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Stereotypes and Evaluations of People who are D/deaf

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Stereotypes and Evaluations of People who are D/deaf

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Abstract

D/deaf individuals face discrimination in their daily lives, impacting their access to language, education, and life satisfaction. While there has been research about some of the stereotypes held about those who are D/deaf, the relationship between those stereotypes and prejudice and discrimination has not been explored, to my knowledge. Additionally, how D/deaf individuals are categorized has not been examined, to my knowledge. Understanding whether the hearing majority holds a distinct cognitive schema for those who are D/deaf or consider D/deaf people within a larger group of disabled people will help in creating anti-bias interventions. For example, if hearing people have a distinct cognitive schema for D/deaf individuals, then anti-bias interventions can focus on changing that schema. However, if hearing people view D/deaf individuals as part of the group of disabled people, then anti-bias interventions targeting the D/deaf cognitive schema will not be sufficient. I recruited a sample of 480 participants via MTurk. They were instructed to list and evaluate stereotypes about the D/deaf and disabled, evaluate the D/deaf and disabled, and answer questions regarding behavioral intentions toward the D/deaf and disabled. To examine the cognitive schema held towards those who are Deaf, a linear regression was conducted with evaluations D/deaf individuals as the dependent variable and stereotypes about the D/deaf and disabled as predictors. Neither predictor was significant. Results are discussed in terms of their implications for developing interventions to reduce the bias against the D/deaf.

Keywords: stereotype, prejudice, evaluation, group categorization, deaf

Stereotypes and Evaluations of People who are D/deaf

Aristotle is noted as saying "men that are born deaf are in all cases also dumb; that is, they can make vocal sounds, but they cannot speak" (as cited in Branson & Miller, 2002, p. 89). This comment exemplifies stereotyping, beliefs about the attributes of a social group (Mackie & Hamilton, 1993), and may have contributed to discrimination of D/deaf people for thousands of years. Discrimination, which is the unequal treatment of social groups (Frank, 2016; Simms & Thumann, 2007), did not end with Ancient Greece. Specific to the deaf population, audism, the belief that a person is superior to another based on their ability to hear and behave in the manner of a hearing person (Humphries, 1975), continues to persist. For example, in 1884, Alexander Bell published a paper warning of the dire consequences of deaf people socializing and marrying each other. He later proposed ways to remove sign language, deaf teachers, and schools for the deaf and imposed a strict ban on sign language on hearing teachers who taught deaf students. He had a great interest in eugenics and through it, the goal of eliminating the deaf population. This movement was thorough in crushing Deaf culture and oppressing the D/deaf population. The "oralism" teaching method, a manner of teaching deaf students entirely with speech and requiring verbal responses, remained the dominant form of education in America for generations and still operates today (PBS, 2007). Aristotle and Alexander Bell may seem drastically removed from each other in time, but they both share the belief that hearing people should make decisions for those who are deaf. Both of these men also succeeded in suppressing Deaf culture by spreading misinformation that was readily accepted by the hearing majority.

Why does this matter? According to the U.S. Department of Health and Human Services in 2014, about 40 million Americans had some form of hearing trouble, while the number of people diagnosed as deaf appears to be approximately a million (Mitchell, Young, Bachleda, & Karchmer, 2006). All of these people may be subject to discrimination. The need for continued research on this topic is clear. To that end, the present research was designed to investigate the stereotypes and evaluations associated with people who are D/deaf, how they are related to one another and also how they are related to behavioral intentions toward the D/deaf.

In this paper, a distinction is made between the use of the words 'deaf' and 'Deaf.' When using 'deaf,' the meaning refers to the medical diagnosis of a person's hearing loss. 'Deaf' in contrast, is used to refer to the specific culture, heritage, language, and community shared and embraced by deaf individuals and, ideally, their families (Barth & Soto, 2010; Jambor & Elliott, 2005). D/deaf may be used to refer to both individuals with hearing loss and those who are culturally Deaf, as these can be two separate groups of people.

Hearing people may not realize the unique value of Deaf culture, particularly for individuals who are deaf. It may be thought that because integration in the majority culture is best for some types of disabilities, that full integration is best for people who are D/deaf as well. A meta-analysis of the effects of English and American Sign Language (ASL) education in D/deaf children found that early introduction to ASL and its consistent use was associated with greater success with English later on in life (Knoors & Marschark, 2012). Additionally, the less access D/deaf children were given to sign language the more negative effects on language comprehension and production were found (Mayberry & Lock, 2003). Specifically, deaf children

deprived of ASL were less able to learn a second language, in this case English, the language held by the majority population. However, this technique for language acquisition often does not occur for deaf children. Instead, the strategies often used for deaf children reflect a lack of knowledge about the condition of deafness and education on how it is unique from other disabilities.

The benefits of Deaf culture go beyond educational gains. For example, identifying as Deaf has been associated with increased resilience, meaning that individuals have an increased ability to recover from difficulties (Jambor & Elliott, 2005). Resilience stems from an ability to maintain self-esteem even in the face of discrimination. For deaf individuals, increased self-esteem has been associated with both identifying as Deaf and assimilating biculturally in both the Deaf and hearing worlds. There is a need to understand the extent to which hearing people recognize D/deaf individuals and their culture as distinct from disabled people.

The first step in this process is understanding how hearing people categorize those who are D/deaf. Individuals who belong to multiple categories (e.g., Deaf and disabled) may be categorized via two processes. The first is that they may be sub-grouped within a larger population (Richards & Hewstone, 2001). In this paper that would refer to the Deaf population being categorized within the larger population of disabled individuals. Thus, they would be associated with the category deaf and the category disabled. The second way a group can be categorized is sub-typing, where a social group is seen as unique from another group. In this paper that could refer to the deaf population being categorized as deaf but not as disabled.

Understanding group categorization is relevant when designing interventions to reduce stereotyping about or prejudice against the Deaf community. If D/deaf people are sub-grouped with disabled people, then reducing bias against disabled people will reduce bias against D/deaf people. However, if D/deaf people are sub-typed as a distinct group from disabled people, then reducing bias against disabled people will not have any effect on biases against D/deaf people. A third possibility may also exist. If hearing people do not have a distinct cognitive schema for those who are deaf, then the best strategy for reducing bias may be education.

While the future goal in this research is to reduce the stereotypes, prejudice, and discrimination held about and experienced by the D/deaf population, there is still much to be explored before that can be done, mainly to understand the biases that currently exist. A meta-analysis supported a correlation between stereotypes, attitudes, and discrimination (Dovidio et al., 1996). However, to my knowledge, these concepts have not been measured in the same study in relation to the D/deaf population. The relationship between these variables appears to be logical, following the theory that a belief (stereotype) would be related to evaluation (prejudice) and would then have the potential to lead to a behavior (discrimination) (Smith, 1993). However, that relationship, while significant, varies in size. This suggests that prejudice against some groups is strongly related to stereotyping about those groups, whereas for other groups stereotyping about the group is only weakly related to prejudice against that group (Dovidio et al., 1996). A goal of the present research was to investigate the strength of the relationship between stereotyping, prejudice, and discrimination that is directed at D/deaf people.

Overview

In this study, stereotyping about, prejudice against, and discrimination toward D/deaf people will be assessed in a non-experimental design. The following hypotheses were pre-registered (https://aspredicted.org/78wq2.pdf) before data collection.

Main Hypothesis. Are people who are deaf sub-grouped or sub-typed with the group of people who are disabled? If people who are D/deaf are sub-grouped, then evaluations of those who are D/deaf will be related to the stereotypes of those who are disabled but not those who are D/deaf. If people who are D/deaf are sub-typed, then evaluations of those who are D/deaf will be related to stereotypes of those who are D/deaf and not those who are disabled.

Additional Pre-Registered Hypotheses. Analyses will be conducted to assess differences in how positively the following groups are stereotyped: people who are deaf, people who are disabled, people who are hearing impaired, and people who are physically disabled. Analyses will be conducted assess differences in how those four groups are evaluated. Finally, the total number of stereotypes held by each participant towards the four social groups will be compared.

Method

Participants

An optional stopping method was used to determine when to stop data collection. According to the G*Power program (Faul, Erdfelder, Lang, & Buchner, 2007), 480 participants are needed to have an 80% chance of detecting a small effect size. I used Pocock's boundary (Pocock, 2005) to implement optional stopping. As peeking at data increases the Type 1 error

rate, the alpha for the pre-registered hypotheses was set at .0221. This ensures that the overall Type 1 error rate for the study was held to 5%. I checked the data after 130, 360, and 480 participants had completed the study. In total, 480 participants volunteered through MTurk to complete the survey in exchange for $.50.

Procedure

After accepting this task in the MTurk software, participants provided informed consent. During the task, participants completed surveys designed to measure their stereotyping, prejudice, and discrimination of people who are deaf, and people who are disabled. Measures of social contact with those who are D/deaf and those who are disabled was obtained as well as demographic information. At the conclusion, participants were presented with a debriefing screen.

Stereotype Task. Participants were informed that the researchers were interested in which traits they believed society associated with a various social groups. Participants then read a statement requesting that they answer questions honestly before completing the stereotype listing, stereotype strength, and stereotype valence tasks (Esses et al., 1993; Phills et al., 2017).

Stereotype listing task. Participants were instructed to list all the stereotypes they could think of about four social groups (people who are deaf, people with physical disabilities, people who are disabled, and people who are hearing impaired). Each social group was presented on the screen by itself, in the same order for each participant. Participants were then prompted to type each stereotype they could think of in individual boxes. There was a maximum input of 10 stereotypes. After participants had listed all the stereotypes they think of for each group, they

then could select a button to move on to the next task. Participants were not required to submit a minimum number of stereotypes per social group listed.

Stereotyping strength task. Participants were instructed to list how strongly they thought society associated each of the answers they supplied during the stereotype listing task with the given social group. These answers were scored on a Likert scale from 1 (very weak association) to 7 (very strong association). For example, if a participant had written the stereotype "speech delayed" for the social group of people who are hearing impaired, they could then select how strongly they believe society would associate that stereotype with that specific social group. This task was completed for each stereotype that had been listed in the previous task for each of the four social groups. Stereotypes were listed in the order previously submitted. Participants were then able to select a button to move on to the next task.

Stereotyping valence task. Participants were again shown each of the stereotypes they had listed, one at a time. They were asked to score how positive or negative these stereotypes were on a sliding scale from 1 (very negative) to 100 (very positive). Stereotypes were shown in the order they were previously submitted. Participants were then able to select a button to move on to the next task.

Evaluations. Participants were informed that researchers were interested in their personal feelings towards a series of social groups. Participants were then asked to evaluate four social groups (people with disabilities, people with physical disabilities, people who are hearing impaired, people who are deaf). The social groups were shown in a random order and accompanied by a picture of a feeling thermometer. Participants were asked to select how warm

or favorably they felt towards each social group, on a scale of 1 to 100. Answers were input via an onscreen slider. The same procedures were used to evaluate five individuals (a person, a person who was deaf, a person who was hearing-impaired, a person who was disabled, a person who was physically disabled). Each label was accompanied by one of five generic photos of a white male (Appendix A). Participants were then able to select a button to move on to the next task.

Attitudes Scales. Participants were informed that researchers were interested in honest, personal responses to a variety of questions. Participants completed several surveys, the Attitudes towards Individuals with Disabilities Scale, (Goreczny, Bender, Caruso, & Feinsterin, 2011), Prototypes of Disability Groups Scale, (McCaughey & Stohmer, 2005), Attitudes towards Deafness Scale, (Cooper, Rose, & Mason 2004), and the Disability Social Relations Generalized Scale (Grand, Bernier and Strohmer, 1982). For each scale, there was also a modified version. If the original scale asked questions about people with disabilities, the modified version asked those same questions about people who were deaf. If the original scale asked questions about people who are deaf, then the modified version asked the same questions about people with disabilities.

Attitudes towards Individuals with Disabilities Scale (Goreczny et al. 2011). Participants were given a 15-item scale on attitudes towards individuals with disabilities selected from the original 42-item scale. The questions selected can be found in Appendix B. Using a Likert scale from 1 (strongly disagree) to 7 (strongly agree) participants were asked questions regarding their feelings regarding common stereotypes. Examples include "individuals with

disabilities should not be allowed the same human rights as those abled bodied" (e.g. laws should prohibit persons with intellectual/developmental disabilities from having children), "people with disabilities can make informed decisions" (e.g. people with disabilities should have the final say in the decisions affecting their lives). Questions were shown in a random order. This process was repeated for a modified version of the scale which focused on those who are deaf.

Prototypes of Disability Groups (McCaughey & Stohmer, 2005). Participants were presented with an 11-item scale on stereotypes towards individuals with disabilities. Questions can be found in Appendix C. Using a Likert scale from 1 (not accurately at all) to 5 (extremely accurately) participants were asked questions regarding their feelings regarding common stereotypes. Examples include associations between disabilities and various attributions, "how accurately do you think the term *sign language* applies to a person with disabilities." Questions were shown in a random order. This process was repeated with a version of the scale modified to focus on those who are deaf.

Attitudes to Deafness Scale (Cooper et al., 2004). Participants were given a 12-question scale on attitudes towards deafness. Questions were selected from the original 22-item scale and can be found in Appendix D. Using a Likert scale from 1 (strongly disagree) to 7 (strongly agree) participants were asked to answer questions closest to their feelings regarding common stereotypes. Examples include "Deaf parents cannot successfully raise hearing children" (e.g. hearing children of deaf parents are at risk for emotional deprivation), and "Deaf individuals should be appropriated into hearing culture and not allowed visual communication" (e.g. Deaf people should learn speech rather than sign language). Questions were shown in a random order.

This process was repeated with a modified version of the scale that focused on individuals with disabilities.

Behavioral Intentions. Participants were informed that researchers were interested in honest, personal responses to a variety of questions. Participants completed two surveys, the Disability Social Relations Scale (Grand, Bernier, and Strohmer, 1982) and a modified version designed to focus on individuals who are deaf. Specifically, participants were given an 11-question scale on behavioral intentions towards disabled persons. Questions can be found in Appendix E. Using a Likert scale from 1 (strongly disagree) to 7 (strongly agree) participants were asked to answer questions by selecting the answer closest to their honest feelings. Questions focused on two subscales including behavioral intentions in dating and marriage. Examples include "comfort in dating a person with a disability" (e.g. I would have a friendship, nothing more, with a person with a disability), and "comfort towards marrying a person who was disabled" (e.g. if I loved a person with a disability, I would try to marry him or her). Questions were shown in a random order. This process was repeated with a modified version of the scale that focused on people who are deaf.

Deaf Cultural Knowledge (Jambor and Elliott, 2005). Participants were shown three questions about factors that increase resilience for D/deaf individuals. Participants were shown each question individually, in a random order. "How important do you think it is for a person who is deaf to identify as culturally Deaf?" and "how important do you think that it is that a person who is deaf is able to get along well in both the hearing and culturally Deaf communities?" was scored on a Likert scale from 1 (not at all important) to 5 (extremely

important). "Do you think people within the Deaf community who experience greater hearing loss will be more resilient?" was scored on a Likert scale from 1 (definitely not) to 5 (definitely yes).

Results

Reliability

Cronbach alpha was calculated for each scale. They were all found to have good reliability (all α's > .80) except for Attitudes to Deafness Scale (α = .71) the version of the Attitudes to Deafness scale modified to focus on disabilities, α = .67.

Main Hypotheses

In accordance with the pre-registered optional stopping procedure, only p-values below .0221 will be considered significant for each significance tests in this section.

In order to test whether D/deaf individuals are sub-grouped or sub-typed with people who are disabled, we conducted a linear regression. Mean stereotyping scores were calculated for each participant by multiplying the strength of the stereotypes by the valence score for each trait listed and then calculating an average. Thus, higher stereotyping scores represent more positive stereotyping about each group. Stereotyping scores about those who are deaf and stereotyping scores about those who are disabled were entered as predictors in the linear regression and evaluations of people who are deaf were entered as the dependent variable. The model was not significant, $F(2, 476) = 1.84$ $p = .160$, $R^2 = .008$. Also, neither stereotypes of those who are deaf ($B = -.099$, $SE = .010$, $p = .064$) nor those who are disabled ($B = .030$, $SE = .002$, $p = .580$) were

significantly related to evaluations of people who are deaf. These results did not support the sub-typing or sub-grouping hypothesis. This suggests that there may not be a distinct cognitive schema held about individuals who are D/deaf.

Additional Pre-Registered Hypotheses

The pre-registered additional hypotheses were not tested using the adjusted Pocock's boundary alpha because they did not inform my decisions to optionally stop data collection. Instead, a Bonferroni correction was used account for multiple tests. Specifically, *p*-values below 0.002 will be considered significant because I conducted 23 significance tests. All tests conducted were two-tailed.

Differences between Stereotyping Scores. In order to compare the stereotyping scores between the four social groups (people who are deaf, people who are disabled, people who are physically disabled, people who are hearing impaired), a one-way ANOVA was conducted. The means and standard deviations for each group are shown in Table 1. There was a significant effect for stereotyping, Wilks' Lambda = .831, $F(3, 464) = 31.47$, $p < .001$, $p\eta^2 = .17$. To analyze the differences in stereotyping scores paired-samples *t*-tests were conducted. People who are deaf were stereotyped more positively than people who are hearing impaired, $t = 4.20$, $p < .001$, $d = .13$. People who are hearing impaired were stereotyped more positively than people who are physically disabled, $t = 4.60$, $p < .001$, $d = .13$. Finally, people who are physically disabled stereotype scores were not significantly different from people who are disabled, $t = 9.24$, $p < .001$, $d = .28$. The means and standard deviations for each stereotyping score can be

found in Table 1. This suggests that the stereotypes about people who are deaf and people who are disabled are different. This supports the sub-typing hypothesis.

Differences between Evaluation Scores. A one-way repeated measures ANOVA was conducted to compare the evaluation scores for people who are deaf, people who are disabled, people who are physically disabled, and people who are hearing impaired, Wilks' Lambda = .99, F (3, 489) = .90, p = .439, $p\eta^2$ = .006. The means and standard deviations for each social group can be found in Table 1. The evaluations of these groups did not differ from one another.

Relationship between Stereotyping Scores and Attitude Scales. In order to test if attitudes towards those who are deaf was predicted by stereotyping scores of those who are deaf or those who are disabled, addition linear regressions were conducted with stereotyping scores of those who are deaf and those who are disabled entered as predictors but one of the attitude scales entered as the dependent variable. The models associated with Attitudes Towards Individuals with Disabilities Scale ($F(2, 476) = 27.89 \ p < .001$, $R^2 = .11$) and the same scale modified to focus on individuals who are deaf ($F(2, 475) = 18.20 \ p < .001$, $R^2 = .07$) as the dependent variable were significant. The models associated with Prototyping of Disability groups ($F(2, 476) = 3.91 \ p = .21$, $R^2 = .02$), it's modified version ($F(2, 473) = .67 \ p = .514$, $R^2 < .01$), the Disability Social Relations Generalized Scale ($F(2, 472) = 2.84 \ p = .059$, $R^2 = .01$), and its modified version ($F(2, 473) = 2.43 \ p = .089$, $R^2 = .01$) as the dependent variable were not. In the next section I will describe the significant models in more detail.

In the model associated with Attitudes Towards Individuals with Disabilities Scale, the stereotyping scores of those who are deaf ($B = .25$, $SE < .001$, $p = .001$) but not those who are

disabled ($B = .12$, $SE < .001$, $p = .021$) were significantly related to Attitudes Towards

Individuals with Disabilities Scale. This suggests that stereotypes about D/deaf people but not

stereotypes about disabled people relate to attitudes about disabled people. This does not support

either the sub-grouping or sub-typing hypothesis. In the model associated with the modified

Attitudes Towards Individuals with Disabilities Scale, the stereotyping scores of those who are

deaf ($B = .18$, $SE < .001$, $p = .001$) but not those who are disabled ($B = .12$, $SE < .001$, $p = .017$)

were significantly related to Attitudes Towards Individuals with Disabilities Scale, modified to

deaf. This suggests that stereotypes about D/deaf people but not stereotypes about disabled

people are related to attitudes about D/deaf people. This supports the sub-typing hypothesis.

Exploratory Analyses

In order to test if attitudes toward individuals were predicted by stereotyping scores of

those who are deaf or those who are disabled, addition linear regressions were conducted with

stereotyping of those who are deaf and those who are disabled entered as predictors but one of

the individual evaluations entered as the dependent variable. The models associated with a

person ($F(2, 476) = 1.27$ $p = 0.282$, $R^2 < .01$), a person who was deaf ($F(2, 475) = .43$ $p = 0.652$,

$R^2 < .01$), a person who was disabled ($F(2, 476) = 1.13$ $p = 0.324$, $R^2 < .01$), a person who was

physically disabled ($F(2, 476) = .66$ $p = 0.517$, $R^2 < .01$), and a person who was hearing impaired

($F(2, 476) = .91$ $p = 0.404$, $R^2 < .01$) as the dependent variable were not significant. This

suggests that neither stereotypes of people who are D/deaf or disabled predicted any of the

evaluations of a person, in various social groups. This does not support either the sub-typing or

the sub-grouping hypothesis.

Correlations. The relationship between the stereotyping scores of the four social groups (people who are deaf, people who are hearing-impaired, people who are disabled, people who are physically disabled) was investigated using Pearson product-moment correlation tests. There was a strong positive correlation between all four variables (r's > .78, p's < .001). The p and r values can be found in Table 2.

The relationship between evaluations of the four social groups (people who are deaf, people who are hearing-impaired, people who are disabled, people who are physically disabled) was investigated using Pearson product-moment correlation coefficient. There was a strong positive correlation between all four variables (r's > .84, p's < .001). The p and r values can be found in Table 3.

There were strong positive corrections between each of the original attitude and behavioral intention scales and their modified versions, the Attitudes Towards Individuals with Disabilities Scale (r = .83, n = 494, p < .001), the Prototypes of Disability Groups (r = .66, n = 492, p < .001), the Attitudes to Deafness scale (r = .82, n = 492, p < .001), and the Disability Social Relations Generalizes Scale (r = .79, n = 491, p < .001).

Discussion

Summary of Results

The main hypothesis of this study was to find if people who are deaf are sub-grouped or sub-typed with the group of people who are disabled. Some of the tests did support a sub-typing hypothesis, in that stereotypes of people who are deaf and not stereotypes of people who are

disabled were related to the evaluations of people who are deaf. However, for many of the other tests this was not supported. Since support for the sub-typing hypothesis was not found consistently, we do not make a strong conclusion either in favor or against either hypothesis. This suggests that there is not a clear cognitive schema held about those who are D/deaf. Thus, the best bias reduction strategy may not be to focus on specific bias against either disabled people or D/deaf people but to focus on education about people who are D/deaf and Deaf culture.

Additional pre-registered hypotheses looked at the differences in social group stereotyping scores. It was found that stereotyping scores were highest for people who are deaf, and lowest for those who are disabled. There were not differences in how participants evaluated any of the four groups. The stereotyping scores were also examined for their relationship to attitude scales and behavioral intentions. It was found that both the Attitudes towards Individuals with Disabilities Scale and it's modified to deaf version were predicted by stereotyping scores of those who are deaf, but not those who are disabled. None of the other scales, or their modified versions were related to stereotyping those who are deaf or those who are disabled. Exploratory analyses found that evaluations of individuals (a person, a person who was deaf, a person who was disabled, a person who was hearing impaired, or a person who was physically disabled) were not predicted by stereotyping scores of those who are deaf and those who are disabled.

Strengths

Construct Validity. To allow for an understanding of participant's stereotypes, without the implementation of experimenter bias or external assumptions, self-generation methods were

used. This allowed each participant to generate the stereotypes they personally associated with a given social group, it's strength, and its valence without any external suggestions from researchers. Thus, the stereotypes generated should represent a pure measurement of the stereotypes genuinely held by the participant as opposed to stereotypes that may have been influenced by the researcher.

For the measurement of participant's evaluations of social groups, a simple evaluation thermometer was used. This eliminated the risks present in attitude scales of measuring unknown constructs in addition to social group evaluation. For example, an attitude question could state "people with disabilities should not be able to own property" and be scored on a 7-point Likert scale from "very much agree" to "very much disagree." However, it is unclear if a very much agree would be the measurement of negative stereotypes or negative attitudes. The evaluation thermometer used in this study was clear tool for measuring individual attitudes towards a given person or social group, without the influence of stereotypes.

Statistical Validity. In my study I preregistered my hypothesis, plans for optional stopping, and the methods to be used to test my main hypothesis. This allowed for clear data collection methods, and honest analysis of both the main hypothesis and my exploratory hypotheses.

I also controlled for Type 1 error rates in two ways. First, for my main hypothesis I used a reduced alpha determined by Pocock's boundary. This maintained my Type 1 error rate even though I peeked at the data three times. Additionally, I adjusted the alpha for the remaining tests with a Bonferroni correction. This also ensured that my Type 1 error rate was maintained at 5%.

In the present research I was able to expand upon the sample sizes of previous studies, thus providing a more accurate estimate of effect size and increased statistical power. The study that introduced the Attitudes to Deafness Scale (Cooper & Mason, 2004) had a sample size of 90 participants. The study that introduced the Attitudes towards Individuals with Disabilities Scale (Goreczny, Bender, Caruso, & Feinstein, 2011), had a sample size of 129 participants. The study that introduced the Prototyping of Disability Groups (Strohmer & McCaughey, 2005), had a sample size of 122 participants.

Limitations

External Validity. It is unclear whether this data would generalize to the hearing educators of those who are D/deaf. Studying how hearing educators categorize D/deaf children could help understand the circumstances creating the negative experiences that have been documented (Simms & Thumann, 2007). If it was found that educators did not have a clear mental schema for D/deaf students, then schools could implement additional training for the instructors and staff on the importance of Deaf culture and how to foster resilience in their students. However, if it was found that educators do have a clear mental construct, understanding group categorization could lead to different anti-bias methods. If educators sub-type D/deaf students, then anti-bias interventions focusing stereotypes of those who are D/deaf could be used. But, if educators primarily sub-group D/deaf children then anti-bias interventions could target both stereotypes held towards those who are D/deaf and those who are disabled.

Additionally, it is also not known if this data generalizes to the medical providers of the D/deaf. Studying a population of medical providers working with D/deaf patients would help in targeting education that would be most effective for enabling them to provide appropriate diagnosis and treatment. If it is found that health care providers do not have a clear cognitive schema for those who are deaf, additional targeted education on current research findings could address that issue. However, it may be found that providers do have a clear cognitive schema for their patient groups. In this case, then alternative methods would rely on understanding social categorization. If providers are sub-typing those who are D/deaf than additional education could be targeted for those who are D/deaf. If providers are sub-grouping, additional education focusing on the differences in treatment of those who are Deaf, deaf, have other specific medical conditions, or disabilities would need to be provided.

Future directions

This study's analysis appears to support that there may not be a clear mental schema held for those who are D/deaf. However, as this was not the pre-registered hypothesis, additional data should be collected to replicate this result before any conclusion can be drawn. Additional experimental measures should be used towards the goal of reducing bias towards those who are deaf. If it is shown that there is not clear mental schema for those who are deaf, then additional experimental measures could be conducted to see if Deaf cultural knowledge could reduce bias.

Conclusion

The issue of stereotyping, prejudice, and discrimination continues to be experienced in the lives of those who are D/deaf. As long as that continues, research should focus to finding out why it occurs and how it can be changed into more positive results. It is my hope that this research and future experimental measures developed from this study could implement anti-bias interventions to create an environment for those who are D/deaf to experience equality with their hearing cohort.

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Table 1

Means and standard deviations for evaluations and stereotypes of people in the four social groups.

	Mean	Standard Deviation	N
Stereotypes	412.37	183.91	482
Disabled Stereotypes			
Deaf Stereotypes	361.55	173.46	488
Physically Disabled Stereotypes	407.32	182.28	483
Hearing Impaired Stereotypes	383.43	177.32	481
Evaluations			
Disabled Evaluations	76.06	22.37	494
Deaf Evaluations	76.39	21.93	494
Physically Disabled Evaluations	75.71	22.41	495
Hearing Impaired Evaluations	76.60	21.83	495

Table 2

*Pearson's correlations and p-values for the stereotypes of the four social groups.*

	Deaf Stereotypes	Disabled Stereotypes	Physically Disabled Stereotypes	Hearing Impaired Stereotypes
Deaf Stereotypes	-	r = 0.780, p < .001	r = 0.801, p <.001	r = 0.780, p < .001
Disabled Stereotypes	-	-	r = 0.899 p < .001	r = 0.801, p <.001
Physically Disabled Stereotypes	-	-	-	r = 0.809 p < .001
Hearing Impaired Stereotypes	-	-	-	-

Table 3

Pearson's correlations and p-values for the evaluations of the four social groups.

	Deaf Evaluations	Disabled Evaluations	Physically Disabled Evaluations	Hearing Impaired Evaluations
Deaf Evaluations	-	r = 0.855, p < .001	r = 0.845, p <.001	r = 0.910, p < .001
Disabled Evaluations	-	-	r = 0.916 p < .001	r = 0.823, p <.001
Physically Disabled Evaluations	-	-	-	r = 0.839 p < .001
Hearing Impaired Evaluations	-	-	-	-

Appendix A
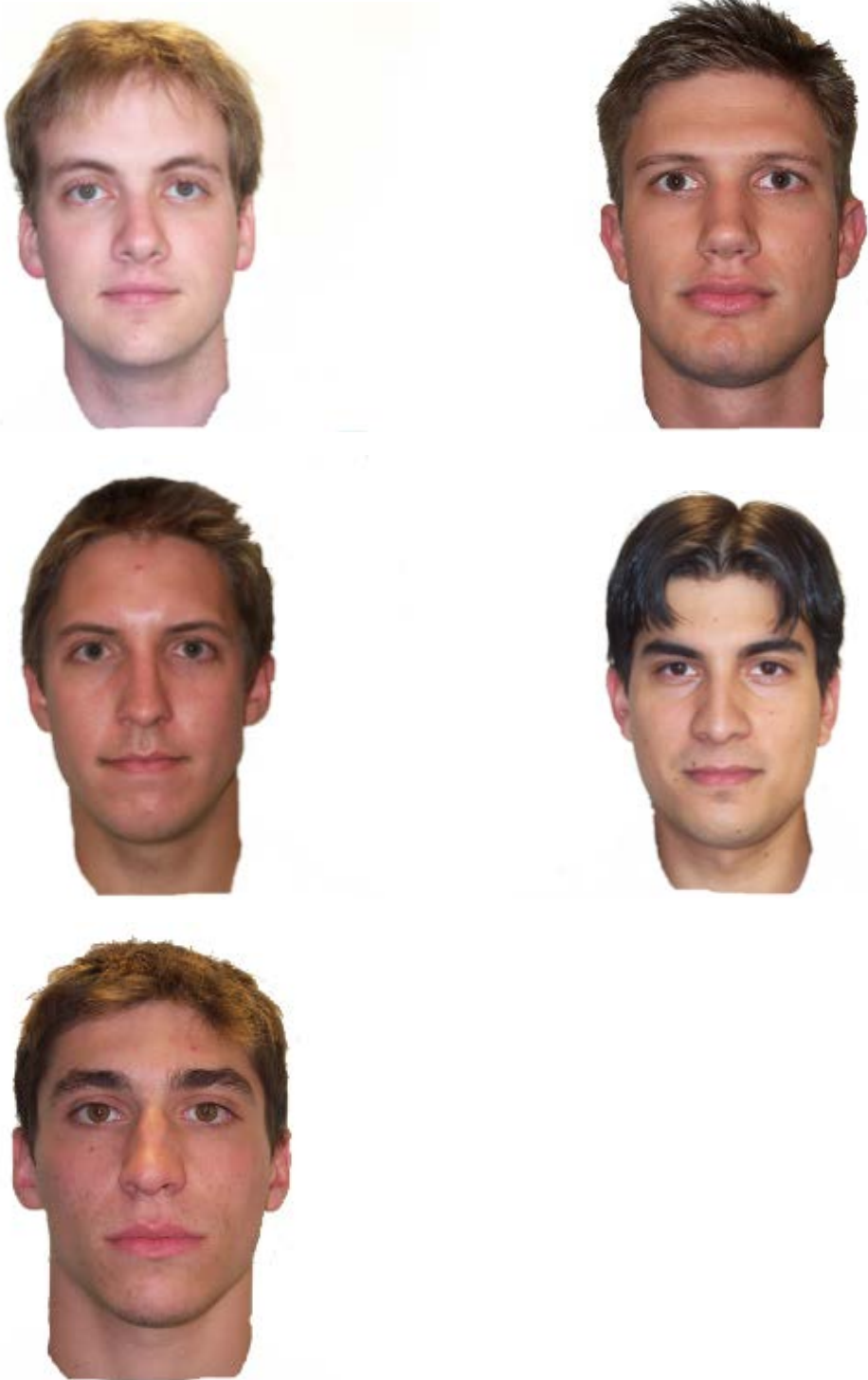
Appendix B

1. All children should have equal access to free, public education.

2. When provided with the proper environment and presented with appropriate opportunities, persons with intellectual/developmental disabilities (people who are deaf) are capable of leading successful lives.

3. Most persons with intellectual/developmental disabilities (people who are deaf) are only capable of leading successful lives when institutionalized.

4. Laws should require persons with intellectual/developmental disabilities (people who are deaf) to live in institutionalized facilities, away from the general public.

5. Laws should prohibit persons with intellectual/developmental disabilities (people who are deaf) from renting or owning property.

6. Persons with intellectual/developmental disabilities (people who are deaf) are capable of making a valuable contribution to a workplace environment.

7. When placed in regular classrooms, children with intellectual/developmental disabilities (children who are deaf) can have a positive impact on the children without disabilities.

8. Persons with disabilities (people who are deaf) are happy.

9. Persons with disabilities (people who are deaf) should not be allowed to marry persons without disabilities.

10. Persons with disabilities (people who are deaf) are capable of positively contributing to society.

11. Most persons without disabilities (people who are hearing) find the thought of marrying a person with disabilities as (person who is deaf) as repulsive.

12. Persons with disabilities (people who are deaf) should have the final say in decisions affecting their lives

13. People with disabilities (people who are deaf) who are severely ill should have Do Not Resuscitate (DNR) orders when in the hospital.

14. Persons with disabilities (people who are deaf) are capable of forming close relationships with others.

15. Persons with intellectual/developmental disabilities (people who are deaf) do not participate in healthy habits, such as maintaining a healthy diet and a physical exercise routine.

Appendix C

1. How applicable do you find the term *sign language* to applying to a person with disabilities (person who is deaf)?

2. How applicable do you find the term *hearing aid* to applying to a person with disabilities (person who is deaf)?

3. How applicable do you find the term *speech problems* to applying to a person with disabilities (person who is deaf)?

4. How applicable do you find the term *deaf/cannot hear* to applying to a person with disabilities (person who is deaf)?

5. How applicable do you find the term *read lips* to applying to a person with disabilities (person who is deaf)?

6. How applicable do you find the term *heightened reliance on other senses* to applying to a person with disabilities (person who is deaf)?

7. How applicable do you find the term *problems hearing* to applying to a person with disabilities (person who is deaf)?

8. How applicable do you find the term *difficulty communicating* to applying to a person with disabilities (person who is deaf)?

9. How applicable do you find the term *caused by heredity or injury* to applies to a person with disabilities (person who is deaf)?

10. How applicable do you find the term *negative emotions and treatment* to applying to a person with disabilities (person who is deaf)?

11. How applicable do you find the term *special schools* to applying to a person with disabilities (person who is deaf)?

Appendix D

1. Deaf couples (people who are disabled) should receive genetic counseling to avoid having deaf (disabled) children.
2. Deaf (disabled) children should learn to speak to communicate with hearing parents. (Disabled children should learn to adapt to an 'abled' world.
3. Deaf people (people who are disabled with a verbal/hearing impediment) should learn speech rather than sign language.
4. Deaf (disabled) people are handicapped.
5. Deaf children (children with disabilities related to hearing and/or verbal skills) should be taught in sign language.
6. Hearing (Regularly abled) children of deaf (disabled) parents are at risk of emotional deprivation.
7. Deaf (disabled) people are safe drivers.
8. Deaf people (people who are disabled with hearing impediments) should learn to lipread.
9. Interpreters should be available for deaf people (people with disabilities with verbal/hearing impediments) at work.
10. All deaf (disabled) people should be offered corrective surgery.
11. Having a deaf (disabled) colleague would cause problems in the workplace.
12. Deaf (disabled) people have their own culture.

Appendix E

Dating Subscale:

1. I would have a friendship, nothing more, with a person with a disability (deaf).
2. When dating a person with a disability (person who was deaf), I would not feel uncomfortable if people would stare.
3. In dating a person with a disability (person who was deaf), I would not worry what others think.
4. When dating a person with a disability (person who was deaf), I would be willing to have a sexual relationship with him or her.
5. When dating a person with a disability (person who was deaf), I would not find sex or physical contact with him or her embarrassing.

Marriage Subscale:

6. In considering marriage, I would not exclude a person with a disability (person who was deaf).
7. If I loved a person with a disability (person who was deaf), I would try to marry him or her.
8. A spouse with a disability (who was deaf) would not be too dependent on me.
9. In marriage to a person with a disability (person who was deaf), I would feel comfortable making love to my partner.
10. In marriage to a person with a disability (person who was deaf), my partner would be able to earn an adequate income.
11. In marriage to a person with a disability (person who was deaf), a partner would take full responsibility as a parent.