

Who Is Where? Characteristics of Deaf and Hard-of-Hearing Students in Regular and Special Schools

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To address the needs and abilities of deaf and hard-of-hearing (DHH) students in different educational settings, it is important to understand who is in which setting. A secondary analysis of the National Longitudinal Transition Study 2 database was conducted to examine differences in the characteristics of students who attended special schools, such as schools for the deaf, and those who attended regular schools serving a wide variety of students, such as neighborhood, alternative, and charter schools. The study included a nationally (U.S.) representative sample of about 870 DHH secondary school students. Findings from parent interviews and surveys revealed that students who attended only special secondary schools had greater levels of hearing loss, were more likely to use sign language, had more trouble speaking and conversing with others, and were more likely to have low functional mental scores than students who had attended only regular secondary schools. There were no differences in the presence of additional disabilities or cochlear implants between students in the different settings. In many ways, student characteristics did not vary by school type, suggesting that both types of secondary schools serve students with a wide range of needs and abilities.

The U.S. Education for All Handicapped Children Act of 1975 (P.L. 94–142) mandated that children with special needs be educated in the least restrictive environment (commonly known as LRE) to the maximum extent possible. There still is considerable debate about which subgroups of deaf and hard-of-hearing (DHH) students will benefit from placement in regular classrooms rather than separate classrooms

and to what extent (Knors & Marschark, 2012; Stinson & Kluwin, 2011), but there is no debate that the enrollment of students with special needs in regular classrooms has altered public education (e.g., Fish, 2002). The law now known as IDEA (Individuals with Disabilities Education Act) has contributed even more to dramatic changes in the education of DHH students: Before 1975, approximately 80% of DHH children were attending schools for the deaf; today, more than 85% spend all or part of the school day in regular school classrooms (Data Accountability Center, 2008).

There are a number of common assumptions about the makeup of enrollments in regular schools versus schools designed for DHH students. These in part reflect beliefs about how best to educate students with disabilities and DHH students in particular.¹ For example, schools for the deaf and other specialized programs for DHH students are widely believed to enroll more students with complex needs, including those with multiple disabilities; whereas students with more hearing, with or without cochlear implants, are assumed to be concentrated in regular schools (e.g., Allen, 1992; Harris & Terletski, 2011; Karchmer & Mitchell, 2011). Spoken language is assumed to be the language of instruction for DHH students in regular *mainstream* classrooms (also known as *general education* classrooms), whereas sign language is seen to play a primary role in schools for the deaf (Allen & Anderson, 2010). More generally, Antia, Jones, Reed, and Kreimeyer

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(2009) suggested that because of the greater likelihood of their using spoken language, DHH students with mild to moderate hearing losses would have less need of academically related interventions and thus be more likely to be placed in regular school classrooms.

Although these only are assumptions or conclusions based on limited samples, they often drive educational practice as well as perceptions and school placement of DHH students. The need for caution in this regard cannot be overstated. Reviews by Easterbrooks and Stephenson (2006), Spencer and Marschark (2010), and Marschark, Tang, and Knoors (in press) have clearly indicated that we know far less about educating DHH students than commonly is believed. Both argued for a better understanding of the effectiveness of various practices in regular and separate settings and how they are affected by student characteristics and the large individual differences among DHH students.

The challenges in accurately characterizing DHH students reflect the complexity associated with characterizing a population that is extremely heterogeneous, as well as the difficulty of obtaining accurate information concerning a population with what is considered a low-incidence disability that is widely dispersed in regular and special educational environments. In addition, previous studies of the characteristics of students in the different settings have used data from sources with small sample sizes or samples that do not represent all DHH students.

This paper is aimed at gaining a better understanding of who is in the different types of schools—an important step if we are to educate DHH students in ways appropriate to their strengths and needs. The findings presented here are based on secondary analyses of data from the nationally representative, large-scale National Longitudinal Transition Study-2 (NLTS2) conducted in the United States from 2000 to 2009. NLTS2 was shaped by a conceptual framework that identified and linked the main factors that need to be understood in the transition of students with disabilities from secondary school to post-high school outcomes (see Wagner et al., 2003). The primary focus of the present study was the extent to which DHH secondary school students who attended special secondary schools such as schools for the deaf differed from those

who attended regular secondary schools serving a wide variety of students such as neighborhood and charter schools. We also examined whether DHH students who attended both types of secondary schools at one point or another differed from those who attended only one or the other.

Issues in School Placement for DHH Students

Various studies have attempted to identify factors associated with the characteristics, placement, and academic abilities of DHH students. Since the 1970s, many of the investigators who have examined the increasing trend toward educating DHH students in regular schools have used what is now referred to as the Annual Survey of Deaf and Hard-of-Hearing Children and Youth, conducted by Gallaudet University (e.g., Allen & Osborn, 1984; Karchmer, Milone, & Wolk, 1979; Schildroth & Hotto, 1991). Early in the move to mainstreaming in the United States, researchers using this survey found that “students who are integrated constitute a population with different characteristics from those shown by students who receive instruction in special education settings only” (Allen & Osborn, 1984, p. 100). Specifically, researchers found that DHH students in regular schools tended to be older, white rather than a member of a minority group, and have more hearing (e.g., Karchmer et al., 1979). Allen and Osborne (1984) further suggested that those students recognized as “more capable” by parents and teachers were more likely to be in regular schools.

More recently, Mitchell and Karchmer (2011) reported that although males and females were equally represented in regular and special schools, white students tended to predominate in the regular schools. Drawing on the 2008 Annual Survey, Allen and Anderson (2010) analyzed data from 8,325 students with profound hearing losses. They found that the three variables of age, cochlear implant use, and mode of communication in the home together predicted which students were in regular classrooms using spoken language only.

Although the Annual Survey has been an important source of information on the education of DHH students, its findings do not represent the full population of DHH students. Allen and Anderson (2010), as well

as others (e.g., Holt, 1993), have acknowledged that the Annual Survey has a sampling bias toward special schools for the deaf, underrepresenting students in regular schools. Ries (1994) found that the Annual Survey overrepresented students with greater hearing losses. In addition, Mitchell and Karchmer (2011) reported that DHH students who were age 18 and above were overrepresented in the Annual Survey. The sampling biases of the Annual Survey are problematic, because it frequently was and is used to describe DHH students in the United States—descriptions that are not accurate for the national population of DHH students. The overrepresentation of students in schools for the deaf has become even more problematic with the implementation of universal newborn hearing screening (UNHS) throughout the United States. Early intervention now lasts on average two years longer than it did pre-UNHS, and it is reasonable to expect that more children identified through UNHS would be mainstreamed than those who were late identified (and thus had less time in early intervention).

Data sources other than the Annual Survey also have also been limited by nonrepresentative samples. Antia, Reed, and Kreimeyer (2008) were interested specifically in factors associated with academic achievement of DHH students in regular schools. They suggested that good research on the population is difficult both because DHH students currently are widely dispersed across schools and because most research is focused on deaf students, whereas the majority of the DHH population has mild to moderate hearing losses.

Investigators have long acknowledged that no single form of education is best for all DHH students. Pflaster (1980), for example, sought to “determine which factors to consider when deciding on the most appropriate educational placement for an individual hearing-impaired child” (p. 72). Yet her study involved only DHH students enrolled in regular schools. Pflaster examined intercorrelations among 251 different variables ranging from communication to social-emotional functioning to artistic ability to parental expectations in a sample of students 6.6–19.8 years of age with a mean hearing loss of 71 dB (range = 30–110 dB). She identified three “primary” clusters of variables: spoken language communication (production and reception), personality (both student personality characteristics

and teachers’ perceptions of the students’ academic potential), and overall language ability (linguistic competence primarily relating to written and spoken language skills). Together, these and other findings led Pflaster to conclude that communication/language and personality characteristics are central in determining the “appropriateness” of a regular classroom setting for any particular DHH student. However, she only described the nature of her study sample and did not evaluate either the appropriateness or the relative value of such placements.

Complexities and confounds in student characteristics and school placement emphasize the importance of having a full understanding of which DHH students are in special schools and which are in regular schools if we are to be able to support their academic and social success. In earlier studies, it was unclear whether it was school placement, hearing thresholds, or language fluency that explained observed levels of academic achievement and social functioning (e.g., Owrid, 1970; Reich, Hambleton, & Houldin, 1977). Hearing thresholds often are associated with language abilities and reading comprehension scores (e.g., Holt, 1993; Yoshinaga-Itano & Downey, 1996), but they generally do not predict either academic achievement or classroom learning more broadly (Convertino, Marschark, Sapere, Sarchet, & Zupan, 2009; Marschark, Morrison, Lukomski, Borgna, & Convertino, 2012; Powers, 1999, 2003; Tymms, Brien, Merrell, Collins, & Jones, 2003; cf. Karchmer, Milone, & Wolk, 1979). Using grades as an indicator of learning by DHH children in elementary and middle school, for example, Blackorby and Knokey (2006) found that among students in both integrated and self-contained classrooms, those with severe to profound hearing losses did better, not worse, than students with lesser hearing losses. When abilities of DHH children in integrated settings were measured using Woodcock-Johnson III Passage Comprehension and Mathematics tests, students with severe to profound losses generally performed better than those with moderate losses. Clearly, a more careful consideration of the characteristics of students in different settings, including hearing thresholds and communication abilities, is needed if we are to understand the needs and abilities of students in the different settings.

Methods

Data Sources and Analytic Methodology

As indicated earlier, findings for this study came from secondary analyses of the National Longitudinal Transition Study-2 (NLTS2) database and rely primarily on parent report. Funded by the U.S. Department of Education in 2000 with an initial sample of more than 11,000 students, NLTS2 produced the only recent national database on the characteristics, experiences, and post high school outcomes of secondary school-age students with disabilities. It is nationally representative not only of students in the targeted age range as a whole but also of those in each federal special education disability category, including students who are deaf or hard of hearing (D/HH). It is the largest data set available to examine the experiences and outcomes of secondary school DHH students and the only one that can address these topics for DHH students nationally. Given that this was a secondary analysis of an existing data set, analyses were limited to the data collected by NLTS2.

The analysis sample included approximately 870 DHH students who met the following criteria as of December 1, 2000: they were 13–16 years of age, in Grade 7 or above, and identified by their school district as receiving special education services for a primary disability of “hearing impairment.”^{2,3} NLTS2 sampling procedures involved first drawing a random sample of school districts that served students in the eligible age range, stratified by region, the size of the local education authority (or LEA; i.e., student enrollment), and wealth (the proportion of the secondary student population living below the federal definition of poverty). The target sample of 501 LEAs was reached. In addition, 77 state-sponsored special schools (serving primarily DHH students, students with vision impairments, and those with multiple disabilities) were invited to participate, with 38 providing student rosters for the study. The second sampling stage entailed randomly selecting students receiving special education in each of the 12 special education disability categories from the rosters of participating LEAs and special schools.

The NLTS2 weights allow findings to be estimates of the true values for the U.S. population of DHH students in the NLTS2 age range. The response for each

sample member was weighted to represent the number of youth in the “hearing impairment” category in the kind of LEA (i.e., region, size, and wealth) or special school from which he or she was selected. Weights also took into account nonresponses within sampling strata to reduce nonresponse bias. Analyses for the current study were weighted using an NLTS2 cross-wave weight to yield estimates that generalize to the U.S. population of DHH students in the NLTS2 age range receiving special education services within the NLTS2 time frame. Further details on the weighting strategy can be found in Newman et al. (2011) and Valdes, Godard, Williamson, Van Campen, McCracken, Jones, and Cameto (2012).

The NLTS2 database includes data collected from interviews and/or surveys of parents and youth across five waves of data collection (conducted every other year beginning in 2001 and ending in 2009), high school transcripts, surveys of students’ high school teachers, and direct assessments of students’ academic achievement. Data for this paper were primarily from parent interviews/surveys conducted in the initial years of the study, 2001 and 2003, when the majority of the sample members still were in secondary school. In addition, information on the type of school attended was drawn from parent/youth interviews/surveys from the data collection waves in which youth were enrolled in secondary school (most of the youth had exited school by Wave 4), as well as from school surveys.

Analyses involved descriptive statistics (e.g., percentages and means) and bivariate relationships (i.e., cross tabulations), excluding cases with missing values. Missing values ranged from 1% to 8% for most items, with the exception of mother’s education level (13%) and the number of parents in the household (15%). In the tables provided, a standard error is presented for each mean and percentage. All statistics were weighted to be representative of a larger population of secondary school age DHH students; no imputation of missing values was conducted. Comparisons between DHH students in the different types of secondary schools were conducted using two-sample *t* tests with unequal variances.

Measures

Types of secondary schools. For the purposes of this investigation, students who were in nonschool settings

such as a hospital, home school, or a juvenile justice facility were excluded from analyses (0.2% of secondary school age DHH students). To examine characteristics of students who attended different types of secondary schools, we examined school enrollment over time,^{4,5} grouping students into three categories:

1. *Regular secondary schools only*, including regular secondary schools that serve a wide variety of students, as well as magnet, charter, alternative, and vocational schools.⁶ Students who attended these types of schools across all waves of data collection while they still were in secondary school, according to parent or student report, were included in this category. (To simplify language, the term “regular secondary school” refers to those who had attended regular secondary schools only.)⁴
2. *Special secondary schools only*, including schools that serve only students with disabilities. These include schools for the deaf, as well as others serving only students with disabilities (e.g., schools for the blind and those serving students with multiple disabilities). Students who attended special schools across all waves of data collection while they were still in secondary school, according to parent or student report, were included in this category. (To simplify language, the term “special secondary school” refers to those who had attended special secondary schools only.)
3. *A mix of both regular and special secondary schools*. Students who attended both regular and special secondary schools, as defined above, across data collection waves, transferring in either direction at one or more points in time, were included in this category.

Among students in the analysis sample, 78% attended regular secondary schools only, 14% attended special secondary schools only, and 8% attended both types of schools across data collection waves. Of the students who attended a mix of both types of schools, approximately equal percentages transferred from a regular secondary school to a special school or from a special school to a regular secondary school.

Student and family characteristics. We selected measures of student and family characteristics cited in

previous research to be related to school placement, as well as those known to be related to student outcomes such as academic achievement. Specifically, we examined:

- Demographic characteristics including gender, ethnicity, mother’s level of education, and household income,
- Disability- and health-related characteristics that is, if the child had additional disabilities, level of hearing loss, use of cochlear implants,
- Communication modes and skills (e.g., use of spoken or sign language, ability to understand others),
- Functional and social skills (e.g., ability to perform basic life tasks and interact with others),
- Educational history (e.g., history of grade retention, suspensions), and
- Parental expectations (e.g., with regard to high school completion, postsecondary education).

It was beyond the scope of NLTS2 to conduct independent assessments of factors such as level of hearing loss and communication functioning; therefore, analyses of these factors rely on parent report. Further details on the measures used are provided as they are discussed in the sections below.⁷

Results

Various student characteristics were compared across the three types of secondary school enrollment patterns—regular secondary schools only, special secondary schools only, and a mix of both types of schools. Results are presented below.

Demographics

Overall, independent of school type, approximately half the secondary school DHH students were female; 60% were white, 17% were African American, 18% were Hispanic, and 6% were other race/ethnicities (Table 1). Approximately 30% came from households with incomes of \$25,000 or less, 32% from households with incomes of \$25,000–\$50,000, and 38% from households with incomes exceeding \$50,000. Approximately 18% of the students had mothers who did not complete high school, 35% had mothers who

Table 1 Parent-reported demographic characteristics of secondary school deaf and hard-of-hearing (DHH) students

	Secondary school type							
	DHH students overall		Regular schools only		Special schools only		Mix of special and regular schools	
	Percent	SE	Percent	SE	Percent	SE	Percent	SE
Gender (870)								
Male	49.7	2.41	48.7	2.83	55.3	5.03	46.9	7.30
Female	50.3	2.41	51.3	2.83	44.7	5.03	53.1	7.30
Race/Ethnicity (870)								
White	60.2	1.24	61.0	2.02	62.2	7.19	51.9	9.79
African American	16.5	0.88	15.3	1.42	25.0	7.18	12.8	4.74
Hispanic	17.8	1.09	17.3	1.77	10.2	3.53	35.0	9.21
Other	5.5	0.41	6.5	0.65	2.6	1.22	+	+
Household income (800)								
\$25,000 and under	30.2	1.26	29.1	1.94	20.0	7.62	39.9	9.65
\$25,000–\$50,000	31.5	1.13	31.7	1.69	29.6	5.32	33.9	11.41
Over \$50,000	38.2	1.34	39.3	2.22	40.4	7.82	26.2	8.07
Mother's level of education (760)								
Less than high school	18.2	2.19	16.2	2.56	20.0	4.67	34.3	10.13
High school graduate or equivalent	34.7	3.85	34.4	5.03	43.2	7.55	23.2	7.08
Some college	29.9	2.65	30.2	3.15	24.0	5.63	23.9	9.45
Bachelor's degree or higher	18.2	2.55	19.1	2.98	12.8	3.56	18.6	8.32
Youth lives with two parents (740)	67.3	2.63	69.9	3.35	63.0	8.06	47.7	10.29

Note. + indicates cell size of <3.

Percentages are weighted population estimates.

Sample sizes, rounded to the nearest 10, are presented in parentheses for each variable.

Source: National Longitudinal Transition Study 2 Wave 1 and 2 Parent Interview/Survey, 2001 and 2003.

were high school graduates, 30% had mothers who attended some college, and 18% percent had mothers with college degrees. About two thirds of DHH students lived in a two-parent household.

Students who attended regular secondary schools did not differ from those who attended special secondary schools on any of these individual or family characteristics. However, students who attended both types of school at one point or another did differ somewhat from those who attended a single type of school. A higher percentage of Hispanic students had attended both types of school over time as compared with attending only regular or special secondary schools (35% vs. 17% and 10%, respectively; $p < .05$ for comparison with students in regular schools and $p < .01$ for comparison with special schools). In addition, students in a mix of school settings over time were less likely than those who attended regular secondary schools to live in two-parent households. Whereas 70% of DHH students who attended regular secondary schools lived with both parents, 48% of students who attended a mix of regular and special schools lived in such households ($p < .05$).

Disability Characteristics

All students included in the sample had been identified by their school district as receiving special education services under the federal "hearing impairment" category. Parents were asked with what physical, sensory, learning, or other disabilities or problems youth had been diagnosed. Youth whose parents indicated "deafness" as a diagnosed disability in Wave 1 or 2 were grouped in the *deaf* category. Youth whose parents indicated "hard of hearing" or "hearing impairment" were grouped in the *hard of hearing* category. Youth whose parents did not identify them as deaf, hard of hearing, or hearing impaired in Wave 1 or 2 were grouped in the *other* category.

Parent reports of whether students were deaf, hard of hearing, or neither differed across the school types (Table 2). DHH students in regular secondary schools were more likely to be reported to be hard of hearing than students in special secondary schools or those who had attended both types of schools (67% vs. 32% and 39%, $p < .001$ and $p < .01$, respectively). Conversely,

Table 2 Parent-reported disability categories and health problems of secondary school deaf and hard-of-hearing (DHH) students

	Secondary school type							
	DHH students overall		Regular schools only		Special schools only		Mix of special and regular schools	
	Percent	SE	Percent	SE	Percent	SE	Percent	SE
Disability (850)								
Hard of hearing	59.7	3.55	66.8	3.98	32.3	5.28	38.8	9.39
Deaf	32.7	3.06	24.8	3.06	64.7	5.94	55.2	10.76
Other	7.6	1.30	8.5	1.71	3.0	1.26	6.0	3.22
Additional disabilities								
Youth has multiple disabilities (830)	35.8	2.49	34.7	3.22	33.1	5.18	49.8	13.77
Youth has been diagnosed with ADD/ADHD (860)	12.5	1.65	11.9	2.07	11.5	3.11	18.3	6.59
Youth has been diagnosed with dyslexia or learning disability (830)	11.5	1.54	12.1	1.98	9.3	3.85	10.3	4.21
Youth has been diagnosed with speech or communication impairment (830)	11.6	1.97	10.5	2.24	12.1	3.58	19.9	7.42
Youth has health problems (840)	25.5	3.01	24.4	3.55	24.1	4.79	35.8	8.37

Note. ADD/ADHD, attention deficit disorder; ADHD, attention deficit hyperactivity disorder. Percentages are weighted population estimates. Sample sizes, rounded to the nearest 10, are presented in parentheses for each variable. Source: National Longitudinal Transition Study 2 Wave 1 and 2 Parent Interview/Survey, 2001 and 2003.

students who attended special secondary schools or both types of schools were more likely to be reported as deaf than students in regular secondary schools (65% and 55% compared with 25%, $p < .001$ and $p < .01$, respectively). Overall, the parents of about 8% of the secondary students identified by their school district as having a primary disability of hearing impairment did not report deafness, hard of hearing, or hearing impairment as a diagnosed disability or problem for their child but reported other disabilities. The parents of students in regular secondary schools were more likely than those in special secondary schools to report a disability (or disabilities) other than D/HH (9% vs. 3%, $p < .01$).

Overall, 36% of DHH students had multiple diagnosed disabilities according to parental report. The most commonly reported other disabilities for DHH students included ADD/ADHD (13%), a speech or communication impairment (12%), and dyslexia or learning disability (12%). Whether students had multiple disabilities or a diagnosis of any particular disability

or condition as an additional disability did not vary by school type. In addition, students in different types of school settings did not vary in the presence of health problems identified by parents.

Parents were asked to report the child’s level of hearing loss by indicating whether the child heard “normally” or had a “mild,” “moderate,” or “severe to profound” hearing loss. Parent-reported level of hearing loss was much greater among students who attended special schools than among those in regular schools. Specifically, parents reported that 16% of students in regular secondary schools heard normally or had mild hearing loss, 30% had moderate hearing loss, and 55% had severe to profound hearing loss (Table 3). In comparison, 2% of students in special secondary schools were reported by parents to hear normally or have mild hearing loss, 7% had moderate hearing loss, and more than 91% had severe to profound hearing loss ($p < .001$ for these comparisons). Levels of hearing loss among students who attended a mix of regular and special schools differed

Table 3 Parent-reported hearing levels, hearing devices, and age of diagnosis and start of service of secondary school deaf and hard-of-hearing (DHH) students

	Secondary school type							
	DHH students overall		Regular schools only		Special schools only		Mix of special and regular schools	
	Percent/mean	SE	Percent/mean	SE	Percent/mean	SE	Percent/mean	SE
Severity of hearing loss (840)								
Mild/hears normally	13.3	2.17	15.7	2.73	2.3	1.07	9.6	5.30
Moderate	25.2	3.32	29.6	3.80	6.9	2.27	15.4	6.04
Severe to profound	61.5	4.16	54.8	4.55	90.8	2.57	75.1	8.82
Youth has a cochlear implant (810)	6.0	1.48	6.0	1.64	3.0	1.39	10.6	7.39
Youth has an assistive listening device (810)	86.8	1.92	87.7	2.12	83.6	5.99	83.4	6.31
How well youth hears with a hearing device (among those with a device; 660)								
Hears normally	21.4	3.60	24.4	4.09	7.6	2.39	14.3	6.56
Has a little trouble hearing	39.8	4.00	45.4	4.44	15.8	3.20	27.9	8.66
Has a lot of trouble hearing	28.4	2.74	25.6	2.94	38.0	5.10	37.7	9.19
Does not hear at all	10.5	2.41	4.5	1.80	38.5	7.46	20.1	7.98
Mean age of youth when started having problem/disability (840)	2.5	0.20	2.9	0.22	1.6	0.61	1.3	0.48
Mean age of youth when started receiving services (780)	4.1	0.20	4.5	0.22	2.5	0.26	3.3	0.68

Note. Percentages are weighted population estimates.

Sample sizes, rounded to the nearest 10, are presented in parentheses for each variable.

Source: National Longitudinal Transition Study 2 Wave 1 and 2 Parent Interview/Survey, 2001 and 2003.

significantly from students in regular secondary schools, with those who had attended both types of schools being less likely to be identified as having a moderate hearing loss (15% vs. 30%) and more likely to be considered by parents to have a severe to profound hearing loss (75% vs. 55%, $p < .05$ for both comparisons). They did not differ in this regard from students in special secondary schools.

The percentage of students reported by parents to have cochlear implants, hearing aids, or other assistive listening devices did not differ significantly across types of schools. Relatively few students had cochlear implants (ranging from 3% in special schools to 11% in both types of schools), whereas a large proportion of students had hearing aids (ranging from 83% of students who had attended both types of schools to 88% in regular schools). Of those using a hearing aid or other device, students in special schools were more likely than those in regular schools to be considered by their parents not to hear well: 8% of students in special secondary schools compared with 24% of students in regular secondary schools were reported to hear normally with a hearing device ($p < .001$), 16% compared with 45% were reported to have a little trouble hearing ($p < .001$), 38%

compared with 26% were reported to have a lot of trouble hearing ($p < .05$), and 39% compared with 5% were not able to hear at all ($p < .001$). Hearing levels with a hearing device of students who attended a mix of school types were not reported to differ significantly from those who attended either regular or special schools.

Parents were asked the age at which their child's disability or problem was first identified and when the child first began receiving services for the disability or problem. According to parent reports, problems or disabilities began earlier for students who had attended special secondary schools or both types of schools than for students who attended regular secondary schools (1.6 and 1.3 vs. 2.9 years of age, $p < .01$ and $p < .05$, respectively). In addition, parents reported that students who attended regular secondary schools began to receive services at 4.5 years of age, or 2 years later than students who attended special secondary schools ($p < .001$).

Communication Methods and Skills

NLTS2 included four categories of communication: oral speech, lipreading, cued speech, and sign language. *Oral*

speech refers to expressive and receptive spoken language; *lipreading* (or speechreading) refers to visual support for receptive spoken language. *Cued speech* is a system for supporting spoken language in which manual cues (36 for English) in seven different locations are used to disambiguate spoken language on the mouth (Cornett & Daisey, 1992). *Sign language* refers to American Sign Language (ASL) and other manual communication systems (e.g., ASL signs with English word order). Parents were asked whether or not the child used each of these types of communication methods (information about frequency of use and fluency was not obtained by NLTS2); multiple communication modes could be indicated.

Parents' report of whether or not the student used spoken language or sign language differed significantly between students who attended regular secondary

schools and those who attended special secondary schools or a mix of regular and special schools (Table 4). Students who attended regular secondary schools were more likely than students who attended special secondary schools or both types of schools to use spoken language (95% vs. 59% and 70%, $p < .001$ and $p < .01$, respectively), whereas they were less likely to use sign language (52% vs. 98% and 92%, $p < .001$ for both comparisons), according to parent report. Students in regular secondary schools also were less likely than students who attended special secondary schools to be reported by parents as using cued speech (29% vs. 52%, $p < .01$); however, reported use of cued speech by students who had attended both types of schools did not differ significantly from either other group of students. Lipreading/speechreading was reportedly

Table 4 Parent-reported communication modes and communication skills of secondary school deaf and hard-of-hearing (DHH) students

	DHH students overall		Secondary school type					
			Regular schools only		Special schools only		Mix of special and regular schools	
	Percent	SE	Percent	SE	Percent	SE	Percent	SE
Youth uses:								
Oral speech (800)	87.2	1.93	94.5	1.53	59.0	8.39	70.0	8.53
Lipreading (800)	77.3	2.62	76.5	3.02	79.2	4.98	80.5	7.70
Cued speech (800)	33.8	2.88	29.4	2.66	52.4	6.57	40.9	11.86
Sign language (810)	61.9	3.24	51.6	3.57	98.1	1.29	91.6	4.50
Members of youth's household use sign language (among households of students who use sign language, 570)	73.8	4.15	67.6	4.81	87.8	5.63	82.0	7.72
How well youth communicates (840)								
As well as other children	46.5	3.15	48.6	3.70	40.9	6.68	36.8	8.48
A little trouble	44.0	3.61	43.2	4.56	45.5	6.64	49.1	10.06
A lot of trouble/not at all	9.5	1.56	8.2	2.20	13.6	3.81	14.1	5.14
How clearly youth speaks (840)								
As well as other children	31.2	3.27	38.3	3.64	3.0	0.89	14.3	5.98
A little trouble	40.5	3.26	44.0	4.12	27.1	5.11	30.4	7.39
A lot of trouble/not at all	28.3	2.85	17.7	2.54	70.0	5.10	55.3	9.78
How well youth converses (840)								
As well as other children	50.5	3.17	51.7	3.52	51.3	6.58	38.7	9.53
A little trouble	35.8	3.24	37.8	3.44	25.6	4.32	34.7	11.27
A lot of trouble/not at all	13.6	1.98	10.5	1.73	23.1	4.97	26.7	6.74
How well youth understands (840)								
As well as other children	52.5	3.13	53.3	3.33	55.1	6.59	41.3	10.29
A little trouble	40.8	3.19	42.3	3.42	32.6	4.50	40.5	9.78
A lot of trouble/not at all	6.7	1.54	4.4	1.35	12.3	3.99	18.2	5.92

Note. Percentages are weighted population estimates.

Sample sizes, rounded to the nearest 10, are presented in parentheses for each variable.

Source: National Longitudinal Transition Study 2 Wave 1 and 2 Parent Interview/Survey, 2001 and 2003.

very common for all three groups of students—used by approximately three-fourths or more—with no significant differences across groups. Among students who used sign language, household members' use of sign language was more common for students in special schools compared with those in regular secondary schools (88% vs. 68%, $p < .01$), with no significant differences between students in these groups and those who attended both regular and special schools.

To obtain measures of communication, parents were asked the following questions: “How well does [YOUTH] communicate by any means?” “How well does [YOUTH] speak?” “How well does [YOUTH] carry on a conversation?” and “How well does [YOUTH] understand what people say to [him/her] in [his/her] primary language (including sign language)?” For each of these questions, parents were given four possible responses to indicate whether the youth had “no trouble,” “a little trouble,” “a lot of trouble,” or was “not at all” able to communicate, speak, carry on a conversation, or understand others.

Independent of the type of school attended, between 37% and 49% of students were reported by parents to communicate as well as other children, with 43–49% reported to have a little trouble communicating, and 8–14% reported to have a lot of trouble or not be able to communicate at all (Table 4). Although the parent-reported overall ability to communicate did not differ significantly across the groups, students' clarity of speech, ability to converse, and ability to understand speech did differ, according to parent report. Students in regular secondary schools were over 10 times as likely as students in special secondary schools to be reported to speak as well as other children (38% vs. 3%, $p < .001$) and about two to three times more likely than students who attended both types of schools (38% vs. 14%, $p < .001$). Students in regular schools also were less likely to be reported to have a lot of trouble speaking or not be able to speak at all than students in special secondary schools or those in both types of schools (18% vs. 70% and 55%, respectively; $p < .001$ for both comparisons). In addition, those in regular schools were reportedly more likely than students in special secondary schools to have a little trouble conversing (38% vs. 26%, $p < .05$) but less likely than students in special secondary schools or both types schools to have a lot of trouble conversing

or not to be able to converse at all (11% vs. 23% and 27%, respectively, $p < .05$ for both differences). Finally, students who had attended both a regular and a special school were reportedly more likely than their peers who attended regular secondary schools to have a lot of trouble understanding others addressing them in their primary language or not to be able to understand them at all (18% compared with 4%, $p < .05$).

Functional and Social Skills

The NLTS2 data set included measures of students' social, self-care, and functional mental skills. The social skills scale was developed from nine items from the Social Skills Rating System (Gresham & Elliott, 1990) on general social skills, with items pertaining to interactions with friends and with family members. Parents were asked to rate their child's skills on a 3-point scale from *never* to *very often*. For self-care skills, parents of youth with disabilities were asked to rate how well youth could feed and dress themselves without help on a 4-point scale from *not at all well* to *very well*. Parents were asked to use the same 4-point scale to evaluate their children on four functional mental skills that often are used in daily activities: reading and understanding common signs, telling time on a clock with hands (an analog clock), counting change, and looking up telephone numbers and using the telephone. Summative scores for all three scales were grouped into three categories of ability: *low*, *medium*, and *high*.

Students' functional mental skills and social skills differed across school types, but more differences were apparent between those who attended regular schools and those who attended both types of schools during their secondary school years (Table 5). Low functional mental skills were reported for 1% of students who attended regular secondary schools, 7% of students who attended special secondary schools ($p < .05$ for difference with regular school students), and 28% of students who had attended both types of schools ($p < .05$ for difference with regular school students). The percentages of students with high functional mental skills were similar among students who attended regular or special schools (59% and 57%, *n.s.*), but the percentage among students who had attended both types

Table 5 Parent-reported functional mental, social, and self-care skills of secondary school deaf and hard-of-hearing (DHH) students

	DHH students overall		Secondary school type					
			Regular schools only		Special schools only		Mix of special and regular schools	
	Percent	SE	Percent	SE	Percent	SE	Percent	SE
Functional mental skills scale (850)								
Low	4.4	1.13	1.3	0.57	7.3	2.73	27.5	10.31
Medium	39.1	2.53	39.3	3.37	35.7	5.36	42.0	8.58
High	56.6	2.58	59.4	3.26	57.0	5.55	30.5	6.55
Social skills scale (840)								
Low	11.9	1.75	11.1	1.83	15.8	6.42	13.2	5.26
Medium	51.0	3.17	49.3	3.75	48.7	6.78	68.5	7.69
High	37.2	3.22	39.6	3.91	35.5	6.76	18.3	5.62
Self-care skills scale (830)								
Low	+	+	+	+	+	+	+	+
Medium	2.2	0.59	1.2	0.55	6.7	3.11	4.3	2.40
High	97.8	0.62	98.8	0.55	93.3	3.11	94.5	2.69

Note. + indicates cell size of <3.

Percentages are weighted population estimates.

Sample sizes, rounded to the nearest 10, are presented in parentheses for each variable.

Source: National Longitudinal Transition Study 2 Wave 1 and 2 Parent Interview/Survey, 2001 and 2003.

of schools was considerably lower (31%, $p < .001$ for difference with regular schools, and $p < .01$ for difference with special schools). Students who attended both types of schools also were more likely than students who attended regular schools to have medium levels of social skills (69% vs. 49%, $p < .05$) and less likely to have high social skills (18% vs. 40%, $p < .01$). The majority of students were reported to have high self-care skills, with no significant differences across groups.

Educational History

Among students who attended special secondary schools, the mean number of schools attended since entering elementary school was 2.6, significantly lower than the 3.6 schools attended by both students who attended regular schools ($p < .001$) and both regular and special schools ($p < .01$; Table 6). In contrast, the percentages of students who had ever been held back a grade or had ever been suspended or expelled from school did not differ across the three groups, with the former ranging from 22% to 30% and the latter from 15% to 23%.

Parental Expectations

Parents' expectations for their child's obtaining a regular high school diploma or attending postsecondary

school did not differ for students in regular schools and special schools (Table 7), however parents of students in regular schools were more likely to say that their child *definitely* or *probably* would eventually getting a paid job than students who attended special schools (87% and 12 % compared with 73% and 26%, respectively, $p < .05$ for both comparisons). Across these three types of expectations parents held lower expectations for students who attended a mix of regular and special schools. Whereas parents of 72% of students who attended regular schools and 64% of students who attended special schools reported that they expected their children *definitely* would get a regular high school diploma, 40% of students who attended a mix of regular and special schools had parents who reported such an expectation ($p < .01$ mix of schools vs. regular schools; $p < .05$ for mix of schools vs. special schools). Parents of students who attended a mix of types of schools were more likely than parents of students at regular schools to *probably* or *definitely* expect that their child would not attend postsecondary school (41% vs. 16%, $p < .05$). Finally, parents of 87% of students who attended regular schools reported expecting that their children *definitely* would get a paid job, compared with 59% of students who attended both types of schools ($p < .01$).

Table 6 Parent-reported educational history of secondary school deaf and hard-of-hearing (DHH) students since elementary school

	DHH students overall		Secondary school type					
			Regular schools only		Special schools only		Mix of special and regular schools	
	Percent/mean	SE	Percent/mean	SE	Percent/mean	SE	Percent/mean	SE
Mean number of schools attended since entering elementary school (790)	3.4	0.08	3.6	0.09	2.6	0.20	3.6	0.33
Youth was ever held back a grade (790)	28.8	0.94	29.8	1.45	27.7	4.83	22.2	7.10
Youth was ever suspended or expelled from school (830)	17.2	1.81	16.5	1.92	23.0	5.51	15.1	5.82

Note. Percentages are weighted population estimates.

Sample sizes, rounded to the nearest 10, are presented in parentheses for each variable.

Source: National Longitudinal Transition Study 2 Wave 1 and 2 Parent Interview/Survey, 2001 and 2003.

Table 7 Parental expectations of secondary school deaf and hard-of-hearing (DHH) students

Parent expectations	DHH students overall		Secondary school type					
			Regular schools only		Special schools only		Mix of special and regular schools	
	Percent	SE	Percent	SE	Percent	SE	Percent	SE
Youth will get a regular high school diploma (810)								
Definitely will	67.8	2.71	71.5	3.16	63.8	5.86	40.0	9.14
Probably will	22.0	2.60	20.2	3.06	24.6	4.20	34.8	9.43
Probably/definitely won't	10.1	1.77	8.3	1.86	11.6	2.99	25.3	9.73
Youth will attend postsecondary school (810)								
Definitely will	45.9	2.82	48.8	3.69	37.3	7.89	33.7	8.71
Probably will	35.0	3.15	35.0	3.58	41.5	7.21	25.3	6.86
Probably/definitely won't	19.1	2.31	16.2	3.00	21.2	5.42	41.0	9.17
Youth will eventually get a paid job (820)								
Definitely will	82.8	1.89	87.0	2.10	73.4	6.17	58.8	8.41
Probably will	16.1	1.96	12.2	2.12	25.5	6.22	37.6	9.30
Probably/definitely won't	1.1	0.43	0.9	0.43	1.1	0.87	3.6	3.02

Note. Percentages are weighted population estimates.

Sample sizes, rounded to the nearest 10, are presented in parentheses for each variable.

Source: National Longitudinal Transition Study 2 Wave 1 and 2 Parent Interview/Survey, 2001 and 2003.

Discussion

This study was aimed at gaining a better understanding of characteristics of DHH students enrolled in different academic settings. Information of this sort is necessary if we are to decipher the many complexities associated with academic placement of DHH students and, ultimately, ensure that students are placed in settings that are most enabling rather than administratively expedient. DHH students have been found to be a very heterogeneous

population; the differences within this population are likely to affect language, academic achievement, and social functioning during the school years and beyond (Knors & Marschark, 2012). Knowing the characteristics of students in each setting will help investigators and educators recognize and marshal the resources, knowledge, and supports to most effectively meet the needs of students within those settings.

The present findings revealed that DHH students who were enrolled in regular secondary schools, special

secondary schools, or both regular and special schools differed in some ways that were consistent with findings from previous studies. With regard to hearing losses per se, students who attended special secondary schools were more likely to be reported by their parents to have profound hearing losses and hence were reported to have more trouble hearing even with an assistive listening device than their peers who attended regular secondary schools. In addition, their parents were more likely to report that their disability classification was deafness compared with peers in regular secondary schools. The finding that almost 10% of parents who had a child identified as D/HH by their school district did not provide a similar report could indicate that they considered other issues to be more relevant to their child's well-being.

Consistent with findings reported by [Allen and Anderson \(2010\)](#) for a sample with a wider age range (under age 3 through age 18) and dominated by individuals with greater hearing losses (drawn from the 2008 Annual Survey, which is completed by school personnel), the NLTS2 data indicated that students who attended special schools were less likely to use spoken language and more likely to use sign language than those who attended regular schools. In addition, according to parental report, students in regular secondary schools were less likely than students who attended special secondary schools to use cued speech, whereas use of cued speech by students who had attended both types of schools did not differ significantly from either other group of students. In contrast to those numbers, however, other studies have indicated that the use of cued speech by U.S. DHH students is only about 0.3–0.4% ([Allen & Anderson, 2010](#); [Gallaudet Research Institute, 2011](#)), perhaps suggesting that parents of DHH students may not be familiar with some of the terminology and methodologies of deaf education.

Although, overall, students who attended special secondary schools were reported by their parents to communicate as well as other children and to be understood by others, they were more likely to have trouble speaking or to carry on a conversation than students who attended regular secondary schools. These findings most likely reflect parents' recognition that their children's sign language abilities surpass their spoken language abilities. Alternatively, they may indicate

parents' overestimation of their children's communication skills ([Marschark, et al., 2012](#)) or parents' not having sufficient sign language skills themselves to judge their children's signing abilities. Students in special secondary schools were reported to have had a disability or problem identified and began receiving services at a younger age, to be more likely to have a low functional mental skills rating, to have lower parental expectations for eventual employment, and to have attended fewer schools since entering elementary school compared with students in regular schools. It is unclear whether the last finding is due to special schools serving a wider grade range than regular schools or whether students who attended these schools were more appropriately placed than students who attended regular schools ([Stinson & Kluwin, 2011](#)). Similarly, NLTS2 data do not allow us to ascertain whether the finding that students who attended regular secondary schools received services at a later age than those who attended special schools reflects differences in need or the availability of services.

Contrary to frequent expectations in deaf education, we found no significant differences between students who attended special secondary schools and those who attended regular secondary schools in the presence of secondary disabilities/health problems or the use of cochlear implants (cf. [Harris & Terletski, 2011](#)). The contrast of these findings with results from previous studies likely reflects the utilization of a nationally representative sample in the present study as opposed to samples used in other studies such as the Annual Survey, which has been acknowledged to overrepresent students with greater hearing losses and those enrolled in special schools (e.g., [Allen, 1992](#); [Karchmer & Mitchell, 2011](#)). We also found no differences among the groups in their use of other assistive listening devices, parents' rating of students' social skills and self-care skills, or whether the student had ever been held back a grade or suspended or expelled from school. Finally, students who attended special secondary schools did not differ from those in regular schools in demographic characteristics or parents' expectations for educational outcomes.

In some ways, students who attended a mix of special and regular schools during their secondary education

were similar to those who attended special secondary schools. Like students who attended special secondary schools, they were more likely to have profound hearing losses than students in regular secondary schools. They were also less likely to use spoken language and more likely to use sign language than their peers in regular secondary schools, according to parent report. In addition, students who attended both special schools and regular schools were more likely to have trouble speaking clearly and conversing with others than students in regular secondary schools. They did not differ from students in a single type of setting in the presence of additional disabilities or health problems.

The present study is apparently the first to include and distinguish DHH students who moved between special schools and regular schools. The finding that they were different in several ways than peers who remained in a single school type could be of critical importance for understanding both placement decisions (Stinson & Kluwin, 2011) and the effects of school placement on academic achievement, social-emotional functioning, and other factors related to transition. Demographically, Hispanic students and students not living in a two-parent household were more likely to attend a mix of special and regular schools than a single type of school. More importantly, they had lower parental ratings of functional mental skills and social skills than students in regular schools. Perhaps related to both mental and social skills were the findings that those students had more trouble understanding others than students in regular secondary schools (students in regular secondary schools and those in special schools did not differ significantly in this regard). In addition, parents of students who moved between school types had lower expectations for their child's education and employment outcomes than students in the other groups.

The interpretation of findings apparently indicating some greater challenges among DHH students who move between special and regular schools is not immediately obvious, although some research has demonstrated that changing schools more often tends to be associated with lower levels of achievement in reading and mathematics, more behavioral problems, and a higher likelihood of being held back in school or to dropping out (GAO, 1994). Previous studies have involved children of migrant workers,

those living in inner cities, and those with limited English proficiency. Taken together, these findings suggest that the results are more a function of student characteristics and their match/mismatch with school placement rather than a placement per se (Stinson & Kluwin, 2011). The interplay of socioeconomic factors and challenges related to students' mental, social, and communication functioning may be complicating parents' and educators' abilities to help these students succeed where placed, resulting in placement changes. For both theoretical and practical reasons, however, the causes and effects of ways in which this group differs from other DHH peers warrant further investigation.

Two other findings are worthy of mention. First, relatively few DHH secondary school students represented by NLTS2 used cochlear implants (see Table 5). We found rates ranging from 3% of those in special schools to 11% of students who attended a mix of types of schools. This frequency is somewhat less than the approximately 15–20% reported by recent administrations of the Annual Survey (e.g., Gallaudet Research Institute, 2011) and various schools for the deaf in the United States and far below the 90–95% now being reported for young children in other developed countries (Knors & Marschark, 2012). The difference between the findings from NLTS2 and the Annual Survey may be due in part to the differences in the ages of children included and the data collection time periods. Cochlear implants were not approved by the U.S. Food and Drug Administration for children as young as 2 years until 1990 and for children as young as 12 months in 2002. The increasing prevalence of pediatric cochlear implantation, as well as the increasing frequency of newborn hearing screening, however, means that the school-age population of DHH children is constantly changing. As various U.S. states have adopted UNHS, for example, language, social-emotional, and academic characteristics of DHH students likely have changed in a geographically piecemeal fashion. The extent of such changes remains unclear, as does the extent which they can be attributed to increasing frequencies of UNHS, cochlear implantation and digital hearing aids, inclusion, or improved teaching methods aimed at DHH students.

Another finding of note concerned the frequency with which sign language was used in the home relative to the proportion of students who used sign language in general. Overall, 52% of students who attended regular secondary schools were reported to use sign language compared with 98% of those who attended special schools and 92% of those who attended both. Among the families of students who were reported to use sign language, the frequency of sign language use in the home was 74% for DHH students overall. This finding suggests that beyond the language of instruction and students' primary modes of communication, considerable variability exists in the communication used at home. Coupled with parents' awareness that less than 50% of their DHH children communicate as well as other children, our findings suggest that regardless of whether parents have placed their child in a setting where spoken language predominates, the need for effective communication within the family trumps philosophical attitudes about the use of sign language (Allen & Anderson, 2010). At the very least, parents recognize that their children's speech does not necessarily translate into effective communication with others.

This study provides important information about secondary school-age DHH students in the United States; however, several cautions should be noted. First, the findings are representative of DHH students nationally who were enrolled in secondary school at the time of sampling (2000) and not of students currently enrolled in secondary school. Second, the sample includes students receiving services under IDEA and therefore does not represent DHH students who were not receiving such services. Third, levels of hearing loss, communication functioning, and other functional abilities were measured through parental report and not through clinical assessments that may have provided more precise and reliable information. Finally, students who attended different types of schools may differ in ways not measured by the NLTS2 study, limiting this study's ability to present a comprehensive picture of the differences and similarities of students in different school settings.

These limitations, as well as questions raised by the study's findings, point to directions for future research. Given the importance of the parent-reported

communication abilities in distinguishing students attending the different types of schools, further research on DHH students' communication modes and skills and how these factors relate to school placement, educational experiences, and outcomes is warranted. Specifically, the use of independent assessments of hearing thresholds and communication abilities would add to this line of research.

In addition, the present study examined school types defined broadly; however, within each of the main school types examined, DHH students can experience a variety of placement options, programs, and instructional settings (e.g., settings within regular schools can include resource rooms, itinerant teaching, general education classrooms, and other settings). Investigating such factors as the language of instruction, the extent to which DHH students are in classrooms with hearing peers, the characteristics and qualifications of their teachers, the individualized education program development process, and how placement decisions are made would further illuminate the characteristics and experiences of DHH students in different educational settings.

The unique contribution of NLTS2 to the field of deaf education is the national representativeness of its sample, which provides a more accurate national characterization of DHH secondary school students in different types of schools than any that has been available previously. With the ongoing debate about the optimal educational settings for DHH learners, understanding who is in each setting is critical to addressing their needs and improving their outcomes. There is now broad international agreement that there is no single school placement that will be optimal for all DHH students and that more care must be given to match students to the varied programming alternatives, especially with regard to language (Marschark et al., in press). The present study has revealed that U.S. students who attended special schools and those who attended regular schools differed primarily in their parent-reported hearing thresholds and communication functioning. The analyses also showed that students who attended different types of schools were more alike than they were different, suggesting that both special schools designed for DHH students and regular schools serving a wide variety of students are educating DHH students with a

wide range of needs and abilities. Whether one kind of setting or another is more appropriate for students with particular characteristics remains to be determined.

Notes

1. Under IDEA 2004, deafness is one of 13 special education disability categories identified by the U.S. government. Deaf individuals, however, are the only ones simultaneously identified as constituting a linguistic-cultural minority. Although not all deaf individuals identify as part of that subgroup, it suggests caution in considering deaf students to be the same as any other population of “disabled” students.

2. Students were sampled under the federal disability category of “hearing impairment.” In this paper, we refer to this population as *deaf and hard-of-hearing*, the convention used in deaf education and related research; following the 1991 joint statement by the World Federation of the Deaf and the International Federation of Hard of Hearing People that rejected “hearing impairment” in favor of “deaf and hard of hearing.”

3. School districts and states do not adhere to uniform policies and procedures for determining special education eligibility for DHH students; therefore, there is variability in how students are classified into the “hearing impairment” category.

4. The NLTS2 database does not contain information about school type for every year of students’ enrollment in secondary school. This information is available only for years of data collection waves (every other year) for which there was a completed parent or youth interview or survey for youth who were still enrolled in secondary school.

5. The type of school categorization is based on data collected across the waves of data in which youth were still enrolled in school (up through Wave 4, although most youth had exited by Wave 3); whereas the other variables come from the Wave 1 or Wave 2 parent interview/survey. Although most of the variables would not be expected to change over time, parental expectations may change over time. Whether this construct might be confounded with type of school is an issue for further investigation.

6. In the United States, magnet, charter, alternative, and vocational high schools are options within the public school system that serve students with and those without disabilities. Approximately 4% of DHH students represented by NLTS2 were enrolled in these types of schools in the first wave of data collection.

7. Exact wording of all the interview items can be found at http://www.nlts2.org/data_dictionary/index.html.

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Conflicts of Interest

No conflicts of interest were reported.

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