Does (child) have a hearing problem?" with the response coded as "does not have condition" or "currently has condition." For children with hearing problems, severity was categorized based on parent report as "mild" or "moderate/severe."

2.4. Statistical analysis

A series of count regression models were conducted using Mplus statistical analysis software [12] using a subset of the NSCH

Table 1
Participant characteristics.

	Total sample ($n = 45,273$)	Youth with hearing loss ($n = 655$)	Youth without hearing loss ($n = 44,618$)
Sex			
Boy	23,573 (52%)	356 (54%)	23,217 (52%)
Girl	21,646 (48%)	298 (46%)	21,348 (48%)
Age			
10 years	5393 (12%)	85 (13%)	5308 (12%)
11 years	5306 (12%)	73 (11%)	5233 (12%)
12 years	5790 (13%)	93 (14%)	5697 (13%)
13 years	4991 (11%)	75 (12%)	4916 (11%)
14 years	5365 (12%)	78 (12%)	5287 (12%)
15 years	5758 (13%)	81 (12%)	5677 (13%)
16 years	6261 (14%)	84 (13%)	6177 (14%)
17 years	6409 (14%)	86 (13%)	6323 (14%)
Race			
Caucasian	33,481 (74%)	473 (72%)	33,008 (74%)
African American	4485 (10%)	63 (10%)	4422 (10%)
Other	6231 (14%)	108 (17%)	6123 (14%)

Missing values excluded.