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## Limitations When Conducting Quantitative Disability Research

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## Limitations When Conducting Quantitative Disability Research

### Keywords

disability, quantitative research, secondary dataset analysis



## LIMITATIONS WHEN CONDUCTING QUANTITATIVE DISABILITY RESEARCH

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### Abstract

Research of issues related to disability is consistently evolving in several social science related fields such as social work, psychology, sociology, and education. Disability research often employs large public datasets for researchers to conduct secondary analysis. However, these datasets come with many limitations that can impact the overall results. The purpose of this article is to discuss the limitations that occur when conducting a quantitative analysis for disability research from a secondary dataset.

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### Limitations When Conducting Quantitative Disability Research

As the criteria of disability expands, the number of people who are classified as having a disability is consistently growing (Luckasson & Tasse, 2021). Research of social issues related to disability is consistently evolving in several social science related fields such as social work, psychology, sociology, and education. Disability research often employs large public datasets for researchers to conduct secondary analysis (Dirth & Branscombe, 2018; Bills, 2020). This allows researchers to obtain a national or international representative sample without the restrictions of accessibility to a disability sample or boundaries posed by the IRB (Singal, 2010; Shirilla et al., 2021; Smith, 2018). Additionally, it ensures that there is statistical power when conducting data analysis.

Although having a large sample size assists with ensuring statistical rigor (Shirilla et al.,

2021), secondary dataset analyses does come with substantial limitations that can impede the internal and external validity of a study. Some of these limitations include inconsistencies of the definition of disability, lack of disabilitycategorical differentiation, accuracy of the dependent variable answers, disproportional sample sizes, and difficulties related to the ethical requirements of researching people with disabilities. The purpose of this article is to synthesize the potential gaps and limitations that are encountered when conducting quantitative disability research. Implications for future research are discussed.

### **Operational Definition of Disability in Research**

*Disability* is a very complex classification that is not always correctly defined in research studies and participation recruitment. Thus, hindering accuracy and the validity of outcomes. This holds especially true when data is collected through self-reporting. Self-reported data provides cost-effective means to obtain disability status but does not always provide accurate results (Schwartz et al., 1999). The ADA (1990, p. 1) defines disability as:

“a person who has a physical or mental impairment that substantially limits one or more major life activity. This includes people who have a record of such an impairment, even if they do not currently have a disability. It also includes individuals who do not have a disability but are regarded as having a disability.”

However, not all disability studies employ this operational definition. Some studies conceptualize disability based on the responses provided by the participants in the study sample. Participants in a sample may self-report their disability status inaccurately due to not knowing the legal definition of having a disability. Additionally, participants may believe they have a disability, but do not have the diagnosis to support their status. Thus, resulting in false reporting that can result in skewed outcomes that do not represent the accurate outcomes that disability has in the data analysis.

Additionally, even when a common definition is utilized, there can be variability in how different districts or states interpret the definition. Villarreal (2015) utilized state enrollment data for students with special needs finding that different states had statistically significant levels of identification of individuals with Emotional Disturbance (ED), and a statistically significant association between the state’s identification rate of ED, and high school graduation.

### **Categorizing Disability Types**

Building upon potential issues related to operationally defining *disability*, categorizing the different disability types can also pose threats to validity and causation of the outcome variable. The first predominant problem that is often observed in relation to categorizing *disability* is using a dichotomous (yes/no) variable, rather than a multi-categorical variable (Bills, 2020). Researchers often do this when employing quantitative methods because, it creates a bigger sample size for researchers to have adequate statistical power in their analysis. However, the use of a dichotomous variable can make the results inaccurate due to the diversity of the different types of disabilities.

There are several different types of disabilities that all pose different barriers and experiences. The different disability types include physical, intellectual, learning, and cognitive disabilities (Qian, et al., 2020). Additionally, these different disability categories also differentiate within themselves. Each disability category contains a range of mild, moderate, and severe variables within them (Shaywitz, Fletcher, & Shaywitz, 1995). Thus, every individual with a disability has their own set of unique experiences and challenges that are not always accounted for when conducting quantitative research. For researchers to accurately account for disability related causation, it is vital that disability researchers account for the many disability categories and levels of severity.

### **Disproportional Sample Sizes**

Since individuals with disabilities are a minority population, obtaining an adequate sample of individuals with disabilities is extremely difficult for researchers. When conducting quantitative research, it is imperative that the sample sizes of different participant demographics are proportional to the overall sample. However, in disability research with large datasets, the disability variable is often substantially smaller in comparison to the overall sample size of the dataset. When this occurs, it poses a threat to internal validity due to violating assumptions of proportional odds (Mac Giolla Phadraig et al., 2021). These specific issues can be observed when employing logistic regressions, linear regressions, multi-level modeling, structural equation

modeling, and confirmatory factor analysis, any of which may possibly result in type I and type II error. This indicates that disability researchers must attempt to recruit larger sample sizes of participants with disabilities.

### **Inaccuracy in Dependent Variable Answers**

Within any research, there is always the opportunity for an individual to interpret questions in a different way than the researcher intended. This misunderstanding could lead to inaccurate responses, and ultimately impact the data viewed as a whole. When surveying individuals with disabilities, there may be an increase in misunderstandings due to the individuals' disability.

One group that may have more frequent errors in interpretation are individuals with intellectual disabilities (ID). The American Association on Intellectual and Developmental Disabilities (AAIDD) defines an intellectual disability as “a disability characterized by significant limitations in both intellectual functioning and in adaptive behavior, which covers many everyday social and practical skills.” They further indicate that the intelligence scores (IQ) of these individuals is typically below 75, with score between 85-115 typically considered in the “average” range. The combination of a lower intellectual functioning and challenges with adaptive behavior, that may impact conceptual, social, and practical skills, could dramatically impact the individual's perception of survey questions. Errors in interpreting survey questions would likely occur in situations in which the individual with ID reads questions to themselves and when a researcher reads the questions to the individual. Within a classroom, rephrasing a question for an individual who does not understand is a common practice, but on a survey, rephrasing a question could lead to reliability and validity concerns.

### **Ethical Issues in Disability Research**

Whenever an individual seeks permission for a new research project from an institutional review board (IRB), the questions to be answered will include whether the research includes any *vulnerable populations*. Shivayogi (2013) states that while there are different definitions of the term, “the words simply imply the disadvantaged sub-segment of the community requiring utmost care, specific ancillary considerations and augmented

protections in research” (p. 53). Shivayogi indicates a list of many groups who may be included within the term *vulnerable populations* including children, minors, physically and intellectually challenged individuals, ethnic minorities, and visual or hearing impaired. Inherently, individuals with disabilities are very much part of the protected group and this makes obtaining permission for research more challenging.

“Research with this sub-segment of population is validated if reasonable direct benefits are foreseen, in compliance with local legal regulations” (Shivayogi, 2013, p.53). Institutional review boards, and researchers rightfully should work to protect vulnerable individuals from possible exploitation, but this may result in potential projects not occurring due to the ethical challenges to overcome.

### Conclusion and Future Directions

When researching disabilities, there are a substantial number of limitations that disability researchers must account for. Although large secondary datasets provide large sample sizes, they can result in accurate outcomes and relationships with the independent variable. Implications for future disability research include using datasets that categorize the different types of disabilities, have proportional sample sizes, and have consistency with surveys when gathering data. Additionally, disabilities researchers should strive to collect their own data using all the suggestions provided in this review.

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