Accommodations Use for Statewide Standardized Assessments: Prevalence and Recommendations for Students Who Are Deaf or Hard of Hearing

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The Second Annual National Survey on Assessments and Accommodations for Students who are Deaf or Hard of Hearing investigated the types of testing accommodations used on 2004–2005 statewide standardized assessments as well as recommendations for best practices. A total of 444 participants who served over 9,000 students as teachers, administrators, or other educational professionals responded to the survey. The most widely used accommodations were small-group testing, interpreting test directions, and extended time. With the exception of interpreting or reading test items aloud, accommodations were largely used for both reading and math assessments. Participants perceived all listed accommodations as both valid and easy to use. Participants recommended that student academic level, communication mode, and additional disabilities be taken into account when choosing accommodations for students who are deaf or hard of hearing.

There is an increasing awareness of the need to ensure high academic standards for all students, including those with disabilities (McDonnell, McLaughlin, & Morrison, 1997; Thompson & Thurlow, 2001). Prior to legislation mandating increased access to the general education curriculum, few students with disabilities had the opportunity to learn core curricular content taught in regular education classrooms (Osgood, 2005). One recent strategy for raising academic achievement for students with disabilities is to hold schools and districts accountable for student outcomes (No Child Left Behind Act of 2001). Under No Child Left Behind (NCLB), states measure student proficiency with large-scale, standardized assessments, with nearly all students included in these assessments. Many students with disabilities now use “testing accommodations” in order to participate in statewide measures of student achievement (Lazarus, Thurlow, Lail, Eisenbraum, & Kato, 2006). Trustworthy accommodations are therefore critical for schools to accurately document student proficiency in core content areas.

Of the 60 million elementary and secondary school students enrolled in the U.S. facilities in 2004, approximately 72,000 were identified as deaf or hard of hearing (U.S. Department of Education, 2004).1 Students who are deaf or hard of hearing (SDHH) face similar access issues as students with other disabilities: a need for increased exposure to core curricular content and accommodations to facilitate access to both instruction and assessment (Gordon, Stump, & Glaser, 1996). Yet, SDHH are unique because of their diverse linguistic characteristics and the varied educational settings they attend. There are several characteristics within SDHH, including those who are culturally Deaf, who wear cochlear implants, who have mild to moderate hearing loss, or those who have parents who are Deaf.2 Depending on a number of factors, including access to spoken English and American Sign Language...
(ASL), SDHH may come to schooling as fluent users of ASL, English Language Learners (ELL), as emerging bilingual students, or with limited language base (Marschark, Lang, & Albertini, 2002).

Issues of access and valid accommodations use for SDHH are complex due to these varied language and communication characteristics. Although there is a long history of research of academic achievement for SDHH, there remains a need for research to support clear assessment policy and practice within accountability reform. The purpose of this paper is to present findings from the Second Annual National Survey of Assessments and Accommodations for Students who are Deaf or Hard of Hearing (Second National Survey). The literature review will provide the context for this study: current issues in educational reform, validity of accommodations for standardized assessments, and the unique characteristics of SDHH. The article then provides results from the Second Annual Survey and discusses the implications of these findings for assessment policy, teacher professional development, and future research.

Accountability Reform

Recent standards-based and accountability educational reforms focus on high-quality standards and reporting academic progress of all students. The purpose of the NCLB Act is to “ensure that all children have a fair, equal, and significant opportunity to obtain a high-quality education and reach, at minimum, proficiency on challenging State academic achievement standards and state academic assessments” (20 U.S.C. § 6301). NCLB builds on previous legislation by requiring states to implement a systemwide accountability framework in order to be eligible for federal funds. Under these guidelines, states are required to test students in core content areas and produce “report cards” for each school based on assessment results. These tests have high stakes: when schools do not make Adequate Yearly Progress, states are to implement a series of progressively stronger interventions aimed at raising student achievement. As we move into later years of NCLB, the impact of state assessments and accountability measures on students and schools will continue to grow.

Although states have previously been required to include students with disabilities in state assessments (Individuals with Disabilities Education Act of 1997), it is only under NCLB that these scores are disaggregated on a uniform reporting mechanism. Assessment participation and proficiency rates are reported for key student subgroups, including students with disabilities, on each school, district, and state report card. SDHH scores are included within this larger group of scores for students with disabilities as a whole. Schools only meet Adequate Yearly Progress if students with disabilities meet the same proficiency benchmarks as other students in the school. NCLB measures thus have the potential to identify areas where tailored instructional strategies may need to be implemented for improved academic achievement for students with disabilities.

Accommodations and Standardized Assessments

Under NCLB, statewide, standardized assessments are the primary method by which states measure and report the academic proficiency of students (only a very small percentage of students can participate using an alternate assessment format). NCLB reform is useful only to the extent that states use accurate and meaningful measures of achievement for all students. Because many students with disabilities have difficulty with the format of standardized assessments, accommodations can be administered to provide the best opportunity for testing participation and accurate test scores (McDonnell et al., 1997; Phillips, 1994). Accommodations are meant to make it easier for students with disabilities to gain access to test content without changing the difficulty of the item. Testing accommodations appear to have a positive effect on student participation in assessments used for NCLB accountability (Lazarus et al., 2006). This is true for SDHH as well; on the whole, SDHH participate in state standardized assessments, with a significant proportion using at least one accommodation (Cawthon, 2004; Cawthon & Online Research Lab, 2006).

Common accommodations. Several types of accommodations can be found in the literature and in practice (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1999; Thurlow & Bolt, 2001; Thurlow, Lazarus, Thompson, & Morse, 2005; Tindal & Fuchs, 2000). One of the most common...
accommodations is extended time. Extended time increases the time available to complete the exam and can range anywhere from time and a half to double or unlimited time. Another type of accommodation is small-group testing, when students complete the test in smaller groups instead of in the larger class. Both these accommodations are assumed not to significantly alter the content of the test, including the targeted skill and cognitive demands of the test items (Elliott & Braden, 2000; Phillips, 1994; Shriner & DeStefano, 2003). In the 2003–2004 academic year, two of the accommodations most frequently used by SDHH were extended time and a separate room for test administration (Cawthon & Online Research Lab, 2006).

Other accommodations make the test more accessible by changing the test direction or test item presentation, often times involving an “access assistant” for test administration (Clapper, Morse, Thompson, & Thurlow, 2005). An access assistant is an individual whose purpose is to provide an accommodation for students with disabilities. In the standard (nonaccommodated) test administration, the teacher may read the test directions aloud to the students. An accommodation often used for SDHH is to have the test directions interpreted (TDI) into ASL or other signed language, often with an access assistant such as an interpreter (Cawthon & Online Research Lab, 2006). Access assistants may also be used for the test items themselves. In the test item read aloud (TIR) accommodation, the student does not read the question, but listens to it read aloud by a teacher or other test administrator. A related accommodation is to have the test item interpreted (TII) for the student. For SDHH, test items may be translated into ASL or another signed language used in instruction. This can be administered either in person or via a prerecorded, DVD format (Maihoff et al., 2000). Although less frequently used than interpreting the test directions, having the test items read aloud or interpreted into sign language is administered as an accommodation to many SDHH (Cawthon & Online Research Lab).

Accommodations can also be used to alter how a student responds to the test item. In most standardized assessments with multiple-choice items, the student responds by filling in a “bubble” on a scantron sheet or by selecting a response option on a computer screen. For various reasons, students with disabilities may need to respond to the test item using an alternate format. For example, instead of answering via paper and pencil, a student may respond by writing their answer in a test booklet instead of on a scantron sheet. Another kind of response accommodation is to allow students to have a scribe record their answers. For a SDHH whose primary language is ASL, an interpreter would record the student response by filling in the sheet or, for items where students are to compose a written response, by translating the response into written English. For SDHH with multiple disabilities, such as cerebral palsy, signing a response to a scribe may improve access to the standardized assessment format by accommodating both the physical barrier (holding the pencil) and language barrier (using ASL) to participation. Although used less often by SDHH than other accommodations, state policies that allow signing a response to a scribe are on the rise and may result in increased use in future years (Cawthon & Online Research Lab, 2006; Lazarus et al., 2006).

Validity. Much of the discussion in determining appropriate accommodations focuses on the issue of validity. Validity is the extent to which the accommodated test meaningfully represents student knowledge by measuring what the test intends to measure (Messick, 1995; Phillips, 1994). A valid accommodation allows a student with disabilities an opportunity to be assessed fairly and on the same level as a student without disabilities (Karkee, Lewis, Barton, & Huang, 2003). Ensuring the validity of accommodations is a difficult process; care must be taken to remove enough barriers to allow participation without overestimating and oversimplifying the testing process (Koretz & Barton, 2003; McDonnell et al., 1997; Tindal & Fuchs, 2000).

One way to view the validity of an accommodation is the effect on student scores. For example, if all students were to use an accommodation meant to increase access for students with disabilities, a “valid” accommodation should increase the test scores of students with disabilities “more” than their nondisabled peers. This measure of validity is referred to as a “differential boost” (Phillips, 1994). An accommodation that results in differential boost targets the need for
greater access to test content by removing barriers that are irrelevant to the cognitive task of the test item. If all students improve with the accommodation, it is more likely that the accommodation makes the test item itself easier to complete than remedying issues of access for students with disabilities. When this occurs, the validity of the accommodation is called into question.

Yet differential boost is but one measure of validity; this analysis should be taken in conjunction with other factors that contribute to our understanding of how the accommodation may change the content or cognitive demand of a test item (Braden & Elliott, 2003). Even if an accommodation results in a differential boost, the accommodation may still invalidate test scores. An accommodation can change the task demands more for one group than another, resulting in a differential boost but making the test item easier for one group than for another. A change in task demand can thus result a test “modification”, not a test accommodation (Elliott, McKeveit, & Kettler, 2002). Although modified tests can refer to those that remove certain test items or change the response from an essay to a multiple-test format, accommodations that change the cognitive demands of a test item also result in a test modification. For example, if a test item that is translated into a different language simplifies the task by providing different information to the test taker than in the original format, the accommodation changes the knowledge of skill measured by the item. Policies on test modifications are far more stringent than for test accommodations because scores on modified tests cannot be compared with other scores (Clapper, Morse, Lazarus, et al., 2005). An essential question driving validity research thus becomes: “At what point does the change from standard test administration intended to improve score comparability actually change the task and harm score comparability?” (Braden & Elliott, 2003, p. 8). Because empirical research that takes multiple validity factors into account is still emerging, conclusions regarding the degree of validity of specific test accommodations should be viewed with caution.

Commonly used accommodations vary in their threat to validity. Accommodations that do not change the content or format of individual test items are seen to pose a relatively small threat to test validity. Accommodations such as extended time are generally viewed as valid, though some research shows that extended time does not always create the differential boost indicative of a valid accommodation (e.g., Abedi, Courtney, & Leon, 2001; Fuchs, Fuchs, Eaton, Hamlett, & Kears, 2000; Huynh, Meyer, & Gallant, 2004). Interpreting the test directions is also a widely accepted accommodation because it gives students equal access to the goals of the assessment and increases the likelihood that they will understand what they are being asked to do. There are very few states that restrict the use of either extended time or interpreting test directions (Lazarus et al., 2006).

Accommodations that alter the format of a test item, however, are more likely to pose a threat to test validity. For example, interpreting test items may change the content of the test item because it involves translating from English into another language. For ASL in particular, with a visual grammar space that is very different than in spoken English, the translation may result in a different test item than in the original written English form (Johnson, Kimball, & Brown, 2001). If the translated item is harder than the original written item, a student’s score may underestimate their true ability. Conversely, a translated test item that is easier than its original form may overestimate a student’s knowledge and skills. Both outcomes result in a modification of the test item. Only through controlled studies of translations with participants “blind” to the original test item can the validity of these accommodations be verified. Both read aloud and TII accommodations are controversial; as a result, policies on these accommodations vary significantly from state to state (Lazarus et al., 2006).

The extent to which validity is in question depends in part on the subject of the assessment. For example, read aloud accommodations on tests meant to measure “reading” abilities change the nature of the test. The student may no longer demonstrate decoding and reading comprehension skills, but rely instead on listening comprehension skills (Crawford & Tindal, 2004; Fletcher et al., 2006). In contrast, the purpose of a “mathematics” assessment is to measure a student’s ability to calculate and reason mathematically; accommodations such as read aloud or interpreting the test item may still affect the nature of the test, but to a lesser extent than for reading assessments.
The validity of an accommodation depends, therefore, on the purpose of the assessment.

Although debated in the field, validity of an accommodation may also depend on the linguistic and academic background of the student participating in the assessment (Lazarus et al., 2006). Yet for SDHH, linguistic and academic characteristics often play a significant role in their academic achievement. The next section will discuss issues for consideration when choosing an appropriate accommodation for SDHH.

Making Decisions About Accommodations Use

Decisions about accommodations use are made by the teachers and other educational professionals who serve individual students at the school or district level. This group is referred to as the student’s Individualized Education Plan (IEP) or 504 plan team (Individuals with Disabilities Education Act of 1997; Section 504 of the Rehabilitation Act of 1973). The IEP team consists of parents or guardians, a special education teacher, a regular education teacher, teachers of ELL, the student, and other professionals such as a speech-language pathologist or assessment specialist (Anderson, Minnema, Thurlow, & Hall-Lande, 2005). Together, this team is responsible for deciding how a student will participate in standardized assessments and with what accommodations, if necessary.

Challenges to Determining Best Practices

One goal of research on assessment accommodations is to provide evidence-based “best practices” for IEP team decision making. The term “best practices” refers to a collection of strategies and principles that help provide satisfactory results in test participation. Satisfactory results for students with disabilities include accommodations that lead to high levels of meaningful participation, valid assessment scores, and consistent, large-scale implementation across diverse settings. Early efforts at articulating best practices include the Dynamic Assessment of Testing Accommodations approach (Fuchs et al., 2000) and the Assessment Accommodations Checklist (Elliott, Kratochwill, & Schulte, 1988). Both these tools seek to increase the information teachers have available to make decisions about accommodations (Helwig & Tindal, 2003).

Designing clear models for best practices continues to be a challenge, given the unclear direction provided at the research, practice, and policy levels (Clapper, Morse, Lazarus, et al., 2005). For several accommodations, particularly those that change the format of the test item, it is not clear whether there is sufficient research to determine whether they are valid to use on standardized assessments or with whom. In current practice, teachers tend to perceive accommodations to be valid and effective if they are easy to use (McKevitt & Elliott, 2003). IEP teams may also tend to overuse accommodations that may not necessarily benefit students (Helwig & Tindal, 2003) or they may have limited knowledge on the impact of accommodations on test validity (Hollenbeck, Tindal, & Almond, 1998). These findings indicate that there may be a weak relationship between perceived validity of an accommodation and its effects on student scores. Although the effects of teacher perceptions on student performance, specifically, have yet to be verified, increasing teacher knowledge may have a positive effect on teacher confidence in accommodations choices for their students (De Stefano, Shriner, & Lloyd, 2001).

Students Who Are Deaf or Hard of Hearing

There is very little research on the validity of accommodations used with SDHH (Bolt & Thurlow, 2004). In the absence of a comprehensive model of decision making, McKevitt and Elliott (2003) recommend that those charged with making accommodations decisions should attempt to match the individual student’s needs with the type of accommodation and the content of the test. SDHH are a diverse group with a wide range of linguistic backgrounds. For example, SDHH who are children of signing Deaf adults are more likely to have a fully developed use of ASL than those who do not have access to manual communication at an early age. (Hearing children of deaf adults may also have ASL as their first language.) Communication used in instruction is influenced not only by the student’s primary language but also by the resources and communication philosophies of the school or program (Ramsey, 1997). As a result, SDHH may be educated in classrooms that use only ASL, some sign language and speech together (total communication), a cueing system such as cued speech, English instruction with an
ASL interpreter, or speech only. Because IEP decisions need to take into account both student characteristics and instructional practice, determining the appropriate accommodations for each SDHH is a particularly challenging task.

Academic backgrounds are also an important factor to consider when determining assessment accommodations for SDHH. SDHH have historically struggled to perform on standardized measures of achievement, particularly in reading (Holt, Traxler, & Allen, 1992; Loeterman, Paul, & Donahue, 2002). Difficulties in literacy may stem from limited access to language early in child development. In the past, some students who are profoundly deaf did not have the opportunity to learn a fully accessible language (ASL) until they reached school age (Padden & Humphries, 2005). SDHH, on average, reached only the fourth-grade level in reading when they complete high school (Schimmel, Edwards, & Prickett, 1999). Although early intervention has shown to be effective (Yoshinaga-Itano, 2000) and some reading interventions show promise to benefit SDHH (Schirmer & McGough, 2005), academic achievement as a whole has not increased significantly in recent years.

For students who are proficient in ASL but not in English, unaccommodated standardized assessments can be a particular challenge. Although deafness and hearing loss are designated as a disability under NCLB and Americans with Disabilities Act, many of the linguistic and communication issues faced by SDHH are similar to students who are ELL. Decisions about accommodations for SDHH may therefore benefit from a look at NCLB guidelines for assessing students who are learning English. For example, statewide standardized assessments are to be conducted in a form and language that are likely to produce the most valid measure of the construct being measured. To the extent practicable, assessments should be provided in the student’s native language for up to two consecutive years (20 U.S.C. § 6316). ELL students must also take an English proficiency assessment (oral, reading, and writing) at least once per year (NCLB, Title III); results from these assessments can be used to determine how language is to be considered when developing assessment strategies. These guidelines focus on the language of the assessment as a validity issue when testing ELLs.

State testing policies for students with disabilities who are also ELL need to address both language and educational barriers to test content (Anderson et al., 2005). For SDHH, language and communication are potentially important factors in determining accommodations use for statewide standardized assessments.

**Paper Objective**

The purpose of this paper is to report findings from the Second National Survey. The goal of the Second National Survey was to gather information on statewide assessment practices with SDHH from the 2004–2005 academic year. In addition to findings on accommodations use, participants gave their perspectives on the ease of use for specific accommodations and their validity for use with SDHH. The survey also examined teacher perspectives on best practices for accommodations and alternate assessment use. Research questions guiding the study were as follows:

1. What accommodations did SDHH use on the 2004–2005 statewide standardized assessments?
2. What are education professionals’ perspectives about different accommodations used with SDHH?
3. What do education professionals recommend as best practices for the use of read aloud, test items interpreted (TII), or student sign response accommodations?

**Method**

**Instrument and Procedures**

The Second National Survey was available from April through June 2006. The survey consisted of three parts: demographics, perspectives on accommodations, and perspectives on alternate assessment. The survey format included multiple-choice, Likert scale, and open-ended response items. The survey instrument was administered in two ways: (a) online at the project Web site www.dhh-assess-survey.org (developed using http://www.surveymonkey.com) and (b) paper versions provided to individuals with stamped, self-addressed envelopes for returned responses. Incentives for participation included entry in a drawing for one of four $25.00 gift certificates upon completion of the survey.

Survey participants were individual teachers recruited initially through the Gallaudet Research
Institute’s Annual Survey of Schools and Programs contact list as well as the participant list from the First National Survey of Assessments and Accommodations for Students who are Deaf or Hard of Hearing. Additional recruitment contacts were made through deaf and hard of hearing (DHH) Web site affiliations, state lists of DHH programs and services, and 687 personal e-mails/postcard invitations by the principal investigator. Approximately 396 (88.6%) of the total participants responded online, and 48 (11.4%) responded via hard copy. Participant confidentiality was maintained by coding individual responses with an identification number; no specific names of individuals or schools are reported in the study results.

Because participants had the option of remaining anonymous (with the exception of the school or district name), it was necessary to review the data set for potential duplicate information about accommodations use with SDHH. After all responses were collected, care was taken to verify whether more than one teacher reported data for the same students. Within each school or district, participants were first sorted by the grade range of the SDHH students they served. If there was any overlap in those figures, researchers then looked at data on the participation of students in assessments and accommodations use. If these figures were the same, the participant with the most complete set of responses, from demographic data through to best practices recommendations, was left in the data set for student and accommodations’ results. This process led to the elimination of four participants who were from the same school, grade, and had the same number of students using accommodations as another participant. Data on views on validity and best practices were left in the data set.

Demographics
Participant Characteristics

Four hundred and forty-four participants from across the United States responded to the Second National Survey. The survey item on professional roles invited participants to identify in what capacities they served SDHH in the 2004–2005 school year; a total of 414 responded to this item. The majority of participants identified themselves solely as teachers of the deaf (n = 200), followed by itinerant teachers (n = 49), or “other professional roles” (n = 67), including counselors, speech pathologists, and audiologists. A smaller number of participants indicated as administrators (n = 27), special education teachers (n = 22), interpreters (n = 12), or regular education teachers (n = 11). Participants could indicate more than one role, such as identifying both as a teacher of the deaf and an itinerant teacher (working at multiple sites) or both as a teacher and an administrator; 26 respondents reported that they served in multiple roles. Because of the diversity of survey participants’ roles, the group as a whole will be referred to as “educational professionals” in this paper.

Setting. This study focuses on participants from three main types of institutions: schools for the deaf, district/regional programs, and mainstreamed schools. The first to serve SDHH in the United States, schools for the deaf are specialized institutions with a high proportion of professionals trained as teachers of the deaf. Schools for the deaf now offer a range of options for students, including residential, day school, and itinerant services. District and regional programs generally serve a smaller group of students across several schools or a larger rural area. District programs can serve students either as a stand-alone program or as part of services in a regular education setting with a variety of staff and resources. Mainstreamed settings may not have specialized programs to serve SDHH (Ramsey, 1997). Instead, special education teachers, interpreters, and aides collaborate with regular education teachers to ensure student access to classroom activities. Although participants self-identified with these three categories, it is important to note that there is likely a significant overlap between a school for the deaf, district program, or a mainstreamed setting. For example, students attending a school for the deaf may participate in mainstreamed settings for part of the school day. It is difficult to control for variations in programming that may cross these education setting categories. This overlap means that conclusions based on the above categories should be seen as a starting point for further investigation about setting characteristics such as number of SDHH, range of educational professionals, communication
used in instruction, and access to core curricular content.

Although the unit of analysis for this study is the educational professional, participants provided some basic information about the SDHH they served in 2004–2005. Participants only provided information for the students who they served and had information about assessment accommodations. A total of 411 of the 444 participants reported teaching or working with 9,332 SDHH throughout the United States (Table 1). This figure is likely to be an underestimate of the total sample represented by this survey because not all participants provided student enrollment information. Roughly one-half of the reported students attended schools for the deaf \( (n = 4,649) \), one-third \( (n = 2,772) \) attended district or regional programs, and the remainder \( (n = 1,911) \) were in mainstreamed settings. Participants also taught in diverse geographical regions. The largest proportion of students lived in the South census region \( (n = 4,037, 43\%) \), followed by the West \( (n = 2,244, 24\%) \), Midwest \( (n = 2,078, 22\%) \), and the Northeast \( (n = 973, 10\%) \). This is an improvement from the First Annual Survey in that there is greater representation from the Midwest in the current survey \( (12\% \text{ last year vs. } 22\% \text{ this year}) \), as well as from mainstreamed settings \( (1\% \text{ last year vs. } 20\% \text{ this year}) \).

However, this sample still overrepresents students from the South and from schools for the deaf and underrepresents students from the Northeast and from mainstreamed settings. Mitchell (2004) notes that the demographic information from the Gallaudet Research Institute is also skewed toward students who attend schools for the deaf in the southern region of the country. These findings therefore should not be taken as generalizable to all SDHH in all settings.

State accommodations policies, student characteristics, school resources, and instructional strategies may vary greatly from setting to setting. The findings here reflect many combinations of these factors, but are weighted toward characteristics of students and teachers in schools for the deaf. Greater representation from mainstreamed settings is thus necessary to make strong conclusions about how the setting factor contributes to accommodations use.

### Classroom Characteristics

The majority of participants served SDHH in a classroom setting as a teacher of the deaf, itinerant teacher, interpreter, special education teacher, or regular education teacher. The median number of students served by each participant was 9, with 75% of participants serving fewer than 20 students. Survey participants indicated what languages were used in instruction in their classrooms (or at their school or program). The distribution of communication mode used in instruction, by educational setting, is shown in Table 2 (participants could indicate more than one communication mode). On the whole, schools for the deaf emphasized ASL in their instruction; district/regional programs were most likely to use total communication (oral and some sign together by the instructor); and mainstreamed settings used oral only, total communication, or an interpreter. This is relevant to our investigation because many accommodations for SDHH incorporate sign language in the administration of test directions and items.

### Student Characteristics

**Grade level.** The grade levels of students served by participants in this study varied by educational setting. Educational professionals from mainstreamed (76%) and district/regional programs (74%) were more

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### Table 1 Distribution of students served by educational setting and by U.S. region

<table>
<thead>
<tr>
<th>Educational setting</th>
<th>U.S. region</th>
<th>Northeast</th>
<th>Midwest</th>
<th>South</th>
<th>West</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>School for the Deaf</td>
<td></td>
<td>471</td>
<td>1,265</td>
<td>2,136</td>
<td>777</td>
<td>4,649 (50%)</td>
</tr>
<tr>
<td>District/regional</td>
<td></td>
<td>311</td>
<td>373</td>
<td>925</td>
<td>1,163</td>
<td>2,772 (30%)</td>
</tr>
<tr>
<td>Mainstreamed</td>
<td></td>
<td>191</td>
<td>440</td>
<td>976</td>
<td>304</td>
<td>1,911 (20%)</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>973 (10%)</td>
<td>2,078 (22%)</td>
<td>4,037 (43%)</td>
<td>2,244 (24%)</td>
<td>9,332</td>
</tr>
</tbody>
</table>


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likely to serve students in the elementary grades (K–5) than teachers in schools for the deaf (50%), $\chi^2(2, N = 374) = 21.4, p < .01, \Phi = .24$. Educational professionals from mainstreamed programs (64%) were more likely to serve students at the middle school level (6–8) than schools for the deaf (52%) or district/regional programs (48%), $\chi^2(2, N = 374) = 7.75, p < .05, \Phi = .14$. Finally, participants from schools for the deaf and mainstreamed settings (67% each) were more likely to serve students in high school grades (9–12) than those in district/regional programs (33%), $\chi^2(2, N = 374) = 38.66, p < .01, \Phi = .32$.

**Hearing loss.** Participants also reported on the severity of hearing loss associated with the students that they serve. A one-way between-groups multivariate analysis of variance (ANOVA) was performed to investigate percentage of students at mild, moderate, severe, and profound hearing loss, as well as those with a cochlear implant, in the three educational settings. There were significant differences at $p < .05$ or less for all variables, with effect sizes ranging from small to moderate ($\eta^2 = .02$ to .20). Post hoc comparisons using the Tukey honestly significant difference test indicated that mainstreamed settings had a higher percentage of students with moderate hearing loss ($M = 49\%, SD = 28\%$) than the other two settings, $F(2, 299) = 37.42, p < .01, \eta^2 = .20$. The other hearing loss levels, as well as the percentage of students with a cochlear implant, were statistically significant, but with only very small effect sizes ($\eta^2 < .09$).

**Additional disabilities.** A large proportion (66.5%) of the participants served at least one student with an additional disability. Educational professionals from schools for the deaf were more likely to serve at least one SDHH with additional disabilities (93%) than those in district/regional programs (82%) or mainstreamed settings (77%), $\chi^2(4, N = 390) = 16.9, p < .01, \Phi = .21$. Most (78%) participants reported that at least one SDHH also had a learning disability. Over half (52%) reported serving a student with a cognitive disability, and more than a third (35%) served a student diagnosed as emotionally disturbed, a quarter (24%) served a student with cerebral palsy, and 22% served a deaf-blind student. A large proportion of participants (40%) served a student who had at least one other disability such as attention deficit hyperactivity disorder.

## Results

### Accommodations Use

The first portion of this results section gives study findings on the use of accommodations in statewide standardized assessments with SDHH. First,
participants reported the number of deaf and hard-of-hearing students who participated in the 2004–2005 statewide standardized assessments, with and without accommodations. A total of 5,800 students participated in state assessments. Of these, 5,275 (91%) participated with an accommodation and 525 (9%) participated without an accommodation.

Participants identified which of seven accommodations at least one of their students received in math and reading. The seven accommodations listed on the survey were as follows: extra time to complete the test, small-group/individual testing (SGI) environments, test item read aloud to the student (TIR), test directions interpreted for the student (TDI), test items interpreted for the student (TII), students gave signed responses (SSR), and the use of simplified English (SE). See the Appendix for a complete description of accommodations targeted in this survey.

Figure 1 shows results for overall accommodation use for math only, reading only, both math and reading, or not at all. It is important to realize that these data represent the frequency with which the accommodation was reported used “by at least one SDHH of each participant.” The most prevalent accommodation was the small-group/individual accommodation (89%), followed by the extra-time accommodation (82%). Interpreting test directions was the third most used accommodation (81%). The least used accommodations were the SE accommodation and the student signing the response accommodation. Only 9% of the participants used the SE accommodation, and only 17% used the SSR accommodation.

For most accommodations, participants reported administering them either for both math and reading tests or not at all. However, there were some noticeable differences in results for two accommodations: TIR and TII. Reading the test items aloud (TIR) was more likely to be administered to SDHH in “math assessments only” (26%) than only for reading assessments (6%). The same difference between math only (24%) and reading only (4%) can be seen with the TII accommodation. Teachers therefore made different choices about accommodations that alter test items for math and reading assessments.

There were some accommodations where different choices for math and reading varied by educational setting. Segmentation modeling was used to identify in which accommodations those differences, if any, were most prevalent (Grobler, Bisschoff, & Moloi, 2002; Hyers & Zimmerman, 2002). The TDI accommodation showed the greatest difference by educational setting, \( \chi^2 (2, N = 328) = 18.104, p = .002, \Phi = .23 \). SDHH were more likely to have received the TDI accommodation for “math only or not at all” if they were in a mainstreamed educational setting. In contrast, SDHH were more likely to receive the TDI accommodation for “reading only or for both subjects” if they were at a school for the deaf or in
a district/regional program. Use of TDI also influenced whether students received TIR and for which test subjects. Participants from schools for the deaf and mainstreamed settings used TIR for reading only or for both subjects, whereas district programs were more likely to use TIR only for math, $\chi^2 (2, N = 247) = 12.667, p = .027, \Phi = .23$. These results demonstrate the complexities of how factors such as educational setting, accommodation, and test subject may interact in influencing accommodations use.

Language Used in Instruction

Educational settings vary not only in the location of instruction but also in the language used in the classroom. Participants reported different levels of accommodations use if sign language (ASL or other signed language) was used in instruction than if instruction was oral (English) only. On average, participants with SDHH who received instruction via ASL or signed language were more likely than those in oral-only classrooms to have at least one student who used student sign response [$M = 16\%$ and $4\%$, respectively, $\chi^2 (1, N = 258) = 8.36, p = .004, \Phi = .18$], TII [$M = 66\%$ and $35\%$, respectively, $\chi^2 (1, N = 219) = 30.17, p < .001, \Phi = .30$], TDI [$M = 92\%$ and $59\%$, respectively, $\chi^2 (1, N = 305) = 47.11, p < .001, \Phi = .39$], and extra time [$M = 87\%$ and $71\%$, respectively, $\chi^2 (1, N = 304) = 12.40, p < .001, \Phi = .20$]. There were smaller differences in the prevalence of small-group administration [$M = 91\%$ and $83\%$, respectively, $\chi^2 (1, N = 309) = 5.04, p = .02, \Phi = .13$] or TIR [$M = 61\%$ and $47\%$, respectively, $\chi^2 (1, N = 215) = 4.62, p = .03, \Phi = .15$]. All analyses were conducted on the prevalence of the accommodation for both math and reading. These findings suggest that if students are in a classroom where ASL or signed language is used, they are more likely to receive an accommodation that incorporates manual language into the assessment process. One reason for this may be IEP guidelines that require assessment accommodations to be used in the classroom before they are implemented on statewide assessments. Classrooms that already use ASL or signed languages in instruction would thus be more likely to have the resources in place to implement a broader range of accommodations, particularly those that require an access assistant for implementation.

Accommodations Recommended but not Administered

Along with survey items about what accommodations were used in test administration, survey participants also provided information about accommodations that were recommended on student IEPs or 405 plans but not implemented during the testing period. A total of 165 participants (40%) responded to questions, confirming the use of each of the seven accommodations identified in this study. The remaining 60% skipped this question because the accommodations were not recommended for their students, the accommodations were on the IEP and implemented, or participants did not have the information to confirm their use during assessment. These results are thus not representative of the entire study sample and should be viewed as a starting point for further exploration. The percentage of participants who confirmed that recommended accommodations on the IEP were implemented (or not) is shown in Figure 2. On average, across all accommodations, 85% of participants confirmed that the accommodations recommended for their students were used during assessment. Implementation rates for individual accommodations ranged from 80% for TII to 93% for student signs response. These findings indicate that most, but not all, recommended accommodations are used during the testing period. The time frame of the study (up to a year past the testing date) may be a contributing factor to missing information on the implementation rates for individual accommodations.

Teacher Perspectives About Accommodations

McKevitt and Elliott (2003) showed that teacher perspectives regarding an accommodation’s ease of use influenced the choices they made for their students. Teacher perspectives on validity may also play a role in which accommodations’ students use in standardized assessments. Participants in the Second National Survey shared their perspectives on the ease of use and the validity of accommodations by rating a list of seven accommodations using Likert scale responses.
Perceived ease of use. Participants gave their perspectives regarding the ease of use for each of the seven accommodations investigated in this survey. Participants rated accommodations on a scale of 1–5, with lower mean scores associated with an easier to use accommodation. Overall, the extended time \((M = 1.4, SD = 0.79)\), small group \((M = 1.3, SD = 0.75)\), TDI \((M = 1.58, SD = 0.95)\), and TIR \((M = 1.99, SD = 1.19)\) accommodations were rated as the easiest to implement. The remaining three accommodations, TII \((M = 2.26, SD = 1.34)\), SSR \((M = 2.30, SD = 1.28)\), and SE \((M = 2.75, SD = 1.40)\), were rated as more difficult than the others, but only relatively so. None of the accommodations were seen as difficult to implement (with a mean score of 3.0 or greater).

A one-way between-groups multivariate ANOVA was performed to investigate the perceived ease of use for each accommodation in three different educational settings (schools for the deaf, district/regional programs, and mainstreamed settings). Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance–covariance matrices, and multicollinearity, with no serious violations noted. There was no statistically significant difference between educational professionals at schools for the deaf, district/regional programs, and mainstreamed settings in perceived ease of use for any of the accommodations. Again, there are potential overlaps between these categories depending on how participants identified the characteristics of their school or program.

An independent-samples \(t\) test was conducted to see if there was a difference in ease of use ratings for participants whose SDHH received instruction using some form of sign language (ASL or other signed language) in instruction and those in oral (speech only) settings. For ease of use, participants with sign language as part of instruction rated the student signs response to a scribe accommodation as easier \((M = 2.40, SD = 1.41)\) than those who did not \((M = 2.99, SD = 1.32)\), \(t(198) = 3.28, p = .001, \eta^2 = .05\). There were no significant differences for the other accommodations.

Perceived validity. Study participants also gave their perspectives on the validity of each of the seven accommodations. Overall mean ratings for validity were similar to the ease of use ratings described above, with average scores from \(M = 1.35\) for small groups to \(M = 2.75\) for SE. None of the accommodations had an average rating of invalid or very invalid by participants in this survey (mean scores higher than 3.0). In addition, there were no statistically significant differences in perceived validity scores between educational settings at \(p < .05\).

An independent-samples \(t\) test was conducted to see if there was a difference in validity ratings for
educational professionals who used some form of sign language (ASL or other signed language) in instruction and those in oral-only settings. For validity ratings, participants who used sign language in instruction rated the extended time accommodation as more valid \((M = 1.33, SD = 0.64)\) than those who did not \((M = 1.54, SD = 0.95), t(336) = 3.42, p = .02, \eta^2 = .02\). None of the other accommodations had different validity ratings by educational professionals who used sign language-based or oral instruction.

The next set of analyses investigated the relationship between reported ease of use and validity of each accommodation. A positive correlation was found between the perceived ease of use and validity of use scores for all accommodations. In other words, participants who thought each accommodation was easy to use tended to also think it was a valid accommodation. Using Cohen (1988) as a guide, the effect size for these relationships was small for extended time \((r = .31)\) and small group \((r = .17)\); medium for TIR \((r = .24)\) and TII \((r = .26)\); and large for student signs response \((r = .31)\), TDI \((r = .35)\), and SE \((r = .36)\). The strength of the relationship between ease of use and validity appears to be stronger for the accommodations that involve changing the language used in test administration (e.g., TII, student signs response, or SE) than those that do not (extended time and small group). It should be noted that the strong correlations may be an artifact of the data; scales that allow greater differentiation between ratings may produce different results.

Best Practice Recommendations

The last component of this survey investigated participant perspectives of best practices regarding assessment for SDHH. Because there is often unclear guidance from both policy and research literature on accommodations use, the purpose of these questions was to raise important issues to consider when administering test accommodations for SDHH. Participants shared their best practice recommendations for three accommodations: (a) test items read to the student; (b) TII in sign language to the student; and (c) students signing a response to a scribe. The questions were open ended and allowed for participants to describe under what conditions they would recommend use of the accommodation. Responses were analyzed for recurring themes using thematic content analysis. Each response was coded independently by two research assistants who had both developed the thematic categories and participated in analyzing pilot data. The interrater reliability was 96% for read aloud, 86% for interpreted test items, and 77% for student signs response to a scribe. Responses where coders did not agree were evaluated by the lead researcher who made the final coding designation.

Because teachers often gave several examples in their answers, responses could be coded for more than one theme. Categories included student academic level, student communication, test subject, test format, and additional disabilities. Table 3 highlights examples of participant responses across the key categories found in this analysis.

**Read aloud.** The read aloud accommodation item had 329 responses, with an average of almost two response categories \((M = 1.78, SD = 0.89)\) per participant. Participants largely focused their recommendations for best practices on categories of student communication \((n = 68)\), academic level \((n = 125)\), and test subject \((n = 75)\). Interestingly, not many participants \((n = 13, 3\%)\) listed validity concerns as an issue when using the read aloud accommodation. There were no significant differences in the frequency of responses by educational setting from schools for the deaf, district programs, or mainstreamed settings.

**Interpreter for test items.** A total of 334 participants gave their recommendations for when to use an interpreter for test items. Participants responded across a large number of categories, with an average of \(M = 1.57 (SD = 0.73)\) themes per response. The majority of participants placed emphasis on the language the student used in communication \((n = 111)\), the student’s academic level \((n = 79)\), and the subject of the assessment \((n = 62)\). There were also a large number of responses \((n = 64)\) in the “other” category. This included responses that were general affirmations that they thought the accommodation was effective without specifics as to when or with whom. Interestingly, participants expressed concern about the validity of this accommodation more often \((n = 40, 8\%)\) than they
did for having test items read aloud or when a student signs responses to a scribe. For example, one participant wrote “Yes, if the interpreter knows the student and the ethics involved with high stakes testing—multiple interpreters may interpret the test in different ways which could generate different scores.” Participants did not focus specifically on quality of the sign language interpreter as part of best practices; this may be assumed or implied in their recommendations. For this accommodation and the next item, student signs response to a scribe, the skills of the interpreter are critical to the effectiveness of these accommodations in assessment.

### Table 3  Examples of participant responses to open-ended questions about the best practice on accommodations use for SDHH

<table>
<thead>
<tr>
<th>Response category</th>
<th>TIR</th>
<th>Student signs response to a scribe</th>
<th>TII</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student academic level</td>
<td>“…for students who either can’t read or whose vision is poor enough that they can’t read print. It is important to know how good student’s speech, reading, and/or speech discrimination ability is, for this to be valid.”</td>
<td>“If students’ written language skills are lagging considering the student’s primary means of communication.”</td>
<td>“When concerned that the student’s ability to read the test item with ease will interfere with their ability to demonstrate what they know in test that is meant to assess another skill.”</td>
</tr>
<tr>
<td>Communication mode</td>
<td>“To any students who primarily use Spoken English and to auditory learners”</td>
<td>“At any time a student’s writing and/or spelling skills may affect their scores. Although it is difficult b/c a student that dictates something in ASL must be scribed word for word and not translated into English.”</td>
<td>“Students with limited reading English skills who can’t hear will be able to have the test parts that are allowed to be signed interpreted.”</td>
</tr>
<tr>
<td>Test format or test subject</td>
<td>“Can’t be used for a reading test. Does the student have reading disabilities that affect reading? Does the student use his/her hearing enough to benefit from this? It’s appropriate for some.”</td>
<td>“If the student has limited English languages skills but proficient with ASL, then interpreting test questions for content area might be one possibility to consider. I would have reservations about doing this for subtests measuring either reading or English/Language Arts, however.”</td>
<td>“…”</td>
</tr>
<tr>
<td>Additional disability</td>
<td>“… only if the student is extremely slow or anxious writer because of other physical or mental difficulties.”</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Student signs response to scribe.** In the scribe response category there were 386 respondents with an average of $M = 1.06$ ($SD = 0.80$) themes per participant. A third (30%) of participants indicated that this accommodation was either not applicable ($n = 113, 22\%$) or not appropriate ($n = 16, 8\%$) for their students. Best practice recommendations mainly focused on communication issues ($n = 73$), academic level ($n = 84$), and additional disability ($n = 57$). The emphasis on a student’s additional disability included consideration of physical disabilities or other concerns about a students ability to use a pen or pencil to complete a standardized
assessment. However, issues of interpreter quality or school resources did arise in a few responses. For example, one participant responded in the following way: “First, how well the student knows how to sign and how well the scribe understands sign language. I personally feel the scribe needs to have a ‘significant’ amount of demonstrable training. If not, misunderstandings abound that could have an effect on the students education.” This response includes consideration of both the student’s and the scribe’s language proficiency in order for student signing a response to a scribe to be an effective accommodation.

Discussion

This discussion will focus on three main findings of this study: (a) prevalence of accommodations use; (b) participant perspectives; and (c) participant recommendations for best practice in accommodations use. For each domain, the role of language and communication in this context will specifically be addressed. There are some limitations to this study that should be kept in mind when interpreting results: (a) the sample is weighted toward teachers in schools for the deaf over those in mainstreamed settings; (b) accommodations use data are, in most cases, for groups of students and not for individual students; and (c) participants could remain anonymous in their results and thus could not be reached to confirm the intent of open-ended responses. Although the proportion of participants from mainstreamed settings has grown from the previous survey administration, the characteristics of the educational professionals, program resources, and students in this sample may be very different than those found on a national basis. More specifically, participants in this sample are more likely to serve students who have more profound hearing loss, use ASL or sign language in instruction, and have additional disabilities. Teachers who serve students with moderate hearing loss or who use only oral language in instruction are underrepresented in this sample and may, for example, make different recommendations for best practices in accommodations use. Nonetheless, these findings have important implications for professional development, assessment policy, and needed research in the validity of accommodated assessments.

Prevalence

The first research question guiding this study was what accommodations SDHH used on the 2004–2005 statewide standardized assessments. The findings from this study build upon school-level descriptions of accommodations use collected in the First National Survey (Cawthon & Online Research Lab, 2006). Teachers reported whether they used accommodations for reading only, for math only, for both subjects, or for neither subject. A significant majority of teachers in this study had at least one student use extended time, small-group/individual administration, or test directions interpreted for both math and reading. Teachers also widely used TIR or TII but were more likely to use it only for math and not for reading. Finally, only a few teachers had students who signed their responses to a scribe or took a test in SE. Accommodations use is prevalent for SDHH participating in statewide standardized assessments. However, because these data are at the teacher level and not at the student level, it is not clear whether all of a participant’s students received the same set of accommodations or whether individual students used different accommodations. These data do not provide information about how consistently an accommodation such as TIR is implemented within a school or between settings. There may also be a gap between the accommodations recommended on student IEPs or 504 plans and those actually used with each student during the statewide assessments. Such analyses would require information on assessment practices with each individual student, including investigation of how the accommodation was implemented on site, data not available here.

Role of language used in instruction. Although participants reported wide use of TII or TDI accommodations, students signing responses to scribes was rarely reported. This is a concern because large numbers of teachers conducted assessments in communication modes that differed from those used in instruction. This may indicate one of several possible conditions. First, many teachers across settings and communication modes may not have discerned a need for students to sign responses to a scribe on statewide assessments, as the majority of the questions are multiple choice.
Second, school districts and/or institutions may not have had the funding necessary to provide for scribes. Bilingual staff trained in test administration may not be available for students in many settings. Another possibility to consider is that IEP teams may not realize the importance of native language communication when students demonstrate their knowledge and skills on standardized assessment. Finally, many states restrict the use of this accommodation; even when it is allowed, states put limitations on how student scores can be included in accountability frameworks (Clapper, Morse, Lazarus, et al., 2005). These limits reflect a concern that changing the language of test administration and student responses significantly alters the task demands of the test item, resulting in a test modification, instead of a test accommodation. Such modifications make valid comparisons between tests taken with and without the accommodations difficult to achieve.

Teacher Perspectives

Teachers play a significant role in assessment practices for students with disabilities, and their views about accommodations influence their use. The second research question in this study was to explore the perspectives of teachers who serve SDHH. Teachers rated all the listed accommodations as both easy and valid to use in statewide standardized assessments. There was also a significant positive correlation between ease of use and validity ratings for all accommodations. The correlations were stronger for those accommodations that involve a change in the language used in test administration. For example, SE, student signs response to a scribe, and TII had stronger correlations than extended time or small-group administration. One drawback to the format of these questions is that participants could not make separate ratings for different assessments nor provide reasons behind their ratings. Future studies will allow for greater detail in teacher responses regarding the validity of accommodations for SDHH.

There were a few differences in teacher ease of use or validity ratings by educational setting or in the language used in instruction. The overlap in characteristics between schools for the deaf, district/regional programs, and mainstream settings may contribute to these results. Teachers who used ASL or another signed language in instruction felt that having a student sign their responses to a scribe was easier to use than those who used only speech in instruction. In the validity ratings, those with sign language in instruction thought that extended time was more valid than their oral-only peers. However, these were only slight differences with very small effect sizes. Teachers in this study were in agreement, overall, in their positive perceptions about accommodations ease and validity. These findings support previous research that show teachers tend to associate ease of use with accommodations validity (McKevitt & Elliott, 2003). They also indicate a need for caution in regarding the perception of validity as an indicator of whether an accommodation indeed changes the task demand of a test item.

Best Practice Recommendations

The last section of this study gave participants the opportunity to describe in what contexts they would most recommend the use of three accommodations: read aloud, TII, and student signs response to a scribe. These three accommodations were chosen because the change the presentation of the test item may result in a test modification, not just an accommodation to provide access to test content. These recommendations can be used to identify factors that can guide future research and subsequent policies on when to use accommodations in statewide standardized assessments.

Read aloud. Study participants provided recommendations for when read aloud would be most useful for SDHH. Participants focused mainly on student characteristics, with fewer discussions of policy, test format, or questions about validity of reading test items aloud as an accommodation. The majority of responses included some consideration for the academic level of the student, including the number of grades below grade level or reading level. For example, if a student was two or more years behind grade level in reading, some teachers would then recommend the use of read aloud for test items. At
times, recommendations for use of read loud as an accommodation conflicted. For example, when teachers focused on a student’s language, some teachers were in support of read aloud and others against, with responses supportive of both ASL and spoken English. This may be due, in part, to the fact that some participants equated read aloud with interpreting test items and gave identical responses for both survey questions.

Although teachers did not explicitly state concerns about validity in using read aloud, they did indicate that the accommodation would be more appropriate for math tests than for reading tests. As the earlier findings indicate, IEP teams are beginning to make some distinction between appropriate accommodations for math and reading. This finding is important because the read aloud accommodation has been known to generate much controversy. States seem to be more receptive to read aloud scores from math testing rather than a test that may assess reading skills (Clapper, Morse, Lazarus, et al., 2005). Kentucky, Massachusetts, Missouri, New York, and Vermont are the only states with no restrictions concerning the read aloud accommodation. The remaining states either have restrictions on its use or prohibit read aloud entirely. For SDHH, using read aloud as an accommodation may result in scores that are considered invalid to be included in aggregates of student performance. Further clarification of when read aloud can and cannot be used will be important in ensuring that schools and states are accountable for SDHH academic outcomes.

**Test items interpreted.** Participants gave a range of responses when making suggestions for interpreting test items for SDHH as an accommodation on the large-scale, standardized assessments. We noted that some study participants equated read aloud with interpreting test items, listing the same criteria or simply stating “see above,” referring back to their responses for read aloud. Some similar trends were the focus on the academic level and communication skills of the student, as well as an emphasis on specific test subjects and assessment formats. There were, however, some distinctions in the overall findings for TII and those for read aloud. For example, teachers were more likely to explicitly note concerns about validity for sign language-interpreted items than for those that were read aloud. Yet, in contrast, they were also more likely to give a general endorsement of interpreting test items without identifying specific conditions when the accommodation would be most beneficial. Recommendations for interpreting test items were thus more general in nature, with less emphasis on specific criteria upon which these decisions could be made.

**Student sign response.** Student signs response to a scribe involves a student responding to a test item in sign language with a scribe translating that information to an answer sheet. Overall, teachers were less likely to use this accommodation in testing for SDHH than for the other accommodations in this survey. This is confirmed by the high number of participants \((n = 113)\) who said that this accommodation was not applicable in their setting. Whether this is due to policies that prohibit its use or characteristics of the students they teach is unclear.

Those participants who gave suggestions on when to use the student sign response accommodation focused on three student characteristics: academic level, student communication, and additional disabilities. The first two characteristics were common across all three accommodations discussed in this article. The third, additional disability, was unique to signing a response and was noted by \(n = 57\) study participants. Participants focused mainly on additional disabilities that may limit a student’s ability to hold a pencil or sit for long periods of time. Although students with severe cognitive disabilities can participate in alternate assessments, it is not clear where students with multiple disabilities (that are not severe) fall in NCLB accountability testing policy. If responding in sign language can improve a student’s ability to demonstrate his or her knowledge and skill, this accommodation may be a valuable addition to a state’s accommodations repertoire. This may be an option for students who would otherwise participate in an alternate assessment. Of course, appropriate training in administering an assessment with this accommodation would be necessary to address concerns about the validity of these scores.
Implications

These recommendations have the following implications for policy development, teacher preparation, and future research:

**Policy Development.** Just as policy helps to inform assessment practices, so do recommendations from the field help to inform state policy. Findings from this study emphasize the importance of consistent language and communication in instruction and assessment activities. Teachers in this study reported a high use of sign language in instruction, with ASL, an interpreter, or other signed languages or systems such as cued speech or Pidgin Signed English. Accommodations that match the student’s language background may increase the validity of resultant scores by allowing greater access to test item content. However, concerns regarding the change in task demands from such accommodations are real and need to be addressed through empirical research. It may be that assessments with accommodations that change the language of administration should be considered as modified assessments. If so, policy will need to be revised to allow sufficient room for modified assessment scores to be included in accountability frameworks.

It is the authors’ opinion that testing polices for ELL students may benefit SDHH. There is a very limited research base on accommodations for ELL students (Minnema, Thurlow, Anderson, & Stone, 2005), and state assessment policies for students with disabilities who are also ELLs are still evolving (Anderson et al., 2005). With the exception of assessments measuring English literacy and until students gain proficiency in (written) English, it may be more effective to test students in the same language that is used in instruction. Interpreted directions, interpreted test items, and student signing responses accommodations can be used to facilitate this instruction to assessment match. Although current ELL testing policy allows for only 2 years of assessment in the student’s native language, SDHH may need additional time to gain literacy skills. State policies may need to be reviewed to allow the test scores of students using these accommodations to be more fully integrated into NCLB accountability frameworks.

**Teacher Preparation and Professional Development.**

Teacher preparation encompasses two stages of training: coursework and student teaching as part of initial certification programs and professional development offered by schools and districts through a teacher’s career. Teacher knowledge is a critical factor in ensuring valid accommodations use (Hollenbeck et al., 1998). Teachers rely a great deal on professional judgment when making decisions about accommodations (McKevitt & Elliott, 2003). Professional development has the potential to strengthen decision making for IEP team members (De Stefano et al., 2001). For those who serve SDHH, it is necessary to provide ongoing training and support that focuses on the specific educational, social, and communicative needs of the child who is deaf or hard of hearing.

Results from this study identify potentially beneficial areas for targeted teacher preparation. The first is with regard to validity of different accommodations. Accommodations that do not change the nature of the test item, such as extended time or small-group administration, are granted more latitude than those that may alter the content of the test, such as having an item read aloud on a reading assessment. Do IEP teams make distinctions between accommodations for tests that measure reading versus mathematics (or in coming years, science)? Research has shown that accommodations potentially vary in their validity, yet results from this study indicate that participants view all accommodations as valid. The perception of general validity of accommodations may be due, in part, to mixed results from the empirical literature or differences in state polices on their use. Additional information about differences in validity of accommodations for math and reading may be necessary to improve assessment practices for SDHH.

Accommodations that include an interpreter raise some serious concerns about the validity of the test scores. However, as indicated in teacher recommendations for accommodations, SDHH may benefit the most from accommodations that include ASL or other signed language. An important area of professional development is therefore training in how to effectively translate test directions and test items using sign
language without changing the content of the test. An example of how states can develop guidelines and training materials can be found in Clapper, Morse, Thompson, and Thurlow (2006). Strengthening interpreter quality is a necessary component of this effort. Scholarship in this field has highlighted concerns about the paucity of qualified educational interpreters available for SDHH (Lane, 1999; Ramsey, 1997; Shick, Williams, & Kupermintz, 2006). Yet few states have legislation regulating the standards for a quality interpreter (National Association of the Deaf, 2000). If interpreted test directions or items are key strategies for increasing the participation of SDHH in standardized assessments, questions of interpreter training, quality, and availability will need to be resolved.

**Future Research.** To improve the administration of accommodations for students with disabilities, much more research is needed to examine and ensure best practices in accommodations use (Bolt & Thurlow, 2004). Two recommendation areas for future research stem from the results of the Second National Survey. First, qualitative studies of accommodations decision making need to be conducted in conjunction with experimental designs. Classroom teachers often collaborate with other IEP team members to determine accommodations use. Decision making should therefore be researched as a collective process in addition to the outcome. The culture of schooling, particularly the professional roles of different individuals involved in determining accommodations use, may influence the outcomes of this process. Studies of a collective culture may benefit from including students’ perceptions in their design, especially for students at the middle and high school level. Students at this age are increasingly aware of their own culture and identity; their communication preferences and thoughts about accommodations use may be important factors in successful inclusion in standardized assessments (also recommended by Horvath, Kampfer-Bohach, & Kearns, 2005).

The second recommended area for future research is in accommodations validity. Experimental studies of the effects of accommodations described in this study, particularly those that change the linguistic content of the test item or student response, are largely missing from the research literature (Tindal, 1998). Most teachers in this study reported that at least one of their students used accommodations such as read aloud and interpreted test items. Although a greater proportion used them for only math assessments than only for reading, a large percentage still used these accommodations for both subjects. Several aspects of validity could benefit from further investigation. The first aspect is what teachers mean by a “valid” accommodation or what kind of information they use in that evaluation. The second is a more precise understanding of how sign language as an accommodation (either interpreting the test item or student signing responses) affects the validity of test scores. Pilot research by Maihoff et al. (2000) indicate that there is promise for a standardized signed administration of assessments but that there are logistical issues that arise when groups of students must complete items at the same pace. Controlled study designs would allow for more informed accommodations policy development and implementation, particularly when considering the unique linguistic characteristics of SDHH.

**Conclusion**

The process of choosing an accommodation is perhaps the largest challenge to achieving a valid assessment for students with disabilities (Fuchs & Fuchs, 2001). The intent of the current study was to document what accommodations SDHH use to participate in statewide standardized assessments and to begin the discussion of best practices in this field. The lack of research in this area threatens the effectiveness of both policy development and the IEP decision-making process. Although strong research does not guarantee strong policy, weak research can only lead to weak policy. Because the IEP team is ultimately responsible for administering the most appropriate accommodation for the student in their care, teacher perspectives and knowledge about assessments are an important factor in valid assessment practices. In turn, IEP teams can help improve our knowledge base by taking the time to track, monitor, and research how well accommodations work with each student. Team members can
also be an integral part of identifying how different accommodations may change the test from a standardized to a modified assessment.

In this current era of accountability reform, our focus ultimately turns to student outcomes. Because standardized assessments are the primary gauge of success under NCLB, how SDHH are tested will have a direct bearing on whether states can leverage resources to improve student achievement. Although current statewide assessments and NCLB data reporting are a start, it is still challenging to determine the progress of SDHH, particularly those who attend district/regional programs or mainstreamed schools. We hope that in the future, states can aggregate SDHH scores on assessments of core academic content areas and in English proficiency development. In the meantime, a careful look at how language and communication can become an integral part of the assessment process is one way we can increase meaningful participation for SDHH.

<table>
<thead>
<tr>
<th>Accommodation*</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Extended time</td>
<td>Student is given additional time to complete the test. This may be time and a half, double time, or unlimited time.</td>
</tr>
<tr>
<td>Small-group or individual administration</td>
<td>Student is tested in a separate room from the main classroom, either with a small group or individually.</td>
</tr>
<tr>
<td>Interpreter for directions</td>
<td>The directions portion of the assessment is presented to the student via sign language (or other version such as cued speech, signed English, etc.).</td>
</tr>
<tr>
<td>Interpreter for test items</td>
<td>The test questions/items are given to the student in ASL (or other signed system such as cued speech, signed English, etc.).</td>
</tr>
<tr>
<td>TIR</td>
<td>The test questions/items are read aloud to the student.</td>
</tr>
<tr>
<td>Sign response for a scribe</td>
<td>A scribe writes down the responses a student gives in sign language.</td>
</tr>
<tr>
<td>SE</td>
<td>The test is rewritten so that the directions and items use simplified vocabulary and sentence structure.</td>
</tr>
</tbody>
</table>

*Clapper, Morse, Lazarus, et al. (2005).

Notes

1. This is likely an underestimate because counts do not include students for whom another disability is the primary disability or students who do not receive special services.

2. To be Deaf, with a capital “D” indicates a cultural designation that goes beyond hearing loss, incorporating language (in the United States, ASL) and shared experiences within the Deaf community (Lane, 1999). To be deaf (with a lower case “d”) or hard of hearing typically means that one has a hearing loss that requires amplification for effective communication, but does not imply a cultural context. Levels of hearing loss are measured by the range of decibels that an individual can detect. A mild or moderate hearing loss ranges from 15 to 70 dB, whereas severe or profound losses range from about 70 to over 90 dB (American Speech Language and Hearing Association, 2006). In some states, “hearing impaired” is the legal definition of individuals who are deaf or hard of hearing. Definitions of D/deaf or hard of hearing vary by individual and reflect diverse hearing levels, preferred methods of communication and primary language. The term “students who are deaf or hard of hearing”, or SDHH, will be used in this paper to refer to all groups combined.

References


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