Accommodations Quality for Students Who Are d/Deaf or Hard of Hearing

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American Annals of the Deaf, Volume 158, Number 4, Fall 2013, pp. 438-452 (Article)

Published by Gallaudet University Press
DOI: 10.1353/aad.2013.0031

Cawthon, S. W., Leppo, R., & pepnet 2 Research and Evidence Synthesis Team. (2013). Accommodations quality for students who are d/Deaf or hard of hearing. *American Annals of the Deaf*, *158*(4), 438–452.

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Students who are d/Deaf or hard of hearing often receive accommodations that are intended to increase access to the educational environment. The authors provide the results of a large national study of accommodations use in secondary and postsecondary settings. The article focuses on three aspects of accommodations use: access, quality, and consistency. The participants were 1,350 professionals working with a diverse group of students who were d/Deaf or hard of hearing in a variety of roles, including educators, administrators, interpreters, vocational rehabilitation agency staff, and allied service providers. Data were collected from both a national survey and a series of focus groups conducted over a 1-year period. The authors discuss the results in light of the crucial nature of accommodations during the transition into a variety of educational, training, and employment options.

Stephanie W. Cawthon, Rachel Leppo, and the pepnet 2 Research and Evidence Synthesis Team

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Keywords: accommodations, transition, secondary, postsecondary

The purpose of instructional and assessment accommodations is to provide students with disabilities access to classroom instruction and testing content (Christensen, Braam, Scullin, & Thurlow, 2011). A variety of factors influence students' use of particular accommodations, including state policy, educational setting, teacher perspectives, and student characteristics (Cawthon, Ho, Patel, Potvin, & Trundt, 2009). Students who are d/Deaf or hard of hearing often receive accommodations that are unique to their communication characteristics, such as the availability of a sign language interpreter or captioning in the classroom. However, these students also receive accommodations used by other student groups, such as extended time for assignments or test administration in a separate setting (Cawthon & Online Research Lab, 2006). In residential settings, accommodations may also include such features as a visual signaling device in a dorm room or interpreters for extracurricular activities (Cawthon, Nichols, & Collier, 2009).

Accommodations are often separated into two categories: those used in classroom instruction and those implemented during testing and assessment (American Educational Research Association, American Psychological Association, & National Council on

Measurement in Education, 1999). Instructional accommodations are meant to increase access to classroom activities, and for students who are d/Deaf or hard of hearing who use sign language, may include the use of a sign language interpreter (e.g., in classrooms where instruction is given in spoken English) or a note taker so that a student can watch the interpreter rather than look down to write notes (Cawthon & Online Research Lab, 2009). Other instructional accommodations might include captioning of videos used in class or additional tutoring services (Marschark et al., 2006). Students in postsecondary settings who have stronger literacy skills may also use accommodations that require a significant level of English print comprehension, such as computer-assisted real-time translation (CART) or captioning (Stinson, Elliot, Kelly, & Liu, 2009).

The accommodations students receive in the classroom become the foundation for the accommodations they receive during assessments (Individuals With Disabilities Education Improvement Act Amendments of 2004, hereinafter referred to as IDEA). Assessment accommodations may include an interpreter or scribe during the test, a shortened assignment, or extra time for a standardized assessment such as the MCAT or other high-stakes exam (Cawthon & Online Research Lab, 2006, 2007). In some situations, accommodations may include the translation of test items into a sign system—for example, American Sign Language (Maihoff et al., 2000) or Signed Exact English (Johnson, Kimball, & Brown, 2001)—or presentation of directions in the sign system (Cawthon & Online Research Lab, 2006). Coherence in accommodations use is a particularly important consideration for students who are d/Deaf or hard of hearing with respect to their language of instruction. If a student receives instructional content in ASL, this may place that student at a disadvantage if the tests of academic achievement are then conducted in written English. Conversely, if the student receives instruction in spoken English, it makes little sense to then translate test items into ASL during an assessment. However, translation of test items is also fraught with its own challenges and questions related to accuracy and validity (Brauer, 1993); although some literature on the impact of ASL-translated items suggests that validity issues can be mitigated, most state- and national-level assessment policies allow for translated items only under tightly monitored conditions (Cawthon, 2007).

Effective accommodations *use* relies on a variety of factors, both within the individual and in the larger system. Factors at the individual level include students' knowledge of how to request accommodations when they need them (e.g., when entering a postsecondary training program) and how to advocate for oneself if those accommodations are not of sufficient quality to facilitate learning. Factors at an institutional level can include whether or not the school has enough qualified interpreters available (Cawthon, Nichols, & Collier, 2009; Luft & Huff, 2011). Access to accommodations can also vary greatly depending on the proximity of needed resources. For example, if a student lives in a rural area, there are likely to be far fewer trained sign language interpreters available than if the student lives in an urban area with a higher population density of individuals who use sign language (Belcastro, 2004; Parton, 2005). Advances in technology are one way that accommodations can be made more accessible to individuals across all settings (Buisson, 2007; Luetke, 2009; Luetke-Stahlman, 1995; Slike & Berman, 2008). For example, large-scale use of broadband Internet makes it possible to reliably use video remote interpreting in ways that would not have been possible even 10 years ago. Advances in real-time captioning have also increased the quality of a student's experiences in the classroom, providing verbatim, real-time transcriptions of classroom dialogue, such as is required, for example, by students who prefer CART for the highly technical discussions that often occur in higher-education settings (Stinson et al., 2009).

As students transition from secondary to postsecondary settings, such as community college, work training programs, universities, or employment, the level of infrastructure and resources available to provide consistent and reliable accommodations can be a critical issue in maintaining access to education and occupational opportunities (Convertino, Marschark, Sapere, Sarchet, & Zupan, 2009). Transition planning begins as early as age 14 years and often requires the participation of a team of professionals, parents, and the students themselves. Best practices in transition planning identify not only what accommodations students are currently using within their secondary learning environment, but also the student's postsecondary goals and what accommodations would best fit in those new settings. Whereas accommodations eligibility and services in secondary settings are guided by IDEA, once an individual enters a postsecondary setting, accommodations provisions are governed by the Americans With Disabilities Act of 1990, a change that shifts much of the responsibility away from the institution and onto the individual (Cawthon et al., 2009). This change in policy guidance is just one of many differences in the level of structure in place to help students who are

d/Deaf or hard of hearing navigate and get access to accommodations during transition.

Our purpose in the present article is to present findings from a national study of accommodations use for students who are d/Deaf or hard of hearing in both secondary and postsecondary settings. We discuss accommodations effectiveness in terms of three main characteristics: availability, quality, and consistency. *Availability* refers to whether the accommodation was available for use in a setting; *quality* refers to how often the accommodation was seen to be of high quality; *consistency* refers to the degree of reliability or predictability in the provision of a particular accommodation.

From these findings, we seek to better understand how the accommodations landscape might affect a student's transition experience into college, job training, and the world of work. We discuss accommodations that are rooted in technology (e.g., FM systems and online text communication), those that require a trained professional (e.g., a sign language interpreter, CART reporter, or note taker), or those that have both characteristics (e.g., video remote interpreting). Additionally, we seek to understand any nuances in accommodations use or preparation regarding accommodations that may reflect differences in student setting (e.g., agency setting vs. higher education). Finally, we provide demographic information regarding professionals who currently work with students who are d/Deaf or hard of hearing and some information about the characteristics of the clients these professionals serve.

Methodology

Measures

The present article is based on results from a national online survey conducted as part of a larger needs assessment for a large, federally funded project, pepnet 2 (www.pepnet.org; Cawthon & Research and Evidence Synthesis Team, 2012). This organization encompasses professionals from a variety of settings linked by the common thread of their work with students who are d/Deaf or hard of hearing and their parents. Constituents come from a wide variety of settings all over the United States, including mainstreamed settings, schools for the deaf, vocational rehabilitation settings, state agencies, job training programs, and institutions of higher education. The online survey was launched through Survey Gizmo, and participants were recruited from the organization database and professional listservs and websites. The survey was open from April to June 2012, and was analyzed during the summer and fall of that year.

In addition to the online survey, interviews and focus groups were conducted with selected individuals at professional conferences. The majority of these individuals were professionals who worked with students who were deaf or hard of hearing in either a direct or indirect capacity. These 14 interviews and eight focus groups (with a total of about 40 individuals) were then coded by means of a reiterative process so that we could understand main themes and findings within this data. The interviews were coded for themes developed from thematic analytic and grounded theory approaches (Corbin & Strauss, 2008). Four team members were responsible for coding these transcripts, with one person acting as the "primary" coder and another as the "secondary" coder on each transcript. The list of codes was expanded and refined twice, once after an early review of the transcripts and again after the primary and secondary coding processes. Additionally, where possible, at least one of the coders either had conducted or had been present at the original interview or focus group. Each pair of coders met after coding the transcripts to clarify issues and determine areas that needed further study. The team conducted a reliability coding process to show the extent to which its members were able to agree on the codes used. For this reliability analysis, we randomly selected excerpts from across all of the interview and focus group transcripts. The rate of reliability was 87% across all codes.

After this coding process, analysis focused on counting code occurrences (i.e., how often a code was mentioned in a transcript) and tracking which codes often co-occurred. Co-occurrence measures are similar to correlation statistics. The value varies from 0 to 1 and can be positive or negative. If two codes were often discussed together, then you would find a statistically significant positive correlation, meaning if you saw one code, you would be very likely to see the other reflected in the coded segment. Conversely, if two codes were rarely mentioned together, than the coefficient would be a small value. We present co-occurrence of codes to facilitate understanding of which contextual factors are important when thinking about the role of accommodations for students who are d/Deaf or hard of hearing in secondary and postsecondary settings.

Demographics

In the present section, we provide a summary of the demographic characteristics of both the professionals who participated in the survey and the clients they served. A total of 1,350 professionals participated in the survey (not all participants answered all questions; sample sizes for each item response are provided in the findings). Most of the respondents were female (n = 857); also, the majority of respondents identified as Caucasian (n =

862). The distribution of participants by reported race or ethnicity is provided in Figure 1.

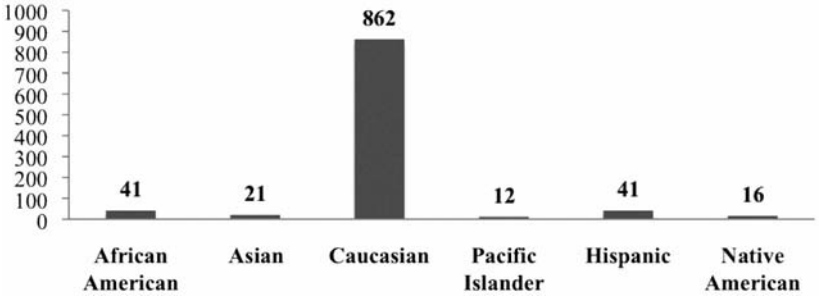
A summary of the age distribution of the sample is provided in Figure 2. The distribution was skewed toward those ages 42–61 years. There was a sharp drop-off after age 61, likely due to retirements from the field.

We also collected information on whether participants identified as deaf or hard of hearing (Figure 3). The vast majority of the professionals identified as hearing (n = 635). Of the toal number of professionals in the sample, 21 said they used cochlear implants.

Participant communication styles and proficiency were varied across several communication modalities. A large percentage of the professionals had at least some experience with ASL, with only 126 reporting no experience at all (Figure 4). The majority (n = 672) were native oral English users. The respondents' levels of fluency in expressing themselves in English through writing were similar. A small group of professionals were high-level users of Spanish, both orally and in written expression; a smaller number were high-level users of Signed Exact English, and an even smaller number was highly proficient with Cued Speech.

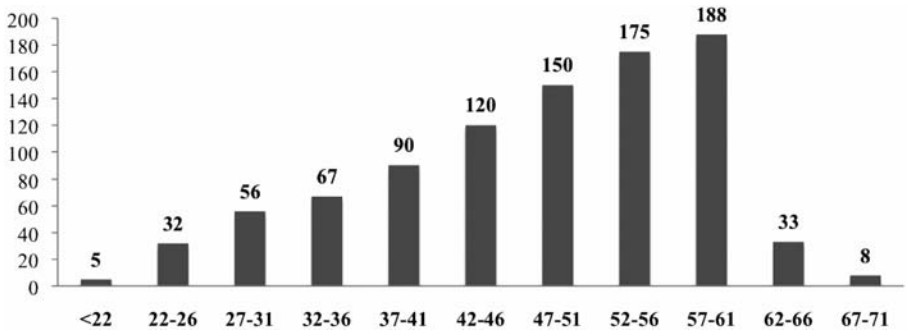
Participants described which professional role(s) they had and in which settings (Figures 5 and 6). These categories were aligned with categories in the project database to allow for easier interpretation of study findings. Respondents were allowed to select more than one role, if applicable. These two figures are for descriptive purposes; we have aggregated these roles and settings into larger categories for later analyses.

Figure 1
Participants' Self-Reported Race/Ethnicity



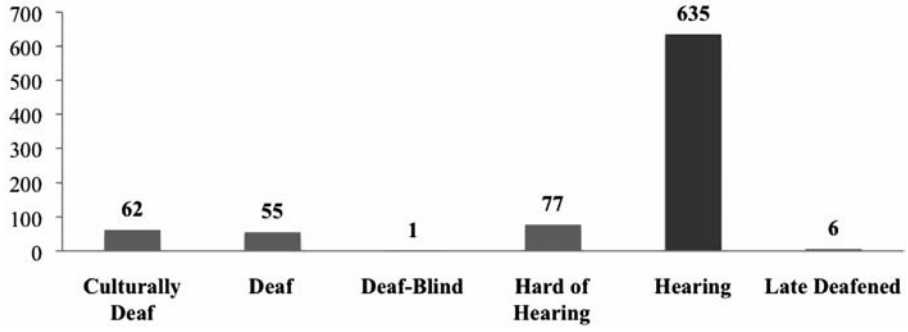
Note. N = 993; not all survey participants responded to this item.

Figure 2
Participant Distribution, by Age (Years)



Note. N = 924; not all survey participants responded to this item.

Figure 3
Distribution of Participants, by Self-Identified Hearing Status

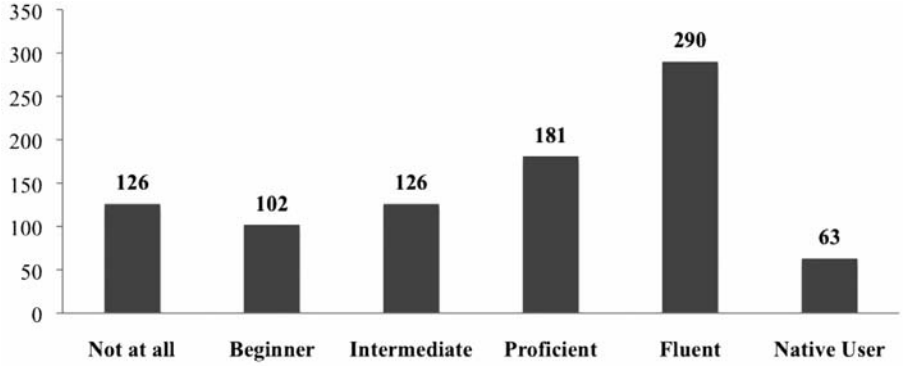


Note. N = 836; not all survey participants responded to this item.

The Individuals the Professionals Served

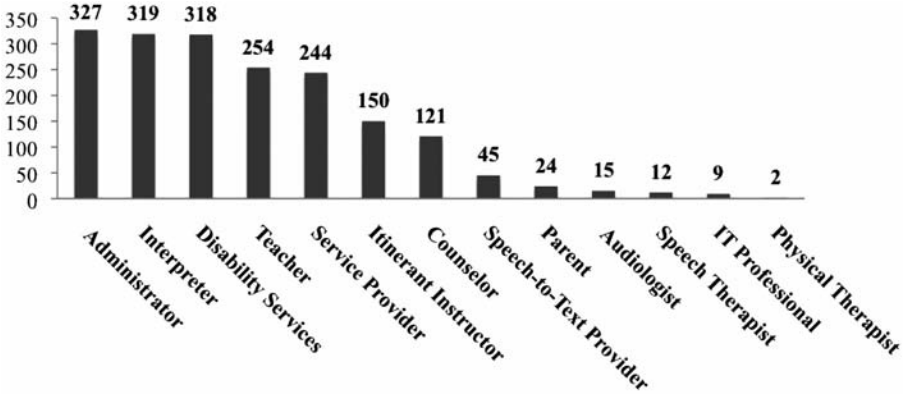
In addition to collecting demographic information about the professionals themselves, we asked them to describe the individuals they served. These questions focused on each professional's overall experience, not individual clients. For example, if a professional indicated that he or she served students who identified as culturally Deaf, that was counted as "one" response. In keeping with the focus on the professional as the unit of analysis, all of these questions allowed professionals to select "all that apply." The

Figure 4
Distribution of Participants by Proficiency in American Sign Language



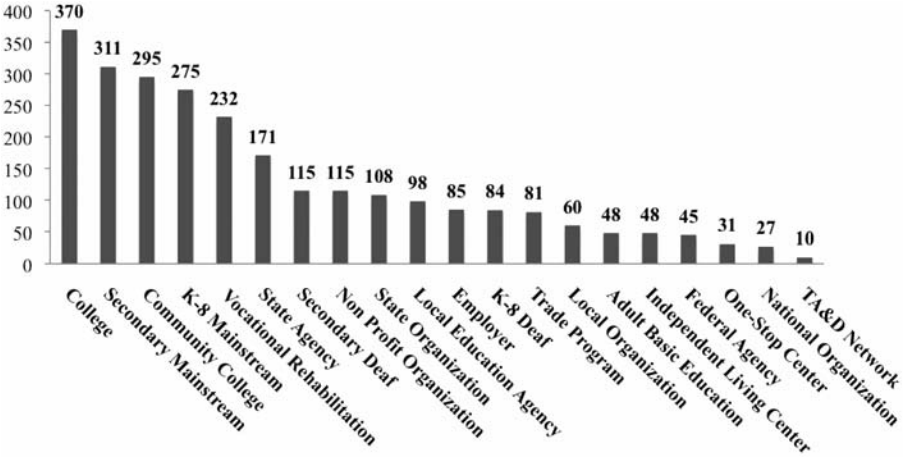
Note. N = 888; not all survey participants responded to this item.

Figure 5
Distribution of Participants by Professional Role



Notes. N = 1,840; respondents were allowed to select more than one role. IT = information technology.

Figure 6
Distribution of Participants by Professional Setting



Note. N = 2,609; respondents were allowed to select more than one setting.

majority of professionals in our survey served individuals who identified as Deaf or hard of hearing, as well as those who had cochlear implants (Figure 7). Fewer had experience with people who were Deaf-Blind or late deafened, or with individuals across all available categories.

Finally, professionals reported the incidence of disabilities among the individuals they served (Figure 8). The most common was learning disabilities, followed by attention deficit hyperactivity disorder, various mental health disorders, visual impairments, mobility disorders, developmental disorders, and medical conditions. Very few of the respondents indicated that they served clients who did not have additional disabilities (n = 92).

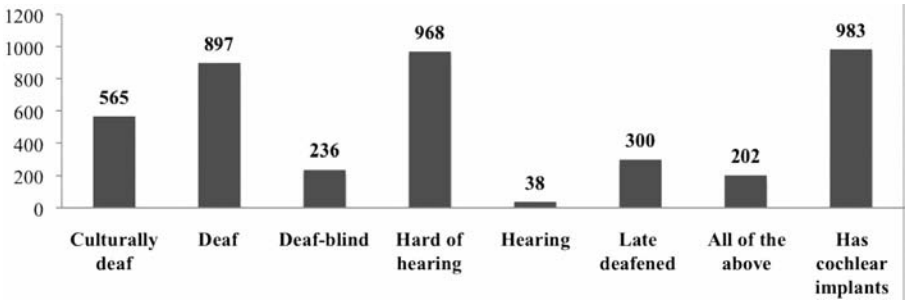
Qualitative Interview and Focus Group Characteristics

As part of the consent form process for the project, we promised to keep all data confidential, including the identities of those who participated in the focus groups. Therefore, we will not describe the individual characteristics of the participants in this part of the project. The interviews and focus groups were few enough in number that providing information such as specific professional roles and responsibilities could result in participant identification. Instead, we will provide an overall description of each participant group.

Interviews

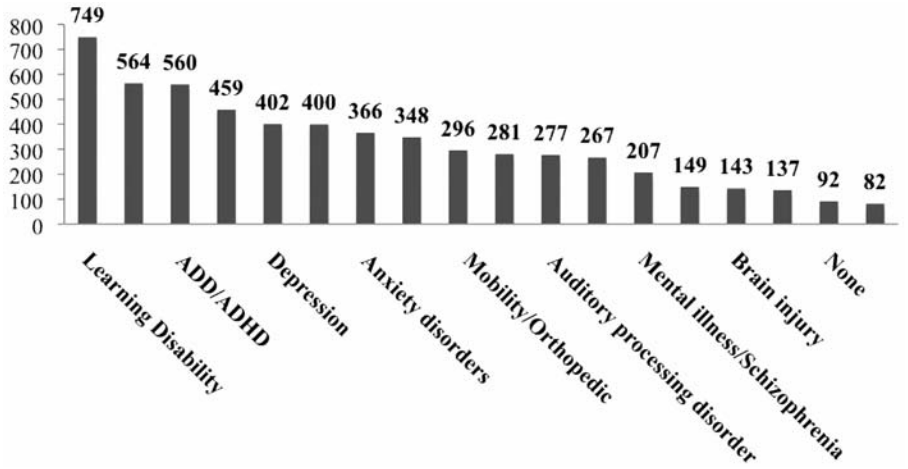
Team members conducted a total of 12 interviews at the Association for Higher Education and Disability (AHEAD) conference and the Southeast Regional Institute on Deafness (SERID) conference, and on a university campus. These interviews focused primarily on individuals with experience in postsecondary settings working directly with individuals who were

Figure 7
Hearing Status of Served Individuals



Note. $N = 4{,}189$; in some instances, more than one category applied to a served individual.

Figure 8
Disabilities and Other Conditions of Individuals Served by Participants



Notes. $N = 5{,}779$; in some instances, more than one category applied to a served individual. ADD/ADHD = attention deficit disorder/attention deficit hyperactivity disorder. PTSD = posttraumatic stress disorder.

deaf or hard of hearing. Participants were split between men and women and mostly represented individuals with at least a decade of experience in the field. They had a range of expertise within that context, from individuals who focused on assessment to those who provided accommodations or coordinated programs for incoming students. On the whole, these individuals were familiar with our organization and the goals of the project.

Focus Groups

Team members conducted eight focus groups across several regional and national conferences, including the American Educational Research Association, California Educators of the Deaf and Hard of Hearing, AHEAD, the annual U.S. Office of Special Education Programs Project Directors' Conference, and SERID. The focus groups ranged in size from 3 to 15 individuals, depending on the place and setting. The focus groups were split between groups of professionals serving individuals who were deaf and hard of hearing, professionals in related fields who did not have expertise with deaf and hard of hearing individuals, and students from a wide variety of backgrounds who were deaf or hard of hearing. The participants across the focus groups were evenly split between men and women and represented a broad age range, from late adolescence through late adulthood. Not all individuals were familiar with our organization, but all were either participating in transition (as students) or were focused on issues related to transition and postsecondary outcomes.

Results

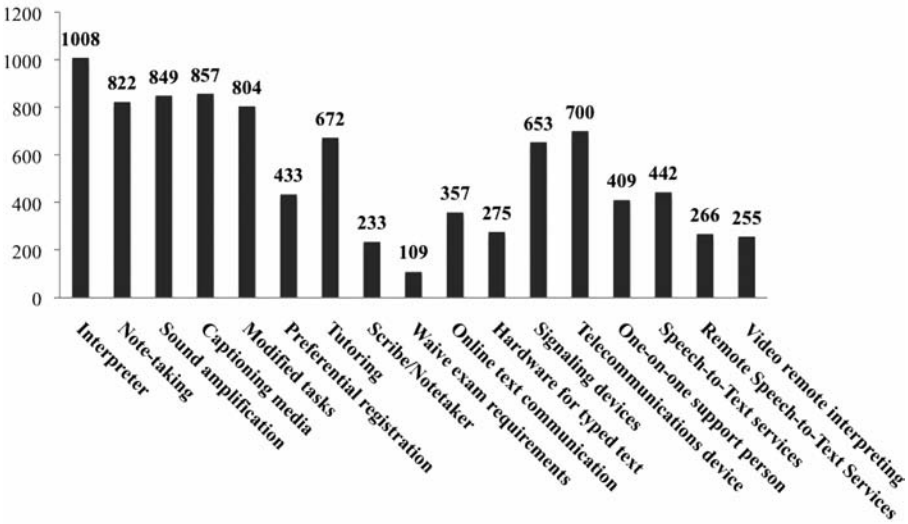
Accommodations Use

Participants reported the use of a large range of accommodations across all settings. As Figure 9 illustrates, interpreters were the most commonly reported accommodation, closely followed by note takers, sound amplification, captions, and modified tasks (most commonly extended time). Telecommunication and signaling devices were also commonly mentioned, as well as student tutoring services. Less frequently used accommodations included those involving a registrar or administrative office, such as preferred registration or waivers of exam requirements. Other less frequently used accommodations were remote services such as interpreters or speech to text.

Table 1 shows the distribution of the professionals by setting and the five key accommodations use by their clients or students.

The accommodations in Table 1 represent the five most frequently used across the data set for the present study. We organize these five by the two that rely most on visual language (interpreters and remote interpreters) and those that are English text–based accommodations (captioning, note taker, and speech to text). Not surprisingly, interpreters were frequently used across all settings, with the level of use apparently remaining consistent in the shift from secondary education to postsecondary settings. Remote

Figure 9
Professionals' Report of Accommodations Use



Note. N = 9,144; in some instances, professionals reported using more than one category of accommodations.

interpreters, those provided via video or the Web, had a stronger presence in agencies and postsecondary settings (37% and 20%, respectively), but not in secondary settings (6%). Technology may be more available in postsecondary settings, or, perhaps institutions and workplaces rely more on remote, contracted interpreters than on ones hired locally. These findings may suggest that, as part of their transition experience, individuals will need to gain further information and practice both in accessing remote services and in using the system itself.

The text-based accommodations varied in their use. Captioning was frequently used (over 60%), though less often in agencies that provided support services than in educational or training settings. Note takers were a very strong presence in postsecondary settings (93%), but had much lower frequency of use across the other settings. This shift may reflect changes both in the resources of postsecondary institutions and in the demands of a college environment. Finally, speech to text (e.g., CART) was most often used by professionals who reported serving students across multiple settings. Nevertheless, it was still one of the least used accommodations overall, particularly in secondary settings.

Table 1
Accommodations Use, by Professional Setting

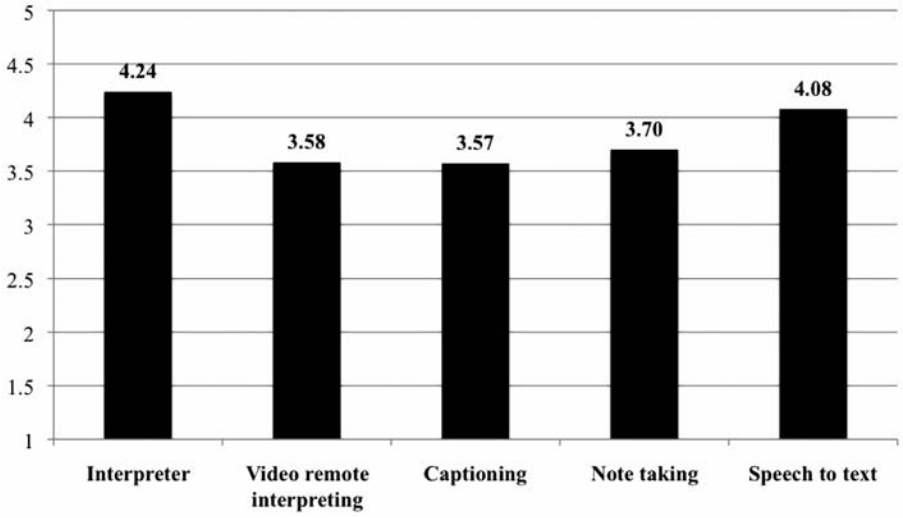
	Accommodation				
Professional setting	*Interpreter*	*Video remote interpreting*	*Captioning*	*Note taking*	*Speech to text*
Secondary school	207 (81%)	15 (6%)	207 (82%)	146 (58%)	37 (15%)
Agency	116 (91%)	47 (37%)	81 (64%)	70 (55%)	137 (39%)
Postsecondary	355 (92%)	77 (20%)	292 (76%)	361 (93%)	42 (33%)
Multiple settings	325 (93%)	114 (33%)	272 (78%)	241 (69%)	223 (58%)

Accommodations Quality

The survey respondents were asked to report on the quality and consistency of accommodations used in their setting by students who were deaf or hard of hearing. Respondents ranked each of these aspects on a 1-to-5 scale, with 1 representing "never" and 5 representing "always."

For consistency, we asked participants to think about how often a requested accommodation was available at the time it was needed, ready and as seamless as possible, and able to facilitate communication in the needed setting. For example, if someone requested a note taker, were the notes complete and provided in a timely fashion? For quality, we asked participants to think about the quality of the accommodation in terms of effectiveness, particularly in the realm of communication. In the case of interpreting, live or remote, was the interpreter a good match for the content or the environment? Did he or she follow professional best practices? The data indicated that the scores for these two questions were highly correlated; that is, when a participant rated an accommodation as highly consistent, that individual also rated it as high quality. While this finding is not surprising, it is good to understand that both of these factors are a part of a person's perceptions about what constitutes a good accommodation. In the analyses below, we average the two ratings (consistency and quality) as an overall "quality" score. This approach provides a more robust measure of quality than the single quality rating alone. Average quality ratings for five key accommodations are provided in Figure 10.

Figure 10
Average Quality Rating Scores for Five Key Accommodations



Note. A 1–5 scale ("never" to "always") was used.

All five of these accommodations had average quality ratings between 3.5 and 4.5. We did not compare quality ratings between accommodations because the number of participants who responded to each accommodation varied depending on the extent to which it was used in each person's setting. Thus, it is difficult to say which accommodation appears to be of higher or lower quality in relation to the others. We emphasize, instead, the professionals' overall ratings of the accommodations as "sometimes" of high quality.

In addition to collecting ratings from the survey participants, we conducted interviews and focus groups with deaf and hard of hearing individuals and with professionals who worked with students who were deaf or hard of hearing. These interviews and focus groups highlighted several themes and processes that may influence a student's experience of accommodations. The codes used in the overall analysis and examples of text that align with these codes are provided in the Appendix. Of greatest relevance to the present article is the occurrence of the ACC (accommodations and services) code in the interview transcripts. *Accommodations were discussed in 30% of the coded segments of the interviews and focus groups.* The ACC code co-occurred with a wide variety of different codes across the list in Table 2. However, the only code that showed a statistically significant level of co-occurrence was TECH (technology), $r = .32, p < .0001$. This overlap can be explained partially by the nature of the technology that the participants referred to when discussing educational settings, and by the fact that many of the technologies were also used as accommodations (e.g., CART). This is illustrated in this quote from one of the professionals:

> We just changed agencies and the agency that went under had never heard of CART. They didn't know what it was, so it was a struggle when we suddenly had to have mandatory webinar training for our deaf staff. The new agency didn't know what to do. Even with CART being provided for the kind of webinars they were doing, it didn't help much for the deaf person to participate, because watching the CART on one part of the screen and the action on another part of the screen . . . well, it didn't really work.

In this quote, TECH was coded both for the reference to webinars and for the reference to CART. The quote is coded ACC for the reference to CART because CART is also an accommodation used by individuals who are deaf or hard of hearing.

Although TECH was the only co-occurring code to reach the level of significance, there were categories that almost reached significance. These were ASSESS (assessment; $r = .10, p = .03$) and DIV (diversity; $r = .10, p = .04$). Overall, ACC issues stood alone and were not discussed in the context of the range of other factors that were discussed that were related to the transition from secondary to postsecondary settings.

Beyond the coding of segments, research staff noted a number of important processes and themes in their analysis of the transcripts. One particular theme was the possible underutilization of accommodations services by students in a postsecondary setting. Professionals described individuals who often attempted to "get by" without accommodations until they were unable to succeed academically. As the two following quotes illustrate, these professionals said this behavior was possibly attributable to guilt over "inconveniencing the system" or a desire to "pass" as a hearing student:

- I see a lot of students get into a situation and feel somehow guilty for expecting full access. And so they settle for something less.
- My experience is that often those students have kind of internal-

> ized this idea that speech is better; you know, the more they can appear like hearing students the better.

The implications for deaf and hard of hearing identity are complicated by the fact that students in a postsecondary setting are responsible for communicating that they have a disability to the appropriate office, a responsibility that effectively adds a potential barrier to access to accommodations. As one professional observed, "Still there are these situations where the student doesn't approach the [Office of Disabilities], waits until an event that's cataclysmic, and then there is this process they have to go through that delays getting services in place."

Professionals described an added layer of complication in this process: the variability in student knowledge of accommodations. Sometimes the students had experiences with a range of options, and sometimes the students only used accommodations that had been available in their particular setting and were unaware of different choices. As one professional said, "They had the legal meetings or whatever and they just weren't told. Or they decided they didn't need this [accommodation or service] in the IEP meeting."

A lack of awareness, coupled with potentially varying sources of information (e.g., family vs. school staff), raises questions as to how prepared students are to use the accommodations that might be available to them across educational settings.

Preparing for the Future

As individuals who are deaf or hard of hearing prepare to enter the workforce, it is important for professionals to prepare them for accommodations discussions with their future employers. Professionals described the extent to which they had these discussions with individuals who were deaf or hard of hearing as part of their own practice. They responded to an item related to this issue on a Likert scale that ranged from 1 to 5 (never to always). Results are shown in Table 2.

Table 2
Professionals' Ratings of Extent to Which They Discussed Workplace Accommodations With Their Students or Clients

Professional setting	*Average rating*
Secondary school	3.38
Agency	3.53
Postsecondary	2.56[a]
Multiple settings	3.54

Note. A 1–5 scale ("never" to "always") was used.
[a] Less likely to discuss accommodations in later employment (significant at $p < .05$).

There were significant differences in their reported levels of discussion, depending on professional setting ($F = 37.59$, $df = 3$, $N = 940$, $p < .0001$). We then conducted paired comparisons using Tukey's method to control for family alpha level. Professionals from postsecondary settings were less likely to discuss accommodations in later employment than those in other settings ($p < .05$). It may be that professionals in education or training settings do not have a structured opportunity to have these kinds of conversations, or that they are not familiar with what kinds of accommodations may be needed in a student's future workplace. In either case, this is an opportunity to help build the capacity of institutions that give students content knowledge and skills training so that they will also have strategies they may need to obtain accommodations on the job. For example, how does a student raise this issue during an interview? What research does a student need to do about available technologies at a potential workplace? Exploring these questions with students is a potential area of growth for institutions that serve students who are deaf or hard of hearing.

In qualitative interviews with professionals working in agency settings, particularly vocational rehabilitation, we incorporated this conversation strand and attempted to determine how professionals were preparing the individuals they worked with to have these conversations with their future employers. Some representative quotes from these discussions follow:

- Well, that would vary by individual. Some are assertive and can do that; otherwise we provide training to teach them to do that.
- As part of this training with this college prep program, we are also teaching them not only to be a college student as far as academics and figuring out how to advocate for the accommodations they need, but also figuring out what accommodations they do need. . . . So when they end up going to college, if they don't end up going to one of these schools, they can at least go into a disabilities support center and talk about these things and be really informed.
- Well, part of that, it's not totally a responsibility that falls on the student or the consumer. Some individuals are better able to express to the employer what their needs are. Some are not,

and some individuals are less knowledgeable about what is available, what accommodations they have access to. . . . So it's kind of a team effort that everyone works together to make sure that things are in place.

Regarding how to have these types of conversations with individuals who may not be as assertive or knowledgeable about the diverse accommodations, several agency personnel referred to self-advocacy training programs:

- We try to teach them. Of course, we encourage our consumers to advocate for themselves because our services are time limited and this is a skill that they will need all their life. So part of that is advocacy training, working with them to make them aware, maybe going with them at one time to show them how you would approach these things [with the employer].
- Our goal, of course, is to always provide the best accommodations that we can. We know we can't always be perfect. In a perfect world, every deaf worker would have . . . total accessibility; we approximate that as closely as possible. For example . . . technology has helped to fill a lot of the gap.

The data from these interviews reflect several themes: individual differences, knowledge of accommodations, and self-advocacy skills. These themes are tightly connected, and several interviewees mentioned that their state programs incorporated these elements into accommodations training for students. These professionals spoke about two types of individuals, those who were able to be assertive and effectively advocate for their accommodation needs, and those who could benefit from training in self-advocacy skills. Two key element of self-advocacy skills were knowing what accommodations were available and having the self-knowledge to realize which accommodations worked best for oneself as a potential member of the workforce.

Discussion

Limitations

There are several limitations to the data that should be borne in mind when drawing conclusions from the results of the present study. As is the case with many surveys, those who responded to our survey were likely those who were most familiar with pepnet 2 or who are more likely to share their experiences with our organization. Therefore, these findings should not be seen as representative of the field as a whole. As much as possible, we contextualized the characteristics of the participants so that appropriate generalizations and conclusions about these findings might be made. Readers of the present article should keep in mind that our participants responded on the basis of their individual understanding of the questions asked of them. In all cases, we use the wording "participants reported that. . . ." This notation is important because we do not want to claim that we observed or had a way of checking on their responses to verify accuracy. This is particularly true in an anonymous survey, which, despite our efforts to make it accessible to a broad range of readers, was still very much a text-based experience. While the directions were presented in ASL in a video format, the modularity and length of the survey precluded a full ASL version of the survey itself. We do not know how many individuals may have left the survey due to difficulties with the reading level required to finish it.

Technology played a significant role in the implementation of our study. We relied on the strength of Web-based technologies to reach our national audience. There were times when technical challenges arose and we were not able to capture all of the information as intended. For example, the survey platform was not always compatible with the platforms used by our participants. Although rare, there were times when the survey could not be fully completed due to technical challenges.

The qualitative research was limited by the set of professionals the research team had access to, through many of the same avenues as were available for the survey. Additionally, as with all research that depends upon interview data, only those who consented were interviewed, and these individuals may have had their own diverse reasons for wishing to contribute their perspective. Thus, the generalizability of the conclusions drawn from the qualitative data may be limited (Lincoln & Guba, 1985). Finally, although at least two team members coded each transcript and the team met as a group to discuss coding issues, the codes and the implications drawn from these data were influenced by the perspectives of the team members and, as such, should be considered carefully.

Impact of Demographics

It is worth considering how the demographics of our survey population may have shaped the context of the findings of the present study. The majority of survey participants were Caucasian females between the ages of 42 and 61 years, and, as a group, they had a relatively high level of ASL proficiency. The participants served deaf and hard of hearing students with a wide range of characteristics and backgrounds, with very few professionals serving individuals with only deafness or hearing loss

as a factor in how they might receive accommodations or special services. Individuals served by professionals in this study also had a wide range of cultural identifications and potentially different communication modalities. This was, therefore, an experienced group of individuals with experiences across the spectrum, who were likely to be familiar with the different accommodations options and resources used in their respective settings. Their perspectives on the use and quality of accommodations are valuable because they draw on the diverse experiences across many different contexts and access requirements. However (and this is true in many service professions), professionals in the field are less diverse than the individuals they serve. Further direct investigation into students' experiences would complement the findings presented here.

Range of Accommodations

The results of the present study indicate that individuals served by the professionals we surveyed used a wide variety of accommodations, with some being utilized more than others. Of note is the finding that accommodations with remote features, such as remote video interpreting and remote speech-to-text services, were less prevalent than immediate accommodations such as an interpreter or note taker. This is particularly significant given the importance of these accommodations to deaf and hard of hearing individuals who reside in rural areas where some accommodations, such as high-quality interpreters, are often unavailable. Additionally, professionals indicated that accommodations such as waivers for exams or preferential registration were not typically used. This finding may reflect the relatively infrequent need for these accommodations (i.e., exams and class registration occur less often than classroom instruction), or the impression among students or staff that they are unnecessary. Professionals also reported that the students they worked with took advantage of several accommodations that are used by students with disabilities more generally, such as modified tasks (e.g., extended time for homework) and tutoring services. This finding may overlap with the respondents' report of the large number of students who were deaf or hard of hearing who had co-occurring disabilities. It is possible that these students with co-occurring disabilities use a different combination of accommodations than students who are deaf or hard of hearing who do not have co-occurring disabilities. Further investigation into individual student characteristics and the match with accommodations in different settings is an important next step in this research program.

Quality Ratings

The quality ratings are promising, but also a cause for concern. When professionals' ratings of the quality of particular accommodations were averaged, the result ranged between "sometimes of high quality" and "often of high quality." Large differences in sample sizes for each accommodation make direct comparisons of the quality ratings unadvisable; thus, it is only possible to state that the five accommodations we examined were reported as being of middle to high quality. This finding is promising given the priority placed on ensuring that quality accommodations are extended to individuals who are deaf or hard of hearing. However, this finding also indicates that there is potential for the quality of accommodations to improve. Additionally, there is a limitation to asking professionals to mentally "average" the experience of their varied students and clients. For example, if one student had a very difficult accommodations experience and another had a very positive experience, the average of the two would be a moderate level of accommodations quality, masking potentially important dimensions of those two divergent experiences.

Context of Accommodations Experiences

Analysis of the qualitative data revealed that accommodations is a theme that is relevant to professionals working with students who are deaf or hard of hearing, as evidenced by the fact that the code for accommodations accounted for 30% of coded segments across all transcripts. Additionally, it appears that issues related to accommodations are closely linked with technology due to the high co-occurrence between these two codes. Furthermore, there are potential identity and relational issues that may arise for individuals as they negotiate the system and access accommodations. The information gleaned from the qualitative analysis indicated that for many students of the professionals in the present study, the structure or process of requesting accommodations can become a barrier to access. Throughout the interviews, professionals spoke about students who felt "guilty" about "inconveniencing the system" or who did not want to identify as a student with a disability until their academic progress was threatened. Additionally, professionals described students who were unfamiliar with the wide range of accommodations available in a postsecondary setting. This theme was echoed in several of the interviews with vocational rehabilitation professionals, who emphasized that students should have exposure to a variety of accommodations and be encouraged to determine

for themselves which accommodations are most helpful to them, and under which circumstances. For instance, one vocational rehabilitation professional said,

> They [students] never used CART before like they had this morning. That hasn't been a choice for them. The school [K–12] made the choices for them previously. I mean, they only had one option maybe. . . . Maybe CART is a better answer to what the student needs. . . . The problem with CART now is not only are they struggling with my teaching and [my] terminology and theory . . . but, now we're giving them two struggles: (1) to learn how to learn, (2) learn the terminology, and then . . . how do they even begin to process my concepts and the theories?!

This statement reminds all researchers that beyond their accommodations use and unique communication needs, students who are deaf or hard of hearing are also students who may struggle with learning in a postsecondary environment. This process can be made rocky or smooth by the accommodations experiences a student has had and will have in the new setting.

Tie to Transition

While the present study did not explicitly look at the shift in accommodations use within the transition process, professionals from both secondary and postsecondary settings responded to the survey, providing some useful information about differences between the two. Individuals who served students in secondary settings largely but not overwhelmingly reported being in mainstreamed settings. The data from these settings offer a useful contrast and a sense of what students' backgrounds are as far as use of accommodations prior to entry into postsecondary training or workplace experiences. The most notable findings in this study were (a) the consistency of interpreter use across all settings and (b) the contrast in remote interpreter, speech-to-text, and note-taking services between secondary settings (less use) and postsecondary settings (more prevalent). When considered in the context of transition planning, students may benefit from practicing strategies for self-advocacy when starting with a new interpreter in a different type of environment than high school, building upon the previous experience base of having an interpreter in a familiar environment. For speech to text, note taking, and remote interpreters, a more scaffolded approach may be necessary to introduce the accommodation option as a possibility in the future, even if it is not being used in the current educational context.

The goal of many postsecondary training and vocational programs is for their students and clients to successfully transition into the workforce. The professional respondents in an agency setting, such as vocational rehabilitation, reported that they felt confident preparing their clients to have discussions with their future employers regarding their accommodations. In contrast, professionals in higher-education settings did not rate their confidence in preparing their students to have these discussions with their future employers as highly. This finding reflects a strength of agencies and an opportunity to build capacity for other types of institutions. The vocational rehabilitation professionals we interviewed pointed to several key elements of the preparation of students to advocate for these accommodations in their future settings. First, the professionals recognized that students differed in their level of comfort with assertively informing their employers of their accommodations needs. This level of comfort influenced whether these students might require further conversations or specific instruction regarding self-advocacy. In order for students to truly advocate for what they needed, they needed to know their range of options **and** be aware of which accommodations worked best for them personally. Thus, effective advocacy for accommodations involves accurate self-knowledge. The need for accurate self-knowledge as a requirement for effective self-advocacy is well documented in the self-advocacy research literature (Test, Fowler, Wood, Brewer, & Eddy, 2005).

Conclusion

Effective accommodations use hinges on so many factors, including availability, quality, and the appropriate fit with the accessibility of the context. Much of the research on accommodations for students who are deaf or hard of hearing emphasizes the effects of changes to a test or instructional activity on students' learning and educational outcomes. The purpose of the present article was to report data on professionals' perspectives on a broad set of accommodations from across secondary and postsecondary settings. Participants in this survey worked in a wide range of contexts, with a diverse set of individuals, and in a variety of roles. Attempting to tease apart specific professional and educational contexts can, at times, put one at risk of getting lost in the proverbial trees. The qualitative aspect of this analysis challenges researchers and practitioners to consider student perspectives and attributes (e.g., the complexity surrounding requests for accommodations, self-advocacy skills) in a wider view of accessibility. It is our hope that this article will offer readers an oppor-

tunity to step back and look at some larger trends that will shape the future of research and practice in the field.

Note

The contents of this article were developed under a grant from the U.S. Department of Education, No. H326D110003. However, these contents do not necessarily represent the policy of the U.S. Department of Education, and readers should not assume endorsement by the federal government.—*The Authors.*

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Appendix

Theme Codes and Example Quotes

Code	*Example quote*
Language and Communication (LC)	"Right, it goes back to the philosophy of the bi-bi method. I tell them to take a chance. Hopefully parents want them to have 10 fingers, 10 toes, but that's not it. You know, take a chance. So I would rather have the dual path, you know, signing, a good language foundation. You've got the speech skills? Great! Take advantage of it. If not, then you've got your ASL skills." (Deaf, professional)
Deaf and Hard of Hearing Identity (DHH IDENT)	"I was mainstreamed in the '80s and '90s. I didn't really learn ASL until I got to college. So my heart is with that class that has gone through the similar experience that I have. For those that have one through schools for the deaf, it was hard for me to identify with that particular group because that wasn't my experience, although we had similarities." (Deaf, professional)
Advocacy (ADV)	"A lot of students come to college and they don't have any idea where they're going, and they're having someone push them around. So the number one advocacy skill that I want all students to have, especially students who have been hovered over a lot, many of these students that come to the disability office have been hovered over an awful lot. They need to discover for themselves what they want to do with their life. The number one thing they have to do is learn how to advocate for their aspirations." (Hearing, professional)
Socioemotional (SOCIOEMO)	"I hated school. All I wanted to do half the time was play football because it was the only thing that made me feel halfway close to people. I hated people that I sat around with because they would all have things handed to them in their life—money, cars, vacations. They had perfect eyesight, perfect hearing, and I just, I never really felt like it was the place for me." (Hard of hearing, postsecondary student)
Goals (GOAL)	"I'm just excited for a new beginning and I'm excited to do what I want finally. I'm excited to play football; I'm excited to go to college. I want to be the first person in my family to graduate with a bachelor's degree." (Hard of hearing, postsecondary student)
Outcomes: academic (OUT)	"So now I'm realizing, maybe they think this truly is an 'A' quality paper; an 'A' product. So now, do I tell them? Do I fail the child? Or do I have to change and kind of adjust to what their needs are? Because it's not their fault, but it kind of puts me in a bind because I want to maintain the academic rigor and integrity." (Deaf, professional)
Family (FAM)	"My father refused to let me work there [at the oil rig]. I kept asking him why. He said, 'You need to go to college first. Get your education. Because as you get older, you're not going to have much of a future if you don't have a college degree.' I felt stuck. I was trying my best already. But he said, "You need to go to college to get the best education you can." My parents didn't want me to be stuck because they thought they were. I never really understood what they meant until now." (Hard of hearing, postsecondary student)
Peers (PEERS)	"Yeah, it's good to do more of an informal question/answer kind of thing because I think that the high school students might have questions that they would like to ask as opposed to having somebody just present something. But also for the students that are in college, they know what really shocks them, or what really helped them. And so letting them have a chance to say their piece of what they feel is the most important thing that they learned." (Hearing, professional)
Transition Factors: individualized education program (IEP) and 9th–12th grades (TRANS)	"Well, maybe it's possible that the program itself is what failed the child. One example would be like an IEP is designed to make sure that the child reaches these goals. Unfortunately, what happens is that the goals were based on very low standards to the point where they'll be achievable; that way, the school looks good. So instead of setting up these really high standards and forcing the child to really work to get them, or getting close—and even if he's getting close, they say, 'Well, he failed.'" (Deaf, professional)
Vocational Rehabilitation (VR)	"Well, what I would like to see is for us to be able to set up a program—a separate program from the school . . . where [people who are deaf or hard of hearing] could be living there and so they're learning all of the independent living skills, and learning how to live with other people. And then being able to go out to a work site with support." (Hearing, professional)

Code	*Example quote*
Institutional Factors (INST)	"Yeah, well, I think all things related to accessibility are going to vary quite a bit by the size of the school and the resources they have available. As a major research institution, we sort of feel, for some reason, like we're scraping the bottom of the barrel for money, but it's just because no one wants to let loose of their own. But there's got to be a lot of money out there; it's just a matter of figuring out where it comes from." (Hearing, professional)
Accommodations and Services (ACC)	"The more information we have, particularly from a hard of hearing individual who is asking for accommodations specifically related to how they hear, because they have to listen to some part of the test, that's where you may be useful. And it's often tricky getting the information that we need." (Hearing, professional)
Personnel and Service Quality/Training (PROQUAL)	"Clearly experience [and training] impact evaluator competency [for deaf and hard of hearing students]. And certainly if nobody mentions anything about the possible consequences of hearing loss." (Hearing, professional)
Assessment (ASSESS)	"There may be some [students] who have co-occurring disabilities that aren't diagnosed. So sometimes they see reading or writing deficits, and yeah, that's not surprising for someone who has a hearing loss. But the evaluator wouldn't have a clue. So we do get someone who has been evaluated by somebody who is trained and experienced in working with students who are deaf and hard of hearing. And so we do get somewhere. . . . I actually have some faith in the evaluation indicating that there is a co-occurring disability. But there are a lot more [for individuals] where the evaluation is worthless." (Hearing, professional)
Money ($)	"They can't afford it. They can't even afford enough coordinators for services… but it's all about funding, and underfunding in this case. " (Hearing, professional)
Time /Timing (TIME)	"If we have a collaborative agreement with that school system or that county or however it's set up, then those students are connected at least by the fall of their junior year or earlier, based on need. If there is not a collaborative agreement and the caseload size of the counselor that would be covering that territory prohibits earlier contact, then they try to connect by their senior year. " (Hearing, professional)
Diversity (DIV)	We have an increasing number of accommodations requests from deaf or hard of hearing TOEFL candidates. I am not sure what that request is other than perhaps the fact that there are more deaf and hard of hearing students who are getting higher education. . . . There may be countries where for some time higher education wasn't open to deaf students. And there are greater educational opportunities now. So we are seeing the opportunity to study at an English institution." (Hearing, professional)
Technology (TECH)	"We just changed agencies, and the agency that went under had never heard of [computer-assisted real-time captioning]. They didn't know what it was, so it was a struggle when we suddenly had to have mandatory webinar training for our deaf staff. The new agency didn't know what to do. Even with CART being provided for the kind of webinars they were doing, it didn't help much for the deaf person to participate because watching the CART on one part of the screen and the action on another part of the screen . . . well it didn't really work." (Hearing, professional)
Societal Factors: institutional or perspective (SYSTEIC)	"The cultural, societal, sub-barriers [and] . . . attitudinal barriers build up expectations, not only of the students themselves so they cannot be limited, but also of the environment, [the] postsecondary environment in particular. Employers [as well] maybe. Erase some of the artificial constructs that stand in [the] way [of individuals who are deaf or hard of hearing] because of people's attitudes about deaf and hard of hearing." (Hearing, professional)