

Research Guidelines for Higher Education and Disability

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Abstract

The body of research in the field of postsecondary education and disability is wide ranging and continues to evolve. Specifically, the literature corpus includes contributions from a range of professions and a considerable number of journals. This breadth of diversity in perspective presents significant advantages; however, it also presents challenges such as how study data are collected and communicated. The article authors represent a range of study disciplines, possess an array of methodological experience, and are affiliated with numerous professional organizations. We present a series of research guidelines for studies focused on postsecondary education and disability, particularly related to describing the sample members and study locations in a clear, consistent manner. The most common currently employed research methodologies are summarized, and suggestions proffered with regard to key study elements to report. The guidelines are not intended to be proscriptive or restrictive, but instead highlight the importance of methodological consistency as the field collectively promotes improved adult outcomes for individuals with disabilities.

Keywords: postsecondary education, students with disabilities, research guidelines

In April of 1977, Section 504 of the Rehabilitation Act of 1973 was signed into law, mandating access to postsecondary education for otherwise qualified students with disabilities (Jarrow, 1991; Madaus, 2011). The subsequent growth in the number of students self-reporting a disability is evident in statistics that show less than 3% of all full-time first time freshmen in 1978 (Henderson, 1999) to over 11% of all undergraduates in 2011-2012 (U.S. Department of Education, 2016) to 19.4% in 2015-2016 (NCES, 2018). Also in 1977, a group of disability service providers convened the “*Disabled Students on American Campuses: Services and State of the Art*” conference, an event that served as the precursor for the development of a postsecondary disability service providers’ professional organization, the Association on Higher

Education and Disability (AHEAD; Marx & Hall, 1977, 1978; Scales, 1986). In many ways, these events brought about a new and unique profession in higher education.

A Growing Literature Base

Along with growth in student access and programming came corresponding advances in the volume of professional literature addressing postsecondary disability services, an important development because professional journals influence a field’s practice, policy, and professional development (McFarland et al., 2013; Plotner et al., 2011). Madaus et al. (2018) conducted a comprehensive evaluation of publications addressing higher education and disability from 1952 to 2012 and reported that 233 distinct journals

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published 1,036 articles. Of these, slightly more than 40% did not report data. Furthermore, of the remaining articles (approximately 60%) that presented unique data (i.e., a study that collects unique survey, measurement, evaluation, observational, or interview data, and that describes the procedures to collect the data), the majority (54%) contained descriptive data only. In many cases, the study methodology was not clearly articulated, and many studies did not provide data on basic demographic variables, such as the location of the study, student class standing, disability type, and, in some cases, gender. With respect to topical area, most publications described the experiences of students with disabilities in higher education, set forth student profiles, and/or described program characteristics. There was, however, limited data-based research focused upon these topics essential for the success of college students with disabilities.

A Need for Rigorous Empirical Research

In contrast to the marked improvement in postsecondary education enrollment rates for students with disabilities, graduation rates of these students have remained flat over time (Newman et al., 2011). As the field matures, there is an increasing need for rigorous empirical research examining effective practice (Kimball et al., 2016) that utilizes a range of methodological approaches. Without research of this nature, the field will likely remain unable to develop and, ultimately, implement genuinely effective and replicable practices designed to improve outcomes of students with disabilities. The field may also be at risk of recommending practice myths that are ineffective and potentially detrimental for students (Madaus et al., 2018). Tankersley (2013) summarized the problem thusly: “If research is not conducted properly, the results can be misleading at worst, or at a minimum, can be meaningless” (p. 120). Peña (2014) and Kimball et al. (2016) highlighted the need for empirical research in higher education and disability relevant to student affairs professionals as well as the dearth of pertinent literature in higher education journals. As Kimball et al. affirmed, “absent empirical findings, best practice literature is based largely on lessons learned from practice and personal experience” and as a result, professionals are serving students with “informal theories drawn from disparate knowledge bases and personal experience” (p. 175).

Previous Quality Research Indicators

In 2005, the journal *Exceptional Children* published a special issue related to quality indicators and effective practice guidelines for a range of methodologies in K–12 special education (Brantlinger et

al., 2005; Gersten et al., 2005; Horner et al., 2005; Odom et al., 2005; Thompson et al., 2005). Each article presented guidelines regarding how to appropriately select methodologies and report results to promote the field’s use of evidence-based findings. Citing a variability in both sample members (including across and within disability categories) and in the educational context in which students receive their education, Odom et al. (2005) stated, “special education research, because of its complexity, may be the hardest of the hardest-to-do sciences” (p. 139). Odom and colleagues justify this observation based on the variability of the students being studied, even within the same disability categories, and the continuum of educational placements in which the research occurs. This assertion can reasonably be generalized to research on students with disabilities in postsecondary education, in which students with a broad range of disability types, strengths and impacts, utilize, and in many cases do not utilize, supports, across a broad range of institutions. The variability in postsecondary institutions cannot be overstated as it ranges from two-year to four-year, graduate or professional schools that vary in size, academic mission, and breadth of available supports. To date, there are currently no similar standards or quality indicators relevant to the research being conducted in higher education and disability.

The Time for Research Guidelines in Postsecondary Education

Although the existing literature does not currently support the promulgation of research standards or quality indicators, the development of *research guidelines* focused on students with disabilities in higher education is a logical first step toward improving the usefulness of the professional literature, and with it, services for students. Hence, the following guidelines are offered for researchers working in this area. The guidelines are structured around three broad areas intended to promote rigorous research practice. Each area is followed by specific recommendations for the design and description of research and additional resources are presented in each.

Area 1: Clearly and Fully Describe Samples

Madaus and colleagues (2018) highlighted that, generally speaking, the extant higher education and disability literature does not clearly and fully describe the study samples. This is problematic inasmuch as it impacts researcher ability to determine the efficacy of interventions for specific student populations. Clear descriptions of study participants are also necessary

in order to generalize findings, make comparisons in replication studies, and to be able to use data in research syntheses (APA, 2020). Trainor et al. (2020) noted that “providing richer descriptions and better assessments of study participants is an initial step in depicting a fuller portrait of the students for whom a practice has been shown to work (or failed to work)” (p. 9). The following section offers recommendations for improving the clarity and completeness of sample description. Additionally, readers are referred to the Human Rights Campaign (2020), and the U.S Census Bureau (2017) for examples of questions that can be used to collect demographic data on gender, sex, race/ethnicity, postsecondary credentials, and disability status, and to the 7th Edition of the *American Psychological Association’s Publication Manual* (2020) for guidance on bias free language.

Recommendation 1A: Collect and Report Disability Data for Participants

Of considerable concern is that only 75% of studies on disability and higher education presently provide well-defined data about participant disability labels/diagnoses (whether obtained by self-report or via the use of documentation; Madaus et al., 2018). Many studies still present students with disabilities as making up a single, homogenous group despite the well-documented differences between and within disability labels/diagnoses (Madaus et al., 2018; Peña, 2014). As such, it is difficult to develop a deep understanding of the lived experiences of students with specific disability labels/diagnoses, and to generalize findings to students with similar diagnoses.

Thus, the following recommendations are offered to researchers. First, the definition of the term *disability* and the specific labels/diagnoses should be provided in-text to make clear the populations/sample being discussed. Varying definitions of disability are available for use (e.g., the Individuals with Disabilities Education Act [IDEA], World Health Organization, American Psychiatric Association). Furthermore, as Trainor et al. (2020) observed in regard to IDEA special education category labels and criteria vary from state-to-state and “adult service systems and post-secondary programs tend to conceptualize disability quite differently than do schools” (p. 9). Thus, precise information about definitions employed is necessary.

Second, eligibility criteria for participant inclusion in the study must be well outlined for readers, including how disability status was determined. For some studies, documentation may be available that can be utilized to ascertain disability status (e.g., Individualized Education Program, psychoeducational testing, physician’s documentation, Social Security

Administration documentation). This information may be obtained from a disability services office or directly from the student. In some cases, participant self-report may be used to determine disability status with participants being asked to indicate the disability labels/diagnoses with which they identify. Furthermore, participants with multiple disabilities should have the opportunity to identify with multiple disabilities.

Third, researchers should consider the significant implications regarding the fact that less than 30% of students who received K-12 accommodations disclose their disability in higher education (Newman & Madaus, 2015). Such limited disclosure impacts all aspects of research including design, sampling, findings, and limitations.

Finally, researchers are obliged to consider the language utilized when describing sample members, including the use of either person-first or identify-first language. According to the *Publication Manual of the American Psychological Association* (7th edition) (APA, 2020),

the language to use where disability is concerned is evolving. The overall principle for using disability language is to maintain the integrity (worth and dignity) of all individuals as human beings. Authors who write about disability are encouraged to use terms and descriptions that both honor and explain person-first and identity-first perspectives. Language should be selected with the understanding that the expressed preference of people with disabilities regarding identification supersedes matters of style. (p. 136)

The APA (7th edition) also offers guidance related to language that avoids negative terminology and euphemisms when describing persons with disabilities.

Recommendation 1B: Collect Sex and Gender Information in a Manner that Respects Participant Identity

Only 57% of studies presently provide well-defined data about participant sex or gender (Madaus et al., 2018). Although improvements have been made regarding the use of the terms *sex* and *gender*, researchers sometimes still use these terms inaccurately and interchangeably. Researchers are encouraged to critically consider the purpose for inquiring about sex and gender. If deemed necessary given the research question, investigators should collect the demographic data most relevant to examining that question.

According to the American Psychological Association (2015) *gender* refers to “the attitudes, feelings

and behaviors that a given culture associates with a person's biological sex. Behavior that is compatible with cultural expectations is referred to as gender-normative; behaviors that are viewed as incompatible with these expectations constitute gender non-conformity" (p. 2). On the other hand, *sex* refers "to a person's biological status and is typically categorized as male, female, or intersex. There are a number of indicators of biological sex, including sex chromosomes, gonads, internal reproductive organs and external genitalia" (p. 5). Extant research studies in higher education and disability generally adhere to traditional binary identifications of sex and gender (i.e., male or female; man/boy or woman/girl) which serve to marginalize and exclude participants who identify as gender non-conforming and/or (depending on the demographic question) intersex. Some research suggests an association between gender variance, gender dysphoria, and autism (e.g., DeVries et al., 2010; Janssen et al., 2016), thus it is of particular importance that investigators provide inclusive options from which participants may choose when gathering gender and sex information. Exact phrasing of sex and gender demographic questions may vary based on factors including sample size, cultural factors, and research question. Researchers should consult with the most recent (7th edition) of the *APA Publication Manual* (2020) for more specific guidance related to describing and reporting gender related topics.

Recommendation 1C: Collect Race and Ethnicity Data in a Manner that Respects Participant Identity

Only 19% of studies have provided well-defined data about participant race and ethnicity (Madaus et al., 2018). As with the terms *sex* and *gender*, the terms race and ethnicity are often misused and used interchangeably. Although the subject of controversy, the United States Federal Government has set definitions for race and ethnicity. *Race* is defined as "a person's self-identification with one or more social groups. An individual can report as White, Black or African American, Asian, American Indian and Alaska Native, Native Hawaiian and Other Pacific Islander, or some other race...[and] may report multiple races" (U.S. Census Bureau, 2017, p. 1). *Ethnicity* is defined as "whether a person is of Hispanic origin or not. For this reason, ethnicity is broken out in two categories, Hispanic or Latino and Not Hispanic or Latino" (p. 1).

Given variation in the social construction of disability and disability labels/diagnoses, it is critical to understand the racial and ethnic backgrounds of participants. To be clear, perspectives on disability can

vary across cultures, so differences in student experiences, beliefs, and attitudes related to disability may be impacted by race and/or ethnicity. The 7th Edition of the *APA Publication Manual* (2020) provides specific terminology guidance related to racial and ethnic identify.

Recommendation 1D: Collect and Report Student Age Data for Participants

Given decisions to delay college entry, take a college respite, reduce one's course load, and other factors, students with disabilities often take longer to complete degrees (Knight et al., 2016). As such, students in the same class year with a similar number of credits earned may be of vastly different ages. To better understand differences between and among students with disabilities of different ages, data regarding student age should be obtained and reported. Readers are referred to the 7th edition of the *APA Publication Manual* (2020) for specific recommendations regarding reporting participant age, including recommended terminology for various age groups.

Recommendation 1E: Collect and Report Postsecondary Progression Data for Participants

Given that students with disabilities often take longer to graduate than their peers without disabilities (Knight et al., 2016), an alternative or complement to the traditional postsecondary progression measurement by class year (i.e., first-year, sophomore, junior, senior, master's student, doctoral student) may be appropriate. Credit hours completed and academic term (e.g., semester, trimester, quarter) are measurements that offer supplementary information regarding a student's academic status.

It is also important for researchers to identify the matriculation status of participants. Are the students enrolled full-time or are they pursuing a degree part-time, or taking a single class at the college/university level? If the student is pursuing a credential, the type of credential (e.g., certificate, bachelor's degree, master's degree, doctoral degree) is also important to report.

For graduate student focused research, it is recommended that investigators specify the school/program in which the participant is receiving professional training. For example, is the student enrolled in law school, medical school, a college of arts and sciences, or a college of education? However, caution must be exercised so as not to provide identifiable information, particularly when sample sizes are small.

Recommendation 1F: Collect and Report Demographic Data for Students Without Disabilities, if Appropriate

If students without disabilities are included, demographic information should be collected similar to that which is described in this section (with exception of disability). Given the large number of students with disabilities who do not self-disclose in college, investigators might consider asking whether students received special education via an Individualized Education Program or Section 504 services in K-12 school settings.

Recommendation 1G: Consider Sample Representativeness and Confidentiality

In some research designs, such as qualitative or single subject studies, sample sizes will be intentionally quite small. In such situations, it is recommended that investigators incorporate a statement regarding the extent to which the sample is representative of, or generalizable to, the larger population. Additionally, efforts need to be made to ensure participant confidentiality is maintained particularly in situations where participants identify as members of multiple underrepresented populations. In all research designs, researchers should only provide descriptions of the participants that are relevant to the particular question(s) being investigated and that impact interpretation of results (APA, 2020)

Recommendation 1H: Describe Participants Using Numbers and Percentages

To date, many studies present demographic data in a manner that requires estimation or recalculation to determine exact sample size (e.g., as percentages). For quantitative studies, researchers are encouraged to present frequency counts to describe participants in tables and in-text descriptions. Although the presentation of sample data as percentages can be used, it should always be used in conjunction with frequency counts. When graphs are used to display frequencies, frequency counts should be incorporated into the graph, if not described in-text.

Area 2: Clearly and Fully Describe Study Location

Study settings must be described with appropriate detail to help practitioners implement and replicate research-based practices with fidelity. The study setting includes the broader context of the college or university, as well as the specific location within the institution in which the study took place. The following section offers recommendations for describing the study setting. Again, researchers should use an

appropriate level of detail; enough to allow for understanding the setting and for possible replication and generalization, but not excessive detail that goes above and beyond the research questions.

Recommendation 2A: Describe the Setting Using Established Classifications

Consistent descriptions of the institutional setting should be provided. For research in the United States, the terminology and definitions utilized by the National Center for Education Statistics (NCES, 2019) Integrated Postsecondary Education Data System (IPEDS) that describe the college or university are a well-regarded option. Table 1 provides a highlight of descriptors, based on IPEDS terminology, that are appropriate when describing the location of a project within higher education settings. It should be noted that these suggestions are not an exhaustive list of descriptors that could be provided. For example, other descriptors relevant to the study (e.g., residential campus; country in which campus is located) might be relevant to fully understand the results and should be included as appropriate. The list provided is the minimum that should be employed for studies that take place within one institution. For research conducted in Canada, *Statistics Canada's Definition and Classification of Postsecondary and Adult Education Providers in Canada provides useful guidance* (Orton, 2009).

Recommendation 2B: Describe in Detail the Office (or Representative) that Serves Students with Disabilities at the Institution, if Appropriate

Research frequently is conducted both in and about offices for students with disabilities. Given the great variation across campuses with regard to these offices, it is critical that study locations are fully communicated. Researchers are encouraged to describe the disability service models using the following dimensions: Staffing and organizational placement (i.e., where the office is administratively housed), and program size and services.

At a minimum, the number of full-time professionals responsible for disability services should be enumerated and described, and ideally, the number of part-time and student-staff should be provided, if relevant to the study. For example, is a single individual responsible for providing disability accommodations/services or are accommodations/services provided by a staff of eight? As relevant to the study, a more complete and disaggregated count of full- and part-time disability services should be included.

Second, organizational placement, defined as the organizational division/unit in which the disability

services office (or representative) is located, should be described. For example, is it located in student affairs, academic affairs, or another division? Third, the total number of students registered with the office should be indicated. This information combined with information regarding staffing levels provides an understanding of the campus context. As noted, the number of students served by the office is not reflective of the full population of students with disabilities on campus, but it does provide some information regarding office workload and campus culture that have implications for generalizing findings of a study.

Finally, a descriptor, or descriptors, of the services available within the office will provide useful context for generalizability of results. For example, does the office provide basic accommodations only, or can students receive additional supports, such as coaching or strategies instruction (and if so, if there is an addition fee for these services).

Recommendation 2C: Describe the Intra-Institutional Location of the Study

Characteristics of institutions of higher education vary greatly, as do the units that make up each institution. For example, a large university can include building and grounds; university administration units (e.g., computer services, library, registrars); auxiliary services (e.g., bookstore, housing and food services); and an array of student affairs' units (e.g., athletics, chapel, counseling and testing, financial aid, health services, or student center; Eckel & King, 2007). Additionally, various affiliated organizations may be considered component units (e.g., athletic associations or research foundations) and play a major role in meeting institutional mission. Concomitant research may be completed in many of these locations. Descriptions, especially in the case of single subject research, must illustrate critical features of the physical and administrative setting with sufficient detail to allow for replication (Horner et al., 2005).

Area 3: Appropriately Select and Fully Describe the Methodologies Employed

The methodology for the study should be selected to meet the particular research questions under investigation, the particular expertise of the researchers, and in some cases, the available extant data set. These should be clearly and fully described, as appropriate to the methodologies utilized. As noted by Cook and Cook (2016), "one research design is not inherently better than another; they just address different questions. The important thing is to interpret and apply studies in a manner that is consistent with how they were designed" (p. 191). Moreover, a statement about

the secondary transition literature base by Trainor et al. (2020) calling for "methodological pluralism" (p. 14) is fitting for research in postsecondary education and disability:

answering the pressing questions of our field will certainly require the use of multiple methodologies...Mixed-methods studies or lines of inquiry that combine quantitative and qualitative approaches that include not only the utilization of extant datasets, direct observation, and experimentation, but also description and interpretation will be particularly important, as many of the issues the field faces must be examined from multiple vantage points to be fully understood. (p. 14)

Four broad categories of the most commonly used methodologies in research on postsecondary education and disability from 1952 to 2012 are subsequently described (Madaus et al., 2018). In order to assist researchers in appropriately selecting a particular research design, potential benefits and limitations of these four areas are presented, as are suggestions regarding information to be provided within each. It is important to note that each of the research methodologies are comprehensively described in other sources including textbooks and online. Thus, the descriptions below and in the accompanying tables are intentionally general and references to additional readings are provided. Readers are also referred to the *Publication Manual of the American Psychological Association* (7th edition, 2020) that includes a chapter on basic journal reporting standards for Quantitative, Qualitative, and Mixed Methods research designs, including components to report in each section of a manuscript. The information that follows should also be combined with the recommendations previously presented in Area 1 and Area 2.

Qualitative Research Methods

Qualitative research is described as "a systematic approach to understanding qualities, or the essential nature, or a phenomenon within a particular context" (Brantlinger et al., 2005, p. 195). Data are collected in natural settings, and the researchers use their own impressions, judgments, and interpretations to inductively interpret and make sense of the data in regard to the meanings that the participants bring to them (Borg & Gall, 1989; Denzin & Lincoln, 2018). Gribich (2013a) noted that subjectivity has value in qualitative designs, and that "both the views of the participant and those of you as a researcher are to be respected, acknowledged and incorporated as data, and the interpretation of this data will be constructed by both of you" (p. 4). Because of the shift away from

a positivist and objective perspective in these approaches (described below), there is debate about the use of the term “research” versus “inquiry.” Readers are referred to Denzin and Lincoln (2018) for more regarding this important discussion.

Both Denzin and Lincoln (2018) and Gribich (2013a) described that new methods of qualitative research are continually emerging, some of which are being combined with prior perspectives, and others of which constitute new paradigms. While we acknowledge this, Table 2 presents an overview of the most common qualitative methods found to date in the literature on postsecondary education and disability. As noted earlier, no one methodological practice is favored over another, and this holds true for qualitative designs (Denzin & Lincoln), therefore, the list is presented in alphabetical order. Readers are referred to Denzin and Lincoln (2018), Gribich (2013a) and Given (2008) for more details about these designs, their uses and limitations, as well as for information on other designs and discussions regarding qualitative research methods. Additionally, readers are referred to Brantlinger et al. (2005) and, again, Gribich (2013a) who present an overview of the evaluation of particular qualitative designs, as well as strategies that researchers can employ to ensure trustworthiness of results and quality indicators in qualitative research.

It is critical that researchers ensure the confidentiality of participant data related to demographics and take steps to ensure anonymity. This is particularly important in qualitative research where participants may be few in number, data are disaggregated, and multiple demographic factors may be provided to describe individual participants. In such research, researchers must carefully evaluate the extent to which participants may be identified via participant descriptions.

Quantitative Research Designs

According to Borg and Gall (1989), quantitative research uses standardized instruments and techniques to collect data, and statistical methods “to analyze the data and draw conclusions” (p. 23). There is an emphasis on objectivity that can lead to explanations and understandings that can be generalized to a larger sample or population of individuals. A variety of methodologies fall under the umbrella of quantitative research and as noted previously, specific methodologies should be selected to meet the particular research questions under investigation, the training of the researchers, and in some cases, the extant data set available. Table 3 provides an overview of the purpose of some of the most common quantitative methodologies as well as their benefits and limitations, as derived from the work of Isaac and Michael (1990).

In sum, these methods present a continuum of options for researchers, as well as a range of design rigor. The designs can provide descriptive information about representative samples or samples of interest, describe specific settings, describe relationships among variables from simple relationships (that cannot explain causation), or can describe systematic cause-and effect between variables. Results from any of these methods can be used as the basis for new theory, experiments, or improved measures (National Research Council, 2002). Guidelines exist for evaluating the quality of designs and evidence from correlational studies (Thompson et al., 2005) and from group experimental and quasi-experimental research in special education (Gersten et al., 2005). Table 4 presents a summary of the Gersten et al. guidelines for experimental designs as presented by Tankersley (2013). These guidelines, and the National Research Council’s 2002 report *Scientific Research in Education* can also serve as excellent resources for researchers planning to employ quantitative design.

Mixed Methods

Though frequently defined with subtle differences, Johnson and colleagues (2007) synthesized a definition from leaders in the field as:

Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., the use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth of understanding and corroboration. (p. 123)

Integration of the qualitative and quantitative components of mixed methods’ design, data collection, analysis, and reporting exists along a continuum, ranging from one component being more dominant to equal status/full integration of the two approaches. Importantly, mixed methodology can occur within a single study, but also within a programmatic line of research with related studies designed to inform one another as a whole, clarifying observed phenomena through mutually informative lenses (Johnson et al., 2007). Table 5 notes the benefits and limitations of using mixed methods.

Single Subject Designs

Single-subject research design serves to document causal, or functional, relationships between independent and dependent variables (Horner et al., 2005) when a high number of participants are not available. Gast (2010) described that “single subject research

design is a quantitative research approach in which ...each participant is exposed to both a 'control' condition, known as a baseline, and an intervention condition" (pp. 13-14). Although these designs might only have one subject, they often involve as many as three to eight (Horner et al.). Researchers who select this research design in their work should include in the method section the description of all the critical features of the single-subject design as described by Horner et al. (2005). The inclusion of all these aspects allows further replication, which is necessary to enhance external validity as well as to promote the development of evidence-based practices (Byiers et al., 2012). Before detailing the critical features of the single-subject design, the researchers should specify the type of design. These may include the following: withdrawal/reversal design, time lagged designs (e.g., multiple baseline), comparison designs (e.g., alternating treatment designs, alternating treatment designs, simultaneous treatment designs, and combination designs (Hammond & Gast, 2010). Table 6 notes some of the advantages and limitations to single subject research, while Table 7 contains a list of the critical features that should be described and considered in such a design.

As was noted in the qualitative design section the confidentiality and anonymity of participants must be ensured in single subject designs, given that there may be small samples and multiple demographic factors may be provided to describe individual participants. Again, researchers must carefully determine if participant descriptions pose a threat to anonymity.

Future Directions for Research Based on These Guidelines

Although the vast majority of articles on the topic of college services for students with disabilities are published in AHEAD's professional journal, the *Journal of Postsecondary Education and Disability*, the fact that articles have appeared in 233 unique journals clearly demonstrates the diversity of professional perspectives related to this important topic (Madaus et al., 2018). The observations and guidelines presented are offered as a means to both increase and improve the extant research base. The recommendations are not intended to be restrictive or proscriptive; instead, they are offered as guidelines for researchers to consider as they plan, conduct, and report their work, with the goal of consistency in reporting and to guide replication.

It is anticipated that there will be debate about some of the elements, with researchers from particular disciplines finding certain aspects of the guidelines more relevant and beneficial than other

guidelines. It must also be acknowledged that there may be minor, or even significant components that have not been included. This may be especially true in the qualitative design section; we understand that there are many additional types of qualitative designs (and more that are emerging) than what have been described. However, the categories described herein reflect those most commonly found in the special education literature to date. An observation by Cook et al. (2009) in regard to quality indicators in special education research is also fitting here: "it is important to note that authors of previous research write the body of extant research without foreknowledge of the future standards of methodological rigor to which it might be held and that they conformed to the external requirements of the day" (p. 380). By no means are these guidelines intended to minimize the existing body of research and the effort expended in its development. Rather, they are a starting point, and with the hope that the recommendations engender a healthy and collaborative dialog regarding how they might continue to advance quality research in the field.

Thus, it is hoped that the guidelines can be utilized, and indeed, debated by a range of professionals with different backgrounds, perspectives, and professional organizational affiliations, including but not limited to AHEAD, the Division on Career Development and Transition (DCDT) of the Council for Exceptional Children, the National Association of Student Personnel Administrators (NASPA), the American College Personnel Association (ACPA), the American Educational Research Association's Division J (Postsecondary Education) and its Disability Studies in Education special interest group. The guidelines may also be of value to researchers working in the burgeoning field of inclusive higher education for students with intellectual disabilities. While researchers from each of these areas study topics relevant to students with disabilities in higher education with unique perspectives, interdisciplinary collaboration and discussion can inform all disciplines and ultimately, help advance the research base in the field overall.

Continuing to Move Forward

We conclude with some additional questions for both researchers and journal editors to consider. Although these do not fit into the specific areas discussed thus far, they may influence the direction of the field's research.

- How can researchers balance research interests and goals with the needs of practitioners in the field? What do practitioners find useful

and useable? What role might practitioners play in the design and implementation of studies that can more readily be translated into practice? How can research in this area be connected to practitioners in K-12 education who are helping students to prepare for, and transition to, postsecondary education?

- How can researchers involve students with disabilities in future inquiries? What are the topics that students with disabilities find important and meaningful to their lived experiences in postsecondary education? How can this research make a positive difference in the postsecondary (and beyond) experiences of these students?
- How can research address the experiences and needs of the majority of postsecondary students with disabilities – those who have not disclosed? And how might such work be targeted to a wider journal readership than those journals focused solely on students with disabilities?
- Relatedly, how can researchers collaborate with the editors of higher education journals focused on the broader population of higher education professionals to raise awareness of the need for this work not to be isolated to a limited number of journals? How can non-disability student affairs professionals and other campus administrators be made more aware of the experiences of students with disabilities, most of whom have not self-disclosed and are using a broad range of campus services?

It is our sincere belief that the answers to these questions, and those yet to be asked by future members of our research community, will continue to move forward in robust fashion as a result of widespread adoption of the aforementioned research guidelines. Research guided by a common set of principles is the greatest lever for improving outcomes for individuals with disabilities in postsecondary settings.

References

- American Psychological Association. (2015). *Definitions related to sexual orientation and gender diversity in APA documents*. <https://www.apa.org/pi/lgbt/resources/sexuality-definitions.pdf>
- American Psychological Association. (2020). *Publication manual of the American Psychological Association* (7th ed.). <https://doi.org/10.1037/0000165-000>
- Blatter, J. K. (2012). Case study. In L. M. Given (ed.), *The Sage encyclopedia of qualitative research methods* (pp 68-71). SAGE. <https://dx.doi.org/10.4135/9781412963909>
- Borg, W. R., & Gall, M. D. (1989). *Educational research: An introduction*. (5th ed.). Longman.
- Brantlinger, E., Jimenez, R., Klingner, J., Pugach, M., & Richardson, V. (2005). Qualitative studies in special education. *Exceptional Children*, 71(2), 195-207.
- Bryman, A. (2006). Integrating quantitative and qualitative research: How is it done? *Qualitative Research*, 6(1), 97-113.
- Byiers, B. J., Reichle, J., & Symons, F. J. (2012). Single-subject experimental design for evidence-based practice. *American Journal of Speech-Language Pathology*, 21(4), 397-414.
- Charmaz, K., & Bryant, A. (2012). Grounded theory. In L. M. Given (Ed.). *The SAGE encyclopedia of qualitative research methods*. (pp. 375-377) SAGE Publications, Inc. <https://doi:10.1177/1468794106058877>
- Cook, B. G., & Cook, L. (2016). Research designs and special education research: Different designs address different questions. *Learning Disabilities Research & Practice*, 31(4), 190-198. [doi:10.1111/ldrp.12110](https://doi.org/10.1111/ldrp.12110)
- Cook, B. G., Tankersley, M. & Landrum, T. J. (2009). Determining evidence-based practices in special education. *Exceptional Children*, 75(3), 365-383. [doi:10.1177/001440290907500306](https://doi.org/10.1177/001440290907500306)
- Denzin, N. K., & Lincoln, Y. S. (2018). *The SAGE handbook of qualitative research*. (5th ed.). SAGE.
- DeVries, A. L., Noens, I. L., Cohen-Kettenis, P. T., van Berckelaer-Onnes, I. A., & Doreleijers, T. A. (2010). Autism spectrum disorders in gender dysphoric children and adolescents. *Journal of Autism and Developmental Disorders*, 40, 930-936.
- Dukes III, L. L., Faggella-Luby, M., Lombardi, A., Madaus, J. W., & Gelbar, N. (2017). PASSing College: A taxonomy for students with disabilities in higher education. *Journal of Postsecondary Education and Disability*, 30(2), 113-129.
- Eckel, P. D., & King, J. E. (2007). United States. In J. J. F. Forest & P. G. Altbach (Eds.), *International Handbook of Higher Education*. (Volume 18, pp. 1035-1053). Springer Dordrecht. https://doi.org/10.1007/978-1-4020-4012-2_55
- Gast, D. L. (2010). *Single subject research methodology in behavioral sciences*. Routledge.

- Gersten, R., Fuchs, L., Compton, D., Coyne, M., Greenwood, C., & Innocenti, M. S. (2005). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children, 71*(2), 149-164. <https://doi.org/10.1177%2F001440290507100202>
- Given, L. M. (2008). *The SAGE Encyclopedia of Qualitative Research Methods*. SAGE. <https://dx.doi.org/10.4135/9781412963909>
- Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis, 11*(3), 255-274.
- Gribich, C. (2013a). *Qualitative data analysis: An introduction*. (2nd ed.). SAGE.
- Gribich, C. (2013b). Grounded theory. In C. Gribich, *Qualitative data analysis: An introduction* (2nd ed.) (pp. 79-91). SAGE.
- Gribich, C. (2013c). Phenomenology. In C. Gribich, *Qualitative data analysis: An introduction*. (2nd ed.) (pp. 92-104). SAGE.
- Hammond, D., & Gast, D. L. (2010). Descriptive analysis of single subject research designs: 1983-2007. *Education and Training in Autism and Developmental Disabilities, 45*(2), 187-202
- Henderson, C. (1999). *College freshmen with disabilities: A biennial statistic profile*. American Council on Education, HEATH Resource Center.
- Horner, R. H., Carr, E. G., Halle, J., McGee, G., Odom, S., & Wolery, M. (2005). The use of single-subject research to identify evidence-based practice in special education. *Exceptional Children, 71*(2), 165-179.
- Human Rights Campaign. (2020). *Collecting transgender-inclusive gender data in workplace and other surveys*. <https://www.hrc.org/resources/collecting-transgender-inclusive-gender-data-in-workplace-and-other-surveys>
- Isaac, S., & Michael, W. B. (1990). *Handbook in research and evaluation*. (2nd ed.). EdITS Publishers.
- Janssen, A., Huang, H., & Duncan, C. (2016). Gender variance among youth with autism spectrum disorders: A retrospective chart review. *Transgender Health, 1*, 63-68.
- Jarrow, J. (1997). Why do we need professional standards? *Journal of Postsecondary Education and Disability, 12*(3), 5-7.
- Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research, 1*(2), 112-133.
- Kim, K. (2018). Pro and con of single subject research in adapted physical education and the guidance for appropriate research designing. *The Asian Journal of Kinesiology, 20*(1), 49-53.
- Kimball, E., Vaccaro, A., & Vargas, N. (2016). Student affairs professionals supporting students with disabilities: A grounded model theory. *Journal of Student Affairs Research and Practice, 53*(2), 175-189.
- Klingner, J. K., & Boardman, A. G. (2011). Addressing the "research gap" in special education through mixed methods. *Learning Disability Quarterly, 34*(3), 208-218.
- Knight, W., Wessel, R. D., & Markle, L. (2016). Persistence to graduation for students with disabilities: Implications for performance-based outcomes. *Journal of College Student Retention: Research, Theory & Practice, 19*, 362-380.
- Kratochwill, T. R., Hitchcock, J., Horner, R. H., Levin, J. R., Odom, S. L., Rindskopf, D. M., & Shadish, W. R. (2010). *Single-case designs technical documentation*. <https://files.eric.ed.gov/fulltext/ED510743.pdf>
- Madaus, J. W. (2011). The history of disability services. In W. S. Harbour and J. W. Madaus. (Eds.), *Disability and campus dynamics: New Directions for Higher Education*. Wiley.
- Madaus, J. W., Gelbar, N. W., Dukes, L.L., Lalor, A. R., Lombardi, A., Kowitt, J., & Faggella-Luby, M. (2018). Literature on Postsecondary Disability Services: A Call for Research Guidelines. *Journal of Diversity in Higher Education, 11*(2), 133-145.
- Marx, P., & Hall, P. (1977, 1978). *Forward*. Paper presented at the Disabled Student on American Campuses: Services and State of the Art conference, Wright State University, Dayton, OH.
- McFarland, L., Williams, J., & Miciak, J. (2013). Ten years of research: A systematic review of three referred LD journals. *Learning Disabilities Research and Practice, 28*(2), 60-69.
- National Center for Education Statistics. (2019). *IPEDS 2019-20 data collection system*. United States Department of Education. <https://surveys.nces.ed.gov/ipeds/Downloads/Forms/IPEDS-Glossary.pdf>
- National Research Council. (2002). *Scientific research in education*. The National Academies Press. <https://doi.org/10.17226/10236>
- Newman, L., & Madaus, J. (2015). Reported accommodations and supports provided to secondary and postsecondary students with disabilities: National perspective. *Career Development and Transition for Exceptional Individuals, 30*, 173-181. doi:10.1177/2165143413518235

- Newman, L., Wagner, M., Knokey, A., Marder, C., Nagle, K., Shaver, D., Wei, X., Cameto, R., Contreras, E., Ferguson, K., Greene, S., & Schwarting, M. (2011). *The post-high school outcomes of youth with disabilities up to 8 years after high school. A report from the National Longitudinal Transition Study-2 (NLTS2)*. SRI International.
- Odom, S. L., Gersten, R., Horner, R. H., Thompson, B., & Harris, K. R. (2005). Research in special education: Scientific methods and evidence-based practices. *Exceptional Children, 71*(2), 137-148.
- Orton, L. (2009). *Statistics Canada's Definition and Classification of Postsecondary and Adult Education Providers in Canada*. Ottawa, Ontario: Statistics Canada. <https://www150.statcan.gc.ca/n1/en/pub/81-595-m/81-595-m2009071-eng.pdf?st=mHF26PdD>
- Peña, E. V. (2014). Marginalization of published scholarship on students with disabilities in higher education journals. *Journal of College Student Development, 55*, 30-40.
- Plotner, A. J., Shogren, K. A., & Strauser, D. (2011). Analyzing the emphasis on transition in rehabilitation counseling journals: A content analysis. *Journal of Applied Rehabilitation Counseling, 42*, 27-32.
- Scales, W. (1986). Postsecondary education for disabled students—Written testimony. *AHSSPPE Bulletin, 4*(1), 20–32.
- Schutt, R. K. (2015). *Investigating the social world: The process and practice of research* (8th ed.). SAGE Publications.
- Simonsen, B., & Little, C. A. (2011). Single-subject research in gifted education. *Gifted Child Quarterly, 55*(2), 158-162.
- Tankersley, M. (2013). Establishing evidence-based practices in disability services. *Social Welfare: Interdisciplinary Approach, 3*(2), 118-124.
- Teddle, C., & Tashakkori, A. (2012). Common “core” characteristics of mixed methods research: A review of critical issues and call for greater convergence. *American Behavioral Scientist, 56*(6), 774–788.
- Thompson, B., Diamond, K. E., McWilliam, R., Synder, P., & Synder, S. W. (2005). Evaluating the quality of evidence from correlational research for evidence-based practice. *Exceptional Children, 71*(2), 181-194.
- Trainor, A. A., Carter, E. W., Karpur, A., Martin, J. E., Mazzotti, V. L., Morningstar, M. E., Newman, L., & Rojewski, J. W. (2020). A framework for research in transition: Identifying important areas and intersections for future study. *Career Development and Transition for Exceptional Individuals, 43*(1), 5-17.
- U.S. Census Bureau. (2017). *Race & ethnicity*. <https://www.census.gov/mso/www/training/pdf/race-ethnicity-onepager.pdf>
- U.S. Department of Education, *National Center for Education Statistics*. (2016). Digest of education statistics, 2015 (2016-014). <https://nces.ed.gov/fastfacts/display.asp?id=60>

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Table 1

IPEDS Glossary List

Carnegie Classification (2000):

- Doctoral/Research Universities-Extensive.
- Doctoral/Research Universities-Intensive.
- Master's Colleges and Universities I.
- Master's Colleges and Universities II.
- Baccalaureate Colleges-Liberal Arts.
- Baccalaureate Colleges-General.
- Baccalaureate/Associate's Colleges.
- Associate's Colleges.
- Specialized Institutions.
- Tribal Colleges and Universities.

Degree of Urbanization:

- Twelve locale codes categorizing the urbanicity of the institution's location, determined by population size.

Sector:

- Three control categories:
 - (a) Public.
 - (b) Private not-for-profit.
 - (c) Private for-profit.
- Three level categories:
 - (a) Four-year and higher ("4-year").
 - (b) Two-but-less-than four-year ("2-year").
 - (c) Less than two-year.

Situational Instructional Format:

- In-person/on-campus.
 - Correspondence education.
 - Distance education.
-

Table 2*Common Types of Qualitative Methods***Case study**

Purpose: “A research approach in which one or a few instances of a phenomenon are studied in depth...case studies focus on one or a few instances, phenomena, or units of analysis, but they are not restricted to one observation” (Blatter, p. 2).

Benefits

- Provides a depth of analysis versus a breadth of analysis featured in large sample studies.
- Focus on descriptive components of a case.
- Can provide advantages in regard to construct and internal validity through the use of “more and diverse indicators for a theoretical construct and for securing the internal validity of casual inferences and/or theoretical interpretations of these cases” (Blatter, p. 3).
- Can include biographies and autobiographies (Brantlinger et al., 2005).

Limitations

- Less ability to describe causality.
- Less ability to apply findings to broader populations than large sample studies.

Grounded Theory

Purpose: “Research done to generate or discover a general theory or abstract analytical hunch based on study of phenomena in a particular situation(s)” (Brantlinger et al., 2005, p. 197).

Benefits

- “Useful in small-scale environments and micro-activity where little previous research has occurred” (Gribich, 2013b, p. 80).
- Allows for in-depth investigation of interactions between people and their environments (Gribich, 2013b).
- Focus on “theory generating research” rather than on theory directed research (Gribich, 2013b, p. 80).
- Provides “systematic, but flexible, guidelines for conducting inductive qualitative inquiry aimed toward theory construction” (Charmaz & Bryant, 2012).

Limitations

- Debates exist among major theoretical perspectives of Grounded Theory resulting in differing assumptions and approaches (Charmaz & Bryant, 2012; Gribich, 2013).
- Focus on the “bigger picture” can be lost because data can become fragmented (Gribich, 2013b, p. 80).

Phenomenological

Purpose: “Studies the meanings people make of their lived experiences” (Brantlinger et al., 2005, p. 197).

Benefits

- Useful in studying phenomena when little data exists.
- Allows the exploration and description of people’s experiences in rich detail.
- Can be conducted via interviews and reviews of a variety of types of documentation (e.g., literature, biography, texts) (Gribich, 2013c).

Limitations

- Multiple types of phenomenology exist and the type used might not be clear.
- Difficult to determine when the process of data interpretation is complete (Gribich, 2013c).

Table 3

Common Types of Quantitative Methods

Descriptive Research

Purpose: “To describe systematically the facts and characteristics of a given populations or area of interest, factually and accurately” (Isaac & Michael, 1990, p. 46).

Benefits

- Can describe existing problems, conditions, situations, events, or existing phenomena.
- Can be used to make comparisons among similar groups.
- Can be combined with other more powerful methodologies.
- Can include survey research.

Limitations

- Purely descriptive data; does not explain relationships, test hypotheses, make predictions, explain meaning or make predictions.

Correlational Research

Purpose: “To investigate the extent to which variations in one factor correspond with variations in one or more other factors based on correlation coefficients” (Isaac & Michael, 1990, p. 49).

Benefits

- Allows for measurement of several variables and their interrelationship.
- Allows for the determination of the strength of relationship among variables.
- Useful with variables do not allow for experimental or controlled manipulation.

Limitations

- Does not identify cause and effect relationships among variables.
- There is less control over independent variables.
- Can lead to a “shot-gun” approach that indiscriminately uses data and can identify misleading, arbitrary, or ambiguous relationships with little to no reliability or validity (Isaac & Michael, 1990, p. 49).

Causal-Comparative Research

Purpose: “To investigate possible cause-and-effect relationships by observing some existing consequence and searching back through the data for plausible causal factors” (Isaac & Michael, 1990, p. 50).

Benefits

- Allows for examination of cause-and-effect relationships when experimental designs are not possible.
- Allows examination of “what goes with what, under what conditions, in what sequences and patterns” (Isaac & Michael, 1990, p. 50).

Limitations

- Limited control over independent variables, so results must be examined against other possible or plausible rival hypotheses.
- Results may be caused by a combination or interaction of factors, rather than a single factor.

(Table 3 continues on next page)

(Table 3 continues from previous page)

True Experimental Research

Purpose: “To investigate possible cause-and-effect relationships by exposing one or more experimental groups to one or more treatment conditions and comparing the results to one or more control groups not receiving the treatment” (Isaac & Michael, 1990, p. 52).

Benefits

- Management of variables and conditions by control or via randomization.
- Minimization of extraneous variables that might impact outcomes but that are not under study.
- Minimization of error, including error of measurement.
- Seeks to maximize internal and external validity.

Limitations

- Most restrictive and artificial design; subjects are not studied in real world situations and may respond differently in controlled situations.

Quasi-Experimental Research

Purpose: “To approximate the conditions of the true experiment in a setting that does not allow the control and/or manipulation of all relevant variables. The researcher must clearly understand what compromises exist in the internal and external validity of his design and proceed within these limitations (Isaac & Michael, 1990, p. 54).

Benefits

- Can be used in applied settings where only some variables can be controlled, allowing the researcher to get as close as possible to the rigor of a true experimental design.

Limitations

- Subjects may not be randomly assigned to treatment or control groups, although some quasi-experimental methods like propensity analyses attempt to statistically control for differences between treatment and control groups.
-

Table 4

Essential Quality Indicators of Experimental Designs

Describing Participants

- Was sufficient information provided to determine/confirm whether the participants demonstrated the disability(ies) or difficulties presented?
- Were appropriate procedures used to increase the likelihood that relevant characteristics of participants in the sample were comparable across conditions?
- Was sufficient information given characterizing the interventionists or teachers provided?
- Did it indicate whether they were comparable across conditions?

Implementation of Intervention and Description of Comparison Conditions

- Was the intervention clearly described and specified?
- Was the fidelity of implementation described and assessed?
- Was the nature of services provided in comparison conditions described?

Outcome Measures

- Were multiple measures used to provide an appropriate balance between measures closely aligned with the intervention and measures of generalized performance?
- Were outcomes for capturing the intervention's effect measured at the appropriate time?

Data Analysis

- Were the data analysis techniques appropriately linked to key research questions and hypotheses?
Were they appropriately linked to the unit of analysis in the study?
 - Did the research report include not only inferential statistics but also effect size calculations?
-

Note. Gersten et al. (2005) as cited in Tankersley (2013).

Table 5

Mixed Methods

Purpose: Research that includes the collection and analysis of both quantitative and qualitative data in one study.

Benefits

According to Bryman, 2006 and Greene et al., 1989,

- Corroboration of findings through triangulation of multiple sources of data;
- Clarification of results observed with one method enhanced with complimentary data from the second method;
- Development of one method in light of results from another especially related to sampling, implementation, and measurement decisions;
- New ways of thinking about the field as potentially contradictory results across methodology initiates new more nuanced understandings; and
- Expands the breadth of understanding of an observed phenomenon with the addition of the second method.
- Uncovering unexpected patterns and generating new research questions (Schutt, 2015).
- Potential to fill gaps introduced by exclusively qualitative or quantitative designs (Teddlie & Tashakkori, 2012).
- Can reflect the diversity of students and their postsecondary school experiences, which are complex and embedded in multiple contexts.
- Particularly useful in research when “comprehensive baseline” information is limited and where little is known about the participants and their lived contexts, as is the case with many aspects of research focused on postsecondary students with disabilities (Klingner & Boardman, 2011).
- Provide contextual depth of information to data from large scale data sets; can answer “why or why not” and “how” research questions.

Limitations

According to Bryman, 2007,

- Projects being structured in a way that makes integration difficult.
 - Quantitative and qualitative component timeline differences.
 - Researchers’ methodological preferences.
 - Researcher skill specialization focused predominantly in either the quantitative or qualitative tradition.
 - Potentially different audiences.
 - Publication issues, such as bias toward a type of research and length restrictions making it difficult to discuss two sets of findings.
-

Table 6

Single Subject Research

Purpose: To document causal, or functional, relationships between independent and dependent variables (Horner et al., 2005).

Benefits

- Allows for manipulation and observation of the relationship between an independent variable and changes to a dependent variable (Horner et al., 2005).
- The individual is the unit of study; allows for cost effective and realistic identification of functional relationships when samples are small and can be done in typical educational settings and with students with lower incidence disabilities. This is especially beneficial when sample sizes are too small for the statistical power needed in other group designs (Horner et al., 2005; Kratochwill et al., 2010; Simonsen & Little, 2011).
- Allows for decision making regarding the appropriateness of an intervention for specific students because individual differences are not covered by larger group averages (Gast, 2010; Simonsen & Little, 2011).
- Designs offer flexibility; additional data points can be collected as needed (Kratochwill et al., 2010).
- Can determine characteristics of both responders and non-responders to an intervention (Horner et al., 2005).

Limitations

- If not replicated, results can have limited external validity and generalizability (Horner et al., 2005; Simonsen & Little, 2011).
 - Multiple threats to internal validity exist if the study is not carefully designed and carried out (Kim, 2018; Kratochwill et al., 2010).
-

Table 7

Key Components to be Clearly Described in Single Subject Research

Independent Variables

- Participants (number, type of disability, year in college, etc.).
- Training of the person(s) conducting the intervention.
- Intervention used by the researcher.
- Instructional materials used in the research.
- Measurement of fidelity.

Dependent Variables

- Clear, quantifiable, and operationally defined description of targeted behavior.
- Clear description of measures used.
 - If using a published measure, describe the technical characteristics (date, validity, reliability, norm sample).
 - If developing a new measure, provide information about the instrument and its development
- Information on the mode of administration of the instrument (e.g., oral, written, email).

Data Collection Procedures

- Time periods in which data was collected.
- Training of the data collectors.
- Procedures for inter-rater/scorer reliability.

Baseline Procedures

- Describe with replicable precision.

Experimental Control and Internal Validity

- Show at least three demonstrations of experimental effect at three points in time.
- Describe design controls for threats to internal validity.

Social Validity

- Provide clear demonstration that the results are socially important.
 - Provide clear demonstration that the intervention is practical and cost-effective.
-

Note. Horner et al. (2005).