Journal of Postsecondary Education and Disability

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Congratulations to the 2021 Reviewers of the Year: Nancy R. Chinn, Ed.D., Santa Rosa Junior College Christa S. Bialka, Ph.D., Villanova University
In our last editorial, we provided an update about the language that we use as a scholarly community to talk about disability and disabled people—noting the varied academic, political, and social factors that could influence people’s decisions before concluding that the preference of the disabled people featured in these pages should inform choices about language. The recurrent idea that we sought to advance in that editorial was that the words that scholars use, the way that they name people and their experiences, matter. This editorial is also about language and the power of naming—although in this case, it is about the meaning of the Journal’s name.

As editors, we spend a lot of time thinking about what the name Journal of Postsecondary Education & Disability means and all that it implies. To be clear, we have no interest in changing or suggesting a change in name. As it exists presently, It is an elegant name reflecting both the wide-ranging postsecondary options available to disabled students and also leaving space for the many ways that these disabled students might identify—including as non-disabled. That is, the name of the journal creates space both for a wide-range of postsecondary experiences and a wide-range of disability identities. As we contemplated this issue’s contributions, we noted examples of both of these powers of naming.

However, as we have talked and thought more about what the Journal of Postsecondary Education & Disability means, it has also become clear that part of the power of the name is in what it implies but leaves unsaid. In this editorial, we want to offer a reminder—as each of these pieces does in its own way—of the subtext of the name: in our short time as editors, we have come to think of ourselves as stewards of the Journal of Postsecondary Education & Disability (and the ableism that structures both educational systems and disability identities). The intellectual community comprised of the editorial board, authors, and readers may all have different ways of addressing ableism in their work, but they share in their experiences the lived reality that it is not possible to talk about postsecondary education without contending with the ways in which it is constructed by ableism. Nor can we talk about disability identities without acknowledging the roles that ableist ideologies and systems of power, privilege, and oppression play in the lives of disabled people.

We are hardly the first to make these claims. Other editors and authors have made this point in this very venue far more eloquently than we have here, but we feel it is important to acknowledge once again the way that the Journal’s two key constructs are shaped by ableism for a few reasons. First, recognizing the latent and active ableism of the academy is critical if we are to acknowledge the full lived experiences of disabled people within an ableist academy. Our work is political, and it is reasonable to remind ourselves of that fact periodically. Second, oppressive ideologies do not operate in isolation of one another. A key part of disability justice is thinking about the ways in which a person’s experiences of disability and ableism are shaped by their experiences of their other social identities and the systems of power, privilege, and oppression to which they are linked. Foregrounding ableism allows for more nuanced, meaningful conversations about people’s intersectional experiences in a scholarly venue focused on disability and postsecondary education. Finally, by using ableism as a prism through which to understand work from radically different intellectual traditions, it becomes possible to work toward a more comprehensive, holistic understanding of disability in colleges, universities, and other adult education spaces. We believe that no publication is as well-suited to this task as the Journal of Postsecondary Education & Disability.

In this issue’s first article, Kyle Reardon, Katherine W. Bromley, and Deanne Unruh (all from the University of Oregon) offer a systematic review of recent literature that utilized universal design frameworks to understand faculty and student experiences in higher education. Notably, this article explores the growing evidentiary base for universal design as a practice intended to promote the broad accessibility of higher education institutions. As is made clear in this article, however, there remains a great deal of work to be done to realize the maximum impact of universal design—including shifts in faculty attitudes, institutional practices, and additional empirical data.

This issue’s second and third articles both examine the experiences of students with intellectual disability / disabilities in higher education. In their article, Lauren Avellone, Jaclyn Camden, Joshua Taylor, and Paul Wehman (all from Virginia Commonwealth University) describe the employment outcomes of higher education for students with intellectual disabilities. Notably, this study links discussions of educational outcomes and occupational outcomes in ways that suggest the need to complicate our existing storytelling about the way that higher education institutions create future opportunities (and for whom). Meanwhile, Elizabeth T. Schroeder, Erik W. Carter, and
Stacy Clifford Simplican (Vanderbilt University) describe the potential of inclusive orientation programs for students with intellectual disability. Their findings highlight the need for intentional planning and action if these programs are to foster a sense of belonging.

In the fourth and fifth articles in this issue, large-scale survey research is used to access otherwise difficult-to-reach information. Carrie Lou Garberoglio, Paige M. Johnson, Adam Sales, and Stephanie W. Cawthon (all from National Deaf Center on Postsecondary Outcomes; authors 2-4 also from University of Texas at Austin) use the American Community Survey to develop important, population level findings about d/Deaf people. As compared to people with many high incidence disabilities, the comparatively low incidence of d/Deaf people on many college and university campuses may obscure data about their postsecondary experiences. This research highlights steady growth in postsecondary outcomes over the decade from 2008-2018. In their article, Olenka Aguilar and Sarah Ketchen Lipson (both from ) likewise use a large sample to highlight a comparatively smaller group, in this case comparing students with and without disabilities. Their findings highlight the mental health needs of students with disabilities on college and university campuses.

Finally, we are pleased this month to feature a book review by Pamela Luft (Kent State University). This book review describes the memoirs of T. Allen Hurwitz, the former president of Gallaudet University and first holder of that office to have been born deaf. This book and review of it detail a life spent navigating the intersections between the main foci of the Journal of Postsecondary Education & Disability (and the ableism that structures both educational systems and disability identities).

Ezekiel Kimball, Ph.D.
Ryan Wells, Ph.D.
Executive Editors
The Promise of Universal Design in Postsecondary Education: A Literature Review

Kyle Reardon¹
Katherine W. Bromley¹
Deanne Unruh¹

Abstract

Institutions of higher education are facing new challenges in planning, delivering, and evaluating instruction in order to meet the needs of an increasingly diverse student population. Disability support services (DSS) offices, in turn, are often overburdened with providing and monitoring the implementation of appropriate classroom accommodations, necessitating a new model for ensuring access to instruction for all students. Frameworks aligned with the tenets of Universal Design (UD) have demonstrated effectiveness in meeting the needs of diverse learners, though there is little research investigating the effectiveness of the frameworks in postsecondary education. Therefore, a systematic review of the literature was conducted to understand the existing literature on UD to support students with disabilities in postsecondary education. The current review included articles featuring the use of UD frameworks in postsecondary, college, university, or higher education settings to meet the needs of students with disabilities. Included articles measured outcomes such as faculty attitudes and perceptions toward the implementation of UD frameworks and inclusive instruction as well as student attitudes toward and perceptions of the effective faculty implementation of UD principles in postsecondary classrooms. The results of the literature review are discussed along with implications and recommendations for DSS practitioners.

Keywords: universal design, postsecondary education, disability

The number of students with disabilities attending institutions of higher education (IHEs) comprises approximately 11% of the entire college student population and continues to grow (Horn, Peter, Rooney, & Malizio, 2002; Newman et al., 2009). Research suggests that 88% of postsecondary institutions in the United States enroll students with disabilities (Raue & Lewis, 2011), though the percentage of students with disabilities who complete a degree program is still far below that of students without disabilities (Newman et al., 2011). The number of students requesting academic accommodations and related services is growing along with enrollment (Davies et al., 2013; McEwan & Downie, 2013; Roberts et al., 2011; Stodden et al., 2011), creating a need for IHEs to be better prepared to support diverse learning needs in the classroom (Horn, Peter, & Rooney, 2002). IHEs must also reexamine their service delivery models to ensure students receive appropriate supports and that disability support services (DSS) offices are not overwhelmed with the provision of accommodations.

There has also been a recent shift in the distribution of disabilities in postsecondary environments with an increase in students with “invisible” disabilities (Raue & Lewis, 2011) who typically require adaptations in the way course content is delivered and assessed. Other diversity-related factors including life experience, academic preparation, native language, and learning abilities impact a student’s ability to access instruction, regardless of disability status (American College Health Association, 2009). This increasingly diverse array of learning needs is not typically addressed through traditional instructional approaches in higher education and requires an increasing number of classroom accommodations and a need for inclusive teaching practices (Leyser et al., 1998; McGuire et al., 2003; Murray et al., 2009; Reed et al., 2003; Scott et al., 2003; Vogel et al., 1999). Such needs create new challenges both for faculty members in planning, delivering, and evaluating
their instruction to meet the needs of an increasingly diverse student population, as well as for DSS practitioners in designing and monitoring the implementation of classroom accommodations (Toutain, 2019).

To improve persistence and achievement levels for all students, many recent curricular design frameworks intended to meet the needs of a diverse set of learners have been based on the principles of Universal Design (UD). UD is a construct originally developed in the field of architecture as a way to create products and environments to support all individuals (Connell et al., 1997). Several classic examples of UD include curb cuts, handrails, and automatic doors. When environments are designed according to UD principles, they are designed to meet the needs of individuals with a wide range of characteristics, of which disability is just one. The original UD construct has since been adapted in several different forms to structure educational environments and instructional pedagogy to meet the needs of all students. While other constructs focus on providing unique supports for students with disabilities, UD frameworks instead focus on a broader perspective of curricular design to promote the success of all students. These constructs are not intended to be substitutes for targeted interventions and are not as specific as accommodations, but instead are tools to increase academic success and potentially limit the need for student-level classroom accommodations (Ketterlin-Geller & Johnstone, 2006).

While the use of UD in postsecondary settings has been supported by legislation, including the Reauthorization of the Higher Education Opportunity Act of 2008 (Roberts et al., 2011), there is limited empirical evidence of its utility in these settings to meet the needs of all learners, specifically students with disabilities. In addition, there are several different UD frameworks being used in postsecondary education, leading to potential confusion and lack of instructional cohesion. The primary purposes of this review, therefore, are (a) to better understand the existing empirical research on the use of UD frameworks in postsecondary education to support students with disabilities and (b) to provide salient implications of these findings for DSS practitioners. The conception and evolution of UD frameworks will be discussed followed by the methodology of the current literature review and associated findings and recommendations.

Universal Design

The original concept of Universal Design included seven principles designed to guide product development to be designed to meet the needs of all users. Figure 1 provides information about each UD-aligned framework and its composite principles. The principles included in the original framework were established by the Center for Universal Design in 1997 and include:

1. equitable use,
2. flexibility in use,
3. simple and intuitive use,
4. perceptible information,
5. tolerance for error,
6. low physical effort, and
7. size and space for approach and use (The Center for Universal Design, 1997; Story et al., 1998; Zeff, 2007).

The principles of UD have been applied to education in multiple forms resulting in numerous frameworks with the intention of meeting the needs of a range of ability levels in inclusive settings (McGuire et al., 2006; Zeff, 2007). These educational frameworks include Universal Design for Learning (UDL) (Rose & Meyer, 2000), Universal Design for Transition (UDT) (Thoma et al., 2009), Universal Design for Instruction (UDI) (Scott et al., 2003), and Universal Instructional Design (UID) (Higbee, 2009). While all of these frameworks have unique components that set them apart (see Figure 1), they all center on best practices and providing access to students with disabilities. The frameworks most consistently appearing in the literature relevant to the present study are UD, UDL, and UDI, and as such, those frameworks will be the primary focus. UDT will not be discussed in this review as it focuses on applying UD principles to the secondary transition process and does not specifically relate to postsecondary education (Thoma et al., 2009); UID will also not be discussed due to its limited appearance in the literature. In the following section, we will discuss the educational applications of UD in order to understand how they have been and can be applied to postsecondary education settings to help meet the needs of diverse learners.

Educational Applications

Universal Design for Learning. One of the most recognizable educational adaptations of UD is UDL, a model that is most commonly used in K-12 education settings for guiding the delivery of instruction intended to support all students. This framework has also been endorsed within Individuals with Disabilities Education Act Amendments (Individuals with Disabilities Education Act, 2004; Kennedy et al., 2013). The primary focus of UDL is to eliminate barriers within the learning environment, ensuring the
focus is on adapting the curriculum to the learner, and not assuming that the learner needs to fit the curriculum (CAST, 2018; Rose, 2001; Rose & Meyer, 2000). UDL’s goal is to combine the best approaches for engaging students and supporting instructors to meet the needs of all students, without advocating for specific teaching practices. The principles of UDL implementation include providing multiple means of:

1. representation to give learners a variety of ways to acquire information and build knowledge (e.g., provide course content in multiple languages, solicit information from students about preferred presentation style, avoid unnecessary jargon, utilize both student and instructor-led discussions);

2. action and expression that provide learners alternatives for demonstrating what they have learned (e.g., multimedia projects, written papers, interactive media, visual displays, diverse project types); and

3. engagement to tap into learners’ interests, challenge them appropriately, and motivate them to learn (e.g., establish a collaborative classroom culture; individualize instruction to meet unique student needs; develop supportive relationships; promote autonomy, self-determination, and collaboration).

**Universal Design of Instruction.** Originally designed specifically to meet the needs of diverse learners in postsecondary education, Universal Design for Instruction (UDI) focuses on designing academic teaching environments, learning products, and learning materials to meet the needs of a diverse set of learners (McGuire & Scott, 2003; McGuire et al., 2003, 2006; Scott et al., 2001, 2003). The principles of this framework include the original seven principles from UD in
addition to two new principles—community of learners and instructional climate—and focus more on instructional delivery than on product design (Scott et al., 2001). The principles are defined as follows:

1. **equitable use**: designing instruction to be useful to and accessible by people with diverse abilities, providing the same means of use for all students (e.g., post lecture notes and provide students with audio files of lectures, provide content through video);

2. **flexibility in use**: instruction is designed to accommodate a wide range of individual abilities, providing student choice in methods of use (e.g., lecture, small group discussions, student-led discussions);

3. **simple and intuitive**: instruction should be designed in a straightforward and predictable manner, regardless of the student’s experience, knowledge, language skills, or current concentration level, ensuring that instructors eliminate unnecessary complexity (e.g., avoid unnecessary jargon, use visual as well as written content);

4. **perceptible information**: designing instruction so that necessary information is communicated effectively to the student, regardless of ambient conditions or the student’s sensory abilities (e.g., written, visual, and verbal presentation of content);

5. **tolerance for error**: instruction anticipates variation in individual student learning pace and prerequisite skills (e.g., varied response opportunities, flexibility in student demonstration of learning);

6. **low physical effort**: instruction is designed to minimize nonessential physical effort to allow maximum attention to learning (e.g., provide clear rows and walkways, use classrooms and lecture halls without steps, provide adequate desks and workspaces);

7. **size and space for approach and use**: the design of instruction with consideration for appropriate size and space for approach, reach, manipulations, and use regardless of a student’s body size, posture, mobility, and communication needs (e.g., set up classroom to minimize limitations, make all materials easily accessible for all students);

8. **a community of learners**: the instructional environment must promote interaction and communication among students and between students and faculty (e.g., develop teacher-student reciprocity, teach self-determina-

9. **instructional climate**: the instruction is designed to be welcoming and inclusive, espousing high expectations for all students (e.g., build a climate and culture of respect through facilitation of healthy student-to-student and small group interactions) (McGuire & Scott, 2003; McGuire et al., 2003, 2006; Scott et al., 2001, 2003).

While there is some evidence in the literature of the effectiveness of using UD principles to support students with disabilities in postsecondary settings, it is a nascent field in need of more empirical evidence. Roberts et al. (2011) conducted a systematic review of the literature on the use of UDI in postsecondary settings, though they did not look specifically at outcomes for students with disabilities, nor did they include any other UD frameworks in their review. Therefore, the present study was designed to better understand the existing research literature on UD in postsecondary settings in order to identify the UD frameworks studied, the dependent variables addressed, and actionable findings for DSS practitioners.

### Method

#### Criteria

The authors conducted a systematic literature review of the use of different UD frameworks in postsecondary education to support students with disabilities. The criteria used for selection of articles were that the article (a) featured the use of UD, UDL, or UDI in a postsecondary, college, university, or higher education setting, (b) addressed outcomes for students with disabilities, and (c) was published in a peer-reviewed journal dated January 1990 or later. These criteria were chosen as the intent of the systematic literature review was to identify and review research on the use of UD frameworks and principles in postsecondary education settings. Though previous reviews searched articles starting in 2000, the year 1990 was chosen as a starting point for this review in an effort to include any seminal articles referencing UD frameworks as applied to postsecondary settings as UDL was developed in the 1990s (CAST, 2018).

#### Data Sources

The literature search process is detailed in Figure 2. The search was conducted in May 2018 and included the following databases: Academic One File, Academic Search Premier, Business Source Complete, Education Abstracts, Education Research Complete,
Figure 2

Search Procedure for Literature Review
ERIC, Masterfile Premier, PsycNET, Education Research Complete, Psychology and Behavior Sciences, and Vocational and Career Collection. Truncated terms (disab* and UD*) were used as a search parameter strategy to return all articles that referenced any form of the word “disability” and any Universal Design construct (UDL, UDI, UDT, or UD), respectively. The primary search terms were “disab*,” “autism,” “attention deficit,” and “ADHD.” Secondary search terms used along with the primary terms were “UD*” and “Universal Design.” Finally, each search was limited using each of the following tertiary search terms: “post-secondary,” “postsecondary,” “post-school,” “postschool,” “college,” “university,” “IHE,” and “higher education.” All searches were conducted with three search terms, and all combinations of primary, secondary, and tertiary terms were searched. The rationale for this was to generate all articles that reference the use of UD principles or frameworks in postsecondary education to support students with disabilities. There was no additional secondary searching strategy employed in this review.

The initial review of article titles and abstracts returned 79 articles based on the above criteria. Once returned, articles were reviewed through a more thorough secondary process resulting in a remaining 21 articles. The criteria for this secondary review was that articles must use experimental design, correlational or descriptive statistical design, quantitative survey design, mixed methods design, or qualitative design. The rationale for this additional limiting criteria was to gather evidence of UD’s effectiveness in postsecondary settings through validated research designs. Thus, articles using action research, practitioner research, and practice briefs were excluded through secondary review.

Coding Procedures

The Quality Indicator checklists developed by the National Technical Assistance Center on Transition (NTACT) were used to determine methodological rigor. These quality indicator checklists were developed in part based on research published in the 71st edition of Exceptional Children (2005). Quality indicators for group experimental research (Gersten et al., 2005), correlational research (Thompson et al., 2005), and qualitative research (Brantlinger et al., 2005; Trainor & Graue, 2014) were used to assess each article according to the research design that it employed. The rationale for using these checklists to code for quality was to ensure that only high-quality research was included in the review.

The Quality Indicator checklists were transferred into computer-based surveys using Qualtrics, a browser-based survey tool, and were used to code each article for quality. The first author coded all 21 articles and Inter-Rater Reliability (IRR) was calculated using the percent agreement calculation (McHugh, 2012) after seven articles (33% of the total article pool) were coded by the second author. The seven articles coded for IRR were selected using a random number generator. The 21 articles were arranged in alphabetical order by the first author’s last name and assigned a number 1-21. A random number generator was then used to identify which seven articles would be coded by the secondary researcher. IRR was calculated by dividing the number of agreement responses by the total number of responses per Quality Indicator checklist. The total IRR percentage for all seven articles was calculated at 81.9% with a range of 41.2% to 100.0%.

Data Analysis

After all articles were coded and IRR was determined to be acceptable (i.e., reaching a threshold of 80%), there were 11 articles that met inclusion criteria and acceptable quality on the Quality Indicator checklists to be included in the analysis. Once article identification and quality coding were complete, the articles were analyzed to identify common themes relative to UD frameworks used, dependent variables measured, measurement tools used, and research designs employed. Themes were then summarized to provide an opportunity for analysis.

Results

This review examined the existing literature on the use of UD principles in postsecondary education to support individuals with disabilities. The 11 articles consisted of the following research designs:

- one experimental design (Dallas et al., 2016),
- one quasi-experimental design (Davies et al., 2013),
- one mixed methods design (Izzo et al., 2008), and
- eight quantitative survey designs (Dallas et al., 2014; Hartsoe & Barclay, 2017; Lombardi & Murray, 2011; Lombardi et al., 2015; Lombardi et al., 2013; Lombardi et al., 2011; Schelly et al., 2011; West et al., 2016).

All of the articles were published between 2007 to 2016 in peer-reviewed journals. The UD frameworks examined were UD (n = 5), UDL (n = 4), and UDI (n = 2). Each of the included articles featured a dependent variable relative to faculty attitudes and perspec-
Table 1

Universal Design Literature Search Results

<table>
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<th>Disab*</th>
<th>Autism</th>
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<th>ADHD</th>
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Note. UD = Universal Design; IHE = Institutions of Higher Education.

tives or student perspectives and outcomes. As such, the findings are presented according to the addressed dependent variable with an additional section focused on findings relevant to the Inclusive Teaching Strategies Inventory (ITSI), a measurement tool used in seven of the included studies.

Faculty Perspectives

Eight of the articles that met inclusion criteria for the review included a dependent variable relative to faculty perceptions, perspectives, or knowledge of UD principles in postsecondary settings. Dependent variables in these studies included faculty attitudes toward the implementation of UDI (Dallas et al., 2014), faculty perceptions of inclusive instruction (Lombardi & Murray, 2011; Lombardi et al., 2015; Lombardi et al., 2013; Lombardi et al., 2011; West et al., 2016), faculty beliefs, knowledge, and confidence in the principles of UDI (Hartsoe & Barclay, 2017), and faculty perceptions of the most important components of inclusive instruction relative to student success (Izzo et al., 2008).

Dallas et al. (2014) measured faculty attitudes toward implementing accommodations for students with disabilities and found that respondents had favorable attitudes toward providing multiple means of presentation, engaging in inclusive lecture strategies, and providing classroom accommodations to students with documented disabilities. In measuring faculty knowledge of the principles of UDI, Hartsoe and Barclay (2017) found significant correlations between faculty beliefs, knowledge, and confidence. Lombardi and Murray (2011), Lombardi et al. (2013), and Lombardi et al. (2011) all found that faculty who had prior disability-focused training had more positive attitudes toward inclusive teaching strategies. As a result of these positive attitudes, faculty demonstrated a greater understanding of disability law, minimized instructional barriers, had greater awareness of campus resources, and had higher performance expectations for their students. In a study yielding similar results, Izzo et al. (2008) found UDL to be the most preferred training topic among university faculty and
that faculty were specifically looking for more training on how to promote educational access and meet the diverse learning needs of their students through more inclusive instructional practices. In comparing U.S. faculty attitudes toward inclusive teaching practices with attitudes from faculty in Spain and Canada, Lombardi et al. (2015) found that U.S. faculty were more likely to have favorable attitudes. Finally, while continuing to find favorable attitudes toward inclusive teaching practices, both Lombardi et al. (2011) and West et al. (2016) found discrepancies between these attitudes and associated faculty actions toward implementing inclusive instructional strategies in postsecondary classrooms.

**Student Perspectives and Outcomes**

Three of the articles included in the review focused on student perceptions, perspectives, or attitudes regarding faculty implementation of UD principles (Dallas et al., 2016; Davies et al., 2013; Schelly et al., 2011). These studies measured dependent variables that included student attitudes toward and perceptions of faculty implementation of UD principles in postsecondary classrooms. In the only experimental study included in the review that focused on the use of closed captioning in postsecondary classrooms, Dallas et al. (2016) found that participants who were exposed to closed captions performed better on an information recall assessment. They also found that those in the closed captioning condition had more overall positive attitudes, as measured by a composite attitudinal score, toward the use of closed captions as compared to students who were not exposed to closed captions, suggesting that positive attitudes increase along with exposure to closed captions.

Schelly et al. (2011) found that students reported a significant increase in the use of UDL strategies by their instructors after a UDL-focused faculty training. Following the training, instructors presented information in multiple formats, provided more course materials in electronic formats, made more reading assignments available online, made key points in videos more apparent, provided feedback on assignments more promptly and constructively, and supplemented more lecture and reading materials with visuals. Similarly, Davies et al. (2013) found that a UDL-focused faculty training had a significant effect on students’ perceptions of instruction in university courses. Strategies most impacted by the training were presenting material in multiple formats, relating key concepts to larger course objectives, providing an outline at the beginning of each lecture, summarizing material throughout each class, highlighting key points of an instructional video, using instructional videos, and using well-organized and accessible materials.

**Inclusive Teaching Strategies Inventory (ITSI)**

Seven of the studies included used the ITSI to measure attitudes and perceptions toward inclusive teaching practices (Dallas et al., 2014; Hartsoe & Barclay, 2017; Lombardi & Murray, 2011; Lombardi et al., 2015; Lombardi et al., 2013; Lombardi et al., 2011; West et al., 2016). Relative to psychometric properties of the ITSI, Lombardi and Murray (2011) established content validity and partial construct validity, resulting in eight reliable factors. Relatedly, Hartsoe and Barclay (2017) found numerous correlations between the ITSI constructs of Beliefs (Accommodations, Accessible Course Materials, Course Modifications, Inclusive Lecture Strategies, Inclusive Classroom, and Inclusive Assessment), Knowledge (Campus Resources), and Confidence (Disability Law), indicating relationships between faculty beliefs, knowledge, and confidence in implementing the principles of UDI.

Lombardi et al. (2013) used the ITSI to measure faculty attitudes at two different universities, and Lombardi et al. (2015) used the ITSI to examine differences in faculty attitudes in the U.S., Spain, and Canada. Lombardi et al. (2011) used the tool to examine correlations between faculty characteristics (gender, years teaching, teaching status, personal experience, and prior disability-focused training) and faculty attitudes toward inclusive instruction, while West et al. (2016) used the ITSI to examine discrepancies between faculty attitudes and actions toward inclusive teaching practices. Finally, Dallas et al. (2014) used the ITSI to measure faculty attitudes toward providing classroom accommodations.

**Discussion**

The purpose of this literature review was to investigate the existing empirical evidence on the use of UD frameworks in postsecondary education to support students with disabilities and to translate those findings into actionable recommendations for DSS practitioners. The inclusion criteria and coding procedures returned 11 articles for inclusion in the review that contained outcome variables related to faculty or student perceptions, attitudes, or perspectives toward the use of UD principles in postsecondary education classrooms. Findings indicate tentative evidence for positive student outcomes based on the use of these frameworks and are consistent with findings from previous literature reviews on this topic (Roberts et al., 2011). The final section of this review will include overarching themes, a discussion of limitations, and a presentation of actionable findings for DSS practitioners.
A salient finding from the article synthesis was the fact that most studies were exploratory and descriptive in nature, focusing on faculty and student attitudes and perceptions. Of the 11 studies included in the review only one included a true experimental design. There was one additional article that used a quasi-experimental design, but the remaining nine articles did not use an experimental research design in their study. It may be useful to move from more descriptive and exploratory research about attitudes and perceptions to more rigorous research, including correlational and experimental designs, to test the impact of UD frameworks on student outcomes, including graduation and retention rates. While preliminary evidence is positive, experimental design research can provide further empirical and correlational evidence for student-related outcomes for the use of UD frameworks in postsecondary education.

The results across studies included in the review also provided tentative evidence for the premise that faculty adherence to inclusive teaching practices and tenets of UD leads to more positive student perspectives of faculty instruction. This indicates that improving instructor knowledge of diverse learning needs and how to support those needs in the post-secondary classroom may make instruction more accessible and potentially lead to positive academic outcomes for students with disabilities and may increase the instructors’ implementation of UD principles in university classrooms (Schelly et al., 2011). Overall, results from these studies provide evidence that UD frameworks may be a paradigm that faculty are willing to adopt to meet the needs of a diverse set of learners in postsecondary settings.

Limitations

There are several limitations to this review that should be understood when considering the implications of findings. While the researchers attempted to retrieve all existing articles that examined the use of UD frameworks in postsecondary education to support students with disabilities, it is possible that there are other articles on this topic that were not captured by the search methodology. While the literature search included what we presumed to be all relevant databases, there may be other relevant databases that we were not aware of and therefore did not search. Furthermore, though our search terms were designed to capture all disabilities, the fact that we used some specific disability labels in our search (e.g., “autism,” “ADHD”) and not all disability labels (e.g., “learning disability,” “dyslexia”) may have had an impact on the articles returned in the search and therefore on the generalizability of our findings.

In addition to these limitations, further limiting the generalizability of our findings was the fact that inclusion criteria were restricted to empirical studies that used an experimental, quasi-experimental, qualitative, correlational, survey, or mixed method design. While this allowed us to examine the quality of empirical evidence, there are likely other findings from action and practitioner research that were not captured here. Our pool of articles was further limited by our use of NTACT quality indicator checklists to evaluate the quality of the research designs included in the review which reduced our pool of included articles from 21 to 11. Finally, the number of articles included in the review, 11, may not be sufficient and may limit the generalizability of the findings from the cross-article analysis.

Recommendations

The results of the articles included in this review, taken together, have several important implications for DSS practitioners and offices. Results provide evidence for the use of UD frameworks in postsecondary settings to support students with disabilities and point to positive perspectives of faculty members toward students with disabilities’ diverse learning needs and implications for positive impacts on academic performance. Findings also indicate the need for more faculty training and ongoing professional development on inclusive teaching strategies and the implementation of UD frameworks to support students with disabilities. Many articles note the positive impacts of even minimal faculty training on both faculty perceptions of students with disabilities and student perceptions of faculty implementation of UD principles. In order to increase the use of UD in postsecondary classrooms and shift faculty perceptions of disability and inclusive practices, DSS practitioners are of vital importance. These individuals are essential to providing and supporting faculty training, consulting with faculty during UD implementation, as well as providing ongoing collaboration. This section discusses these implications in detail along with recommendations for future research.

Faculty training. While the premise that faculty training on UD frameworks may increase their use in practice is encouraging, the inherent challenge is determining the source of this training. Successful faculty training will include initial training in UD principles, strategies for implementation, follow-up coaching, and both formative and summative assessment on the fidelity of implementation of and student outcomes related to UD-aligned instruction. This opens up a significant opportunity for DSS practitioners who have thus far been leaders in the UD movement in institutions of
higher education. While this significant undertaking will require resources and time, the energy spent on training faculty in UD principles and implementation may reduce the need for individual student accommodations, thus limiting the burden on accommodation provision for DSS practitioners.

**Inclusive teaching strategies inventory.** Results from the review also indicated that the ITSI is a valid and reliable tool for measuring faculty attitudes and actions toward inclusive instruction and students with disabilities. Understanding the attitudes and actions of faculty can provide valuable information for DSS offices in determining how and where to implement UD frameworks on campus. As such, DSS offices can survey faculty on their campus using the ITSI as a way of informing faculty trainings to make them even more relevant for their faculty. Analysis of ITSI survey results can also help DSS offices locate knowledge gaps and implementation discrepancies relative to inclusive and UD-aligned instruction. DSS offices can also use data gathered from the ITSI to present to campus administrators in order to strengthen the case for funding, time, and resources for improving implementation of UD frameworks and inclusive instruction. Lastly, the ITSI could be administered to faculty both before and after UD training to determine the impact of instructional changes resulting from the training, and can also be administered to students before and after faculty training to understand shifts in student perception toward faculty implementation of UD principles as a result of the training.

**DSS consultant model.** The rising number of students with disabilities attending IHEs continues to strain the resources of DSS offices, creating a need for a new or complementary service model (Toutain, 2019). If DSS offices are able to provide adequate faculty trainings on UD principles utilizing the ITSI as described above, these practitioners may be able to shift to a consultant delivery model, focusing more attention on instructional delivery and supporting inclusive instructional practices on campus than on the provision of individual student-level accommodations. This model is not intended to replace these important accommodations, but a strong emphasis on inclusive instructional practices may contribute to a reduction in the need for individual accommodations. This is a model that needs more empirical evidence to determine its effectiveness but may lead to improved academic outcomes for students with disabilities.

**Collaboration.** Each of these recommendations necessitates strong collaborative relationships in order to be effective. For faculty training to be fruitful and for faculty to perceive the administration of the ITSI as a value-added resource as opposed to an evaluative or punitive judgement on instructional delivery, collaborative relationships must be built and fostered. While these relationships will need to be reciprocal, will require buy-in from all parties, and will need to be supported by campus administration, DSS practitioners and offices can be leaders in the development and sustainment of these relationships. By offering their resources, guidance, and expertise in a supportive consultant capacity, DSS practitioners can lead the charge in bringing about positive instructional changes on their campuses.

**Future research.** Future research should focus on developing UD-focused training modules that can be used by DSS offices to train university faculty on the implementation of UD principles in order to develop inclusive instructional practices. Extending the postsecondary UD literature from exploration to the development of actionable interventions should be a significant focus of the research moving forward. Future research should also use the ITSI to determine the impact of faculty training modules on both faculty and student perspectives. Finally, future research should incorporate more rigorous experimental designs to empirically measure whether the use of UD frameworks in postsecondary education improves student outcomes, including course and degree completion, as to date research has primarily only examined attitudes and actions toward inclusive practices.

**Conclusion**

Frameworks associated with the principles of UD have potentially positive implications for improving outcomes for students with disabilities in postsecondary education. DSS practitioners and offices have the potential to be significant leaders in the process of shifting postsecondary classrooms in the direction of more inclusive instructional practices aligned with UD principles. These practitioners can lead faculty trainings on UD, can assess faculty attitudes and actions toward inclusive instruction to ensure that these training modules are designed specifically with the needs of their faculty in mind, and can serve in a consultant capacity to monitor the implementation of inclusive instructional practices across their campuses. Development of a more extensive and rigorous research base relative to UD implementation in postsecondary education will add to the empirical evidence for its use and develop increasingly practical applications for implementation in postsecondary classrooms.
References


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Employment Outcomes for Students with Intellectual Disabilities in Postsecondary Education Programs: A Scoping Review

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Jaclyn Camden¹
Joshua Taylor²
Paul Wehman¹

Abstract

The purpose of this scoping review was to examine research evidence supporting the use of postsecondary education programs as a facilitator of competitive integrated employment for individuals with intellectual disabilities. Despite previous calls for change, most individuals with intellectual disability remain unemployed or segregated in vocational workshops, and do not participate in postsecondary education after exiting high school. This scoping review builds upon the work of previous reviews on postsecondary education programs for students with intellectual disabilities by focusing specifically on employment. This review included a systematic search of peer-reviewed articles and grey literature sources published between 2000 and 2020. A total of eleven studies in the empirical literature and one study in the grey literature met inclusion criteria. The final sample of research articles generally suggests positive results for the effect of postsecondary education programs on employment outcomes that need to be verified through future research and with the help of better reporting. Wide variation in implementation and reporting of employment coursework, applied vocational experiences, and transition processes to employment following program exit were observed across studies. Limitations, implications and recommendations for practice, policy, and future research are discussed.

Keywords: postsecondary education, employment; transition, intellectual disability

Persons with intellectual disabilities (ID) are significantly less likely than their peers without disabilities to secure competitive integrated employment (U.S Bureau of Labor Statistics, 2020). In fact, working age adults with ID have strikingly low rates of employment, with only 34% of individuals with ID between the ages of 21-64 working and only 18% in a competitive job (Siperstein et al., 2013). Such low employment rates have led to the development of policies and practices aimed at establishing better transition pathways to employment for students with ID (Carter et al., 2012), including through participation in postsecondary education programs (PSE). Grigal et al. (2011) reported that for students with ID, having attended some PSE at either a two or four-year institute of higher education (IHE) was associated with a greater likelihood of becoming employed.

In an effort to better extend the benefits of PSE participation to students with ID, the U.S. government passed the Higher Education Opportunity Act (HEOA) in 2008. Prior to HEOA, college programs for students with ID existed (e.g., Comprehensive Transition Programs, mainly non-degree) but there were significant barriers to access for most students. Students with ID faced difficulty funding PSE opportunities because they typically did not meet Title IV eligibility requirements for financial aid, which mandated completion of a high school diploma or equivalent, and enrollment in degree seeking coursework (Grigal & Papay, 2018). HEOA (2008) made federal financial support available for students with ID enrolled in a certificate or other non-degree program (Smith & Beniot, 2013). HEOA also authorized the creation of nation-wide demonstration projects known as Transition and Postsecondary Programs for Students with Intellectual Disabilities (TPSID) along
with a National Coordinating Center (i.e., Think College) tasked with providing program support and disseminating information (Grigal & Papay, 2018). Today, at least 295 college and university programs for students with ID exist across the U.S. (Think College, 2020).

PSE Programs for Students with ID

PSE programs for students with ID comprise a variety of service delivery formats. Programs range in terms of credit (e.g., degree, non-degree, certificate), time to completion, location (e.g., two-year community college, four-year college or university), residential status (e.g., on-campus living opportunities, commuter program), and level of integration. Level of integration refers to the extent to which a PSE program is immersed with other campus courses and activities. Some PSE programs have distinct coursework designed specifically for students with ID (i.e., substantially separate program), while others are designed to fully integrate students with ID into typical college courses with individualized supports to promote success (i.e., inclusive model). Still others offer a combination of both specialized and integrated courses, which is known as a mixed/hybrid model (Cook et al., 2015). Therefore, PSE experiences for students with ID differ vastly across programs.

Overview of Literature on PSE Programs for Students with ID and Employment

To date, few literature reviews have been published on PSE programs for students with ID. Most published reviews have focused primarily on tracking the evolution of types of programs offered during the last few decades (Neubert et al., 2001) and whether participation leads to improved outcomes in a broad range of life domains (Thoma et al., 2011). While these reviews included employment, none focused specifically and comprehensively on employment, and none were able to identify clear links between PSE participation and employment outcomes. A brief description of two noteworthy reviews covering a 40-year time frame (1970-2010) is presented (Neubert et al., 2001; Thoma et al., 2011) along with a summary of pertinent trends and issues (Becht et al., 2020; Grigal et al., 2013).

Neubert et al. (2001) conducted a broad investigation of the literature on PSE for individuals with ID and other significant disabilities spanning from 1970-2000. The aim of the review was to identify practices being implemented across PSE programs and to describe the effectiveness of associated practices. Findings demonstrated large gaps in the research literature across all 30 years, particularly related to outcome data. Authors concluded, “There was little evidence concerning how program participants obtained paid employment or accessed more inclusive social or recreational activities as a result of attending a post-secondary program” (p. 165). Thoma et al. (2011) extended Neubert et al.’s 30-year review into the 21st century by examining the next decade (2001-2010) of peer reviewed literature. Results echoed the findings from Neubert’s review; articles mainly focused on program descriptions and little was found in the way of evaluating outcomes. Findings from Thoma et al. also revealed a lack of stringent research methodology across studies that would bolster findings for program efficacy. While a variety of research methodology was reported (e.g., qualitative, quantitative, and mixed-method designs), no true experimental designs (i.e., randomized-control trials) were conducted and only 1 in 37 articles utilized a quasi-experimental design by comparing employment outcomes for students in PSE programs with those who did not attend PSE.

Finally, a 2013 article by Grigal et al. addressing “critical issues and current trends” identified several actions necessary to improve PSE practices for students with ID. Key points included: (a) operationally defining the term “inclusion” and (b) establishing partnerships with community businesses and workforce agencies to better promote competitive employment outcomes. Variation in the definition of “inclusion” makes evaluating the impact of PSE programs across studies challenging and poses problems for effective replication by other PSE program sites. A recent review of the literature specifically on academic access for students with ID in PSE programs found that less than half of the 43 articles included adequately described levels of integration (Becht et al., 2020). Additionally, a lack of reporting on processes for networking with businesses and adult service agencies such as Vocational Rehabilitation (VR) to promote transition from PSE programs to employment makes successful program replication difficult.

Purpose of Current Review

To date, it has been over a decade since the passing of HEOA (2008), which increased PSE program attendance for students with ID. Empirical reviews on PSE programs for students with ID have focused on general outcomes in a broad range of life domains, but none have focused exclusively or expansively on employment. Research indicates that most PSE programs include some level of employment training. For example, 81% of programs surveyed nationally reported that career preparation and applied vocational experiences are offered to students (Grigal et
Many PSE programs also report collecting work-related information. Chezan et al. (2018) surveyed 52 PSE programs across the U.S. and found that most programs acknowledged collecting employment-related data for students on a variety of variables including employment, job title, location, hours, and pay. However, the extent to which this employment related data has been analyzed and disseminated is uncertain.

The purpose of this scoping review was to examine employment in the context of PSE programs for students with ID in the 21st century, including employment experiences occurring during program enrollment and outcomes observed following program completion. In addition to employment specific information, this review captured other contextually important information recommended by previous researchers, such as level of inclusiveness described by programs, research design methodology, and strategies used to connect students to businesses or adult employment service agencies upon leaving the PSE program. Lastly, this review not only investigated peer-reviewed material but also extended its sources by including a search of grey literature (e.g., non-peer reviewed material issued by credible organizations, experts, or government entities) that could provide insight into this topic.

**Method**

Scoping reviews are a method for broadly charting the existing research on a given topic using a systematic protocol (Arksey & O’Malley, 2005). This scoping review comprised two parts: a review of the empirical databases and a grey literature search. The guiding research questions for both searches were as follows:

a. Which components of PSE programs for students with ID that are implemented during student enrollment focus specifically on employment?

b. What competitive employment outcomes (e.g., employment status, hours, pay, benefits, etc.) are reported once students with ID exit PSE programs?

c. What transition-from-PSE-to-employment procedures are reported to promote securing and maintaining employment following program completion?

d. To what extent is research on PSE programs for students with ID and employment utilizing rigorous methodology to ensure replicability?

**Review Procedures**

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews (PRISMA-ScR) protocol was used (Tricco et al., 2018). A list of empirical databases, grey literature sources, and search criteria used for population, intervention, and outcomes is presented in Table 1. Two experts with over 30 years of experience with PSE programs for students with ID were contacted to solicit suggestions on grey literature sources. All articles were published between the years of 2000 and 2020 and were English or English-translated. This review only included articles published in the U.S. about PSE programs in the U.S. due to differences in legislation, program formats, and diagnostic criteria across countries, all of which would make international comparisons difficult. All levels of research design, methodology and data reporting were included. Because the purpose of this review was to investigate the impact of PSE programs on securing employment, only studies reporting employment outcome data at or after exit were included in the final analysis. Articles collected by search procedures were screened at two levels to determine a match for inclusion criteria; title/abstract review and full text review. Two or more trained researchers conducted inter-observer agreement at 90% or above at both levels of screening. A flow chart of the screening process was created to document total articles included at each stage (see Figure 1).

**Results**

**Results of Empirical Database and Grey Literature Review**

Table 2 presents a description of the final sample of peer-reviewed articles. A total of 12 sources were included for synthesis with 11 peer-reviewed articles and one grey literature source (i.e., Grigal, Hart, et al., 2019). On review of the final sample, a meta-analysis of the findings was not attempted because the information presented across articles lacked a common set of attributes that could be accurately combined, including disparities in program descriptions and employment experiences. Findings are organized by the guiding research questions developed for this review.

**Employment Specific Components Received During PSE Enrollment**

Wide variation in the description of employment-related components was observed across studies. For the purposes of this review, employment components reported in the literature were organized by employment-focused coursework and applied ex-
experiences. Findings revealed a greater emphasis on reporting applied vocational experiences over employment coursework. A total of six out of 12 studies described some level of employment coursework in college settings while all but one study (i.e., Zhang et al., 2018) included information about employment experiences. However, three studies reported “other” vocational training and preparation activities (e.g., resume building, interview practice, career assessment, etc.) that were not contextually identified, so it is possible that these practices could have taken place in the context of either courses or applied experiences.

Regarding coursework, some studies simply provided course titles (e.g., Career Preparation, Career Exploration, Career Experience) while others provided general descriptions of employment related skills taught (e.g., how to connect with employers, understand rights and responsibilities on the job, and work ethic). Still others listed brief general statements that noted vocationally focused coursework was included in the program but did not provide specific coursework information. The number of required credit hours related to employment coursework or curriculum details were not clearly specified in the article sample. It is possible that students in the mixed/hybrid and inclusive programs accrued employment coursework credits by enrolling in integrated classes aligned with their individualized career interests (e.g., Cranston-Gringas et al., 2015), but this information was not discernable among studies. The final sample of articles also included several studies comprising aggregate data from multiple PSE programs, so providing specifics for coursework across programs would have been difficult.

More detailed information was provided for employment experiences. According to the Year Four Annual Report of TPSID Model Demonstration Projects (2018-2019) developed by Think College, 93% (n = 332) of students participated in at least one work experience during enrollment (Grigal, Hart, et al., 2019). A combination of activities was reported across the peer reviewed literature including paid and

### Table 1

**Database Search Criteria**

<table>
<thead>
<tr>
<th>Category</th>
<th>Search Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population</strong></td>
<td>intellectual disab* OR developmental disab* OR IDD OR mental retardation OR MR</td>
</tr>
<tr>
<td><strong>Intervention</strong></td>
<td>postsecondary education OR college OR technical school OR trade school OR postsecondary training OR transition and postsecondary programs for students with intellectual disability OR higher education program OR comprehensive transition programs OR dual enrollment OR inclusive postsecondary education</td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
<td>employment OR wage OR hours employed OR job retention OR benefits OR ocupat* OR vocation*</td>
</tr>
<tr>
<td><strong>Empirical Databases</strong></td>
<td>Educational Resources Information Center (ERIC), Education Research Complete, PsychInfo, Academic Search Complete, PubMed (MEDLINE), CINHAL, Psychology and Behavioral Sciences Collection, SocINDEX.</td>
</tr>
</tbody>
</table>


unpaid internships (Cranston-Gingras et al., 2015; Francis et al., 2018; Grigal et al., 2019; Kelly & Buchanan, 2017; Moore & Schelling, 2014; Neubert et al., 2004; Ross et al., 2013; Ryan et al., 2019; Sheppard-Jones et al., 2018; Zhang et al., 2018), job shadowing (Cranston-Gingras et al., 2015), volunteering or service learning (Grigal et al., 2019), assessment of job tasks (Kelly & Buchanan, 2017), teaching of skills related to employment such as transportation (Cranston-Gingras et al., 2015), and instruction on attendance and hygiene (Kelly & Buchanan, 2017). Studies reported a range of five to 25 work experience hours weekly. Some articles reported work rotations to vary experiences during the course of the PSE program although most did not specify this information.

Of those that did report rotations, Cranston-Gingras et al. (2015) reported quarterly rotations, Francis et al. (2018) reported a minimum of three required experiences, Ross et al. (2013) described a one-year internship requirement for select students, Ryan et al. (2019) reported a rotation of four internships, Sheppard-Jones et al. (2018) indicated a requirement of one work experience per semester, and Zhang et al. (2018) reported a semester long practicum experience. Additional information, such as details regarding payment for work experience and integration of experiences in on- and off-campus business locations, varied widely by study. In summary, reporting on the type, format, and level of detail regarding employment related components students with ID received during enrollment was vastly diverse, making the emergence of themes in relation to outcomes difficult to detect.

**Employment Outcomes for Students with ID after Exiting a PSE Program**

Job status was defined as exiting with or securing a job at any point following PSE program completion (Table 2). Since reporting job status was a prerequisite for article inclusion, all included this variable, with 10 studies reporting percentages and one reporting predictors without associated percent-
<table>
<thead>
<tr>
<th>Citation</th>
<th>Method/ Population</th>
<th>Program/ Integration</th>
<th>Cred.</th>
<th>Employment Coursework</th>
<th>Applied Experience</th>
<th>Employment After Program</th>
<th>Transition Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cranston-Gingras et al. (2015)</td>
<td>Quasi-exp. n = 63</td>
<td>University; Inclusive recreation rather than academics</td>
<td>2</td>
<td>Exceptional student education courses: Career Preparation, Career Experience, Career Exploration</td>
<td>93% in internships (community/ campus location, unpaid/ paid, rotate quarterly, 10-15 hrs/wk, travel training, job shadowing)</td>
<td>• 50.8% in paid employment at exit vs. 17.5% employed before program</td>
<td>Not reported</td>
</tr>
<tr>
<td>Francis et al. (2018)</td>
<td>Non-exp. n not specified</td>
<td>2-year residential program; Mixed/hybrid</td>
<td>2</td>
<td>University courses on career interests Other: person-centered planning/ work portfolio</td>
<td>Integrated vocational experience (3 rotations, on or off-campus, 10 hrs/wk for 10 wks each semester)</td>
<td>• 75% in CIE within 1-year of exit</td>
<td>Not reported</td>
</tr>
<tr>
<td>Grigal, Hart, et al. (2019)</td>
<td>Non-exp. n = 981</td>
<td>Aggregate TPSID data from 2 and 4 year IHEs; Specialized and inclusive</td>
<td>1,2,3</td>
<td>Not reported</td>
<td>93% in one of the following: paid work, job seeking, work-based learning, career exploration/ awareness</td>
<td>• 64% working 1-year after exit • 72% of respondents in paid work 2-years after exit</td>
<td>39% of intern in VR; Partner with LEAs, IDD agencies, BACs/ private foundations</td>
</tr>
<tr>
<td>Grigal, Papay, et al. (2019)</td>
<td>Non-exp. n = 686</td>
<td>Aggregate TPSID data from 2 and 4 year IHEs; Specialized and inclusive</td>
<td>1,2</td>
<td>Vocationally focused coursework</td>
<td>Internships, volunteering, service learning, paid work</td>
<td>• Predictors of employment; Paid job before TPSID, 4-year over 2-year program, paid job during program, and IHE credential • Living on campus decreased odds of employment</td>
<td>Not reported</td>
</tr>
<tr>
<td>Citation</td>
<td>Method/ Population</td>
<td>Program/ Integration</td>
<td>Cred.</td>
<td>Employment Coursework</td>
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<td>Transition Processes</td>
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<td>------------------------------------------------------------------------------------</td>
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<td>----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Kelley &amp; Buchanan (2017)</td>
<td>Non-exp. n not specified</td>
<td>2-year program with on-campus residency; Fully inclusive</td>
<td>2</td>
<td>Not reported</td>
<td>Other: Person-centered planning, career assessments</td>
<td>• 80% of program graduates in competitive employment.</td>
<td>Assist with job placement, networking with family, businesses, and VR</td>
</tr>
<tr>
<td>Moore &amp; Schelling (2014)</td>
<td>Quasi-exp. n = 34 (matched NLTS-2 sample)</td>
<td>1 separate and 1 integrated program</td>
<td>2</td>
<td>Not reported</td>
<td>3rd year community employment internships in integrated program, Specialized program employment activities not reported</td>
<td>• 73% integrated and 91% specialized employed vs 37.2% comparison group</td>
<td>Not reported</td>
</tr>
<tr>
<td>Neubert et al. (2004)</td>
<td>Non-exp. n = 163</td>
<td>2 to 4 year colleges and community sites; hybrid and separate</td>
<td>3</td>
<td>Not reported</td>
<td>87% in vocational training (most off-campus, 73% paid, mean of 15 hrs/wk)</td>
<td>Exit data on 58 students</td>
<td>Formal transition plans with link to adult services</td>
</tr>
<tr>
<td>Ross et al. (2013)</td>
<td>Non-exp. n = 125</td>
<td>2 and 3-year community college with on-campus residency; Mixed/hybrid</td>
<td>2</td>
<td>Content on resume building, skill assessment, interviewing, work ethics, time card use, etc.</td>
<td>Optional third year with 20 hr/wk paid internship</td>
<td>2-year program</td>
<td>Transition planning with VR</td>
</tr>
</tbody>
</table>
(Table 2 continues)

<table>
<thead>
<tr>
<th>Citation</th>
<th>Method/ Population</th>
<th>Program/ Integration</th>
<th>Cred.</th>
<th>Employment Coursework</th>
<th>Applied Experience</th>
<th>Employment After Program</th>
<th>Transition Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ryan et al. (2019)</td>
<td>Non-exp. n = 25</td>
<td>Basic 2-year or extended 4-year program with residential component; Mixed/hybrid</td>
<td>2</td>
<td>60 min/wk on employment for 2 semesters</td>
<td>2-year program (4 unpaid, 1-month internship, 360 min of job coaching/wk, paid job on/off campus for last year) Extended 4-year program (work 20-25 hrs/wk)</td>
<td>Combined programs; • 96% had at least one paid job after exit • 84% employed at follow-up • Most working 20-39 hrs • 8% had medical benefits and 4% had dental/vision</td>
<td>Not reported</td>
</tr>
<tr>
<td>Shepard-Jones et al. (2018)</td>
<td>Quasi-exp. n = 19 (matched NCI-ACS group)</td>
<td>PSE programs; All coursework inclusive</td>
<td>1,3</td>
<td>Not reported</td>
<td>1 work experience per semester</td>
<td>Data for current and former students aggregated; • 37% in community employment vs. 13% comparison group</td>
<td>Not reported</td>
</tr>
<tr>
<td>Zafft et al. (2004)</td>
<td>Quasi-exp. n = 40 (non-PSE comparison)</td>
<td>College Career Connection; Inclusive</td>
<td>4</td>
<td>Not reported</td>
<td>Other: person-centered planning, service collaboration</td>
<td>• Of those working, 100% PSE were in integrated jobs over sheltered work vs. 43% of comparison • Non-PSE worked more mean hours (23 vs 13/wk) • PSE wages above federal minimum • PSE students needed less employment support</td>
<td>Not reported</td>
</tr>
<tr>
<td>Zhang et al. (2018)</td>
<td>Non-exp. n = 38</td>
<td>2-year program; Inclusive</td>
<td>2</td>
<td>Enrichment courses targeting job readiness skills</td>
<td>Semester long paid practicum experience with onsite evaluation</td>
<td>• 84% competitively employed at exit • 88% of those employed at exit still employed at 1-year • Most earned over min wage</td>
<td>Not reported</td>
</tr>
</tbody>
</table>

Note. BAC = Business Advisory Committees, Cred. = credentials (1 = degree/college credit, 2 = certificate of completion, 3 = audit, 4 = not reported), Hrs = hours, IHE = Institutes of Higher Education, LEAs = Local Education Agencies, NCI-ACS = National Core Indicators – Adult Consumer Survey, NLTS = National Longitudinal Study, Non-exp. = non-experimental, Quasi-exp. = quasi-experimental, Wks = week
ages (i.e., Grigal et al., 2019). Half of the total sample ($n = 6; 50\%$) only reported job status without any supplementary information such as wage, hours, or industry. Employment outcomes were overall high for most studies with rates of 91\% (Moore & Schelling, 2014), 96\% (Ryan et al., 2019), 84\% (Ross et al., 2013; Zhang et al., 2018), 80\% (Kelly & Buchanan, 2017) 75\% (Francis et al., 2018), 65\% (Neubert et al., 2004), and 50.8\% (Cranston-Gingras et al., 2015) of PSE participants securing employment upon or after program exit. Longitudinal data were lacking but a post-graduation survey of 272 students completing a TPSID between 2015 and 2018 indicated that 64\% ($n = 175$) were in paid employment one year after exit (Grigal, Hart, et al., 2019).

One study reported a significantly lower employment rate (37\%), but this sample included a mix of current and former students (Sheppard-Jones et al., 2018). Since the researchers did not report the number of students yet to exit the program and seek employment, these outcome data should be considered with caution. Despite the mixed sample, this article was still included in the final collection because it is worth noting that even the 37\% job status rate was still considerably higher than job status rates reported for a comparison control group (13\%) who did not attend PSE. Regarding other studies using a quasi-experimental design, findings indicated enhanced employment outcomes. While the 50.8\% employment rate reported by Cranston-Gingras et al. (2015) was considerably lower than rates reported by other studies, it is vastly higher than the 17.5\% of the same sample who had achieved competitive employment prior to entering their PSE program. Moore and Schelling (2014) reported that 73\% of students completing an integrated program and 91\% of those completing a specialized program secured competitive employment upon program completion versus only 37.2\% of a matched sample comparison group.

Few studies reported extension variables of job status, such as wage, hours, or industry, and little could be gleaned across studies in terms of themes associated with employment outcomes. However, Grigal, Papay, et al. (2019) reported three significant predictors of employment after exit, which included earning a credential from an institute of higher education, attending a four-year rather than two-year program, and paid work experience during enrollment. In fact, students who worked paid jobs while enrolled in a TPSID were 15 times more likely to exit the PSE program in paid employment (Grigal, Papay, et al., 2019). Other notable findings included graduates of fully inclusive programs earning more than those of substantially separate programs and a non-PSE control group, though those in fully inclusive programs also worked fewer average hours per week than both the separate and non-PSE groups (Moore & Schelling, 2014). These findings echoed Zafft et al. (2004) who also found that PSE program graduates were more likely to be employed than non-PSE comparison students but worked fewer hours on average per week than the control group. Overall, findings from this scoping review underscored the need for greater efforts to be made in collecting and reporting quality extension variables (e.g., wage, hours, benefits, etc.) related to employment.

**Processes and Supports for Transition from PSE to Employment**

Information regarding processes for transitioning individuals from PSE programs to employment, or installation of follow-up procedures to ensure job retention was omitted from the majority of articles in the sample. Only four articles provided some description on outreach to community businesses and adult service agencies such as VR (e.g., Grigal, Hart, et al., 2019; Kelly & Buchanan; 2017; Neubert et al., 2004; Ross et al., 2017). Reported processes in these four studies included PSE program staff assistance with job placement activities and networking with local businesses, connection to adult services prior to PSE program exit, and involvement of agencies in transition planning. The *Year Four Annual Report of TPSID Model Demonstration Projects (2018-2019)* issued by Think College reported that only 34\% received employment services from VR during enrollment. Some articles briefly mentioned other planning procedures such as person-centered and service collaboration within the general description of the PSE program, so it is possible that processes are occurring to a much greater extent than what is reported within the literature. Still, effective methods for transitioning from PSE to employment is a critical area which deserves more emphasis in reporting.

**Research Methodology in Reviewed Articles**

Finally, several other important features that bolster empirical support for findings and produce replicability of effective program outcomes were examined including methodology, integration, and credentialing. First, included studies were evaluated based on highest to lowest level of rigor—experimental, quasi-experimental, and non-experimental. Of the articles in the final sample, nearly all used a non-experimental design and reported descriptive statistics about program outcomes. A total of three used a quasi-experimental design including matched samples as a comparison (Moore & Schelling, 2014,
Sheppard-Jones et al., 2018; Zaffè et al., 2004) and one reported pre- to post-employment data (Cranston-Gingras et al., 2015). None utilized a true experimental design with randomization of groups. When combined with previous reviews, this translates into 50 years of literature (1970s to present) without any identified experimental randomized control designs.

Second, the literature offered information on a range of different types of programs in terms of level of integration (i.e., separate, mixed/hybrid, and integrated). Several studies aggregated data from different types of programs, so comparisons based on level of integration were hard to ascertain. In general, descriptions regarding the level of integration were brief and in most cases vague. The term “inclusive” needs to be operationally defined by programs during reporting. Only one article attempted to quantify integration by offering an estimation of time students with ID spent with non-disabled peers (Moore & Schelling, 2014). Lastly, most articles described programs that only offered specialized certificates of completion (n = 9) to PSE graduates while other articles described programs that offered a combination of program certificates, institutional degrees, or record of course audit. On account of previous research suggesting that credentials are a known predictor of employment following PSE completion (Grigal et al., 2019), more consistent reporting of this information in PSE program literature for students with ID is warranted.

Excluded Articles

Although the inclusion criteria initially used to search the databases returned a large volume of articles, the overwhelming majority were unrelated to PSE programs for students with ID and employment (see Figure 1). Most articles largely focused on PSE program descriptions without employment data (e.g., Blumberg et al., 2008; Carroll et al., 2008; Giust & Valle-Riestra, 2017; Green et al., 2017; Hendrickson, Carson, et al., 2013), described transition from high school to PSE rather than transition from PSE to employment (e.g., Grigal et al., 2011), evaluated other outcome variables such as psychological well-being or parent experiences (e.g., Hendrickson, Vander Bussard, et al., 2013; Scott et al., 2018), or assessed the experience or benefits of PSE programs to individuals other than the student with ID, such as college peers and professors (e.g. Carter & McCabe, 2020; Causston-Theoharis et al., 2009). Many empirical articles were also excluded from the final analysis because they were preliminary reports, so the information was published before any students completed the program and thus the provision of outcome data was not possible (e.g., Folk et al., 2012; Hafner et al., 2011). While it is acknowledged that tracking employment outcomes longitudinally may be problematic for individual PSE programs due to finances or logistics, more diverse measures of quality employment outcomes beyond simply employment status is needed.

Discussion

Findings from this scoping review reveal generally positive support for the efficacy of PSE programs in promoting employment outcomes for students with ID. However, these findings should be regarded with some caution given the lack of more rigorous research methods used. Compared to previous reviews (e.g., Neubert et al., 2001; Thoma et al., 2011), a marked increase was noted in the overall use of employment outcome measures. Several common program components related to employment appeared in multiple included studies, such as career-related coursework, integrated internship experiences, and interagency collaboration, but it is difficult to establish from the reviewed research whether these PSE components are responsible for the employment outcomes reported. Overall, results from this review reiterate concerns expressed by previous reviews; there remains a pressing need for more rigorous research methodology and more detailed and comprehensive reporting of key program components. Recommendations for future research, policy, and practice are summarized in Table 3.

Implications for Practice

The extant literature includes numerous studies detailing program descriptions with wide ranging levels of detail concerning different program areas. Consistent efforts by PSE program staff to operationally define key characteristics when disseminating information would help the field to begin establishing effective links between program elements and employment outcomes. Based on the findings of this review, along with previous reviews, those key components include better descriptions of program types (e.g., mixed, separate, inclusive) with metrics provided to clarify level of integration. Information linking the type of credential obtained to employment outcomes is needed. Efforts to better detail career development program components within the context of coursework and hands-on paid and unpaid experiences (e.g., volunteer, paid jobs, internships, etc.) and the relation of these components to employment outcomes is suggested. Reporting more expanded employment measures beyond simply job status at exit and post-exit would also help establish a more com-
### Table 3

**Recommendations for Future Research, Policy, and Practice to Promote Employment Outcomes**

<table>
<thead>
<tr>
<th>Area</th>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>Stringent Research Methodology</td>
<td>• Experimental designs with randomized control comparison groups/quasi-experimental designs</td>
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<tr>
<td></td>
<td></td>
<td>• Longitudinal studies to track job retention and upward mobility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Impact of PSE programs on diverse demographics (age, race, gender, socio-economic status, etc.)</td>
</tr>
<tr>
<td></td>
<td>Detailed Reporting</td>
<td>• Thorough descriptions defining program features (e.g., integration, credentials earned, courses, and number of activities)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Extent of PSE program (e.g., program length and/or course credits required for completion)</td>
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<td></td>
<td></td>
<td>• Processes for teaching work skills based on individualized needs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Consistent inclusion of information about work experiences during enrollment (e.g., paid or unpaid, on-campus or community integrated, hours, supports)</td>
</tr>
<tr>
<td>Quality Outcomes</td>
<td></td>
<td>• Post-graduation data beyond job status (e.g., hours, wage, industry, benefits, match with career interests, job supports, level of integration, job retention, and upward mobility)</td>
</tr>
<tr>
<td>Policy</td>
<td>Funding</td>
<td>• Expand grant funding opportunities for longitudinal and experimental research</td>
</tr>
<tr>
<td></td>
<td>Collaborations</td>
<td>• Future legislation should include formal partnerships and linkages with both K-12 and adult service providers</td>
</tr>
<tr>
<td></td>
<td>Federal and State Guidance</td>
<td>• Policy guidance to inform how PSE provisions of HEOA intersect with IDEA transition planning, WIOA (2014) pre-ETS services, and other vocational services funded through VR, Home and Community Based Services (HCBS) or other sources.</td>
</tr>
<tr>
<td>Practice</td>
<td>Evidence-based employment practices</td>
<td>• Paid, community-based work experience included as an essential component of all PSE programs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Incorporate general evidenced-based practices for employment in the absence of more specific PSE research-based predictors currently available</td>
</tr>
<tr>
<td></td>
<td>Transition from PSE to Employment</td>
<td>• Develop processes for connecting students with adult service agencies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Develop procedures for networking with local businesses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Plan for provision of follow-along support by PSE program staff</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Plan for job development by PSE program staff at exit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Family involvement or other transfer of support strategies</td>
</tr>
</tbody>
</table>
Comprehensive picture of the benefits of PSE programs. Lastly, detailed processes for connecting students to employment service agencies in addition to the impact those connections yield is warranted. In the absence of clear directives from research related to the specific PSE program activities leading to improved employment outcomes, it is important for staff to ensure general predictors of employment success already established for youth with ID are incorporated, mainly paid work opportunities (Carter et al., 2012; Mazzotti et al., 2016). Favorably, most studies in this review did include applied work experiences. Having a paid job during high school remains one of the strongest predictors of post school success with regard to securing employment. Other positive correlates include independence in self-care and better social skills (Carter et al., 2012). While a few studies reported teaching skills associated with employment success, more detailed descriptions of these components in the future would also be beneficial.

There is also a need for expanded efforts by program staff to define the role and benefits of collaboration between adult service agencies and PSE programs for students with ID. During this review, studies discussing processes for transition from PSE to service agencies were located but ultimately not included because employment outcome data were not provided. For example, Petcu et al. (2015) found that 74.5% of PSE programs collaborated with VR and 75% collaborated with local businesses to provide employment related services during enrollment. Folk et al. (2012) reported that VR funding was used for students in a PSE program for tuition and textbooks, and services were used to develop an individualized plan for employment to secure employment experiences during enrollment. However, few studies were located that provided information on both employment outcomes and connection to employment services. Reasons for a lack of reporting on connection to employment services after exit are unclear. It can be speculated that perhaps this is due to a lack of discussion on the pertinent role of such agencies. Results of a survey by Plotner and Marshall (2016) revealed that PSE administrators are often confused about the role of VR in PSE programs and feel that VR does little in the way of providing services beyond funding. In other cases, VR may refuse to fund PSE services (Lee et al., 2018). Clarifying the role and benefits of these agencies in the future is recommended.

Finally, little information was provided across studies concerning the role of other entities on campus such as Career Counseling Services or Disability Resource Offices (DRO) in supporting students with IDD during coursework or applied vocational experiences on campus. Postsecondary education programs for students with IDD are unique compared to other campus programs because varying layers of disability support are already provided by program staff. However, as PSE programs for students with IDD continue to evolve across the United States, establishing more clearly defined and effective ways DROs can collaborate with program directors, mentors, faculty and employers to provide accommodations and modifications is needed. Disability resource offices can provide valuable guidance regarding which entity (the DRO or PSE program) is responsible for providing certain types of support and help by including PSE program students in educational trainings and information dissemination campaigns about disability topics along with other non-PSE program students. Reporting on successful processes for establishing and maintaining partnerships between PSE programs and campus DROs is needed.

Implications for Research

Use of more rigorous research methods, including experimental designs is truly needed to investigate efficacy as no studies used designs that might investigate a causal relationship between PSE and employment. Additionally, longitudinal studies examining whether PSE graduates retain employment and experience career advancement in the years following program exit are needed. Research using component analysis is also suggested along with an investigation of dosage to determine the influence of time and intensity of specific coursework, training, and internship activities on employment outcomes. One study excluded from this review because it reported outcomes during the final year rather than at or after exit did report preliminary findings suggesting that inclusive coursework, work experience prior to enrollment, volunteer or community service activities, and participation in social events on campus were associated with higher than minimum wage earnings during the most recent year TPSID program data was collected (Qian et al., 2018). A specific investigation into these particular components in the future is warranted. Future studies should also clearly note which work experiences are paid and community-integrated. While not the focus of this paper, information related to demographic factors like race, ethnicity, gender, socioeconomic status, and age would provide greater potential for generalizability of findings, and allow for a meta-analysis to explore whether interventions are both equitably provided and also equally effective for diverse groups of participants.
Implications for Policy
Policy has no doubt worked to increase opportunities for students with ID over the past few decades. Despite the considerable federal investment, it remains unclear the extent to which these efforts are improving student employment outcomes both in comparison to other service options and sustainably over time. While the National Coordinating Center continues to proficiently track PSE student data, the purpose of the center is not to strategically investigate causal relationships (Think College, 2020). Funding to enable individual programs to conduct comparative research and longitudinal tracking of student outcomes is needed. Reauthorization of HEOA (2008) should continue to enable students with ID access to federal financial aid via work study or grant opportunities in order to attend PSE programs.

Future legislation regarding PSE should work to clarify guidelines for how programs should coordinate with K-12 and adult agency partners. Each PSE student experience is different with regard to connection to K-12 (e.g., some are dually enrolled, some have exited high school, etc.) and VR eligibility (e.g., some do not qualify), so making the roles and responsibilities of these entities as clear as possible will maximize opportunities for collaboration. In 2019, the U.S. Department of Education released a Q&A on how VR and local and state educational agencies can assist students in PSE programs. Even with this resource, additional guidance is needed to inform how PSE provisions of HEOA (2008) intersect with pre-employment transition services mandated under the Workforce Innovation and Opportunity Act (2014).

Limitations of the Review
Several limitations were associated with this review. The inclusion of only U.S. studies due to legislative and diagnostic differences internationally could have omitted important findings on employment and PSE education for students with ID reported abroad. This study also restricted the search to established PSE programs and thus did not capture students with ID who may attend institutes of higher education via other avenues. While the search did not impose an age restriction on population, the majority of PSE programs described in the review serve students in their late teens and 20s, and, therefore, generalization to populations of older students with ID attending institutes of higher education should be made with caution. It should also be stated that lack of reporting on certain program components or procedures related to employment does not equate with a lack of occurrence, and, therefore, the information in this analysis is restricted to what was offered in the literature. Findings from this review thus provide insight into areas of need in reporting as well as practice.

Conclusion
The empirical and grey literature offer general support for the efficacy of PSE programs for students with ID in promoting competitive employment outcomes. The majority of programs describe rich vocational training opportunities during enrollment in applied settings. While limited, the outcome data that is available suggests higher rates of employment upon exit compared to prior to participation in a PSE program, and in relation to comparison groups. These findings warrant further investigation into which specific program components are associated with enhanced employment outcomes after program completion. More descriptive reporting on program elements, such as level of integration, type of credential, employment experiences during enrollment, and processes for connection to adult service agencies, will enable better evaluation of program effectiveness and enhance replication efforts by other sites serving students with ID in PSE settings. Moving to more stringent design of research methodology, specifically designs that include randomization, will help to further establish whether PSE programs for students with ID are an effective pathway to competitive employment. While great strides have been made in providing more opportunities for students with ID to receive advanced training, there is much left to be done by researchers and practitioners to help advance PSE programs and continue assisting students with ID in securing long term employment outcomes.
References


Think College. (2020). What is a TPSID? Available at https://thinkcollege.net/tpsid


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Inclusive First-Year Orientation Programs Involving Undergraduates with Intellectual Disability: Exploring Barriers and Belonging

Elizabeth T. Schroeder¹
Erik W. Carter¹
Stacy Clifford Simplican¹

Abstract

As increasing numbers of colleges establish inclusive postsecondary education programs, it is important to explore how students with intellectual disability are supported in all aspects of campus life. The present study focused on inclusive first-year orientation programs from the vantage point of 16 student group leaders, faculty group leaders, and students with intellectual disability. The researchers used individual interviews to examine how participants described, experienced, and supported the concept of belonging within the context of these semester-long, inclusive groups. Belonging was seen as a multi-dimensional concept that is neither automatically experienced nor fostered without challenges. However, efforts to support belonging were seen as having a reciprocal and sometimes substantial benefit. Implications for inclusive postsecondary education programs and disability services staff are discussed, as well as recommendations for future research.

Keywords: postsecondary education, inclusion, intellectual disability, college

The inclusive postsecondary education (IPSE) movement has grown swiftly over the last decade. More than 280 colleges and universities across the United States now host programs designed to support the involvement of students with intellectual disability in various aspects of the college experience, such as academic courses, career development, social relationships, and service opportunities (Grigal & Papay, 2018). The Higher Education Opportunity Act of 2008 accelerated this expansion nationwide by establishing a new category of higher education program (i.e., a Comprehensive Transition Program), opening access to federal financial aid, and dedicating money to support model demonstration programs in numerous states. In addition, the Think College national coordinating center has outlined quality standards to guide program development (Grigal et al., 2012). Early longitudinal studies suggest these burgeoning IPSE programs may have a substantial impact on the later adult outcomes of graduates (e.g., Sheppard-Jones et al., 2018; Moore & Schelling, 2015).

Although students with intellectual disability are now present on a growing number of college campuses, and there is greater support and resources for them, attention must also focus on ensuring they have a meaningful presence in these learning communities (Björnsdóttir, 2017). IPSE programs vary widely in the degree to which students with intellectual disability participate in campus experiences alongside traditionally enrolled students without similar disabilities. Some programs are substantially segregated, while others reflect varied degrees of integration (Grigal & Papay, 2018). As a result, even in the midst of inclusive courses and campus activities, the extent to which students with intellectual disability experience a sense of belonging can be uneven or uncertain. Although attitudes toward IPSE tend to be positive (Griffin et al., 2012), being present in a particular community does not ensure someone will be seen as—or feel like—a valued member of that community (Prohn, 2014). Much more work is needed, then, to understand students’ experiences of belonging as well.

¹ Vanderbilt University
as the factors that contribute toward a deeper sense of membership.

Attention to belonging is not unique to conversations about the inclusion of college students with intellectual disability. Colleges and universities have long recognized the effect that belonging can have on the adjustment, achievement, and persistence of any undergraduate—within and beyond the classroom (Hoffman et al., 2002; O’Keefe, 2013; Strayhorn, 2019). Indeed, most campuses offer a range of programs and supports aimed at enhancing the sense of connectedness and community experienced by all of their students. First-year orientation programs are an especially common pathway for accomplishing this goal (Padgett & Keup, 2011). Although their specific functions can differ across campuses, most are aimed at smoothing the academic and social transitions of new students by introducing them to one another, the institution, and different aspects of college life (Chan, 2019). Programs can vary in their format (e.g., formal, informal), leadership (e.g., faculty, staff, and/or students), length (e.g., week-long, semester-long), and accountability (e.g., credit-bearing, ungraded).

The inclusion of students with intellectual disability within first-year orientation programs provides a unique and important context within which to examine the concept of belonging. For example, little is known about how belonging is understood and experienced within these influential programs, the ways in which program leaders strive to promote this sense of belonging, and the challenges they experience along the way. Research addressing the IPSE movement is still relatively young. Although several studies have addressed the involvement of students with intellectual disability in academic courses, work experiences, service projects, and social relationships (see review by Whirley et al., 2020), none have addressed the first-year orientation seminar. Moreover, while many studies have addressed conceptions of belonging in college (see reviews by Slaten et al., 2016; Vivekananda-Schmidt & Sandars, 2018), very few studies have centered on students with disabilities (Hadley, 2018; Vaccaro et al. 2015) and none on students with intellectual disability.

The purpose of this qualitative study was to examine the inclusion and belonging of students with intellectual disability involved in a semester-long first-year orientation program from the vantage point of these students and the individuals involved in leading their groups. The following research questions were addressed through individual interviews: How do participants conceptualize belonging within this context? What approaches were used by leaders to foster belonging for students with intellectual disability? What challenges did participants encounter? How did participants describe the impact of inclusion in this context?

**Method**

**Participants**

Participants were 16 individuals who participated in semester-long, inclusive first-year orientation groups at a southeastern university: six young adults with intellectual disability enrolled in the campus’ program (“students with disabilities”), five student orientation leaders (“student leaders”), and five faculty orientation leaders (“faculty leaders”). Across participants, 62.5% were female and 37.5% were male. In addition, 68.8% (n = 11) of participants were White, 12.5% (n = 2) were Asian, 12.5% (n = 2) were multiracial, and 6.3% (n = 1) were Hispanic/Latino. Additional demographics are displayed in Table 1.

Students with disabilities were enrolled in a four-year, non-residential IPSE program. To participate in this program, students had to (a) be 18-26 years old, (b) have a diagnosis of an intellectual disability, (c) have completed high school and received a standard or alternate diploma (e.g., occupational or special education), (d) have not met eligibility requirements for admission into a standard college program, and (e) have a strong personal desire to attend college. All were first-year students (i.e., freshmen). In addition to having an intellectual disability, some students also self-identified as having autism spectrum disorder, speech/language impairment, or multiple disabilities. All 10 first-year students from the program were invited to participate in the study; six agreed to do so. For the two students who were not their own guardians, we also obtained parent consent.

Student leaders were juniors (n = 2) and seniors (n = 3). Faculty leaders represented a variety of undergraduate schools and departments (e.g., Theater, Spanish, Biomedical Engineering, Psychology). All student and faculty leaders had between one and three years of prior experience leading these orientation groups. To be included in the study, student and faculty leaders had to have responsibility for leading an orientation group in which students with intellectual disability participated. Six of the 93 first-year groups included students from the IPSE program. We distributed study information to potential participants by email. Five of the six student leaders and five of the six faculty leaders agreed to participate. All study procedures were approved by the university’s Institutional Review Board.
This study took place at a research-intensive, private university with almost 7,000 undergraduate students. At the time of the study, the freshman class was 51% female and 49% male. Almost half (43%) of the class were students of color, and 12% were international students. The university offers nearly 70 majors in its four undergraduate colleges. Since 2010, the university has offered a non-residential, inclusive postsecondary program for students with intellectual disability. The program began as a two-year program and became a four-year Certified Transition Program (CTP) in 2017. The program supports student access to all aspects of campus life, including academic coursework, career development, student organizations, service-learning experiences, and campus events. Students audit one or two typical university classes each semester, take specialized seminar courses with other students with intellectual disability in the program, access student organizations and extracurriculars, participate in internships and other work experiences, and enjoy other campus activities based on their personal interests. In addition to the semester-long orientation program, students also participate in many other discrete orientation events held during the first week of the semester. Students graduate with a certificate of completion.

### First-Year Orientation Program

All first-year students at the university are randomly assigned to one of 93 orientation groups. Each group is composed of about 18 students. The groups meet for 50 min each week for the first 10 weeks of the fall semester at various on-campus locations. Each group is jointly led by one faculty leader and one upper-level (i.e., sophomore, junior, or senior) student leader. Both faculty and student leaders go through an application and interview process, followed by nine hours of training on program goals, content, and mentorship skills. Throughout the fall semester, the two leaders are expected to come together weekly (for 30 minutes) to plan group meetings, co-lead weekly group meetings and debrief afterwards (for 65 minutes), and meet with each group member at least once during the semester outside of the weekly meetings.

### Table 1

**Study Participants by Orientation Group**

<table>
<thead>
<tr>
<th>Group</th>
<th>Pseudonym</th>
<th>Role</th>
<th>Gender</th>
<th>Race/ethnicity</th>
<th>Year</th>
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<tr>
<td>A</td>
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<td>Female</td>
<td>Multiracial</td>
<td>First-year</td>
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<tr>
<td></td>
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<td>Female</td>
<td>White</td>
<td>Senior</td>
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<td></td>
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<td>White</td>
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</tr>
<tr>
<td>B</td>
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<td>Male</td>
<td>Hispanic</td>
<td>First-year</td>
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<td>White</td>
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<tr>
<td></td>
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<tr>
<td></td>
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<tr>
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<td>White</td>
<td>First-year</td>
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<tr>
<td></td>
<td>Gabby</td>
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<td>F</td>
<td>Simone</td>
<td>Faculty leader</td>
<td>Female</td>
<td>White</td>
<td>NA</td>
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</tbody>
</table>

*Note.* NA=Not Applicable
Although group leadership is truly shared, faculty set the tone for what is expected, what is reasonable, and where the boundaries lie.

Although the program is ungraded and non-credit bearing, all groups share a required program syllabus. Weekly sessions use small-group discussions and activities addressing (a) what college life entails, both academically and socially; (b) the basic skills and available university resources that support students’ academic and personal success; (c) the challenges of maintaining physical and mental health that confront new students living on their own for the first time; and (d) an awareness about issues related to equity, diversity, and inclusion, and the individual role each student plays in promoting an inclusive and supportive environment. Within this framework, group leaders have the autonomy to choose weekly activities and how to address these topics. Groups are intentionally designed to introduce students to a diverse group of peers who they might not meet otherwise.

Assignment of students with disabilities to particular orientation groups was not random. Faculty and student orientation leader pairs were asked to volunteer to lead an inclusive group that involved two students from the IPSE program. Interested leader pairs were assigned two students with intellectual disability as members of their group, and these leaders then received training by IPSE program staff prior to the start of the fall semester. This additional 90-minute training included information on the history and goals of the IPSE program, as well as general strategies for how to support the participation of students with intellectual disability. The training specifically addressed advice on creating an inclusive space and expectations for students enrolled in the IPSE program. The session also provided leaders the opportunity to practice interactive activities meant to promote inclusion and to ask questions of the IPSE staff.

**Interview Procedures and Protocol**

We conducted individual interviews with each participant. All interviews of students and student leaders were conducted by a graduate student majoring in special education and all faculty interviews were conducted by a professor with expertise in the areas of disability and inclusion. Fourteen interviews were held in person and three took place by video. The interviews took place at a location chosen by participants (e.g., campus meeting rooms, faculty offices, students’ homes). Interviews averaged 41 minutes (range 21-65 minutes) in length. All interviews were audio-recorded. Each participant received a $25 gift card for his or her time. Interviews took place during the spring immediately following the fall semester’s orientation program.

A research team, composed of a graduate student and two faculty members, developed two semi-structured interview protocols—one for students with intellectual disability and one for the student leaders and faculty leaders (full protocols are available by request). Although the questions on each of the two protocols were worded somewhat differently, each addressed similar topics: overview of their specific orientation group, their motivations for becoming involved, the ways in which students participated in the group, their own conceptions and experiences of belonging, how diversity and disability were addressed within their group, and their recommendations related to strengthening their group. However, we only asked student and faculty leaders about the approaches they used to foster belonging in their groups. We began by crafting questions aligned to each of our research questions and made adjustments to the wording and order through consensus. Before each interview, the interviewer told participants they could skip any question they did not want to answer or stop the interview at any time. The researchers also took field notes and completed a reflection sheet afterwards to capture any personal insights.

**Data Analysis**

All audio-recordings were professionally transcribed, reviewed for accuracy, and then de-identified with pseudonyms. We used thematic analysis to code all interviews (Patton, 2002). In addition, we adopted the constant comparison method, in which existing codes were frequently compared with previous uses to ensure consistency (Strauss & Corbin, 2008). Finally, we used a team-based approach to strengthen the trustworthiness of our analyses. The team was composed of one graduate student who participated in the interviews (first author) and a faculty member affiliated with the program, but who was not involved in the interviews. We took steps to ensure that our approach aligned with recommended practices in qualitative research (Brantlinger et al., 2005). For example, we recruited individuals with diverse perspectives and roles from six different orientation groups, allowing multiple opportunities to triangulate findings within and across orientation groups. We debriefed at multiple points throughout the process as a way of checking our assumptions and conclusions. We also maintained an audit trail of raw data and products (i.e., iterations of the coding framework) documenting our analysis process.

Data analysis occurred in multiple stages. First, two members of the research team independently coded the same four initial interviews. We identified sections of participants’ responses that were direct-
ly relevant to our four research questions and used open coding to assign a code to a relevant participant response. Coded responses ranged from one or two sentences to several paragraphs. Whenever appropriate, we created in vivo codes that reflected the participant’s actual language (e.g., “network effect,” “us vs. them mentality”). We used axial coding strategies to identify themes and develop a set of code names and tentative definitions addressing each of the research questions. We met to compare and discuss our preliminary codes and reach consensus on an initial coding scheme with overarching themes and categories.

Next, the first author used this initial framework to code the remaining 12 interviews independently. New codes were added as needed and each code was compared to existing codes to ensure consistency across the transcripts. We then met as a team to discuss the revised framework and make revisions for clarity. The first author then revisited all of the transcripts using the final framework to ensure all codes had been appropriately assigned. Once complete, the second team member reviewed the final coded transcripts.

**Findings**

A number of themes and categories emerged across the interviews with students (S), student leaders (SL), and faculty leaders (FL) related to conceptualizing belonging, strategies to promote belonging, challenges, and the impact of inclusion.

**How Did Participants Conceptualize Belonging?**

Four primary themes addressed the ways in which participants defined “belonging.”

**Shared space.** When asked how they defined belonging, most participants spoke to the importance of a shared physical space within which they could interact with one another. The regular coming together at a common time and place provided context for interactions and encounters to take place. For example, Cameron (S) described belonging as “To be with people almost every single day. Never be alone, always be able to talk to someone.” Likewise, Brice (FL) noted how being all together shaped belonging: “It was good to have [IPSE students] there that first meeting, because we want them to see that they were a part of the group.”

In contrast, physical distance was said to hinder belonging—even within group meetings. Justin (SL) described such a concern: “I was always struggling with this idea, did [Marcus] feel like he belonged? Because he kind of tended to sit like in the corner a little bit further away from people…it seemed like he was obviously distanced.” Aly (SL) echoed this sentiment when she noted that on the first day, “The entire [orientation group] sat on one side…Amy (S) sat on the other side because they'd already sat down. We can’t, like, move people around at that point.”

**Shared experiences.** Participants saw the opportunity to participate in common activities as vital for belonging, whether it took place during or outside of orientation activities. Involvement in small-group activities during weekly meetings together with others seemed to contribute to belonging. Theo (SL) illustrated this when talking about a craft the students were making together: “One group specifically invited Joel (S) over to help out and I could just see his face light up when they did that.” Amy (S) echoed this idea: “I like talking to [other group members] and get to know them much better. And it’s pretty fun like, doing some activities with them, and get to connect with them.” In contrast, missed opportunities for shared experiences had the opposite effect. Brice (FL) explained, “There was an issue one day with the t-shirts or something. They [IPSE students] didn't get to make t-shirts with the rest of the group…we had to kind of divert into something else, which it wasn't a huge, huge deal, but they noticed it.”

Students and leaders alike also addressed the effect of shared experiences outside of scheduled group meetings. Brice (FL) described an annual event in which all first-year students run the field at the start of a football game: “That was a big deal. It was really important to them [IPSE students] to be part of the student body and get to run out on the field with everybody.” But he also emphasized the power of more informal times when students spontaneously decided to do something fun together, like heading to the cafeteria: “It was all them initiating that, it wasn't something we had to contrive or create.” When asked how these out-of-meeting experiences made him feel, Joel (S) said, “Well, it made me feel excited.”

Although the salience of shared experiences outside of the meeting were emphasized by everyone, they were not uniformly experienced by students with disabilities. For example, Kerri (S) described a lack of outside interactions: “Mostly I was hanging out by myself… I didn't want to bother them when they were doing homework and studying. I didn't want to bother them. So I kept to myself.” One hindrance to shared experiences was the fact that IPSE students usually left campus in the evenings because the university lacked residential offerings. As Carly (FL) explained, “There were lots of times where on the group chat text it was like ‘hey, we're gonna do this. Right? And we're gonna do that right now.’ And then the [IPSE students] would often respond—because they were
probably some of the most eager ones to respond—but they couldn't come 'cause they weren't here.”

**Shared understanding.** Participants talked about the importance of shared understanding to belonging in two distinct ways: the importance of shared understanding of the orientation content and mutual understanding of each other. Some participants implied that without both types of shared understanding, students might not feel like they truly belonged.

Because the university’s orientation program had an explicit goal of addressing difficult topics (e.g., sexual assault, racism, mental health), participants explained that a shared understanding of this content helped everyone feel like they were a part of the group. Some participants elaborated that this understanding did not need to be exactly the same for everyone to be effective. As Laurie (FL) noted, “Not having the same experience, but in some ways having a parallel learning experience, I knew was, I think to me the ultimate goal.” Many of the leaders, however, described difficulties associated with navigating this content when it was more difficult or particularly sensitive. When describing some of these times, Theo (SL) noted, “I don't know if [Joel] got as much out of it...maybe he just didn't understand what exactly was being involved.” Such misunderstandings could have an inadvertent impact. As Nadia (FL) noted,

> I think it made [Marcus] feel more different and more isolated. 'Cause I think it’s a funny thing, right? You can be in a group that’s supposed to foster this sense of belongingness, but if you don't feel like you're hooked into it, it just makes it worse.

Participants were quick to note, however, that shared understanding of content was helpful, but not sufficient. Instead, a shared understanding of each other was more crucial. Sometimes, this meant a shared understanding of college life. For example, Justin (SL) described what happened when Shannon (S) shared with other group members how many assignments she had due a particular week: “People were like, ‘Oh, I feel you. It's been a rough week for me too!’” He continued, “I think that was a good way to kind of establish belonging where you can share empathy, sympathy, or just mutual understanding of feelings and experiences.” Shannon (S) explained the effect this foundation of mutual understanding had on her own sense of belonging and being herself within the group: “I usually don't talk about [my disability] with people... But since I've talked to my [orientation] group about it, I feel more comfortable about it to the point I don't have to hide myself all the time.”

**Shared interests.** Participants frequently addressed the ways having shared interests contributes to belonging. For two student leaders, mutual interest *in the content* discussed by the group was helpful. However, almost everyone emphasized that students needed to have a genuine interest *in each other* in order to feel as though they belonged within the group. This shared interest could also be as simple as students informally being asked about their life or called on during discussions. Many students with disabilities described the effect this type of shared interest had on them. For example, Shannon (S) said, “It felt a lot better [to be asked about my disability] because like, I usually keep it inside of me a lot. I usually like hide it. I just don't want to like really express myself, really talk about it, really.” Kerri (S) felt similarly when asked how she felt when people reached out to her during meetings, “So, I just felt comfortable...It's hard to put in words...I felt great. I felt really great, and comfortable.” Joel (S) agreed as he expressed surprise that someone in the group would want his opinion. He said, “I kind of felt happy and amazed.” Justin (SL) summarized this point well, “Once they start making friends in the group, I think that also adds a sense of belonging.” Although the importance of shared interests was consistently emphasized, it was not universally experienced. For example, Marcus (S) indicated that other students never really asked his opinion; when asked whether he wished they did, Marcus replied, “Yeah.”

**What Approaches Were Used to Foster Belonging?**

When student and faculty leaders were asked how to best facilitate belonging, they described using a variety of approaches to promote belonging within their groups.

**Content.** All of the leaders discussed how they approached covering information in their groups. Some decided to alter the information to ensure everyone could actively participate. For example, Carly (FL) substantially changed how she approached group discussions to facilitate equal involvement of students: “I had to find a way to be able to create curriculums to basically where it would meet the level of comfort that everybody in the classroom has without making it seem obvious that we were catering it towards certain people.” Most leaders, however, worried that changing the content too much could be problematic. For example, Dominique (SL) explained that it was important to incorporate students with disabilities in all conversations: “I heard from other [leaders] that they got rid of some content because they felt uncomfortable discussing it in front of their [IPSE] students. But I think that's underestimating them.”

**Extra attention.** Every student and faculty leader
mentioned giving extra attention to the IPSE student during meeting times, although this looked different in each group. Many faculty leaders found that tailoring their questioning to topics of interest to the students during group discussions helped engage the student in the rest of the group. Brice (FL) explained how she subtly drew everyone into conversation together, “We know that [one of the IPSE students] loves going to [school] football games, so let’s talk about a [school] game when we start. That’ll be our icebreaker. Did everybody go to the game?” Simone (FL) and Carly (FL) shared similar examples. Several student and faculty leaders also found that giving extra attention to grouping within meetings helped. Justin (SL) noted, “[We’d] break out into these smaller groups where I think Marcus (S) felt a little bit more comfortable sharing his thoughts on things.” He then brought the groups back together so that “everybody felt comfortable saying whatever they felt about things.” Carly (FL) agreed: “When we worked in smaller groups, there were some students who really took our [IPSE] students under their wings, and so that helped with their incorporation and the participation.” Finally, some student leaders provided additional explanation or preparatory discussions just prior to meeting times to students in order for them to better participate in group discussions on difficult topics. Collectively, this directed attention was among the things that students like Joel (S) said “made me feel welcome.”

**Mindset.** Most faculty leaders noted the importance of a specific mindset. For some, the crux of this approach was a new kind of flexibility. When asked about advice for future faculty, Nadia (FL) said, “I would hope that they would go into it with the understanding that they’re going to have to change things up a little bit so that everybody can participate in discussions if they want.” Brice (FL) agreed, “Just make sure you’re aware that things could change, schedules could change…you just have to be willing to adapt to whatever the need is.” For others, this mindset was centered on an open-mindedness and leading by example. Carly (FL) described the impact this open mindset had on her group: “[We as] facilitators have to have a level of comfort with [inclusivity] in order to demonstrate that—then encourage it in others.”

**Disclosure.** Whether to disclose the fact that their groups would include students who had an intellectual disability was a topic of much debate amongst leaders. Some leaders chose not to inform the rest of the group in advance, as they feared it would inadvertently hinder belonging. Explaining why they took this approach, Justin (SL) said, “We didn’t even introduce Shannon (S) and Marcus (S) as being part of the [IPSE] program. We just acted like they were students at [the college], which they are.” Others felt that disclosing the inclusion of IPSE students in their groups prior to the start of orientation was helpful. Carly (FL) described how she prepared her group: “We did talk about the fact that we were going to have two [IPSE] students who were just going to participate with everything that we did.”

**Group member support.** Many leaders relied on group member support to enhance belonging. In describing the impact this had on her group, Aly (SL) said, “There were two or three students who were really nice, and me and my [faculty] partner definitely fell back on them sometimes, when we really needed help integrating [the IPSE students].” Nadia (FL) explained how peer-to-peer support was helpful to her group: “The other thing that happened that was pretty wonderful during the semester, is that Shannon (S), who is the other student, started looking out for Marcus (S). It wasn’t just the neurotypical students in our group, it was the [IPSE] students who took care of each other.”

**Beyond the group.** Although less common, a few leaders extended their strategies outside of group meetings. Some leaders discussed reaching out to IPSE staff as a means of increasing belonging of all students within their groups. For example, Nadia (FL) described this support as invaluable: “You know [the IPSE staff are] in the building, so I would literally see them in the halls. I’d walk by them and be like, ‘You. Come talk to me. I need your help.’ And they were very helpful.” Other faculty, however, did not reach out this way and recommended integrating a scheduled checkpoint with staff. Likewise, many student leaders discussed relying on their faculty partners. This support was particularly helpful for Dominique (SL), whose faculty partner had a son with a disability: “I was really lucky in that I had Brice, who had a lot of experience.”

**What Challenges to Belonging Did Participants Report?**

Three areas of challenges were raised: content, personal factors, and mentality.

**Content.** The issue of whether—if at all—to discuss disability as an aspect of diversity presented a challenge to many leaders. One of the goals of the orientation program is to expose students to issues of campus diversity and inclusion. Many, like Justin’s (SL) group, chose to avoid the topic completely. He said, “I think we purposely didn’t cover the topic of disability because of this idea that we didn’t want to have them be treated any differently than anybody else.” Those who did cover it described feeling uncomfortable. Aly (SL) explained, “Especially when we talked about disability, I felt…like I didn’t have
authority to speak on it, especially when we have two people who immediately face invisible, or visible, disabilities.” Expressing similar fears, Brice (FL) said, “We didn’t want to have those micro-aggressions there, you know, and say, ‘What do you guys think about disability?’ And everyone would turn their chair, looking at our two [IPSE] students. So, we were trying to always balance that.” Likewise, the students with intellectual disability were also mixed in their views. Some said that they would have been happy to talk about their disability and wished that people had asked more about it. As Shannon (S) explained: “You can trust them. Whatever you talk about...stays in that group and nobody will tell anybody what you really talked about.” Others were more reluctant. When asked about this issue, Kerri said “I don’t want to talk about that...Well it seems kind of like too personal.”

Almost all of the student and faculty leaders noted ways in which the content they addressed from the syllabus impacted participation and belonging. Some leaders felt that more sensitive and/or weighty content sometimes posed a challenge for certain students. Carly (FL) explained, “Sometimes I think that the conversation went a little fast for them to fully grasp what was going on. And so sometimes, lack of participation was just because they missed it.” Some students with intellectual disability also said they struggled with some content. For example, Kerri (S) described how she felt when her group discussed tough topics: “[I] needed more help. Sometimes I couldn’t understand it, so I’d go to the teachers and she would explain it to me.” Others felt that their initial fears regarding difficult content did not come to fruition. Nadia (FL) mentioned sessions when topics like sexual assault, drinking, and other difficult issues were addressed: “When topics like that did come up, the students seemed fine. So, I think my worries about things like that tended to be a little bit overblown.”

In other a few cases, content addressed in the curriculum was perceived to be unrelated to the students, such as when Nadia (FL) focused one session on the university’s international programs, which were not available to students with intellectual disability: “I think while we were in the middle of a study abroad session, I was like, ‘Why in the heck did we pick this one?’”

Personal factors. All three groups of participants discussed some challenging personal characteristics that they perceived negatively impacted belonging within orientation groups. Among student leaders, many said the challenges they faced in their inclusive groups were due to their own lack of prior experience or training. Dominique (SL) discussed her anxiety by saying, “I was also worried about my competen-

cy ability...I had never worked with students of either developmental or intellectual abilities before in a leadership way.” Similarly, Gabby (SL) said, “I still felt like there were things that I lacked going into it, and that was maybe even something that I personally should have spent more time seeking out my own training or even taking a class to better understand how to accommodate students of different disabilities.” Interestingly, none of the faculty leaders mentioned this concern.

Both student and faculty leaders indicated that some personal characteristics of students may have hindered belonging, such as anxiety, discomfort with the content, complexity of communication needs, or a tendency to “derail” conversations. Nadia (FL) described issues with student anxiety in her group, “Those attempts to rope [Marcus] into the group would sometimes just make him more anxious.” Joel (S) also affirmed that getting called on “made me feel just a little nervous.” Gabby (SL) described having the opposite problem for a student who often strayed to other topics: “For Cameron, I feel like he just took the conversation wherever he wanted it to go. I feel like I didn't anticipate how to guide all the groups a little bit better in those exercises.” Aly (SL) agreed, describing how a derailed conversation affected the rest of the group: “Especially with [Amy], she would get really excited, and she would keep talking, and then fifteen minutes would go by and...no one had the heart to stop her.”

Problems sometimes arose from other members of the group, who occasionally seemed to be uncomfortable with or disinterested in interacting with students with intellectual disability in their inclusive groups. Aly (SL) offered a possible explanation for this type of hesitation: “I feel like people think—this is horrible—but if people think they have to hang out with one of [the IPSE students during the group], then they always have to hang out with one of them.”

Us vs. them mentality. Student leaders of two groups perceived that an “us vs. them” mindset created a barrier to participation—and subsequently to belonging—between traditional college students and students from the IPSE program within their groups. Aly (SL) postulated that this mindset might be inevitable due to the high ratio of students without disabilities to those with intellectual disability: “There is almost a stigma surrounding disability, and it's something that they’ve lived with all their lives...I just feel like sometimes [orientation] can make them feel even more alone.” Dominique agreed, “There was a lot of us versus them going on.” Other leaders, like Justin (SL), saw this as a “welcome challenge” in which they could work “to integrate them into a larger group
setting and be able to treat everybody equally. And make it seem like it's not two different experiences, but one in its entirety.”

What Was the Impact of Inclusion?

Despite these obstacles, all participants described their inclusive groups as having a positive impact on the group, on them personally, and on their extended networks.

On the group. Several participants indicated that having students with intellectual disability in their group brought a cohesiveness to the group that was lacking when those students were gone. Gabby (SL) explained, “Whether people realize it or not, Cameron was a little bit a piece of the glue that held all of our sessions together, and made it flow better.” Gabby went on to talk about the negative effect Cameron’s occasional absence had on the group: “It wasn't just that he was absent, but his talking was also encouraging other people to talk, and then it just overall became like much more quiet in general...people weren't sharing as much.” Laurie (FL) felt that involving students with intellectual disability “humanizes the process of education...it felt like the group came together and the mission became more than the individual and about the whole group being supportive of each other and working together as a team.”

Every leader agreed that students with intellectual disability enhanced their groups by adding an additional dimension of diversity to the orientation experience. Justin (SL) said it simply: “The big benefit is just this idea of helping people understand that diversity goes in a lot of different ways.” Gabby (SL) agreed with the enriching effect of this enhanced diversity: “It added a lot to our discussions and people's perspectives.” Carly (FL) speculated that those group members who had no prior experience with individuals with disabilities gained the most: “My guess is that the ones who were uncomfortable probably got bigger benefits...By just having the opportunity to interact from watching other people interact with the [IPSE] students was probably very beneficial to them.” This experience of diversity impacted students as well, though fewer participants discussed it. Shannon (S) explained how grateful she was to share her views and to hear the views of others: “I get to hear the other students and sometimes my professors— their own definition about [diversity]...to see, like, the difference of definitions they have for that word.”

Many leaders agreed that students with intellectual disability brought unique and beneficial perspectives to group conversations. Justin (SL) spoke in detail about the impact of these distinctive viewpoints on discussion:

Whenever I would ask, “How has your week been?” their answers were always so unique and different. [Shannon’s (S)] was always just like 100% positive and just like, ‘Oh, I got to meet the [a capella group] today and so this has been the greatest week of my life.’” And then other people are like, “You know what, if that's the greatest week of her life, maybe my weeks aren’t so bad.”

Laurie (FL) saw a similar impact in her group conversations:

I feel like everybody relaxes. They recognize there are different ways to look at the material and I think everyone has a common goal of appreciating where this person is coming from. In a way, the classroom doesn't become just about the material, it becomes about an experience of accepting everyone for who they are and what level they're coming from.

Personal benefits. Most participants also described the impact on themselves personally. All but one student and faculty leader talked about how leading these groups changed their mindset around disability. Dominique (SL) attributed a significant change in her implicit biases to leading this group: “It was definitely a huge learning experience. I realized a lot of my own biases…I think being able to put yourself in situations where you're forced to recognize them does help lessen them.” Even Laurie (FL), who had extensive experience with students with disabilities prior to leading this group, felt a change in her perspective. She said,

I came away from it as hearing: We have a disability, but we want to achieve on our own level. We want to be a part of what's going on, we want to be respected for who we are. We just want to participate in whatever ways we have the ability to participate, just like everyone else.

Many leaders also discussed the positive impact this experience had on their teaching. Reflecting upon the change she saw in her teaching, Nadia (FL) came to this conclusion: “I think it's it made me…a bit more sensitive about the audience that I face when I teach and during discussion sections, even though I don't have [IPSE] students in my class.”

Several faculty described the impact of this experience on their future. Brice (FL) discussed how the experience has made him want to promote inclusion in the formal classes he taught. Nadia (FL) agreed, “I think one other thing it made me realize is how non-in-
clusive most of my classes are. So, working with the [IPSE] students in [orientation] made me think some about whether I would be able to have [IPSE] students in my classes that I teach for undergrad.” Likewise, multiple student leaders addressed how leading this inclusive group would equip them for their future careers in areas like medicine and educational policy. Beyond this professional impact, most student and faculty leaders also talked about being moved to future action—whether it be future friendships or extracurricular involvement. For example, Gabby (SL), who was a residental adviser, planned to advocate for having IPSE students included in dormatories. She said, “I feel like having students from [the IPSE program] on those floors…would add another layer of diversity that a lot of students need to see.”

Some leaders talked about their experience with others in their networks (i.e., fellow faculty members, roommates, family members, classmates). The way that they did so—and what they chose to share—impacted the way their networks viewed the inclusive orientation experience. Laurie (FL) said that this has become a positive, natural part of conversations, saying, “I certainly talk about it as part of my life now and part of my teaching. I actually will tell people whenever I get the chance.” The same was true for Justin (SL), “I pretty much shared everything about it. I shared that I had [IPSE] students, that I was really excited about it. That was really the only sentiment I had about it, was really just that I was excited.”

Finally, students with intellectual disability addressed a variety of ways in which they were personally impacted by their active involvement in an inclusive orientation group. The social benefits were among the most prominent. Cameron (S) emphasized how the weekly interactions “helped me with social skills…[with] the kind of friends that aren't in [my IPSE program]…and [learning] where to find friends.” Other students described their growth in self-confidence around interpersonal relationships. As Kerri emphasized:

At first, it made me feel a little bit uncomfortable. Because I didn't know what to say. So after doing it over and over—going to the [orientation] group—I got to learn how to speak up. It just had to take me a few times to get used to speaking up for myself. . . . That's what they taught me!

Finally, the development of new friendships punctuated the comments of most of the students. Cameron (S) said the group enabled him to “meet people that I might talk to later in the school year and like know for the whole four years.”

Discussion

The inclusive postsecondary education movement is expanding rapidly across the country. As more college campuses strive to welcome and weave students with intellectual disability into all aspects of campus life, it is important to understand the ways in which these inclusive campus experiences contribute to a sense of belonging and the challenges that students with intellectual disability may face along the way. In this study, we interviewed students with intellectual disability, student leaders, and faculty leaders involved in six inclusive, semester-long first-year orientation groups. Several overarching findings extend the literature in important ways.

First, this study suggests that belonging is shaped by multiple factors rather than a singular experience. Although individual participants each defined belonging differently, several themes coalesced around the ideas that belonging is made possible through shared space, shared experiences, shared understanding, and shared interests. Shared space and experiences that extended outside the weekly orientation meetings seemed particularly important, as they demonstrated a commitment to one another that spilled over to times when students were not explicitly asked to get together. Moreover, shared understanding of and interest in one another was emphasized more than the content of any particular orientation meetings. This is promising, as understanding of information was sometimes considered to be a barrier for some students with intellectual disability.

This multi-faceted portrait of belonging aligns with, but also extends, previous studies addressing belonging in other contexts. For example, a large-scale review by Mahar et al. (2013) described belonging as feelings of value and respect introduced through reciprocal relationships that are built upon a foundation of shared experiences, beliefs, or personal characteristics. In their discussion of belonging for individuals with intellectual disability in faith communities, Carter et al. (2016) identified the importance of being present, noticed, welcomed, cared for, supported, accepted, known, befriended, needed, and loved. Finally, in their qualitative study of college students with disabilities, Vacarro et al. (2015) found that belonging influenced the existence of supportive relationships. The present study extends these findings by showing their salience to college students with intellectual disability within the new context of their first-year campus experiences.

Second, these interviews suggested that belonging does not inevitably or automatically come simply because students are participating in integrated
campus experiences. Instead, belonging may require some intentionality or facilitation in order to be experienced by everyone. The strategies student and faculty leaders used to promote belonging were also multiple and varied. Most participants opted not to make substantial alterations to the orientation content. Instead, they provided additional support to students as a means of supporting their engagement in the material. As noted previously, even though student leaders expressed concern that the information covered posed difficulties for students with intellectual disability, understanding of the content was not as critical to belonging as shared understanding of and interest in each other. Most participants agreed that keeping the content the same (with supplementary support) allowed for a more genuine orientation experience in which all students could experience belonging. Leaders were split, however, on whether and how to disclose or discuss disability and its impact on belonging. This finding aligns with the conclusions of other studies addressing inclusive practices in K-12 schools, workplaces, and neighborhoods. A sense of belonging is not experienced simply because individuals with intellectual disability are present in the same classrooms, businesses, or community activities. Most researchers agree that intentional or additional strategies are needed to ensure belonging accompanies inclusion (Carter et al., 2016; Simplician et al., 2015). It is quite possible—and indeed quite common—for individuals with intellectual disability to be present in activities alongside individuals without disabilities and have few interactions or sustained relationships.

Third, fostering belonging can be difficult, even in intentionally inclusive contexts like first-year orientation programs. Although the student and faculty leaders agreed that keeping orientation content as written was a better way of promoting belonging than altering it substantially for students with intellectual disability, many still described challenges in addressing difficult topics in their groups. Most student leaders expressed a need for additional training on how to promote inclusive spaces. Some participants also noted that certain personal characteristics of some students had to be navigated. Interestingly, many of these characteristics were personality traits that could be exhibited by any student in their group. In other words, they were not all specific to having a disability.

Fourth, regardless of the obstacles that are intrinsic to fostering belonging in an inclusive group, this study indicates that the impact of doing so can be rewarding. All of the participants agreed that including students with intellectual disability benefited their groups. In other words, the increased diversity and the new perspectives enhanced the quality of their groups. Most student and faculty leaders described the impact it had on their mindset regarding individuals with disabilities. Several described the experience as so meaningful that it led them to change how they thought about their current or future work. Many leaders also advocated for inclusion elsewhere by sharing their experiences with others. These findings echo other research addressing the impact of well-supported inclusion on individuals with and without disabilities (e.g., Kalambouka et al., 2007).

**Limitations and Future Research**

Several limitations should be considered when interpreting the findings from this study. First, the sample was relatively small and limited to a single university. First-year orientation experiences can differ substantially across higher education institutions. Future studies should examine whether similar themes emerge when looking across other types of campus first-year programs. Second, insights were not obtained from every member of these six orientation groups. The insights of other group members who did not have disabilities and were not leaders would add another important vantage point on the topics of inclusion and belonging. How did they view their group and the participation of students with intellectual disability? How did they conceptualize belonging? How did they experience belonging themselves? Future studies should address these questions. Third, interviews were conducted in the semester following orientation, which may have limited interviewee recall on specific moments from the experience. Lastly, although this study provides new perspectives on belonging, it took place at a single point in time. It is unclear whether the relationships that formed within these groups lasted throughout the academic year and beyond. Longitudinal study of these relationships would provide important insights into the longer-term impact of these experiences.

**Implications for Practice**

Our findings have important implications for universities committed to the inclusion of students with disabilities in all aspects of campus life. First, the expertise and support of disability services professionals could be invaluable in supporting the success of inclusive first-year orientation programs. Many student and faculty leaders struggled with whether and how to address issues of disability disclosure within their groups. Similarly, some students with intellectual disability wondered about the appropriateness and timing of self-disclosure. In each of these areas, disability support professionals could offer expertise and
guidance on navigating these challenging topics well. Likewise, disability support professionals could provide helpful guidance on accommodations and universal design strategies that could enhance the active participation of students with disabilities and give greater confidence to group leaders. Involving them somehow in the initial training provided to all orientation group leaders, as well as the additional training provided to leaders of inclusive groups, could provide one avenue for building the capacity and confidence of these group leaders. Indeed, the reach and relevance of disability services professionals should extend well beyond issues of coursework access (Association on Higher Education and Disability, n.d.). Finally, the significance of belonging evident across these groups might prompt disability services professionals to reflect on the ways in which access might lead to more than just academic learning or active participation. The sense of deep connection and full membership that comes through the experience of belonging may require something more than mere presence. As they promote awareness and advocate for greater access, disability services professionals can remind their institution that inclusion in the absence of belonging falls short of the goal of full participation.

Second, IPSE program staff play a critical role in supporting successful orientation programming. From the initial training they provide to group leaders to the ongoing support they make available throughout the semester, their familiarity with participating students with intellectual disability and expertise in individualized supports are essential. Across the interviews, student and faculty leaders emphasized the helpfulness of these staff while also addressing additional needs. For example, multiple leaders suggested additional training be provided to orientation leaders throughout the semester (rather than only at the outset). Others felt that it could be helpful for program staff to facilitate occasional meetings with all of the leaders of these groups to share ideas and brainstorm challenges. Many leaders said it would be helpful to receive more information on the strengths, interests, and needs of participating students with intellectual disability prior to their first group. Finally, IPSE program staff should meet with disability services professionals to define their collaborative relationship in this area and discuss how issues like the delivery of accommodations and campus access might best be addressed.

Third, this study highlights the promise and possibilities of inclusive first-year orientation programs for campus leaders. Presently, most IPSE programs offer orientation experiences for students with intellectual disability that are substantially separate from typical offerings. College and university administrators should commit to expanding and supporting access to the full range of available campus experiences for these students. This may involve casting a clear vision for campus-wide inclusion, ensuring sufficient resources and staffing are allocated to Orientation offices, and establishing clear policies related to equity and diversity. Here, too, the expertise of disability services professionals could help inform institutional decisions regarding how best to design and implement programming that is welcoming and inclusive (Thompson et al., 2010). Because orientation meetings and activities take place across many different campus spaces and places, efforts are needed to ensure all campus facilities are fully accessible.

**Conclusion**

Findings from this study emphasize the opportunities for belonging that exist within the context of first-year orientation programs. Although not without some challenges, student and faculty leaders affirmed that inclusive experiences can introduce reciprocal benefits for students with and without intellectual disability, as well as for faculty who lead these groups. Other colleges and universities with inclusive post-secondary programs should invest in strong supports for inclusion within orientation activities.

**References**


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Change Over Time in Educational Attainment for Deaf Individuals from 2008-2018

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Abstract

Educational attainment is a crucial contributor to postsecondary achievement for deaf people, as a key component of narrowing employment gaps. Fewer deaf people complete high school and postsecondary education than their hearing peers, resulting in severe educational attainment gaps. However, secondary data analyses of the American Community Survey revealed areas of optimism related to the change over time in educational attainment for deaf people from 2008 to 2018. In general, attainment appears to be steadily improving for deaf people, with demonstrated growth in high school, associate, and bachelor’s degree completion. Differences in growth occurred across gender, race, and ethnicity. Educational attainment gaps between deaf and hearing people narrowed over time for high school and associate degree completion, but stayed stable for bachelor’s degree completion. Findings can drive changes in policy and practice that facilitate greater educational attainment for deaf people.

Keywords: deafness, postsecondary outcomes, transition, longitudinal studies

Completing high school and continuing education and training after high school is becoming increasingly important for maximizing quality of life in the United States. Educational attainment may result in immediate benefits of gaining content knowledge and skills, but has significant implications that persist over longer periods of time as people enter the workforce. Many of the fastest growing jobs in the United States (73%) now require specific postsecondary degrees or certifications as criteria for employment and 60% require at least an associate or bachelor's degree (Hogan & Roberts, 2015). Thus, higher educational attainment has become the standard expectation, or the norm (Carnevale et al., 2010). As postsecondary degree attainment increases, economic benefits increase on a national scale as well as at the state level (Zaback et al., 2012). Across the world, the average educational attainment rates in a country are strongly linked to equitable income distribution (Gregorio & Lee, 2002). Educational attainment increases employment opportunities, enables career advancement, and garners increased earnings.

The benefits of educational attainment are seen not only in employment settings, but also in general life outcomes. Educational attainment has a positive relationship with marital stability (Heaton, 2002), health-related quality of life (Tsimpida et al., 2018), and reduced child mortality (Breierova & Duflo, 2004). People who have completed high school are more likely to have a checking account, volunteer, and register to vote than those who did not complete high school (Newman et al., 2010). Furthermore, higher educational attainment rates have been significantly associated with longer life expectancies (Barro & Lee, 1994) which is true for men, women, people of all races and ethnicities, and across age (Olshansky et al., 2012). Similarly, there are negative consequences of not completing high school. High school non-completers are more likely to be unemployed, receive state and federal financial support, and be incarcerated (Sum et al., 2009). Among those with disabilities, young adults who do not complete high school are significantly more likely to be involved with the criminal justice system. For example, 72%
of non-completers had been stopped by police for something other than a traffic violation, compared to 44% of completers, and 48% of non-completers had been arrested, compared to 21% of completers (Sanford et al., 2011). Educational attainment may have more value for populations that experience systemic marginalization, like deaf people.

For deaf people in particular, educational attainment appears to have the same benefits as it does for hearing people, but in some cases may be even more important. Analyses of the American Community Survey have demonstrated that as educational attainment increases among deaf people, income gaps between deaf and hearing people may significantly narrow (Walter & Dirmyer, 2013) or disappear (Garberoglio et al., 2019). Among deaf people without a high school degree, the employment gap is around 26%, narrowing to 13% for those with a bachelor’s degree and 12% for those with a masters’ degree or above (Garberoglio et al., 2019). These findings indicate that educational attainment can be an important contributor to narrowing employment gaps between deaf and hearing people.

Educational attainment is also strongly linked to economic outcomes for deaf people. Deaf college graduates have higher levels of career mobility, enhanced earnings, reduced likelihood of relying on federal benefits, and increased likelihood of stable employment (Schley et al., 2011; Walter et al., 2002; Walter & Dirmyer, 2013). Deaf people who have a bachelor’s degree may earn between 52% to 66% more than those who have not completed a bachelor’s degree (Garberoglio et al., 2019; Schley et al., 2011). Deaf people who do not have postsecondary education are at risk for underemployment and unemployment, more likely to have shorter job tenure, and may rely on social security income (Houston et al., 2010). Educational attainment appears to be an important tool to narrow the economic gaps between deaf and hearing people (Garberoglio et al., 2019).

In addition, educational attainment is related to general life outcomes for deaf people. Higher educational attainment among deaf people is related to health outcomes such as lower cardiovascular risk (McKee et al., 2014). Deaf people with a college degree report lesser difficulty in understanding health information (Kushalnagar & Kushalnagar, 2018). They also seem to be more comfortable with communicating and finding information related to health care by using online platforms to communicate with healthcare providers (Ryan & Kushalnagar, 2018) and seeking out health information online (Kushalnagar & Kushalnagar, 2018). Deaf people with college degrees also report stronger self-efficacy and greater personal resources (Hintermair, 2007). Educational attainment clearly plays an important role in the lives of deaf people, contributing to employment, earnings, and well-being.

Recognizing the need for skilled employees who can meet the competitive demands of the modern workforce, current legislation and public policy are designed to facilitate conditions that support continuing education and training for all people. The U.S. government set a college degree attainment goal to be achieved by 2020 where at least 60% of 25-34 year-olds will complete an associate or bachelor's degree (U.S. Department of Education, 2012). It was estimated that 50% more associate and bachelor’s degree completers from this age group is needed before the goal can be reached (U.S. Department of Education 2016). Since the passage of the ADA, postsecondary education and training programs have become more accessible for deaf people, who are now enrolled in a wide variety of educational programs across the United States. Vocational rehabilitation funding is also available to support postsecondary education and training for disabled and deaf people across the country. In a 2017 study of deaf people, however, only 27.7% had completed an associate degree, and 18.8% had completed a bachelor’s degree (Garberoglio et al, 2019). Thus, even with these policy, legislative, and financial commitments, educational attainment gaps continue to persist for deaf populations.

**Change over Time in Educational Attainment by Demographic Characteristics**

While completion rates have steadily increased over time for high school (McFarland et al., 2018a), and postsecondary degrees (McFarland et al., 2018b; Nettles, 2017; U.S. Census Bureau, 2017), this growth in educational attainment is inconsistent across people of different races, ethnicities, genders, and disabilities. Thus, focusing only on the overarching outcome of this higher educational attainment goal by 2020 may mean that people with multiple marginalized identities fall through the cracks. The implications of this goal, in other words, may exacerbate educational attainment disparities and further reinforce pre-existing inequities in the workplace, particularly among Black, Native American, and Latinx populations (Nettles, 2017).

**Gender**

Women complete high school and attain associate and bachelor’s degrees at a higher rate than men (McFarland et al., 2018b; Ryan & Bauman, 2016; U.S. Census Bureau, 2019). Since 1967, women have been steadily showing increases in college completion
(Ryan & Bauman, 2016). However, gender differences in completion rates appear to vary depending on the level of educational attainment and age. In 1978, women aged 25 and older surpassed their male counterparts in associate degree completion (National Center for Education Statistics, 2018) but did not catch up to bachelor's degree completion rates for men until fairly recently (Ryan & Bauman, 2016). However, younger women aged 25 to 29 surpassed their male peers in bachelor’s degree completion in 1996 (Stoops, 2003). While overall educational attainment rates for women have steadily increased over time, those gains are most visible among younger women.

**Race and Ethnicity**

Across race and ethnicity, Asian American and White people consistently complete high school and college at higher rates than people of other races and ethnicities (McFarland et al., 2018b; Nettles, 2017; Ogunwole et al., 2012; Ryan & Bauman, 2016). Although high school completion rates between Asian American and White people are comparable, more Asian American people hold associate and bachelor’s degrees than White people (McFarland et al., 2018b; Ogunwole et al., 2012). High school completion gaps between Latinx and White students, as well as Black and White students, have narrowed since 2000 (Musu-Gillette et al., 2016). For college degree completion, Asian Americans are the highest educated of all races and ethnicities, with 50% having completed a bachelor’s degree or higher, followed by Whites (29%), African Americans (18%), Native Hawaiian and other Pacific Islanders (14%), and Alaskan Natives and Native Americans (13%; Ogunwole et al., 2012). These patterns are also observed when examining associate degree completion rates (McFarland et al., 2018b). In general, steady growth across all levels of educational attainment was visible for all races and ethnicities except for Alaskan Natives or Native Americans (McFarland et al., 2018b; Ryan & Bauman, 2016). Younger Asian Americans and Pacific Islanders did not demonstrate significant growth over time in educational attainment, but this group had already reached the 2020 goal in 2014 (Nettles, 2017).

When considering the intersection of gender, race, and ethnicity, women earn college degrees at a higher rate than men across all race and ethnicity groups (DiPrete & Buchmann, 2013; Nettles, 2017; Shapiro et al., 2017). The gender gap is the largest for Black people (DiPrete & Buchmann, 2013; Nettles, 2017; Shapiro et al., 2017). Black women were the first to obtain higher levels of education than their male peers, while Asian American and White women have only recently started surpassing White men in educational attainment (DiPrete & Buchmann, 2013). Furthermore, Black and Latino men represent the majority of all postsecondary students who withdraw from college (Cook & Cordova, 2007; Greene et al., 2008; King, 2000). The intersectional oppressions involved with gender, race, and ethnicity clearly play a role in the educational experiences and opportunities available to people.

**Disability**

Generally, adults with a disability are less likely to graduate from high school and obtain college degrees than adults without a disability (Ryan & Bauman, 2016; Bureau of Labor Statistics, 2015). While many young adults with disabilities enroll in postsecondary education, a high percentage of these students do not successfully complete their degree programs (Newman et al., 2011). Educational attainment patterns across race and ethnicity for people with disabilities are consistent with patterns in the general population, with Asian American and White disabled people completing college degrees at higher rates than Black and Latinx disabled people (Goodman et al., 2017). Within race and ethnicity groups, those with disabilities were significantly less likely than their nondisabled counterparts to obtain a bachelor’s degree or higher. Additionally, high school dropout rates are consistently higher among male students of color with disabilities (i.e., Black, Latinx, and Native American) (Faircloth et al., 2014). Educational attainment rates among people with disabilities vary across disability groups, and are lowest among people with multiple disabilities (Garberoglio et al., 2019; Newman et al., 2011).

From 1990 to 2005, postsecondary enrollment rates significantly increased for youth with disabilities, at a faster rate than in the general population (Newman et al., 2010). A closer look at the impact of disability type, race, and ethnicity shows variation in growth over time in postsecondary enrollment. Young adults who were deaf, or had learning disabilities, intellectual and developmental disabilities, or emotional disturbances showed significant growth over time in postsecondary enrollment, while other disability categories did not show the same growth (Newman et al., 2010). This growth in enrollment was strongest at two-year colleges and Career and Technical Education (CTE) schools, and weakest at four-year colleges. For four-year college enrollment, the only growth by disability category was found among people with learning disabilities. Across race and ethnicity, only White young adults with disabilities showed overall growth in postsecondary en-
rollment of any type, while Black young adults with disabilities showed an increase in enrollment in two-year colleges. As the data on educational attainment growth among disabled populations are sparse, these enrollment data allow for an understanding of potential growth over time.

**Deaf People**

Deaf people are more likely to complete college degrees than those from many other disability groups (Newman et al., 2011), but educational attainment rates continue to lag behind their hearing peers (Garberoglio et al., 2019). Postsecondary enrollment rates for deaf people have increased since the 1980s, in large part due to legislative action and increased accessibility of educational environments, as is true for other disability groups (Newman et al., 2011; Wagner et al., 2005). Despite increasing access to educational systems, current educational attainment rates for deaf people continue to lag behind their hearing peers, with attainment gaps ranging from 6% for high school completion to 15% for bachelor’s degree completion (Garberoglio et al., 2019). An understanding of educational attainment over time for deaf people must explore all the intersecting oppressions that play a role in educational experiences and opportunities. More deaf women than deaf men complete high school and have a bachelor’s degree or higher, as in the general population (Garberoglio et al., 2019). Despite promising educational attainment trends among deaf women, educational attainment gaps between deaf and hearing women persist. These educational attainment gaps are more severe for deaf people of color and deaf disabled people (Garberoglio et al., 2019). In order to narrow achievement gaps between deaf and hearing people, it is necessary to identify if educational attainment is increasing over time among deaf people, and if so, to what extent, and for whom.

**Root Causes of Educational Attainment Gaps Between Deaf and Hearing People**

The reasons for educational attainment gaps between deaf and hearing people are many, and the root causes run deep. People navigate through many complex systems in order to reach their educational goals, and face multiple barriers on the way that could derail their plans, consciously or unconsciously. The many identities that people possess play an important role in the journey towards their educational goals, and influence the opportunities available to them and the cultural dynamics that they are required to manage. Many root causes for those educational attainment gaps are similar to those found in the general population, but some may be magnified due to the deaf experience or experienced uniquely by deaf people.

Deaf people navigate a world where there is significant negative bias about the capability of deaf people to succeed (Mousley & Chaudoir, 2018). Lower expectations for deaf people are found in schools and also at home (Newman, 2005; Smith, 2013). Almost half of parents (43%) did not believe that their deaf child would be able to complete a four-year degree program, and only 45% believed that their child would enroll in any type of postsecondary institution (Newman, 2005). Yet, postsecondary enrollment rates for deaf youth easily exceed the expectations of their parents, with 75% of deaf young adults enrolling in postsecondary education (Newman et al., 2011). While lower expectations of deaf people are prevalent across settings, these expectations may have greater impact for deaf youth of color (Simms et al., 2008).

Within educational settings in secondary schools, placement and course-taking have significant impact on students’ readiness for future educational pathways. Deaf students who take more academically rigorous coursework during high school are more likely to enroll in postsecondary education (Newman et al., 2017). Deaf students who are less academically prepared may be more likely to leave college (Lang, 2002). Students who take more advanced coursework during high school are more likely to continue on and succeed in college (Tyson et al., 2007). However, deaf students are less likely than their hearing peers to take advanced coursework in high school, such as foreign language or advanced math courses (Nagle et al., 2016). Within the population of deaf students, not all deaf students receive the same opportunities. Studies demonstrate that even when Black and White young deaf students read at similar levels, 16% of the Black students were placed in grade-level classes, in contrast with 58% of White students (Wilkens, 2009). Deaf Black students are also more likely to be placed in special education settings than deaf White students (Kluwin, 1994). Those differential placements may play a role in weakening learning opportunities for Black deaf students and other deaf students of color. Assessments of deaf youth’s academic achievement while in secondary school show that White deaf students perform better than Latinx and Black deaf students on passage comprehension, social sciences, and science subtests (Marschark et al., 2015). This speaks more to systemic barriers for deaf youth of color, including potential biases in test development and administration, than to innate abilities. Yet, these assessments are also a key part of the enrollment process for postsecondary education and training, and thus low scores on those assessments limit opportu-
nities for deaf youth of color. The cumulative effects of biases, differential placements, and lower expectations during secondary school impact deaf people’s likelihood of enrolling in, and succeeding in, postsecondary settings.

Once deaf people complete high school and enroll in postsecondary institutions, there are multiple complex factors that may contribute to their likelihood of successfully completing the program. Deaf students feel less integrated in the “university family” than their hearing peers do (Foster et al., 1999), and this experience of not being socially integrated in the institution is a strong predictor of leaving college (Stinson & Walter, 1992; Tinto, 1987). The quality of accommodations (e.g., interpreting, real-time captioning, etc.) may be a moderating factor in deaf students’ satisfaction with social integration and retention. In a study, 48% of deaf students identified interpreters as a barrier to classroom participation because they were not available or present, not familiar with the content, not visible from the position of the student, or were mismatched in terms of signing modalities between the student and the interpreter (Foster et al., 1999). However, the role of accommodations in the relationship between social integration and retention of deaf students have not been investigated in sufficient depth (see Lang, 2002).

For many marginalized students, receiving a degree or certificate is not the only purpose served by postsecondary education. Formulating one’s identity by affiliating with a community is a crucial aspect of the college experience (Maramba & Velasquez, 2012). Developing those community affiliations within higher education institutions is often more challenging for deaf students, particularly those with multiple marginalized identities. Research has shown, for example, that deaf students of color believe there is a shortage of diverse deaf representation within postsecondary settings, even at deaf universities (Parasnis et al., 2005; Stapleton, 2015). In the Stapleton (2015) study, deaf women of color at hearing universities reported feeling that they did not have adequate opportunities to strengthen their racial and ethnic identity affiliations. Overall, these studies show that culturally competent support for deaf college students of color is severely lacking in postsecondary environments (Parasnis et al., 2005; Stapleton, 2015, 2016; Stapleton & Croom, 2017).

Despite these important findings, however, there is a paucity of research on deaf students of color, which results in assumptions about best practices for supporting the success of deaf students being made based on research on predominantly White deaf students. Therefore, educational attainment disparities must be addressed not only for the deaf population as a whole, but also for deaf people who possess multiple marginalized identities. This is a necessary, and highly strategic, approach to reducing economic disparities for deaf people. Within the general population, educational disparities are strongly linked to income inequality across the world (Gregorio & Lee, 2002). Narrowing educational attainment gaps is a key strategy for systemic change to increase equity for deaf people and within deaf communities. In order to do so, it is necessary to understand how educational attainment for deaf people has changed over time, and if the field is moving in the right direction. If not, this is an invitation for growth. This paper explores the following questions:

1. How has the average level of educational attainment among deaf Americans changed over time, between the years of 2008-2018?
   a. How do these trends differ across gender, race, and ethnicity?

2. Have educational attainment gaps between deaf and hearing Americans narrowed over time, between the years of 2008-2018?
   b. How do these changes in attainment gaps differ across gender, race, and ethnicity?

**Methods**

A secondary analysis of the American Community Survey was conducted to identify trends between 2008 and 2018 in educational attainment for deaf and hearing Americans between the ages of 25 and 65, and the change over time in educational attainment gaps between deaf and hearing Americans. The “hearing difficulty” variable was introduced into the ACS in 2008, thus analyses begin with 2008. We focus on the proportions, over time, of people who completed at least a high school, associate, or bachelor’s degree, across gender, race, and ethnicity.

**Data Sources**

The data for this project were taken from the Public Use Microdata Sample (PUMS) in the 2008-2018 American Community Survey (ACS) conducted by the U.S. Census. The ACS gives us the largest possible representative sample of deaf people in the United States. The PUMS provides a confidential subset of the ACS for the public to analyze. The ACS is a legally mandated questionnaire that is typically used to determine how federal funds are allocated from region to region. The ACS randomly samples homes and group quarters, and gathers data pertaining to their residents. The PUMS dataset includes person-level
weights, designed for estimates of individual-level quantities (such as educational attainment) that generalize to the entire US population or to subsets of interest. These weights account for both the complex sampling scheme as well as non-response. The PUMS also contains a set of 80 replicate weights, to be used in standard error estimation. More information on the ACS can be found at www.census.gov/programs-surveys/acs/about.html.

The sample of interest in these analyses was non-institutionalized people ages 25–64 in the 50 states and Washington, DC. Institutional group quarters include correctional facilities, nursing homes, and mental hospitals. The U.S. Census collects data on functional limitations rather than disability or identity labels, so we used the variable “hearing difficulties” to track deaf people. The survey respondents who stated that they were deaf, or had extreme difficulty hearing, were used to represent the deaf population in these analyses. The final sample of deaf people included more than 39,000 deaf people per year. The comparison group, what we call “hearing people,” were those who did not report having any “hearing difficulties.” For the most part, the data for the group of hearing people are largely comparable to data for the general population. But for comparison purposes, this analysis focuses on people in the general population who did not report any type of “hearing difficulties,” which allows for an understanding of what educational experiences may be unique to the deaf population.

Data Analysis
Estimating Attainment Rates

We used one-year ACS PUMS individual-level data, with person weights, to estimate the proportions of each subpopulation of interest in each year who had attained at least a high school degree, at least an associate degree, or at least a bachelor’s degree. To estimate each proportion, we defined an indicator variable that is equal to one for subjects who have attained the educational level in question or higher, and then took the weighted sample mean of that indicator variable among members of the subpopulation of interest, using ACS person weights. We estimated standard errors (shown in Tables 1, 2, and 3) with the successive difference replication method using the person replication weights provided with the PUMS (U.S. Census Bureau, 2018, pp. 12-13).

Analysis of Trends Over Time

Linear regression coefficients regressing the measure of attainment on a linear year variable are used to identify trends over time. True trends are unlikely to be linear; however, the coefficient from the linear model can still be interpreted as the average linear change over the course of the study period (2008-2018). In particular, positive coefficients indicate increasing trends, on average—this would not rule out plateaus or decreasing trends over part of the study period—it refers only to overall averages. Estimated trends adjust for age, since age is a strong predictor of educational attainment, and changes in the age composition of the population may induce changes in average educational attainment, even absent policy relevant effects. Since age predicts educational attainment, in many cases this has the effect of reducing residual error and increasing precision, even if age compositions remained constant.

We estimated trends separately for each education level we considered (high school, associate, or bachelor’s degrees, or higher), for deaf and hearing people in each subgroup. Our strategy had two steps. First, we estimated attainment rates, as described above, for each age, 25-64, and subgroup of interest. Let these estimates be denoted as $\hat{p}_{dly}^{dls}$ where the superscript $d$ indexes deaf or hearing people, $l$ denotes level of education, $s$ denotes subgroup, and subscript $a$ denotes age, and $y$ denotes year. For instance, $\hat{p}_{dly}^{dLS,35}$ would denote the 2013 proportion of deaf Latinx people of age 35 who had at least a high school diploma, and $\hat{p}_{dly}^{LS,35}$ would be the proportion of all deaf people age 35 in 2013 who had attained at least a high school diploma.

Next, we regressed these estimated proportions on age fixed-effects and a linear year term,

$$\hat{p}_{dly}^{dls} = \alpha_d^{al} + \beta^{dl} y + \epsilon_{dly}^{dls}$$

using weighted least squares (WLS); we report the trend for deaf or hearing people for education level $l$ in subgroup $s$ is $\beta^{dl}$, the estimated coefficient on the linear $y$ term. $\alpha_d^{al}$ are fixed effects for each age. Note that within each model, only subscripts $a$ and $y$ vary; superscripts $d$, $l$ and $s$ remain constant.

WLS is a variant of the usual ordinary least squares (OLS) model. Whereas OLS estimates coefficients by minimizing the sum of the squared residuals from a model, $\sum (Y - \hat{Y})^2$, WLS minimizes the weighted sum $\sum w_i (Y - \hat{Y})^2$. Weights $w_i$ may be chosen to be inversely proportional to residual variances (Aiken, 1935), to maximize precision, or to estimated average slopes for a target population (see Pfeffermann, 1993 for a general discussion of the use of weights in survey regressions). With properly chosen weights, the regression model above is equivalent to an OLS regression on individual-level data, where the dependent variable is a dichotomous indicator.
of attainment and the independent variables are the same—fixed effects for age and a linear time trend. Instead, we weighted each observation according to estimated age distribution in the overall U.S. population in 2018, so weights \( w_{ay}^{dis} = \frac{\text{Prop}_{2018}(a)}{\sum \text{Prop}_{2018}(a)} \), where \( \text{Prop}_{2018}(a) \) is the estimated proportion of the 2018 U.S. population of age \( a \), and the denominator, \( \sum w_{ay}^{dis} \) ensures that the weights sum to one. This choice of weights estimates trends in educational attainment, with the age distribution held constant at the estimated 2018 distribution.

While a multilevel model, which partially pools data across subgroups, has a number of statistical advantages (Gelman et al., 2012), we chose to estimate each trend in a separate model, for two reasons. First, our estimation strategy hews closer to the design principles of the ACS (for instance, in our use of survey weights). Second, our strategy allowed for the straightforward, computationally-feasible two-stage estimation strategy described above. For confidence intervals, and \( p \)-values, we used heteroskedasticity-consistent standard errors (MacKinnon & White, 1985). Heteroskedasticity-consistent standard errors relax the standard least squares assumption that the variance of regression errors \( \epsilon_{ay}^{dis} \) is constant across cases. This assumption is particularly suspect in our case. Regression errors \( \epsilon_{ay}^{dis} \) are composed of two parts: the difference between estimated and true population proportions, \( \hat{p}_{ay}^{dis} \) and \( p_{ay}^{dis} \), and the difference between the model’s prediction and the true population proportion. Both of these components may vary between age groups or years. Additionally, the dependent variable of the regression is a proportion, which is constrained to be between zero and one; as the model’s prediction approaches these limits, the variance of the regression error necessarily changes.

**Analysis of Attainment Gaps**

Age is an important predictor of deafness, as well as educational attainment. Gaps in attainment between deaf and hearing people, therefore, are typically due to a combination of differences in attainment due to deafness and differences in the distribution of age between deaf and hearing people. Since our interest is in the former, we accounted for age in all estimates of trends in attainment gaps.

To estimate trends in attainment gaps in a particular subgroup \( s \) (e.g., African Americans), we first estimated attainment rates for that subgroup for each age, for deaf and hearing people, across all 11 years of the dataset, \( \hat{p}_{ay}^{dis} \). We then fit the model:

\[
\hat{p}_{ay}^{dis} = \alpha_{a}^{dis} + \beta_{1}y + \beta_{2}\text{DEAF:y} + e_{ay}^{dis}
\]

where \( \alpha_{a}^{dis} \) is a fixed effect for age-deafness (i.e., 25 years old deaf, 25 years old hearing, 26 years old deaf, etc.), \( \beta_{1} \) is the linear trend for hearing people, and the interaction term \( \beta_{2} \) represents the trend in the attainment gap between deaf and hearing people (we include the full set of age-deafness fixed effects instead of an intercept and stand-alone term for deafness). As above, we fit this model with WLS, weighting the regression according to 2018 overall age distribution, and estimated confidence intervals and \( p \)-values using heteroskedasticity-consistent standard errors.

**Multiplicity Adjustment and Hypothesis Tests**

We conducted hypothesis tests and computed the \( p \)-values testing for trends in deaf people’s attainment and attainment gaps over time, and corrected these \( p \)-values for multiplicity. We conducted multiplicity adjustments separately in our study of achievement trends and in achievement gap trends. We corrected the tests for overall trends in high school, associate degree, and bachelor’s degree gaps using the Holm procedure (Holm, 1979). We corrected the \( p \)-values for subgroup-specific trends using the Benjamini-Hochberg procedure, which controls the “false discovery rate” (Benjamini & Hochberg, 1995).

To compare trends in attainment or in gaps between males and females, overall and within racial/ethnic groups, we compared the ratio of the difference in estimated trends to the standard error for the difference (computed as \( \sqrt{SE_{1}^{2} + SE_{2}^{2}} \)), where \( SE_{1} \) and \( SE_{2} \) are the estimated standard errors for the two trends) to a standard normal distribution. To compare trends between racial/ethnic groups, we first conducted an omnibus test for any difference between groups (using the meta-analysis Q-test; Cooper et al., 2010). When this test yielded a significant result, we tested pairwise differences between categories. We adjusted all pairwise tests (between genders and between racial/ethnic groups) using the Benjamini-Hochberg procedure.

All analyses were conducted in R (R Core Team, 2018) using the tidyverse and estimatr packages (Blair et al., 2019; Wickham et al., 2019), and all replication code and more detailed tables of results are available at github.com/nationalDeafCenter/educationalAttainmentTrends.

**Results**

**High School Attainment**

From 2008 to 2018, high school completion rates for deaf people grew by roughly 4 percentage points—a rate of 0.5 percentage points per year (PPY) (\( p < 0.001 \)) (Table 1, Figure 1). When the sample was restricted to deaf people ages 25-34, the estim-
ed trend over time was 0.6 PPY \((p < 0.001)\). High school completion trends were similar for deaf men and women, at 0.4 \((p < 0.001)\), and 0.5 \((p < 0.001)\) PPY, respectively. Trends varied between racial/ethnic subgroups \((p < 0.001)\): high school completion increased for deaf Latinx \((1.1 \text{ PPY}; p < 0.001)\), African American \((0.8 \text{ PPY}; p < 0.001)\) and White people \((0.4 \text{ PPY}; p < 0.001)\), for both males and females. High school completion increased faster for Latinx than for White, Asian or Pacific Islander, or Native American deaf people \((p < 0.01)\) and increased faster for African Americans than for white people \((p < 0.01)\). Estimated trends for other racial and ethnic groups were too imprecise to draw conclusions.

**Trends in High School Attainment Gaps**

From 2008 to 2018, the age-adjusted hearing-deaf gaps in high school completion narrowed from roughly 7.6 in 2008 to 4.9 in 2018, a trend of roughly \(-0.27 \text{ PPY} \quad (p < 0.001)\), where the negative sign indicates a narrowing gap (Table 1). Curiously, this achievement gap trend is not apparent in the 25-34 age group; instead, it appears to have been driven largely by changes in the proportions of deaf, but not hearing, people ages 35-54 reporting high school diploma attainment. The high school gap appeared to narrow more for women \(-0.36 \text{ PPY}; p < 0.001\) than for men \(-0.24 \text{ PPY}; p < 0.001\) though the difference in trends is not statistically significant. Nevertheless, as of 2018 the high school completion gap remains higher for women, at 6.13, compared to 3.72 for men. Across race and ethnicity, the high school gap narrowed for White people \(-0.3 \text{ PPY}; p < 0.001\), and African American people \(-0.4 \text{ PPY}; p < 0.001\). Among African American people, narrowing the gap appears to be driven largely by African American women, for whom the gap trend was particularly pronounced \(-0.6 \text{ PPY}; p < 0.001\). There was little evidence of different trends between racial and ethnic groups, or within racial and ethnic groups between genders.

**Associate Degree Attainment**

From 2008 to 2018, associate degree completion rates for deaf people grew by roughly 5 percentage points—a rate of 0.7 PPY \((p < 0.001)\) (Table 2, Figure 2). When the sample was restricted to deaf people ages 25-34, the estimated trend over time was 0.8 PPY \((p < 0.001)\). Associate degree completion trends were similar for deaf males and females, at 0.6 \((p < 0.001)\) and 0.7 \((p < 0.001)\) PPY, respectively. Trends were more similar for deaf Latinx \((0.6 \text{ PPY}; p < 0.001)\), deaf African American \((0.7 \text{ PPY}; p < 0.001)\), and deaf White people \((0.7 \text{ PPY}; p < 0.001)\). Estimated trends for other racial and ethnic groups were too imprecise to draw conclusions. Within racial and ethnic categories, trends in associate degree completion were similar between deaf females and deaf males, or were too imprecise to draw conclusions.

**Trends in Associate Degree Attainment Gaps**

From 2008 to 2018 the age-adjusted hearing-deaf gaps in the proportion of people earning at least an associate degree narrowed from roughly 15.9 in 2008 to 14.6 in 2018, a trend of roughly \(-0.11 \text{ PPY} \quad (p < 0.05)\) (Table 2). This trend appears to be driven entirely by changes in in the deaf-hearing associate degree gap for men, which narrowed by approximately \(-0.29 \text{ PPY} \quad (p < 0.001)\). The trend in the gap for men was faster than for women \((p < 0.01)\), which was estimated as 0.01 PPY \((p = 0.87)\). Trends in the associate degree gap for age or racial/ethnic categories were mostly too small or measured with too much noise to draw conclusions. One exception is the trend in the gap for White males, which was \(-0.27 \text{ PPY} \quad (p < 0.001)\), more pronounced than for White females \((p < 0.01)\) and comparable to the estimated trends in gaps African American and Latinx males, -0.31 and \(-0.23 \text{ PPY} \quad (p < 0.01)\), respectively, which, however, were not statistically significant due to imprecision.

**Bachelor’s Degree Attainment**

From 2008 to 2018, Bachelor’s degree completion rates for deaf people grew by roughly 3 percentage points—a rate of 0.5 PPY \((p < 0.001)\) (Table 3, Figure 3). When the sample was restricted to deaf people ages 25-34, the estimated trend over time was 0.6 PPY \((p < 0.001)\). Bachelor’s degree completion trends were somewhat higher for deaf females than males \((p < 0.01)\), at 0.6 \((p < 0.001)\), and 0.4 \((p < 0.001)\) PPY, respectively. Trends were similar for deaf Latinx \((0.5 \text{ PPY}; p < 0.001)\), deaf African American \((0.5 \text{ PPY}; p < 0.001)\), and deaf White people \((0.5 \text{ PPY}; p < 0.001)\). Estimated trends for other racial and ethnic groups were too imprecise to draw conclusions. Trends were higher \((p < 0.01)\) for white women than for white men; comparisons between men and women within other racial and ethnic categories were too imprecise to draw conclusions.

**Trends in Bachelor’s Degree Attainment Gaps**

The trend in the deaf-hearing gap in Bachelor’s degree attainment was estimated as \(-0.05 \text{ PPY}\); this estimate was statistically insignificant \((p = 0.22)\). However, the bachelor’s degree gap for men did appear to narrow, at a rate of \(-0.15 \text{ PPY} \quad (p < 0.001)\). None of the other subgroups we studied exhibited a statistically significant trend at the bachelor’s degree gap from 2008 to 2018.
Table 1

Percentage of Deaf People Completing High School or Higher: 2008 to 2018

<table>
<thead>
<tr>
<th>Grouping</th>
<th>2008</th>
<th>2018</th>
<th>Deaf Attainment</th>
<th>Deaf-Hearing Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>80.1 (0.3)</td>
<td>84.2 (0.3)</td>
<td>0.46 (0.03)***</td>
<td>-0.27 (0.03)***</td>
</tr>
<tr>
<td>25-34</td>
<td>80.2 (0.9)</td>
<td>85.5 (0.8)</td>
<td>0.56 (0.08)***</td>
<td>-0.08 (0.08)</td>
</tr>
<tr>
<td>Male</td>
<td>80.7 (0.3)</td>
<td>84.4 (0.3)</td>
<td>0.44 (0.04)***</td>
<td>-0.24 (0.04)***</td>
</tr>
<tr>
<td>Female</td>
<td>78.9 (0.4)</td>
<td>84.0 (0.4)</td>
<td>0.52 (0.05)***</td>
<td>-0.34 (0.05)***</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>72.3 (0.8)</td>
<td>81.1 (1.0)</td>
<td>0.83 (0.10)***</td>
<td>-0.43 (0.10)***</td>
</tr>
<tr>
<td>American Indian</td>
<td>80.4 (1.7)</td>
<td>81.1 (1.8)</td>
<td>0.03 (0.23)</td>
<td>0.18 (0.23)</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>75.2 (1.9)</td>
<td>78.5 (1.6)</td>
<td>0.36 (0.17)</td>
<td>-0.12 (0.18)</td>
</tr>
<tr>
<td>Latinx</td>
<td>57.1 (1.0)</td>
<td>68.1 (1.0)</td>
<td>1.09 (0.10)***</td>
<td>-0.19 (0.10)</td>
</tr>
<tr>
<td>Other</td>
<td>82.6 (1.5)</td>
<td>85.2 (1.5)</td>
<td>0.34 (0.16)</td>
<td>-0.02 (0.17)</td>
</tr>
<tr>
<td>White</td>
<td>84.4 (0.3)</td>
<td>87.9 (0.2)</td>
<td>0.41 (0.04)***</td>
<td>-0.28 (0.04)***</td>
</tr>
<tr>
<td>Race/Ethnicity: Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>73.0 (1.2)</td>
<td>81.5 (1.3)</td>
<td>0.72 (0.15)***</td>
<td>-0.28 (0.15)</td>
</tr>
<tr>
<td>American Indian</td>
<td>82.5 (1.9)</td>
<td>82.8 (2.0)</td>
<td>0.02 (0.28)</td>
<td>0.23 (0.29)</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>78.0 (2.1)</td>
<td>80.1 (2.0)</td>
<td>0.36 (0.25)</td>
<td>-0.18 (0.25)</td>
</tr>
<tr>
<td>Latinx</td>
<td>58.0 (1.3)</td>
<td>68.5 (1.3)</td>
<td>1.07 (0.13)***</td>
<td>-0.17 (0.13)</td>
</tr>
<tr>
<td>Other</td>
<td>84.8 (2.0)</td>
<td>83.6 (2.0)</td>
<td>0.12 (0.21)</td>
<td>0.17 (0.22)</td>
</tr>
<tr>
<td>White</td>
<td>84.3 (0.3)</td>
<td>87.6 (0.3)</td>
<td>0.41 (0.05)***</td>
<td>-0.28 (0.05)***</td>
</tr>
<tr>
<td>Race/Ethnicity: Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>71.5 (1.4)</td>
<td>80.7 (1.3)</td>
<td>1.02 (0.15)***</td>
<td>-0.64 (0.15)***</td>
</tr>
<tr>
<td>American Indian</td>
<td>77.4 (3.0)</td>
<td>78.5 (3.4)</td>
<td>0.11 (0.33)</td>
<td>0.07 (0.35)</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>72.1 (2.7)</td>
<td>76.7 (2.3)</td>
<td>0.31 (0.26)</td>
<td>-0.01 (0.26)</td>
</tr>
<tr>
<td>Latinx</td>
<td>55.7 (1.4)</td>
<td>67.7 (1.4)</td>
<td>1.12 (0.15)***</td>
<td>-0.25 (0.15)</td>
</tr>
<tr>
<td>Other</td>
<td>79.4 (2.6)</td>
<td>87.5 (2.1)</td>
<td>0.60 (0.27)*</td>
<td>-0.25 (0.28)</td>
</tr>
<tr>
<td>White</td>
<td>84.5 (0.5)</td>
<td>88.4 (0.4)</td>
<td>0.41 (0.05)***</td>
<td>-0.27 (0.05)***</td>
</tr>
</tbody>
</table>

Note. Standard errors are in parentheses. All results were computed from the ACS PUMS single year data, with person weights. *p < .05. **p < .01. ***p < .001 (corrected for multiplicity)
Figure 1

High School Degree Attainment 2008-2018

![High School Degree Attainment 2008-2018 graph]

Figure 2

Associates Degree Attainment 2008-2018

![Associates Degree Attainment 2008-2018 graph]
Table 2

Percentage of Deaf People Attaining an Associate Degree or Higher: 2008 to 2018

<table>
<thead>
<tr>
<th>Grouping</th>
<th>2008</th>
<th>2018</th>
<th>Rates (%)</th>
<th>2008</th>
<th>2018</th>
<th>Trends (Percentage Points/Year)</th>
<th>Deaf Attainment</th>
<th>Deaf-Hearing Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>23.5 (0.2)</td>
<td>28.6 (0.3)</td>
<td>0.65 (0.04)***</td>
<td>-0.11 (0.05)*</td>
<td></td>
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</tr>
<tr>
<td>25-34</td>
<td>20.0 (0.9)</td>
<td>29.5 (1.0)</td>
<td>0.77 (0.10)***</td>
<td>-0.03 (0.10)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>23.1 (0.3)</td>
<td>27.0 (0.4)</td>
<td>0.62 (0.05)***</td>
<td>-0.29 (0.05)***</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Female</td>
<td>24.2 (0.4)</td>
<td>31.2 (0.5)</td>
<td>0.72 (0.06)***</td>
<td>0.01 (0.07)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race/Ethnicity</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>15.6 (0.9)</td>
<td>22.4 (1.0)</td>
<td>0.71 (0.11)***</td>
<td>-0.09 (0.11)</td>
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</tr>
<tr>
<td>American Indian</td>
<td>20.2 (2.2)</td>
<td>21.2 (1.9)</td>
<td>0.05 (0.27)</td>
<td>0.19 (0.29)</td>
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</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>36.7 (2.3)</td>
<td>39.9 (1.7)</td>
<td>0.37 (0.23)</td>
<td>0.19 (0.23)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latinx</td>
<td>14.5 (0.7)</td>
<td>20.5 (0.7)</td>
<td>0.59 (0.08)***</td>
<td>-0.05 (0.08)</td>
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<td></td>
</tr>
<tr>
<td>Other</td>
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<td>0.38 (0.21)</td>
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<td>30.5 (0.3)</td>
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<td>-0.07 (0.06)</td>
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<tr>
<td>Race/Ethnicity: Male</td>
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<td></td>
</tr>
<tr>
<td>African American</td>
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<td>-0.31 (0.14)</td>
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<tr>
<td>Latinx</td>
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<td>21.5 (0.9)</td>
<td>0.62 (0.11)***</td>
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<tr>
<td>Other</td>
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<tr>
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<td>-0.27 (0.06)***</td>
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<tr>
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</tr>
<tr>
<td>African American</td>
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<td>23.4 (1.4)</td>
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<td>0.12 (0.15)</td>
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</tr>
<tr>
<td>American Indian</td>
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<td>25.7 (3.1)</td>
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<td>-0.06 (0.52)</td>
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</tr>
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<td>Asian/Pacific Islander</td>
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<td>0.75 (0.34)</td>
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<tr>
<td>Latinx</td>
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<td>19.2 (1.0)</td>
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<td>0.17 (0.13)</td>
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<tr>
<td>Other</td>
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<tr>
<td>White</td>
<td>27.0 (0.5)</td>
<td>34.4 (0.7)</td>
<td>0.76 (0.07)***</td>
<td>0.11 (0.09)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*Note.* Standard errors are in parentheses. All results were computed from the ACS PUMS single year data, with person weights. *p < .05. **p < .01. ***p < .001 (corrected for multiplicity)
Table 3

Percentage of Deaf People Attaining a Bachelor's Degree or Higher: 2008 to 2018

<table>
<thead>
<tr>
<th>Grouping</th>
<th>2008</th>
<th>2018</th>
<th>Deaf Attainment (Percentage Points/Year)</th>
<th>Deaf-Hearing Gap (Percentage Points/Year)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall</strong></td>
<td>15.9 (0.2)</td>
<td>19.2 (0.3)</td>
<td>0.49 (0.04)***</td>
<td>-0.05 (0.04)</td>
</tr>
<tr>
<td><strong>25-34</strong></td>
<td>13.2 (0.8)</td>
<td>19.4 (0.8)</td>
<td>0.59 (0.08)***</td>
<td>0.06 (0.08)</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Male</strong></td>
<td>15.7 (0.3)</td>
<td>17.9 (0.3)</td>
<td>0.40 (0.04)***</td>
<td>-0.15 (0.04)***</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>16.1 (0.4)</td>
<td>21.2 (0.5)</td>
<td>0.62 (0.05)***</td>
<td>-0.01 (0.06)</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>African American</strong></td>
<td>9.6 (0.8)</td>
<td>14.2 (0.8)</td>
<td>0.52 (0.08)***</td>
<td>-0.04 (0.09)</td>
</tr>
<tr>
<td><strong>American Indian</strong></td>
<td>10.5 (1.6)</td>
<td>11.2 (1.7)</td>
<td>-0.09 (0.22)</td>
<td>0.04 (0.29)</td>
</tr>
<tr>
<td><strong>Asian/Pacific Islander</strong></td>
<td>29.7 (2.4)</td>
<td>30.6 (1.7)</td>
<td>0.17 (0.21)</td>
<td>0.42 (0.22)</td>
</tr>
<tr>
<td><strong>Latinx</strong></td>
<td>8.6 (0.6)</td>
<td>13.1 (0.6)</td>
<td>0.47 (0.06)***</td>
<td>-0.08 (0.07)</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>17.0 (1.7)</td>
<td>20.6 (1.9)</td>
<td>0.34 (0.18).</td>
<td>0.50 (0.19)</td>
</tr>
<tr>
<td><strong>White</strong></td>
<td>17.4 (0.3)</td>
<td>20.6 (0.3)</td>
<td>0.53 (0.04)***</td>
<td>0.00 (0.06)</td>
</tr>
<tr>
<td><strong>Race/Ethnicity: Male</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>African American</strong></td>
<td>9.7 (1.1)</td>
<td>13.5 (1.1)</td>
<td>0.44 (0.11)***</td>
<td>-0.13 (0.12)</td>
</tr>
<tr>
<td><strong>American Indian</strong></td>
<td>12.1 (2.3)</td>
<td>10.6 (2.1)</td>
<td>-0.35 (0.32)</td>
<td>-0.37 (0.43)</td>
</tr>
<tr>
<td><strong>Asian/Pacific Islander</strong></td>
<td>29.7 (2.8)</td>
<td>29.8 (2.4)</td>
<td>-0.13 (0.32)</td>
<td>0.56 (0.32)</td>
</tr>
<tr>
<td><strong>Latinx</strong></td>
<td>8.5 (0.8)</td>
<td>13.4 (0.8)</td>
<td>0.45 (0.08)***</td>
<td>-0.18 (0.09)</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>17.7 (2.4)</td>
<td>17.5 (1.9)</td>
<td>-0.11 (0.28)</td>
<td>0.77 (0.32)</td>
</tr>
<tr>
<td><strong>White</strong></td>
<td>17.0 (0.3)</td>
<td>18.9 (0.4)</td>
<td>0.43 (0.05)***</td>
<td>-0.12 (0.05)</td>
</tr>
<tr>
<td><strong>Race/Ethnicity: Female</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>African American</strong></td>
<td>9.6 (0.9)</td>
<td>15.0 (1.2)</td>
<td>0.60 (0.13)***</td>
<td>0.00 (0.13)</td>
</tr>
<tr>
<td><strong>American Indian</strong></td>
<td>8.3 (1.9)</td>
<td>12.0 (2.6)</td>
<td>0.15 (0.41)</td>
<td>-0.22 (0.59)</td>
</tr>
<tr>
<td><strong>Asian/Pacific Islander</strong></td>
<td>29.7 (3.2)</td>
<td>31.4 (2.5)</td>
<td>-0.04 (0.31)</td>
<td>0.80 (0.33)</td>
</tr>
<tr>
<td><strong>Latinx</strong></td>
<td>8.8 (0.9)</td>
<td>12.7 (0.8)</td>
<td>0.45 (0.10)***</td>
<td>0.06 (0.10)</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>15.9 (2.3)</td>
<td>25.6 (3.4)</td>
<td>0.58 (0.31).</td>
<td>0.36 (0.33)</td>
</tr>
<tr>
<td><strong>White</strong></td>
<td>18.2 (0.5)</td>
<td>23.6 (0.6)</td>
<td>0.67 (0.07)***</td>
<td>0.07 (0.09)</td>
</tr>
</tbody>
</table>

*Note. Standard errors are in parentheses. All results were computed from the ACS PUMS single year data, with person weights. *p < .05. **p < .01. ***p < .001 (corrected for multiplicity)*
Figure 3

Bachelors Degree Attainment 2008-2018
Discussion

From 2008 to 2018, educational attainment among deaf people in the United States has steadily increased, with greater numbers of deaf people completing high school, associate, and bachelor’s degrees. This is not unexpected; educational attainment has shown steady growth for people in the United States over time (McFarland et al., 2018b; Nettles, 2017; U.S. Census Bureau, 2017). The essential question to ask is if the growth in diploma and degree completion among deaf people is narrowing educational attainment gaps between deaf and hearing people. The answer is complex; what we have learned is that in some cases, the educational attainment gap is narrowing, and in others it is not. Educational attainment gaps between deaf and hearing people are narrowing in high school completion, narrowing to a lesser extent for associate degree completion, and staying stagnant for bachelor’s degree completion. High school completion among deaf individuals increased from 80.1% in 2008 to 84.2% in 2018. From 2008 to 2018, associate degree completion increased from 23.5% to 28.6%, while bachelor’s degree completion increased from 15.9% to 19.2%. Trends in educational attainment over time also differ across gender and among racial and ethnic groups. In sum, despite optimistic trends of growth over time in educational attainment among deaf populations, that growth is not yet robust enough for deaf people to catch up with educational attainment levels in hearing populations, particularly for deaf people of color.

Across levels of educational attainment, the gaps between deaf and hearing people narrowed the most over time for high school completion, with very little discernible change over time in postsecondary degree completion gaps. There are vast differences between secondary and postsecondary educational systems that may contribute to differences in trends across levels of educational attainment for deaf people. Secondary schools are expected to comply with school accountability systems, compulsory attendance policies, and federal regulations related to ensuring a free appropriate public education and special education services for students with disabilities. These multi-layered systems of oversight may mean that there is a greater likelihood for deaf students to successfully complete their education in secondary programs. Postsecondary settings, although obligated to comply with the Americans with Disabilities Act and Section 504, have less oversight in policies and practices related to deaf students’ access to educational opportunities. There are far greater chances for deaf students to fall through the cracks in postsecondary settings, whether that happens during the application process or while enrolled. Postsecondary education and training are becoming increasingly more important to stay competitive in the global, fast-paced job market, and deaf people cannot afford to lag behind their hearing peers in postsecondary educational attainment.

Traditionally, many people in the United States who pursue higher education have completed at least a bachelor’s degree by the age of 25. Deaf people between the ages of 25 and 34 are demonstrating higher completion rates over time, from 80.2% in 2008 to 85.5% in 2018 for high school completion, from 20% in 2008 to 29.5% in 2018 for associate degrees, and 13.2% in 2008 to 19.4% in 2018 for bachelor’s degrees. However, this growth is insufficient to make a discernible impact on educational attainment gaps between deaf and hearing people in this age group. Deaf people are a very long way away from attaining the ambitious goals for postsecondary degree completion set by the U.S. Department of Education (Nettles, 2017), which is particularly salient for young adults. In the United States, this age group, also known as millennials, is highly educated, on average (Frey, 2018). Younger deaf people who are entering the labor force are competing for jobs against their hearing peers who are more likely to have college degrees. In a competitive job market, this means deaf people have even greater barriers to surmount when looking for work.

Deaf women and men are both demonstrating growth in educational attainment over time. However, robust educational attainment trends among women in the general population (McFarland et al., 2018b) indicate that completion rates should be higher among deaf women than they currently stand. Indeed, the high school completion gap between deaf and hearing people is higher for women than for men (6.13% vs. 3.72%, respectively). While deaf women were narrowing the gap in high school completion, they were not doing so for associate or bachelor’s degrees. In those cases, deaf men were narrowing the gap. Looking at completion rates among deaf women, while promising, do not give us the full picture. Placing deaf women’s educational attainment data in comparison with their hearing female peers, or their deaf male peers, shows us that deaf women are not reaching educational attainment goals commensurate with their peers.

Across gender, race, and ethnicity, demonstrated growth in educational attainment was present for deaf Black, Latinx, and White people across all levels of education. Growth was largest among deaf Black and Latinx people in high school completion, increasing from 72.3% in 2008 to 81.1% in 2018 and 57.1%
in 2008 to 68.1% in 2018, respectively. Black deaf women, in particular, are significantly narrowing the gap in high school completion between Black deaf women and Black hearing women. While demonstrated growth was present among deaf Black and Latinx communities, the educational attainment rates in these communities continue to lag behind national educational attainment data, particularly those of Asian American and White people. Accelerated growth rates are needed in order to narrow the gaps not only between deaf and hearing people, but also within deaf communities. While Asian Americans are the highest educated racial and ethnic group in the deaf community, growth in educational attainment was not visible among deaf Asian Americans and Pacific Islanders, which may be partially due to smaller sample sizes, but is also reflective of large variance in educational attainment within this population.

Despite increasing postsecondary enrollment among deaf young adults from 1990 to 2005 (Newman et al., 2010), policy initiatives established by the U.S. government to encourage degree completion (U.S. Department of Education, 2012), and greater access to a range of postsecondary education and training opportunities for deaf people, educational attainment rates among deaf people have not increased enough to truly level the playing field. Deaf people continue to be underemployed and underpaid in the workforce (Garberoglio et al., 2019), and frequently experience discrimination when applying for work or promotions on the job. Having more postsecondary education and training makes deaf people more competitive in the workplace, and increases available opportunities (Garberoglio et al., 2019). The findings from this study indicate that the field has much more work to do in terms of creating optimal conditions for success for deaf people. Enrollment in postsecondary settings is not enough. Growth in degree completion is not enough. We must see accelerated growth in educational attainment among populations that have historically been marginalized, to truly narrow achievement gaps.

Policy initiatives that are designed to increase educational attainment on a national level (U.S. Department of Education, 2012), while well intended, may be neglecting to address structural inequities that prevent marginalized populations from benefiting from those policies, initiatives, and programs (Nettles, 2017). Educational attainment gaps across the nation are visible across gender, race, ethnicity, and disability. As the population of the United States becomes increasingly diverse, including people with disabilities who expect greater access to education and the workplace, it is essential to address structural inequities while designing and implementing new policies, initiatives, and programs. A focus on overarching goals for educational attainment may only exacerbate gaps for marginalized groups and amplify pre-existing employment, economic, and health disparities among marginalized populations.

**Limitations**

This study is not without its limitations. We recognize that using broad categories of race and ethnicity misses important data about within-group variability and complexity. For instance, the educational attainment of Asian people in the United States varies widely, often showing a relationship with the country of origin (de Brey et al., 2019; Lopez et al., 2017). Citizenship and immigration status are also linked to educational attainment across race and ethnicity (Everett et al., 2011; Musu-Gillette et al., 2017). However, throughout this paper we try to emphasize that educational attainment gaps across gender, race, ethnicity, and disability are directly linked to systemic barriers that prevent marginalized people from attaining their educational goals, not innate characteristics of individuals themselves (O'Connor & Fernandez, 2006). The second limitation was that sample sizes became increasingly smaller when narrowing the unit of focus, such as when looking at Native American deaf women. Our statistical analyses were conservative; thus, those smaller sample sizes may not have enough power to identify the effects of time on educational attainment. The third limitation is related to the dataset in general, which is designed to capture the broadest possible spectrum of people in the United States, and thus loses important nuance that is needed when discussing deaf people and deaf communities. The American Community Survey does not capture disability-specific characteristics, or features that are unique to the deaf experience such as sign language usage, age of language acquisition, age at onset of deafness, or decibel level (Garberoglio, 2017).

**Conclusion**

This study aims to shed light on educational attainment gaps across gender, race, and ethnicity within the deaf population. The results from this study can help guide policy decisions and implementation of services that are needed in order to increase educational attainment for deaf people, particularly deaf people of color. The onus of eliminating educational attainment gaps should not fall on deaf people themselves, but on the systems in which they navigate. Educational attainment gaps are an indicator of systemic barriers and failures, not individual deficien-
cies (O’Connor & Fernandez, 2006). Institutional readiness to serve deaf people is as important, if not more so, than individual readiness (Cawthon et al., 2014). Systemic barriers are malleable. Individual characteristics are less so.

Institutional readiness to serve deaf students needs to involve systemic planning and multiple levels of collaboration, both within and between institutions. Schools that are operating with limited resources, particularly for serving a small segment of the student body, can capitalize on creative collaborations with other schools or programs that have more specialized resources or greater capacity to serve deaf students. For instance, schools could consider ways to develop student organizations or other support systems for deaf students that tap into broader community networks outside of the school. Schools must be strategic and intentional when planning strategies for maximizing the educational experiences of deaf students on campus. Deaf students cannot rely on accessing informal opportunities for engagement or gaining information from incidental learning that typically happens on campus between students, or between students and staff. Those opportunities that are part and parcel of the typical hearing student experience are not immediately accessible to deaf students without intentional planning on the part of the institution, or most often happens, on the part of the student. Schools must be proactive in planning accessibility of all events and activities on campus and making the campus community more welcoming of deaf students (Johnson & Fann, 2016). Professionals who are familiar with deaf students, preferably those who are deaf themselves, also seem to be key elements of effective educational experiences for deaf students, including academic advisors (Johnson & Fann, 2016) and mentors (Listman & Dingus-Eason, 2018). In order to improve the educational experiences of deaf students in secondary and postsecondary schools, institutions should aim to make improvements on multiple levels of their system from enrollment, assessment and placement, advising, mental health counseling, academic support services, student life, classroom experiences, and disability services.

Future research can build on preexisting bodies of work that explore the lived experiences of deaf people of color in educational settings, like Black deaf college students (Stapleton, 2015, 2016; Stapleton & Croom, 2017) and Latinx deaf high school students (García-Fernández, 2014). Much more work needs to be done in this area. The vast majority of educational research about deaf people does not account for important within-group differences. Deaf people are not all the same. Educational research, policy, and practice must recognize the systemic barriers, structural inequities, and intersectional oppressions that are experienced by deaf people of color. To eliminate educational attainment gaps between deaf and hearing people, large-scale structural change is needed on multiple levels of the systems in which deaf people navigate. Gradual growth is not enough.

References


About the Authors

Carrie Lou Garberoglio received her B.A. degree in humanities from New College of California and Ph.D. from University of Texas at Austin. Her experience includes working as a preschool teacher for deaf children at a bilingual Waldorf school and teaching statistics and research methods at the University of Northern Colorado. She is currently the Co-Director of the National Deaf Center on Postsecondary Outcomes at the University of Texas at Austin. Her research interests include psychological factors involved with transition for young deaf adults, and strategies for mitigating systemic disparities within deaf communities. She can be reached by email at: carrielou@utexas.edu.

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A Public Health Approach to Understanding the Mental Health Needs of College Students with Disabilities: Results From a National Survey

Olenka Aguilar¹
Sarah Ketchen Lipson¹

Abstract

Students with disabilities are a growing population on college and university campuses across the United States. Despite this, the mental health status and service utilization of students with disabilities remain largely understudied. From a public health perspective, large-scale research is needed to understand the mental and behavioral health needs of these students and inform evidence-based intervention and prevention efforts. The purpose of this study was to estimate the prevalence of mental health symptoms and rates of mental health help-seeking in a national sample of college students with disabilities (N=6,382) and to compare these outcomes to a national sample of students without registered disabilities (N=86,966). The large and diverse sample drawn from 60 campuses provides a valuable opportunity to explore mental health variations within the population of students with disabilities. Results demonstrate that students with disabilities have significantly higher prevalence rates of mental health problems and are more likely to utilize mental health services compared to students without disabilities. Overall, students with disabilities report finances and a lack of convenience as the main reasons for accessing fewer counseling sessions. The findings of this population-level analysis can provide insight into the mental and behavioral health needs of students with disabilities. In doing so, this study can inform disability service providers and deans of students on college campuses of the significance of addressing the mental health needs of a highly vulnerable population.

Keywords: adolescent and young adult mental health, campus mental and behavioral health, students with disabilities, mental health service utilization

College students across the country are experiencing what many refer to as a “campus mental health crisis” (Kadison & DiGeronima, 2004; Schwartz & Kay, 2009), with some researchers suggesting that the prevalence of mental health problems in college populations has increased in the last decade (Lipson et al., 2019). According to the American College Health Association (2018), over half of college students surveyed felt hopeless, and close to 90% felt overwhelmed during the past 12 months. Recent data from the Healthy Minds Study revealed that 39% of students were experiencing clinically-significant symptoms of one or more mental health problems (Eisenberg & Lipson, 2017). Of those students, 18% screened positive for major depression, and 13% for severe anxiety (Eisenberg & Lipson). Student-level data are consistent with findings from a national survey of college counseling center directors, in which a majority of directors perceive an increase in the severity of psychopathology among students presenting in their counseling centers (Mistler et al., 2012). Over 1,100 students die by suicide each year, making suicide the second leading cause of death among college students (National Institute of Mental Health, 2019). Furthermore, the period of onset for lifetime mental illnesses directly coincides with the age range of many college students: 75% of chronic mental illnesses begin by age 24 (Kessler, et al., 2005). These and other statistics underscore the public health importance of understanding and addressing the mental and behavioral health of college student populations.

There are approximately 20 million students en-
rolled in U.S. postsecondary education, including graduate and less than 2- to 4-year undergraduate private, public, or proprietary institutions (Ginder et al., 2019). College students represent roughly 70% of all adolescents and young adults nationwide (Ginder et al.). College students in the U.S. are an ever-diversifying population across numerous dimensions, including age, race, ethnicity, citizenship, sexual orientation, gender identity, and socioeconomic status. A growing body of literature is focused on the mental and behavioral health of the subgroups of students defined by the aforementioned characteristics and identities (Lipson et al., 2019). However, disability status is one dimension that warrants additional attention in the national dialogue about understanding and addressing mental and behavioral health on campus.

According to the most recent data from the National Center for Education Statistics (2019), students with disabilities make up 19% of undergraduate students and 12% of graduate students in the U.S. The Americans with Disabilities Act (ADA) of 1990 (ADA, 1990) and ADA Amendments Act (ADA-AA, 2008) defined disability as a physical or mental impairment that significantly limits one or more major life activities. Major life activities include disabilities affecting seeing, hearing, walking, communicating, learning, thinking, and limited bodily functions (ADA, 1990; ADA-AA, 2008).

Disability Services for College Students

Postsecondary institutions are required by the ADA and ADA-AA to support students with disabilities throughout their college years by providing equal opportunities and reasonable accommodations (ADA, 1990; ADA-AA, 2008). Disability support services (DSS) offices on many college campuses play an integral role in assisting students with disabilities (Summers et al., 2014; Carter, 2017). DSS provides notetakers, adapted learning tools, tutors, advocacy and counseling services, and career advice to students with registered disabilities (Summers et al.; Carter). Research shows that of all students registered with disabilities, a vast majority received services from DSS on their college campuses (Marshak et al., 2010). DSS can serve as an advocate for students with disabilities through various partnerships with campus programs (Association on Higher Education And Disability [AHEAD], n.d.). By representing students with disabilities on campus committees, disability service providers can ensure students with disabilities have equal access to on-campus services (AHEAD, n.d.). Disability service providers also focus on enhancing disability awareness through comprehensive disability training of staff members (AHEAD, n.d.). Integrating DSS with other campus services and collaborating with program directors to promote accessibility for students with disabilities could improve the college experience for students with disabilities.

Prior Research on Campus Mental Health Services

The majority of university students in the U.S. have health insurance and access to free mental and behavioral health services (Eisenberg et al., 2007). According to the Association for University and College Counseling Center Directors Annual Survey (2018), over half of students receiving counseling reported that counseling helped them stay in school and improve their academic performance. While mental and behavioral health services are available and affordable on college campuses, a large portion of students experiencing mental and behavioral health symptoms are not utilizing these services (LeViness et al., 2017). Findings from the Healthy Minds Study show that only 53% of students with positive screens for depression and anxiety received mental health services in the past year (Eisenberg & Lipson, 2018). Available evidence suggests that there will be an increased demand for mental and behavioral health services among college students as prevalence rates continue to rise (Goodman, 2017). The large gap between campus mental health services and the increasing number of students experiencing mental and behavioral health conditions is another challenging aspect of the campus mental health crisis (Mistler et al., 2012).

Mental Health of Students with Disabilities

Students with disabilities have unique and additional challenges in navigating and adjusting to college (Ford et al., 2019). Compared to their peers, students with disabilities report greater academic-related concerns, distress, and self-harming tendencies (Coduti et al., 2016). Extant research suggests that students with disabilities are at increased risk of experiencing emotional, academic, and behavioral challenges (Hendrickson et al., 2017). However, the few existing studies in this area rely on small sample sizes of college students with disabilities (Coduti et al., 2016; Fleming et al., 2018). From a population-level perspective, even less is known about how students with disabilities seek disability support and mental health services, and the degree to which their needs are being met by the campus mental health system (Carter, 2017). Existing studies have looked at students seeking counseling services (i.e., those in treatment), rather than population-level, random student samples (Fleming et al.; Coduti et al.). The limited
body of research on mental health among college students with disabilities may not be representative of the population. Additional research can provide further knowledge of the mental health status and help seeking behaviors of students with disabilities. This information can serve as a measure of the additional counseling and advocacy needed by DSS and Counseling Center Directors on campus. Understanding the behavioral health needs of students with disabilities can propel Disability Service providers to review campus-wide programs and the services DSS offers. Through collaboration with related program directors, Disability Service providers can promote awareness of the multi-layered vulnerabilities experienced by students.

To fill these important gaps in knowledge, the objectives of this study were (1) to estimate the prevalence of clinically-significant mental health symptoms in a sample of college students with disabilities, (2) describe the mental health help-seeking behaviors of students with disabilities, and (3) compare the behavioral health needs and service utilization among students with disabilities relative to their peers. The large national sample in this study also provides a valuable opportunity to explore behavioral health variations within the heterogeneous population of students with disabilities along dimensions of racial, ethnic, and gender identity, among other student characteristics. The findings of this population-based nationwide study highlight the magnitude of behavioral health needs in the highly vulnerable yet understudied population of students with disabilities. The snapshot of the mental health experiences of students with disabilities can inform disability service providers and accessibility consults of the need for improvements in the delivery of campus mental health services.

Methods

Study Design

Data

The Healthy Minds Study (HMS) is a national web-based annual survey exploring mental health, use of services, and related topics in undergraduate and graduate student populations. Details about the study design and methodology of HMS have been reported in previous publications (Lipson et al., 2018; Sonneville & Lipson, 2018). In the present study, we analyzed two years of HMS data (2016-2018) from 60 colleges and universities. All participating institutions elected to take part in HMS. There are no exclusion criteria for institutions enrolling in the study. The institutions in the study have diverse characteristics, including location, size, type of institution, and admissions selectivity. Including institutions with varying characteristics strengthens how much the sample in the study represents the college student population.

The Institutional Review Board approved HMS on all participating campuses. Additional protections were provided by a Certificate of Confidentiality from the National Institutes of Health.

Recruitment and Informed Consent. At each participating campus, the HMS study team recruited a random sample of 4,000 degree-seeking students from the full student population at that institution; at smaller institutions, all students were recruited to participate. Random sampling was used to obtain an unbiased reflection of the population of interest. The Registrar of each institution provided student sample files, which included names and email addresses that were used for recruitment and nonresponse analyses. Students were emailed a personalized link and provided an informed consent page to review before entering the survey. Then, students had to agree to the terms of participation before starting the survey. Data from the surveys were collected using Qualtrics software. Students less than 18 years of age were excluded from the study—there were no other exclusion criteria. In an effort to improve participation rates, students were incentivized to participate in the survey through eligibility to receive one prize per cycle. Prizes totaled $2,000 annually and included ten $100 gift cards and two $500 gift cards.

Non-response Analysis. The overall response rate for the two years was 23%. The study team created sample probability weights to account for possible differences between responders and nonresponders. To construct response weights, administrative data were used. Participating institutions provided the data, including race/ethnicity, male/female gender, academic level, and grade point average. Response weights equal to 1 were divided by the estimated probability of response, which was calculated using logistic regression. To ensure the estimates are representative of the whole population, respondents with underrepresented characteristics have larger weights.

Measures

Disability Status

The primary independent variable was students’ disability status; students in the study were categorized into two categories depending on whether they reported having a registered disability. We used the following question to assess disability status: “Are you registered with the office of disability services on this campus, as having a documented and diagnosed disability?” Students answered “yes” if they
were registered as having documented and diagnosed disability or “no” if they were not.

**Disability Type**

To understand variations in mental health symptoms across disabilities, we examined disability type. We used the following question to determine the students’ disability type: “Please indicate which category of disability you are registered for.” To ensure sufficient sample sizes for the analyses, we categorized students into the following disability types: neurodevelopmental, psychological, physical, and other. Participants who reported they were registered for attention-deficit/hyperactivity disorder and learning disorders were categorized in the “neurodevelopmental disability” category. Students were categorized in the “psychological disability” category if they reported registering for a psychological disorder/condition. Participants who reported they were registered for mobility impairments, visual impairments, physical/health-related disorders, and deaf or hard of hearing were categorized in the “physical disability” category. Participants who reported having a registered disability other than the choices listed above were categorized in the “other disability” category.

**Mental Health Outcomes**

The primary dependent variables in the study were mental health symptoms. We assessed seven binary measures of mental health: flourishing, depression, anxiety, non-suicidal self-injury (NSSI), suicidal ideation, suicide attempt, and any mental health problem. Most of the binary measures we used have been validated based on standard cutoffs allowing for comparison between students that screen positive or negative for mental health problems.

To understand how students with disabilities flourish (i.e., have positive mental health) compared to their peers, we examined the proportion of flourishing students using the Flourishing Scale (Diener et al., 2009). The eight-item scale has shown to have convergent validity with other similar scales (Diener et al., 2010). The scale is designed to measure major factors related to social-psychological functioning, including purpose, optimism, relationships, and self-esteem (Diener et al., 2009). The scale produced scores ranging from 8-56. Higher scores indicate higher well-being. We identified a score of >48 to indicate flourishing based on similar rates on other scales (Keyes, 2002).

Symptoms of depression were measured using the Patient Health Questionnaire-9 (PHQ-9) (Kroenke et al., 2001). Validation studies of the PHQ-9 have determined it to be internally consistent and highly correlated with clinical diagnosis (Lowe et al., 2004; Huang et al., 2006). Scores ranged from 0-27 with higher scores indicating higher levels of depressive symptoms. We used the standard cutoff of >10, with scores >10 indicating symptoms of depression.

Symptoms of anxiety were assessed using the Generalized Anxiety Disorder-7 (GAD-7) scale (Spitzer et al., 2006). We used the standard cutoff of >10, with scores >10 indicating symptoms of anxiety (Spitzer et al. 2006). Prior studies found this cutoff to be sensitive and specific (Spitzer et al. 2006).

To compare NSSI across disability status we used the following: “This question asks about the ways you may have hurt yourself on purpose, without intending to kill yourself. In the past year, have you ever done any of the following intentionally?” Self-injury was identified as any harm individuals inflict upon themselves, with response options including cutting, burning, and punching. We created a binary measure of any past-year NSSI and no past-year NSSI.

To determine whether students with disabilities experienced suicidal ideation or attempt more or less often than students without disabilities, we used two questions. To measure suicidal ideation we asked the following question: “In the past year, did you ever seriously think about attempting suicide?” Suicide attempt was examined using a single question: “In the past year did you attempt suicide?” Students selected “yes” or “no” from the response options. We created binary measures based on the response options for these questions.

In addition to examining each of the above-mentioned mental health symptoms, measuring whether students experienced at least one mental health symptom would provide an overview of the overall mental health status of students. We developed a binary variable of any mental health problem to determine whether one or more of the above-mentioned problems were present (depression, anxiety, NSSI, suicidality).

**Help Seeking/Service Utilization**

We assessed two binary measures related to mental health service utilization: (1) any therapy, past year, and (2) any prescription medication, past year. We examined service utilization among students meeting criteria for each of the mental health measures and any mental health problem. To measure therapy use in the past year, we asked the following question: “How many total visits or sessions for counseling or therapy have you had in the past 12 months?” We created a binary variable and categorized students who had no visits in the past year and students who had one or more visits in the past year. To measure any medication intake in the past
year, we asked the following question: “In the past 12 months, have you taken any of the following types of prescription medications? (Please count only those you took, or are taking, several times per week, Select all that apply).” We created a binary variable and categorized students who did not take medications or took sleeping aids into one category and those who took any other medications in the answer choice list into another category. Response options include psychostimulants, amphetamine salts, antidepressants, anti-psychotics, and anti-anxiety medications.

Data Analysis
We examined student characteristics by disability status and identified significant differences in characteristics between the two disability status groups using chi-square tests and t-tests. We report significant differences in student characteristics using p-values. To address our main research questions, we report the prevalence of the mental health measures described above stratified by disability status. Then, we calculated bivariate statistics for help seeking/service utilization among students with each mental health measure and any mental health problem stratified by disability status. In Tables 1 and 2, we report significance using p-values based on two-tailed chi-square tests. We assessed sample characteristics of students with registered disabilities by mental health measures and service utilization. We identified significant differences in the characteristics of students with disabilities using chi-square tests and t-tests and use p-values to report them. We report significant findings in the text with odds ratios and 95% confidence intervals (CI) to show effect size. We calculated the odds ratios for significant findings using logistic regression analysis. We report confidence intervals and p-values for the odds ratios. An odds ratio greater than one indicates higher likelihood of occurrence. Analyses were conducted using SAS 9.4.

Results

Sample Characteristics
The sample consisted of 93,348 students on 60 U.S. campuses. Within the sample, 70.4% were undergraduate, and 28.6% were graduate students. The sample included 6,382 students with registered disabilities (6.8%) and 86,966 students without registered disabilities (93.2%). Among students with disabilities, 44.3% reported being registered for a neurodevelopmental disability, 28.4% reported being registered for a psychological disability, 18.3% reported being registered for a physical disability, and 9.0% reported being registered for other disabilities. Additional sample characteristics are presented in Table 1.

Mental Health Status
Overall, 47% of students in the study met the criteria for at least one mental health problem, defined as screening positive for depression or anxiety or reporting NSSI, or suicidality. As shown in Figure 1, students with disabilities were more likely to meet the criteria for any mental health problem relative to students without disabilities (p <.0001). The prevalence of at least one mental health problem among students with disabilities was 67% compared to 45% for students without disabilities (p <.0001). More specifically, the odds of meeting the criteria for any mental health problem were 2.5 times greater among students with disabilities (p<.0001, 95% CI: 2.4-2.6). This finding was consistent across mental health indicators, with a higher prevalence of depression, anxiety, NSSI, suicidal ideation, and suicide attempt among students with disabilities relative to students without disabilities. Over half of students with disabilities screened positive for depression (51%), and 43% for anxiety. Over one-third of students with disabilities (37%) reported non-suicidal self-injury. Students with disabilities had a prevalence of suicidal ideation that was twice as high (23%) as their peers (11%) or odds that are 2.4. times higher (p<.0001, 95% CI: 2.0-2.2). The prevalence of suicide attempt was more than three times higher for students with disabilities (3.3%) compared to students without disabilities (0.9%) (p<.0001). The odds of suicide attempt were 3.8 times greater among students with disabilities (p<.0001, 95% CI: 3.3-4.5).

Among students with disabilities, the following individual characteristics were associated with significantly higher rates of having one or more mental health problem all at p <.001: being female, being a gender minority, being queer, and being a student of color. Additionally, students of color, gender minority students, and queer students with disabilities had significantly higher rates of mental health therapy and medication use (p<.001).

Mental Health Service Utilization
Of students with at least one mental health problem, 69% of students with disabilities reported receiving therapy for their mental health concerns and 67% reported taking prescription medication over the past year. As shown in Figure 2, students without disabilities and at least one mental health problem reported less utilization of therapy services (35%) and medication (26%). We also explored the location of services received. We did not find statistically sig-
Table 1

Sample Characteristics Among Students With and Without Registered Disabilities

<table>
<thead>
<tr>
<th></th>
<th>Students with registered disabilities</th>
<th>Students without registered disabilities</th>
<th>Statistical significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>6,382</td>
<td>86,966</td>
<td>.0400</td>
</tr>
<tr>
<td>Age (N)</td>
<td>6,382</td>
<td>86,966</td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>23.3 (+ 7.2)</td>
<td>23.5 (+ 6.6)</td>
<td></td>
</tr>
<tr>
<td>Gender identity (N, %)</td>
<td></td>
<td></td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Male</td>
<td>1,600 (25.1)</td>
<td>26,351 (30.3)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>4,344 (68.1)</td>
<td>58,623 (67.5)</td>
<td></td>
</tr>
<tr>
<td>Gender minority</td>
<td>433 (6.8)</td>
<td>1,903 (2.2)</td>
<td></td>
</tr>
<tr>
<td>Sexual orientation (N, %)</td>
<td></td>
<td></td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Heterosexual</td>
<td>4,324 (68.1)</td>
<td>71,814 (82.9)</td>
<td></td>
</tr>
<tr>
<td>Queer (gay, bisexual, etc.)</td>
<td>2,030 (32.0)</td>
<td>14,772 (17.1)</td>
<td></td>
</tr>
<tr>
<td>Race/ethnicity (N, %)</td>
<td></td>
<td></td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>White</td>
<td>4,363 (68.5)</td>
<td>53,657 (61.8)</td>
<td></td>
</tr>
<tr>
<td>Student of color</td>
<td>2,006 (31.5)</td>
<td>33,176 (38.2)</td>
<td></td>
</tr>
<tr>
<td>Citizenship (N, %)</td>
<td></td>
<td></td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>U.S.</td>
<td>6,132 (96.3)</td>
<td>78,326 (90.2)</td>
<td></td>
</tr>
<tr>
<td>International student</td>
<td>235 (3.7)</td>
<td>8,522 (9.8)</td>
<td></td>
</tr>
<tr>
<td>Degree program (N, %)</td>
<td></td>
<td></td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Undergraduate</td>
<td>5,286 (83.8)</td>
<td>60,395 (70.2)</td>
<td></td>
</tr>
<tr>
<td>Graduate</td>
<td>1,025 (16.2)</td>
<td>25,683 (29.8)</td>
<td></td>
</tr>
<tr>
<td>Year in degree program (N, %)</td>
<td></td>
<td></td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>1st</td>
<td>1,466 (24.0)</td>
<td>26,402 (31.5)</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>1,656 (27.1)</td>
<td>22,562 (26.9)</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>1,443 (23.0)</td>
<td>17,325 (20.7)</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>1,203 (19.7)</td>
<td>13,839 (16.5)</td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>231 (3.8)</td>
<td>2,405 (2.9)</td>
<td></td>
</tr>
<tr>
<td>6th</td>
<td>72 (1.2)</td>
<td>739 (0.9)</td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>46 (0.8)</td>
<td>476 (0.6)</td>
<td></td>
</tr>
<tr>
<td>Housing (N, %)</td>
<td></td>
<td></td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>On-campus</td>
<td>2,981 (46.7)</td>
<td>30,979 (35.6)</td>
<td></td>
</tr>
<tr>
<td>Off-campus</td>
<td>2,516 (39.4)</td>
<td>43,030 (49.5)</td>
<td></td>
</tr>
<tr>
<td>Parent/ relative home</td>
<td>780 (12.2)</td>
<td>11,801 (13.6)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>105 (1.7)</td>
<td>1,156 (1.3)</td>
<td></td>
</tr>
<tr>
<td>Parental education (N, %)</td>
<td></td>
<td></td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>First-generation college student</td>
<td>2,228 (35.0)</td>
<td>34,120 (39.3)</td>
<td></td>
</tr>
<tr>
<td>Non-first-generation college student</td>
<td>4,144 (65.0)</td>
<td>52,690 (60.7)</td>
<td></td>
</tr>
</tbody>
</table>

Note. Table values are weighted percentages with the exception of age, presented as means with standard deviations (SD) in parentheses. Statistical significance based on an identified significance level of 0.05. Students are classified as gender minority if they reported their gender identity as trans male, trans female, genderqueer, or self-identity. Students are classified as first-generation if neither parent received a bachelor’s degree.
Table 2

| Mental Health Status Among Students With and Without Registered Disabilities |
|--------------------------------------------------|-----------------|-----------------|-----------------|
|                                                   | Students with   | Students without| Statistical      |
|                                                   | registered       | registered       | significance     |
|                                                   | disabilities     | disabilities     |                 |
| N                                                  | 6,382            | 86,966           |                 |
| Positive mental health (Flourishing Scale>48) (N, %) | 2,015 (31.6)     | 36,577 (42.1)    | <.0001          |
| Depression (PHQ-9>10) (N, %)                       | 3,255 (51.0)     | 26,393 (30.4)    | <.0001          |
| Anxiety (GAD-7>10) (N, %)                          | 2,766 (43.3)     | 22,588 (26.0)    | <.0001          |
| Non-suicidal self-injury, past year (N, %)         | 2,241 (37.0)     | 17,382 (21.1)    | <.0001          |
| Suicidality, past year (N, %)                      |                 |                 |                 |
| Suicidal ideation                                  | 1,425 (22.6)     | 9,283 (10.8)     | <.0001          |
| Attempted suicide                                  | 207 (3.3)        | 754 (0.9)        | <.0001          |
| Any mental health problem (N, %)                   | 4,289 (67.2)     | 39,250 (45.1)    | <.0001          |

Note. Table values are weighted percentages. Statistical significance is based on an identified significance level of 0.05. Any mental health problem is defined as one or more of the following: PHQ-9>10, GAD-7>10, any past-year non-suicidal self-injury, any past-year suicidal ideation, and/or suicide attempt.

Figure 1

Mental Health Symptoms Among College Students With and Without Registered Disabilities

Note. Depression is defined as PHQ-9>10, and anxiety is defined as GAD-7>10. Non-suicidal self-injury is defined as any past-year non-suicidal self-injury. Suicidal ideation is defined as any past-year suicidal ideation. Suicide attempt is defined as any past-year suicide attempt. Any mental health problem is defined as one or more of the following: PHQ-9>10, GAD-7>10, any past-year non-suicidal self-injury, any past-year suicidal ideation, and/or suicide attempt.
significant differences in the location of mental health services received by students with and without registered disabilities. The majority of students with disabilities (53%) reported receiving counseling from on-campus providers rather than off-campus providers, which include psychiatrists, psychologists, social workers, or primary care doctors. Students with disabilities received fewer mental health services due to the inconvenience of accessing services and financial reasons. Both students with disabilities and students without disabilities who receive therapy perceived the inconvenience of accessing services (38%) and financial reasons (27%) as a barrier to receiving mental health services.

Discussion

To our knowledge, this is the first population-level study to examine the mental and behavioral health status and service utilization patterns of college students with disabilities at a national level. Students with disabilities form a large portion of the collegiate population, with 19% of undergraduate and 12% of graduate students having a disability; this represents over 400,000 students (National Center for Education Statistics, 2019; Ginder et al., 2019). Students with disabilities are at a higher risk of experiencing additional needs and challenges as they navigate through college than their peers (Ford et al., 2019; Hendrickson et al., 2017). Students with disabilities may also be confronted with public or perceived stigma from classmates, instructors, or staff on college campuses (Paul, 2000). The academic success of students with disabilities may be difficult due to concerns of being misunderstood by professors or stigmatized if they receive accommodations (Denhart, 2008). Knowledge of the mental and behavioral health needs of such a large vulnerable population of college students can provide insight for deans of students and disability service providers servicing the mental and behavioral health needs of diverse student bodies.

The results of this study demonstrate the mag-
nitude of the mental and behavioral health needs of students with disabilities relative to students without disabilities. Our findings reveal that students with disabilities have a significantly higher prevalence of depression, anxiety, non-suicidal self-injury, and suicidality. In our sample, the prevalence of suicide attempt is over three times higher for students with disabilities than students without disabilities. The mental and behavioral health symptoms of students with disabilities in the study are consistent with research related to the increased risk of greater emotional, behavioral, and academic needs and concerns of students with disabilities (Ford et al., 2019; Hendrickson et al., 2017).

The diverse sample of more than 90,000 college students, including over 6,000 students with disabilities, is a unique strength of this study. The multi-campus nature of HMS further strengthens the generalizability of our study. The comparison of the mental health measures and service utilization of students with disabilities and students without disabilities demonstrates that students with disabilities have greater and unmet mental health needs. The analyses of variations in mental and behavioral health needs between specific subgroups within the sample of students with disabilities point to additional and multiple vulnerabilities that can affect the mental health needs of students with disabilities.

Students with disabilities who experience symptoms of at least one mental health problem reported accessing therapy or counseling services with a prevalence that is nearly two times greater than students without disabilities. The prevalence of prescription medication use is two times greater among students with disabilities who reported experiencing at least one mental health problem relative to students without disabilities. On-campus counseling services were utilized more than off-campus services by both students with disabilities and their peers. Among students with at least one mental health problem who receive counseling services, students with disabilities reported receiving fewer mental and behavioral health services due to a lack of convenience of accessibility and financial reasons. Students with disabilities reported that appointments are not readily available, too expensive, or not covered by insurance. Although students with disabilities reported seeking mental and behavioral health services at a higher prevalence than their peers, they may face challenges accessing the number of counseling sessions they require. Perceived accessibility barriers to therapy sessions could be related to the session limits, waitlists, and wait times for appointments that some mental and behavioral health counseling centers on college campuses report (Mistler et al., 2012). Almost half of the Counseling Centers participating in the AUCCCD Annual Survey reported having flexible session limits (Mistler et al.). Centers reported an average wait time of 6.5 business days for a first appointment, and those who utilized waitlists reported that clients waited an average of 17.7 business days for a first appointment (Mistler et al.). Moreover, students with disabilities identified finances as a reason they obtain fewer therapy sessions. Studies show that people with disabilities have greater financial burdens due to higher health expenses and transportation costs compared to people without disabilities (Mitra et al., 2017; Mitra et al., 2009). Students with disabilities may have additional expenses related to their medical and transportation needs that create financial stress and limit them from seeking the number of therapy sessions they need.

Implications and Opportunities for Disability Service Educators

Our findings highlight a gap in the services offered to students with disabilities and an opportunity for disability service educators to work toward addressing the unmet mental health needs of students with disabilities. Students with disabilities have worse mental health outcomes, regardless of their high utilization of mental health services. These results show that the disability and mental health services offered on college campuses are not meeting the mental health needs of students with disabilities. As advocates of students with disabilities, disability service providers have the opportunity to partner with counseling center directors to review the delivery and inclusivity of mental health services offered on campus. Disability and counseling service providers can work to ensure proper disability training is given to staff. Moreover, they can help determine whether counseling programs are adequately funded to meet the needs of vulnerable populations (Goodman, 2017). The benefits of such partnerships could improve both DSS and counseling sessions for students with disabilities (Abreu et al., 2016; Goodman, 2017).

The disability and mental health service experiences of students with disabilities often begin before students step into a DSS office or counseling center. Research shows that close to half of all college students with disabilities do not register with the office of DSS (Coduti et al., 2016). Therefore, students may not be aware of services that can ease their mental health burdens. Counseling and disability service providers can aim to understand why students are not registering with DSS and raise awareness of the importance of registering. Moreover, prevention-focused interventions, such as mental health screening,
given by disability service providers may be one proactive approach to addressing the needs of students with disabilities. In one study, researchers implemented universal mental health screens at a university health center to identify the mental health needs of college students, (Shepardson & Funderburk, 2014). They found that screening students for mental health allowed them to determine the needs of students and improve access to care centers. Similarly, students with disabilities may benefit from mental health screens given by disability providers upon registration or on a semester basis. Disability service providers can work with counselors and key stakeholders to implement mental health screens during visits to the DSS Office. Mental health screening can allow disability service providers to create individual support plans and refer students to counseling.

Some college campuses are turning to embedded counselors in athletic departments, residence halls, colleges within the university, and other locations to meet the increased need for mental and behavioral health services (Mistler et al., 2012). Campuses with embedded counselors align mental and behavioral health services with students’ routines to increase accessibility. Disability service providers can advocate and promote efforts for the inclusion of students with disabilities by stressing the importance of integrated mental health services (Goodman, 2017). Institutions with integrated services reported an improvement in meeting students’ needs and providing convenient services in the ACHA survey (Downs et al., 2018). Moreover, students reported being satisfied with the services offered by integrated centers.

Mental and behavioral health during the college years is an important factor in short- and long-term outcomes, including educational attainment, economic productivity, and social relationships (Arria et al., 2013; Hefner & Eisenberg, 2009; Kawachi & Berkman, 2001; Eisenberg et al., 2009; Wang et al., 2007). For many students, college will be the only time in their lives when a single setting encompasses the main aspects of their daily lives, such as work, place of residence, healthcare, and peer/social networks. Through each of these avenues, there are opportunities for intervention and prevention. Overall, these findings are indicative of the unmet mental and behavioral health needs of students with disabilities and highlight the opportunities for disability service providers to address all students’ needs.

Future Research

Longitudinal research following students with disabilities throughout their college experience can inform and contribute to the inclusion and participation of students with disabilities in mental and behavioral health programs and policies. Research examining how institutional factors, such as the integration of counseling and disability services and the size of the student body, are associated with outcomes for students with disabilities is needed to address the mental and behavioral health needs of students with disabilities. Future research of the quality and results of the services offered by disability and mental health providers to students with disabilities can help identify areas of improvement related to staffing and training.

Limitations

There are several limitations to consider in this study. Although the mental health screens in the study are validated and have been widely used in college populations, these screens do not represent clinical diagnoses. Additionally, the sample of students with disabilities in the study includes students who reported having registered with the office of disability services on their campus. Students who have a disability but did not register with their office of disability services were not captured in the sample definition. Due to the cross-sectional design of HMS, we cannot measure changes in mental health among students with disabilities over time. The response rate of 23% is average for online surveys of college students; however, it is important to note that there is a potential for response bias in the study (Eisenberg et al., 2007). This potential bias was partially addressed in the non-response weights applied in the analysis; the extent to which disability status may be associated with differential response to the survey would introduce additional bias into the estimates. Importantly, HMS is conducted entirely online and is designed to be accessible to all students with mobile devices such as computers or smart-phones. Lastly, studies show that about 45% of high school students with disabilities do not pursue postsecondary education after high school (Sanford et al., 2011). Students with disabilities are less likely than their peers to enroll in postsecondary institutions; therefore, these analyses are not representative of the national adolescent and young adult population with disabilities as a whole (Sanford et al.).

Conclusion

This national study demonstrates the great unmet mental and behavioral health needs of college students with disabilities relative to college students overall while highlighting higher utilization of on-campus mental and behavioral health services and perceived barriers to accessing care. Findings stress the impor-
tance of providing adequate disability and behavioral health services to students with disabilities and other understudied vulnerable populations by implementing inclusive programs, policies, and partnerships that support accessibility for all students.

References


**About the Authors**

Olenka M. Aguilar received her M.P.H. in Epidemiology and Biostatistics from Boston University and her B.A. degree in Public Administration from Florida Atlantic University. Her experience includes working as a Senior Analyst/Statistician for eMAX Health. Her primary research interests include inclusive education systems and barriers in mental health care seeking and utilization for students with disabilities. She can be reached by email at: oaguilar@bu.edu.

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Sarah completed a dual-Ph.D. at University of Michigan in Health Services Organization and Policy at the School of Public Health and Higher Education at the School of Education. She received her bachelor’s degree from Tufts University and her master’s from Harvard University.

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Let’s Go In: My Journey to a University Presidency (Book Review)

T. Allen Hurwitz, Gallaudet University Press, 2020, 222 pages, $30 (Paperback or eBook)

Reviewed by Pamela Luft¹

The title of this book reflects a moment when Dr. Hurwitz and his wife, Vicki, arrived at the Gallaudet University front gate: He was to become the new president, leaving behind the successes and comforts of their lives at the National Technical Institute of the Deaf (NTID), Rochester Institute of Technology. He asked if she really wanted to continue and she responded, “Let’s go in,” characterizing their joint willingness to assume new challenges and shared decision-making.

This book begins with the announcement of Dr. Hurwitz’s assumption of the presidency, then traces his family’s early life beginning with his parents, both of whom were deaf. This very personal narrative proceeds in approximate consecutive order through important episodes of his life told in short, diary-like narrative segments. Chapter titles refer to important moments or events in his life intermingled with other events that occurred during that general timespan. These include family and social celebrations, work, camping, travel, and his enjoyment of these. Dr. Hurwitz places great value on family and friendships in describing the accomplishments and challenges faced by him, his parents, his wife, and his children. Several stories exemplify the difficulties faced by deaf individuals over 50 years ago, including the inability to contact others when trains or flights were delayed or canceled. Before cell phones, many deaf people used pagers, but before that, they had few options for letting others know if there was a change in plans.

Being Jewish also is an important part of Dr. Hurwitz’s family life. He was not bar mitzvahed, nor was his father, because they were deaf. This was remedied while he was on a trip to Russia for NTID and again as president of Gallaudet; this second time by a deaf rabbi. As president, he received a mezzuzah from Israel and placed it on the front door of the president’s house, with four others subsequently placed on other first floor doors. These were left in place by the subsequent president, Dr. Roberta Cordano in 2016, who wanted the house to remain “blessed.”

Dr. Hurwitz’s parents raised him using American Sign Language. However, his mother had graduated from the Central Institute for the Deaf (CID), which promotes use of oral skills. His parents sent him to CID so that he could develop strong spoken language skills in addition to the ASL used at home. He did very well at CID but it left him unprepared for the shock of public high school. There he was unable to communicate effectively with his teachers or peers, resulting in several humiliating incidents. There were no accommodations in the late 1950s-60s, which challenged him also in earning his bachelor’s and master’s degrees in electrical engineering. He had notetakers but in order to know what was happening in class, he would peer over the notetaker’s shoulder. When hired to work at NTID in 1970, he was amazed at how helpful the interpreters were for meetings with others not fluent in ASL. Only then did he realize how much he had missed in his classes and as an engineer at the McDonnell Douglas Corporation.

It was while working at NTID/RIT that Dr. Hurwitz received his doctorate degree. During this time, he also became involved in multiple deaf and deaf advocacy organizations, at one point focusing on an issue that became personal. His father had lost his job and all retirement benefits, was rehired as a temporary worker without benefits, and let go again repeatedly. Dr. Hurwitz obtained a copy of the union contract and identified this treatment as a contract violation. The union office was quite surprised to learn of the situation, and fought successfully for his father’s full-time reinstatement. Dr. Hurwitz remained concerned about treatment of other deaf workers and made it a lifelong priority to expand career options and educational opportunities for deaf people. The book also describes a few controversies in assuming the Gallaudet presidency, and in making difficult personnel decisions and administrative reorganizations.

Dr. Hurwitz’s style of short descriptions of his experiences, often without naming names, allows for a neutral presentation of these events. However, this approach does not lead to thoughtful consideration of the longer-term and broader issues arising

¹ Kent State University
at both campuses during these remarkable but also somewhat turbulent times. His emphasis on promoting community inclusivity and opportunities for feedback at NTID and Gallaudet University campuses speaks to existing tensions. More detail regarding his own insights and perspectives would have offered readers greater depth in understanding his resilience and perseverance in dealing with difficult issues, and in steering both of these leading institutions toward increased consensus and accomplishment. For example, he assumed the Gallaudet presidency after a prior selection led to campus and community protests with an interim president hired to stabilize the situation. Dr. Hurwitz was concerned that his presidency could be similarly contentious, but this did not occur.

His accomplishments at NTID and Gallaudet were substantial, including new student degree offerings, promoting excellence in sign language interpreting, innovative doctorates in interpretation and translation, and educational neuroscience at Gallaudet University. His perspectives on what he believed were his more memorable accomplishments and his strategies, would have provided the reader with more insights and understandings regarding these accomplishments.

The book provides examples of his many positive qualities including his work ethic and consistent inclusion of community members. His struggles, lessons, and persistence serve as a role model to young deaf students in overcoming obstacles and assuming leadership roles. The Afterword lists 10 principles of leadership that he learned during his life and career. At both NTID and Gallaudet, he was the first CEO to have been born deaf—those prior had acquired their hearing loss after birth. The book also may be of interest to those involved in the Deaf community or knowledgeable about the history and development of services to deaf people over the past 70 years, the important events and individuals.

*Note: Terminology and lower-case usage reflects that of the book.

**About the Author**

Pamela Luft received her M.Ed. in Deaf Education from McDaniel College, her M.S. in Technology for Persons with Disabilities from the Johns Hopkins University, and her Ph.D. from University of Illinois at Urbana-Champaign in Special Education. She worked in public, special day, and residential schools as a teacher, behavior specialist, career coordinator, and program administrator before getting her doctorate. She publishes on transition, technology, literacy, and instructional practices.
JPED Author Guidelines

Purpose

The purpose of the *Journal of Postsecondary Education and Disability* (JPED) is to publish research and contemporary best practices related to disabled college students, college and university disability services offices, disability educators, and disability studies as a field within and lens for the study of higher education institutions. The sponsoring organization for the JPED is the Association on Higher Education and Disability (AHEAD, www.ahead.org), the primary source of disability related expertise on accessibility, legislation, rights, and any other disability-related information as it pertains to higher education. Consistent with the overall goals of AHEAD, each JPED article includes practical implications for disability services educators in colleges and universities.

Review Process

The JPED is peer-reviewed and uses a masked-in-both-directions review process. Although our reviewers take care to provide developmental feedback, it is essential that prospective authors follow the guidance and formatting instructions in this document carefully. The editorial process is not typically able to address major issues of conceptualization or craft in a way that leads to eventual publication.

Manuscript Topics and Types

Published manuscripts will advance JPED’s purpose as detailed above (i.e., research, best practices, implications for disability services educators).

Research Articles

Manuscripts demonstrate scholarly excellence using one of the types of articles described in the *Publication Manual of the American Psychological Association* (7th edition, American Psychological Association [APA], 2020) sections 1.1-1.8 These include quantitative, qualitative, mixed methods, replication, meta-analyses, literature review, theoretical, and methodological articles. *Inclusive of all manuscript elements (including title page, references, tables, and appendices) research articles cannot exceed 35 pages and typically are between 25-30 pages.*

Practice Briefs

Manuscripts describe innovative programs, services, or contemporary best practices that support disabled college students or disability services, and are organized using the following first-heading levels (APA 2.27):

- **Summary of Relevant Literature**: provide a succinct summary of the most relevant and contemporary literature that provides context for what is already known about the practice/program.
- **Setting and/or Participants Demographics**: provide enough information about the implementation context for the practice described for the reader to make an informed assessment regarding similarity to their own practice environment—using a pseudonym or compositing as needed to provide anonymity for participants/institutions involved;
- **Depiction of the Problem**: provide a statement of the problem being addressed.
- **Description of Practice**: briefly describe the intended outcome for the innovative practice/program and how it has been implemented to date. Tables and figures may enhance specific details.
- **Evaluation of Observed Outcomes**: summarize formative and/or summative data used to evaluate the efficacy of your practice/program; support claims with evaluation data.
- **Implications and Transferability**: discuss what has been learned and how this practice/program could be enhanced. Be realistic about any challenges encountered and how others seeking to replicate the practice elsewhere might experience them. Offer suggestions about what could be done differently in the future to achieve better outcomes. Provide a clear description of how and why other disability service educators should consider adapting your practice/program.

*Inclusive of all manuscript elements (including title page, references, tables, and appendices) practice briefs cannot exceed 15 pages and typically are between 8-12 pages.*

Book Reviews

Prior to preparing a book review, please contact the JPED’s Managing Editor (jped@ahead.org) to discuss the book you are considering reviewing. We typically have a queue of books for which we seek reviewers and also are typically awaiting reviews from several authors at a time. Doing so will increase the likelihood that we will be able to use the review you submit, which will follow the same submission process as other types, outlined below. Book
reviews provide:

- An overview of the book, identifying the book’s stated purpose, the author’s and his/her viewpoint, and a general summary of the content.
- An evaluation of the book’s strengths, elaborating on the author’s objectives and how well those objectives were achieved.
- Recommendations about the audiences that might find the book useful, why, and how you would suggest the book be used. Please be sure to address its potential contribution to the field. For any gaps in the book’s content, rather than framing as weaknesses, consider offering suggestions about other works or perspectives that could be used in tandem with this book. In other words, of what conversations in our field could this book be an important part?

Inclusive of the text of the review itself, book reviews should typically be between 750-1250 words. Book review submissions should also be accompanied by a complete citation for the book reviewed as well as references for any additional citations in the text of the review.

Manuscript Preparation

All manuscripts must be prepared according to the standards of the APA publication manual (7th edition). Authors submitting manuscripts to the JPED will be well-served to thoroughly understand Section 12 of the APA manual where the publication process is described as preparing for publication, understanding the editorial publication process, manuscript preparation, copyright and permission guidelines, and during and after publication.

When submitting a manuscript to the JPED, follow these specific guidelines:

- Submit one complete Word document (.doc or .docx) that contains all manuscript components (i.e., title page, abstract, body, references, tables/figures).
- Provide a separate cover letter (APA 12.11) asking that the manuscript be considered for publication and stating that it has not been published, or is not being reviewed for publication, elsewhere.
- Manuscripts should have one-inch margins in 12-point Times New Roman font. Double space the abstract, body, and references; single space the title page and tables/figures.
- The title (APA 2.4) should not exceed 12 words.
- Place the abstract (maximum 250 words, APA 2.9) on page two (following the title page). Include three to five keywords (APA 2.10) below the abstract (does not apply to book reviews).
- Use APA Section 1, Scholarly Writing and Publishing Principles, related to types of articles and papers; ethical, legal, and professional standards in publishing; ensuring the accuracy of scientific findings; protecting the rights and welfare of research participants and subjects; and protecting intellectual property rights.
- Use APA Section 2, Paper Elements and Format, to align paper elements, format, and organization.Indent paragraphs (APA 2.24), and adhere to heading levels (APA 2.27) to organize the manuscript.
- Content and method are important. Use APA Section 3, Journal Article Reporting Standards, related to overview of reporting standards; common reporting standards across research designs; and reporting standards for quantitative, qualitative, and mixed methods research. Please refer to Madaus et al. (2020) for research guidelines for higher education and disability where instructions are provided for describing samples and study locations, and appropriately selecting and describing the methodologies employed.
- Writing is important, carefully edit and proofread the manuscript. Use APA Section 4, Writing Style and Grammar, related to continuity and flow, conciseness and clarity, verbs, pronouns, and sentence construction. Use APA Section 6, Mechanics of Style, related to punctuation, spelling, capitalization, italics, abbreviations, numbers, statistical and mathematical copy, presentation of equations, and lists. Refer to APA 6.32-6.39 to properly report numbers expressed as numerals or in words.
- APA Section 5, Bias-Free Language and Guidelines provides guidance for writing about people, identity, and other topics wherein bias in writing is common. Although generally useful, this section’s discussion of disability is reductive. Authors should follow their best judgment in this regard. Additional guidance is provided below.

Regarding language related to disability, authors must determine the type of wording that is best for their given study - typically person-first or identity-first language. (See the “AHEAD Statement on Language” for details about these options and for additional resources on the topic.) We encourage authors to be explicit about their choices in the manuscript, informing
readers about the rationale for their choice of language. When research or program participants are disabled and it is possible to determine their preferences, the preferred language of those individuals should be prioritized ahead of researcher or practitioner decisions. Additionally, aligned with the AHEAD statement in terms of outdated language use, we discourage “the use of outmoded euphemisms such as ‘special needs,’ ‘physically or mentally challenged,’ differently- or alternatively-abled, etc.” unless there is an explicit reason, such as referring to past practices or terminology to learn something valuable from it for current practice.

- Use APA Section 8, Works Credited in Text, related to general guidelines for citation, works requiring special approaches to citation, in-text citations, and paraphrases and quotations. All citations must be referenced, and all references must be cited; avoid undercitation and overcitation (APA 8.1). Double-space and block quotations of 40 words or more (APA 8.27).

- Provide a complete reference list (APA 2.12) rather than a bibliography following the manuscript. References should be formatted consistently, following APA examples in sections 9-11. Please be sure to carefully edit references as manuscripts will not be sent out for review until they conform to APA guidelines and references represent the most common challenge point for submitted manuscripts.

- Mask any information that could reasonably reveal the identity of the authors to the reviewers. For example, citations that would identify an author should be replaced with “citation omitted” and the corresponding reference removed from the reference list (APA 8.3). This does not mean that all author citations must be removed, only those that are likely to reveal an author identity by being self-referential. Those which are “in press” or “under review” should also be removed as they are typically from an author. Mask institutional identities in manuscripts if they are likely to reveal the institution of an author. Please do not use a title that can be searched in order to find a previous iteration of the work (e.g., a conference presentation, a dissertation). We will ask you to unmask these elements of your manuscript subsequent to acceptance. These examples are not exhaustive, but it is the author’s job to minimize any information that can reveal author identity.

- Tables and/or figures, following references, are in black and white only, and must conform to APA standards in APA Section 7. Follow examples related to table lines. Align numbers in tables to the single digit or the decimal. If tables and/or figures are submitted in image format (JPEG, PDF, etc.), an editable format must also be submitted along with a text description of the information depicted in the table/figure. This will be provided as an alternate format in the electronic version of the JPED, making tables/figures accessible for screen readers.

- In submitted manuscripts, all tables and figures should be placed at the end of the manuscript with a corresponding indication in the text, “<Place Table/Figure X approximately here>”.

- Do not include footnotes, instead, incorporate footnote narratives into the manuscript.

- Because of the importance of articles including practical implications for disability services educators in colleges and universities, authors will be well-served to include in the discussion a multiple paragraph subsection where practical implications for disability services educators are discussed.

- Before submission, ensure that the manuscript is ready by using strategies, examples, and checklists provided by APA:
  - Sample papers (end of Section 2, pp. 50-67).
  - Strategies to improve your writing (APA 4.25-4.30).
  - Tables checklist (APA 7.20).
  - Figure checklist (APA 7.35).
  - In-text citation styles (Table 8.1).
  - Examples of direct quotations in the text (Table 8.2).
  - Reference examples (section 10 and 11).

### Manuscript Submission

Before you decide to submit your manuscript, authors are encouraged to read past articles in the JPED (available at https://www.ahead.org/professional-resources/publications/jped) to better understand the types of submissions we print. A manuscript must be submitted electronically as an attachment via email to jped@ahead.org, and must include the following:

- Subject line: JPED manuscript submission.
- Include in the body of the email a statement
that you are submitting a manuscript for consideration for the JPED. Include the title of the manuscript and the full contact information for the corresponding author (APA 2.7).

• Attach to the email your complete manuscript, prepared as directed above, and a cover letter as outlined above.
• You will receive an email reply from Richard Allegra (Managing Editor of J PED) to confirm receipt of your submission within seven business days.
• Manuscript submissions by AHEAD members are especially welcome.

Upon Acceptance for Publication

For manuscripts that are accepted for publication, we will request additional information at two separate intervals:

• First, corresponding authors will be asked to respond to copyediting suggestions shortly after acceptance. As part of this process, Cassie Sanchez (Copyeditor) will contact you with a proposed copyedited draft of your submitted manuscript and/or specific questions requiring your response.
• Second, once your manuscript has been assigned to a future issue, Valerie Spears (J PED Editorial Assistant) will contact the corresponding author to request: 1) a 40-50 word bibliographic description for each author; 2) and a signed copyright transfer form (Valerie will send templates for both); and 3) approval of galley proofs of the article ready for publication.

Although J PED reserves the right to edit all material for space and style, corresponding authors will be notified of changes.

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The J PED occasionally publishes special issues which feature a series of articles on a particular topic. The J PED welcomes ideas for special topic issues related to the field of postsecondary education and disability or disability studies. The issue can be formatted as a collection of articles related to a particular topic or as a central position paper followed by a series of commentaries (a modified point/counter point). If the issue has the potential to be valuable to the readership of the J PED, modification to the journal’s content or format may be possible. Authors who wish to discuss a special issue should contact the editorial team at jped@ahead.org.

Publication Information

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J PED’s acceptance rate is moderately selective, accepting approximately 20% of all submitted manuscripts during the last calendar year. J PED is indexed in EBSCO, ERIC and Emerging Sources Citation Index. At present, J PED does not have an impact factor but is working with Clarivate Analytics’ Social Sciences Citation Index to obtain one.

Editorial and Review Teams

The editorial team is composed of Ezekiel Kimball, Ryan Wells, Valerie Spears, Richard Allegra, and Cassie Sanchez. The review board is composed of more than 70 international disability scholars and disability services educators with expertise on disabled college students, disability services, disability studies, and research methodologies.

References
