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Siblings of People with Disabilities' Explicit and Implicit Disability Attitude Divergence

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Abstract

Siblings of people with disabilities have more exposure to people with disabilities than most nondisabled people uniquely positioning them towards disability yet less is known about how this may impact their attitudes. This study examined siblings' disability attitudes by determining siblings' explicit and implicit disability bias, mapping their two-dimensional prejudice, and examining theoretical variables that may be relevant to their attitudes. To do so, the Disability Attitudes Implicit Association Test, the Symbolic Ableism Scale, and survey questions were administered to forty-eight siblings. Findings revealed the majority of the siblings implicitly preferred nondisabled people despite reporting low levels of explicit attitudes.

Keywords: siblings of people with disabilities; implicit attitudes; explicit attitudes; disability attitudes; aversive ableism

Siblings of People with Disabilities' Explicit and Implicit Disability Attitude Divergence

Siblings of people with disabilities have more exposure to people with disabilities than most nondisabled people, uniquely positioning them towards disability. In fact, siblings of people with disabilities have an intimate and unique connection to disability. Doody et al. (2009) cites the importance of this sibling relationship; siblings of people with disabilities have been found to have warmth, heightened empathy, increased altruism, and a larger sense of responsibility (Benderix & Sivberg, 2007; Cate & Loots, 2000; Hannah & Midlarsky, 1985; Lobato, 1983; Stocker et al., 1997). While research has detailed conflicting findings about closeness with their sibling with a disability, especially based on gender and age, overall most siblings have high levels of involvement with their sibling with a disability (Doody et al., 2009; Floyd, 1995; Pulakos, 1989). Indicative of a strong closeness to their sibling with a disability, siblings often take on more formal roles such as caregiving later in life (Heller & Kramer, 2009; Mailick Seltzer et al., 2005). Moreover, siblings' strong relationship with disability is reflected by their increased likeliness to go into disability related fields (Eget, 2009).

While literature shows that siblings of individuals with disabilities often know their brothers and sisters with disabilities well, and feel strong responsibility and commitment towards them, less research has focused on how the sibling relationship impacts their understandings of disability and disability attitudes. Disability attitudes can both reflect and contribute to “the subordination of people with disabilities” – ableism (Campbell, 2009, p. 4). Ableism is “discrimination in favor of the able-bodied,” including “the idea that a person’s abilities or characteristics are determined by disability or that disabled people as a group are inferior to

nondisabled people” (Linton, 1998, p. 9). Ableism manifests itself through institutional, systemic, and subtle discrimination (Harpur, 2011; Keller & Galgay, 2010; Linton, 1998).

While Neely-Barnes et al. (2010) suggest siblings may initially learn how to understand disability from their families and parents, they may also understand disability in the context of broader society and the ableist forces that are present in the attitudes, structures, and laws. Even less is known about siblings’ perceptions of people with disabilities as a social minority group. Thus this study, in focusing on siblings of individuals with disabilities, takes seriously the unique perspective that siblings offer on disability. By examining complex disability attitudes, this study may allow a new perspective on how siblings perceive and understand disability, both as they have experienced life with their sibling with a disability and how they engage with the broader cultural understandings of disability.

Attitude Measurement

Expanding our knowledge of attitudes helps us to understand social interactions, socialization, and prejudice formation (Antonak & Livneh, 2000). Attitudes operate on two levels, explicit (conscious) and implicit (unconscious) (Amodio & Mendoza, 2011; Antonak & Livneh, 2000). There are concerns that explicit measures do not capture all attitudes because participants may feel pressure to conceal their biases or may be unaware they hold biased attitudes (Amodio & Mendoza, 2011; Antonak & Livneh, 2000). This can be especially true for subjects where it is especially taboo to have negative attitudes – prejudice – such as against people with disabilities. For this reason, much research has shifted towards measures that examine unconscious implicit attitudes towards social minority groups. Implicit attitudes can relate to automatic processes triggered by external cues and reflect associations between attitudes and concepts (Amodio & Mendoza, 2011). Implicit attitudes are theorized to be rooted in normal

cognitive processes, especially those related to societal norms; thus, it is likely the majority of people hold these negative implicit attitudes (Dovidio & Gaertner, 2004; Dovidio, Gaertner, Anastasio, & Santioso, 1992).

Because of the ways explicit and implicit attitudes operate peoples' implicit and explicit attitudes do not always align. In fact, different combinations of explicit and implicit bias can be organized into four different categories: symbolic¹, aversive, principled conservatives, and truly low prejudiced. Symbolic prejudiced people have high explicit and high implicit bias (Son Hing, Capodilupo, Nadal, & Torino, 2008). Although less work has been done on symbolic ableism, symbolic racism has been tied to conservatism; symbolic racists are those who believe discrimination is no longer relevant, disadvantaged Black people are demanding too much too quickly and are receiving special treatment, and not taking responsibility for their lives (Henry & Sears, 2002). Aversive ableists have low explicit prejudice and high implicit prejudice (Friedman, 2016; Son Hing et al., 2008). Aversive ableism and racism theories focus on those people who are more progressive and believe they are not prejudiced yet still participate in biased actions or thought (Friedman, 2016; Gaertner & Dovidio, 1986; Gaertner et al., 2005). Principled conservatives are those who have high explicit prejudice and low implicit prejudice because they truly value abstract conservative ideals, which cause them to dislike policies that stray from tradition (Son Hing et al., 2008). Finally, as the name suggests, truly low prejudiced people are those who truly have low explicit and implicit prejudice (Son Hing et al., 2008).

The majority of research about attitudes towards people with disabilities has focused on explicit bias measures and has not considered how explicit and implicit prejudice may operate in tandem. More recently studies have begun examining implicit disability attitudes, especially as

¹ This category includes both the concepts of symbolic and modern prejudice. While at one time they were considered separate, the significant bulk of the literature now considers them the same thing (Henry and Sears, 2008). Thus it is referred to as symbolic prejudice throughout this paper for clarity.

held by particular groups of people, such as physician assistant students (Archambault et al., 2008), rehabilitation counseling students (Pruett & Chan, 2006), nurses (Aaberg, 2012), teachers (Federici & Meloni, 2008), child protective services employees (Proctor, 2011), etc. All of these studies have found high implicit attitudes with participants favoring nondisabled people over people with disabilities (Aaberg, 2012; Archambault et al., 2008; Chen et al., 2011; Federici & Meloni, 2008; Proctor, 2011; Pruett & Chan, 2006).

One group whose implicit attitudes have not been examined is siblings of people with disabilities. Siblings' intimate relationship to disability and involvement with people with disabilities suggest they will have more positive explicit attitudes than other groups, yet less is known about how this may impact their implicit prejudice. Thus the purpose of this study is to answer the following question: what are siblings' explicit and implicit disability attitudes? In doing so, the aim of this study is to examine siblings' disability attitudes by determining their patterns of explicit and implicit disability bias, and examining theoretical variables that may be relevant to more positive attitudes such as demographics, political orientation, and closeness with their sibling. This will be approached with the following three hypotheses: 1) Because of their experience with and exposure to their sibling/s with a disability the majority of siblings will have low explicit disability prejudice; 2) Since ableism is very prominent (Abberley, 1987; Barnes, 1997; Baynton, 2001; Keller & Galgay, 2010; Linton, 1998; Schweik, 2009; Shakespeare, 1996; Young, 2014) and many implicit attitudes are tied to normal cognitive processes (Dovidio et al., 1992; Dovidio & Gaertner, 2004; Gaertner et al., 2005) the majority of siblings will have moderate to high levels of implicit disability prejudice; and, 3) Siblings will most often be prejudiced following the aversive ableism pattern, with low explicit prejudice and high implicit prejudice.

This study is based on original data used to test these hypotheses by administering the disability attitudes implicit association test (Greenwald, McGhee, & Schwartz, 1998), and the symbolic ableism scale (Friedman & Awsumb, in preparation), which measures explicit prejudice. In order to categorize participants according to prejudice style (symbolic, aversive, principled conservative, truly low prejudiced) Son Hing et al.'s (2008) two-dimensional model of prejudice, described in more detail below, will be used. Participants will also be asked other survey questions about their relationships with people with disabilities and their demographics so it can be determined if these factors impact explicit or implicit prejudice.

Methods

This study operated under the following three hypotheses: 1) the majority of siblings will have low explicit disability prejudice; 2) the majority of siblings will have moderate to high levels of implicit disability prejudice; and, 3) siblings will most often be prejudiced following the aversive ableism pattern.

Participants

Forty-eight people (43 women, 5 men) participated in this study; the mean age of participants was 38.23 years ($SD = 13.28$). Forty of the participants (83.3%) had one sibling with a disability, seven (14.6%) had two, and one (2.1%) had four. Seven participants (14.6%) also identified as having a disability themselves. While the majority of participants were White (79.2%), others were Asian (6.3%), Black (6.3%), Latino/a or Hispanic (4.2%), Middle Eastern (2.1%), and interracial (2.1%).

Measures

The Disability Attitudes Implicit Association Test. One of the most prominently used implicit methods is the Implicit Association Test (IAT), which was developed by Greenwald et

al. (1998). The IAT presents participants with two target-concept discriminations, such as Black and White, and two attribute dimensions, such as pleasant and unpleasant, displaying one target-concept discrimination and one attribute dimension on each side of the computer screen. For example Black and unpleasant on the left side of the screen and White and pleasant on the right. It then presents participants with related image or word stimuli and asks them to sort them to the category it falls under. Target-concept discriminations and attribute dimensions are arranged so they appear both stereotype congruent and incongruent at different times. The IAT then compares response latencies for participants' congruent and incongruent items.

IAT tests have been used to study prejudice and associations for a number of target populations such as Black versus White people, Lesbian and Gay versus Straight people, and fat versus thin people. The Disability Attitude Implicit Association Test (DA-IAT) (Greenwald et al., 1998) is the most widely used disability related IAT. It is similar to the original IAT that examined preferences for Black versus White people except the target-concept discriminations are 'disabled persons' and 'abled persons' and the attribute dimensions are 'good' and 'bad;' the stimuli used are symbols of people with disabilities and nondisabled people, and items and words for good and bad developed by *Project Implicit* (Nosek et al., 2007). See table 1.

Several studies have shown the DA-IAT's construct validity (Aaberg, 2012; Pruett, 2004; Pruett & Chan, 2006), discriminant validity (White, Jackson, & Gordon, 2006), and reliability (Pruett, 2004; Pruett & Chan, 2006; Thomas, Vaughn, Doyle, & Bubb, 2013). Moreover, the DA-IAT has been administered to over 38,500 participants through the open-access *Project Implicit* website alone (Nosek et al., 2007). In doing so Nosek et al. (2007) found it to have the strongest implicit effects over the other social group domains examined by *Project Implicit*.

The Symbolic Ableism Scale. In order to measure participants' explicit bias the Symbolic Ableism Scale (Friedman & Awsumb, in preparation) was used. The Symbolic Ableism Scale (SAS) is an explicit scale adapted from the Symbolic Racism Scale 2000 (Henry & Sears, 2002; Sears & Henry, 2003). This scale presents participants with thirteen statements about disability on a seven point Likert scale (from strongly disagree to strongly agree). For example, one item participants are presented with is "discrimination against disabled people is no longer a problem in the United States." Although they must be paired with implicit measures to determine the participants prejudice style higher scores on the scale hint at symbolic ableism while lower scores aversive ableism. The Symbolic Racism Scale 2000, which the Symbolic Ableism Scale is adapted from, has been found to be internally consistent, and have good construct validity, predictive validity, and discriminant validity (Sears & Henry, 2008).

Demographics and other questions. In addition to the DA-IAT and the SAS, the participants were administered a number of other questions to determine if any factors could predict explicit or implicit prejudice. We asked participants about their demographics (e.g., gender, race, job) and relationships with people with disabilities (e.g., how many of your friends have disabilities?). Participants were asked to select their political orientation by moving a needle on a sliding scale from very liberal (1) to very conservative (100). Participants also completed a similar sliding scale about how close they feel with their sibling/s with disabilities. They were asked about their participation in any sibling advocacy group and if their sibling/s with disabilities participated in disability advocacy groups. We also asked participants where their sibling/s live/s (e.g., their home, their state) and if they were their sibling/s legal guardian/s.

Procedure

After approval from the Institutional Review Board, participants were recruited through the Sibling Leadership Network, a national organization for siblings of people with disabilities. If interested in volunteering for the study participants accessed the study website where they were presented with the informed consent and exclusion criteria that specified they must speak and read English, and they must be a sibling of at least one person with a disability. The participants were then introduced to the DA-IAT via Millisecond Inquisit software with the following instructions. They were instructed to push the 'E' key if presented stimuli belonged in the categories on the left side of the computer screen and the 'I' key for the right. They were told to do so as quickly as possible and with the least amount of errors. If participants placed stimuli on the incorrect side of the screen a red 'X' appeared until they corrected their choice.

The DA-IAT presents participants with seven blocks (rounds) of categorization tasks (see table 2). During the first practice block, which lasts 20 trials, the participants *only* sort the target-concept discriminations with 'abled-persons' on one side of the screen and 'disabled persons' on the other. The second practice block is similar; 'good' is presented on one side of the screen and 'bad' on the other for 20 trials. For blocks three (20 trials) and four (40 trials) the target-concept discriminations and the attribute dimensions are both presented on the screen at the same time. For example, 'abled persons' and 'bad' may be on the left with 'disabled persons' and 'good' on the right. The computer system randomizes if they are presented with stereotype consistent or inconsistent items during these blocks. Block five (40 trials) is then a practice block where only good and bad are presented on opposite sides of the screens. This allows participants to become familiar with the switched location of these two attribute dimensions. Block six (20 trials) and seven (40 trials) are then very similar to blocks three and four except if they received the

stereotype inconsistent layout in those blocks they will receive the stereotype consistent ones in blocks six and seven and visa versa.

After completing the DA-IAT participants were administered the SAS. During the SAS participants selected responses on a seven-point Likert scale from strongly disagree to strongly agree to 13 statements about disability. Participants then completed the survey questions about demographics and other factors.

Analysis

Implicit attitudes on the DA-IAT were calculated using Greenwald, Nosek, & Banaji's (2003) updated IAT scoring protocol (see table 3). *D* scores were produced for each participant based on their response latencies in stereotype consistent and stereotype inconsistent blocks. DA-IAT scores are reported the strength of preference for nondisabled or people with disabilities. In general they may range from -2 to 2. Scores of -.14 to .14 reveal no preference for nondisabled or people with disabilities, scores of .15 to .34 a slight preference for nondisabled people, .35 to .64 a moderate preference, and .65 or greater a strong preference (Aaberg, 2012; Greenwald et al., 2003). Negative values of the same ranges reveal preferences for people with disabilities (Aaberg, 2012; Greenwald et al., 2003). To calculate participants' explicit attitude scores on the SAS, the applicable explicit seven-point Likert items were reverse coded and then all items were recoded from zero to one in accordance with the Symbolic Racism Scale 2000 (Henry & Sears, 2002, 2008; Sears & Henry, 2005), of which the SAS is based. Each participant's mean Likert score then created a master explicit ableism score. Linear, quadratic, and cubic regression models were then used to determine the best-fit form of the relationship between explicit and implicit attitudes. Linear regression models were also used to determine which other variables influenced participants' explicit and implicit attitudes.

Results

Explicit and Implicit Attitudes

The participants had a mean explicit (SAS) score of .28 ($SD = .13$), ranging from 0 to 0.60; see figure 1 for distribution of SAS scores. On the DA-IAT, the participants ($n = 47$) had a mean D score of .53 ($SD = .44$). A one-tailed t -test determined this score was significantly different from zero ($t(46) = 8.29, p < .001$), indicating an implicit preference for nondisabled people. It should be noted that one participant did not complete the DA-IAT and therefore their score was not calculated. The DA-IAT scores ranged from -0.63 (moderate preference for people with disabilities) to 1.29 (strong preference for nondisabled people) and were normally distributed according to the Shapiro-Wilk test. 83.3% ($n = 39$) of participants preferred nondisabled people, 8.4% ($n = 4$) preferred disabled people, and 8.3% ($n = 4$) had no preference. The majority of participants strongly preferred people with disabilities; see figure 2.

Relationships Between Explicit and Implicit Bias

To evaluate the best-fit form of the relationship between explicit and implicit scores linear, quadratic, and cubic regressions between explicit and implicit scores were run. A centered cubic regression analysis had the best fit, $F(3, 43) = 3.02, p = .040, R^2 = .17$. See figure 3. The regression equation for predicting the implicit scores from the explicit scores is

$$\text{Implicit Score} = .62 - .49(\text{Explicit Score} - .28) - 5.63(\text{Explicit Score} - .28)^2 + 26.87(\text{Explicit Score} - .28)^3$$

The centered quadratic term was significantly different from zero at $t = -2.07, p = .045$. Although statistically significant, this model only predicts 17.4% of the implicit scores so it is still a fairly weak relationship.

Prejudice Styles

It was hypothesized that siblings' would most often be prejudiced in the aversive ableism fashion, with low explicit prejudice and high implicit prejudice, because their experience with people with disabilities was likely to result in low explicit prejudice however, they are susceptible to the same societal pressures and messages about disability and therefore are likely to be implicitly prejudiced against people with disabilities. Thus, in order to determine the most prominent style of prejudice, an adapted version of Son Hing et al.'s (2008) two-dimensional model of prejudice was used to categorize participants according to symbolic ableism (high explicit, high implicit), principled conservatives (high explicit, low implicit), aversive ableist (low explicit, high implicit) and truly low prejudiced (low explicit, low implicit). To do so participants' explicit and implicit scores were each categorized as high and low. The implicit scores were cut-off based on the moderate prejudice level (.35) according to IAT standards while the explicit score cut-off used was .50 – the midpoint of the Likert scale (Friedman & Awsumb, in preparation). Using these criteria participants' scores were then grouped into symbolic ableist, principled conservatives, aversive ableists, and truly low prejudiced. In our study 32 siblings were classified as aversive ableists, 13 as truly low prejudiced, two as symbolic ableists, and none as principled conservatives. Figure 4 details this breakdown by percentages.

Factors that Predict Implicit and Explicit Prejudice

Another goal of this study was to explore if any factors had significant relationships with explicit and/or implicit prejudice to better understand siblings' attitudes towards disability. In order to examine which variables influence explicit bias multiple linear regression procedures were run between explicit bias and the following factors, with a separate regression for each factor:

- political orientation;

- guardianship of their sibling/s with a disability;
- where the sibling/s with a disability lives;
- participant's involvement in advocacy;
- the sibling with a disability's involvement in advocacy;
- employment in a disability related field/industry;
- the number of family with disabilities;
- the number of friends with disabilities;
- the number of acquaintances with disabilities;
- reported closeness with the sibling/s with a disability; and,
- participant's own disability status.

For explicit prejudice, the only significant model was between explicit prejudice and political orientation, $F(1, 46) = 5.14$, $p = 0.028$, $R^2 = 0.10$ (see table 4). Very liberal people (those with a one out of 100 on the political orientation sliding scale) are expected to have an explicit score of 0.22 (low explicit prejudice). For every one unit siblings' political orientation goes up on the sliding scale and thus gets more conservative their explicit prejudice is expected to increase by 0.002; this difference is significantly different from zero, $t = 2.27$, $p = 0.028$.

When separate linear regression models were run with implicit prejudice and the aforementioned variables, political orientation was significant, $F(1, 45) = 7.74$, $p = .008$, $R^2 = 0.15$ (see table 5). According to this model very liberal people (those with a one out of 100 on the political orientation sliding scale) are expected to have an implicit score of 0.30, slightly preferring nondisabled people. For every one unit siblings' political orientation goes up on the sliding scale – gets more conservative – their implicit prejudice will increase by .008; this difference is significantly different from zero, $t = 2.78$, $p = 0.008$.

The following factors did not have a relationship with implicit prejudice: where the sibling with a disability lives; guardianship; involvement in advocacy; the sibling with a disability's involvement in advocacy; working in a disability related field/industry; the number of family with disabilities; the number of friends with disabilities; the number of acquaintances with disabilities; reported closeness with sibling/s with a disability; and, own disability status.

Discussion

More recently siblings of people with disabilities have coalesced and began sharing their own perspectives and position themselves as disability allies (Burke, Arnold, & Owen, 2015). Because of their positioning as allies to people with disabilities and the larger disability advocacy movement, as well as their intimacy to disability, we expected siblings to have little explicit prejudice. Yet, siblings without disabilities themselves experience disability differently than people with disabilities. They have different understandings of and relationships with disability than people with disabilities because of different experiences, vantage points, and power dynamics. Thus, this different disability experience (peripherally versus personally) coupled with an ableist society led us to expect that most siblings would have negative implicit disability attitudes. Our findings mirror these expectations. Despite many participants reporting relatively low levels of explicit prejudice, the majority of our participants implicitly preferred nondisabled people. In fact, almost 45% of our sibling participants strongly preferred nondisabled people. This pattern is in alignment with our third hypotheses that the bias of sibling of people with disabilities would most likely align with aversive ableism wherein they would have little explicit prejudice and high implicit prejudice. More than two-thirds of our participants were categorized as aversive ableist.

In addition to examining siblings' explicit and implicit bias, one of the goals of this study was to examine if any variables significantly related to explicit and implicit prejudice. After regression models were run political orientation was significant for both explicit and implicit prejudice. Both models predict higher levels of explicit and implicit prejudice for participants that are more conservative. For example, using this model on average mid-level liberal siblings (25 out of 100 on the political orientation sliding scale) are expected to moderately favor nondisabled people scoring .48 implicitly, while mid-level conservative siblings (75 out of 100 on the political orientation sliding scale) are expected to highly favor nondisabled people scoring .98 implicitly. Aversive racism and symbolic racism theories suggest liberals are less likely to report explicit prejudice than conservatives because egalitarianism is important to liberals' self-concepts (Dovidio & Gaertner, 2004; Dovidio et al., 1992; Gaertner & Dovidio, 1986; Gaertner et al., 2005; Henry & Sears, 2002; Son Hing et al., 2008). Meanwhile, aversive racism and symbolic racism theories suggest both liberals and conservatives are likely to have high implicit prejudice because they are still likely to hold prejudiced values unconsciously (Dovidio & Gaertner, 2004; Dovidio et al., 1992; Gaertner & Dovidio, 1986; Gaertner et al., 2005; Henry & Sears, 2002; Son Hing et al., 2008). This study's findings mirror these effects. However, when interpreting our findings it is important to note that although significant the models only predict 10% and 15% of explicit and implicit prejudice respectively so there are still fairly weak relationships with political orientation. Thus we suggest the impact of political orientation on siblings explicit and implicit disability attitudes should be explored further.

One limitation of our study was the small sample of convenience. Due to financial constraints all participants were volunteers, meaning we were not able to obtain as large of a sample as we would have liked to, which weakened the statistical power. Low statistical power

could have contributed to the weak correlations and large number of insignificant findings. As the participants were volunteers there was also a chance of self-selection bias. Future studies will benefit from larger sample sizes. Another limitation of our study's sample was that few men volunteered. Women tend to be more impacted by having a sibling with a disability as exemplified by the fact that they are more likely to be the primary caregiver for their sibling, and are more likely to marry and have children later than men with siblings with disabilities (Hodapp, Urbano, & Burke, 2010). Moreover, Hirschberger, Florian, and Mikulincer, (2005) found in general women to have more favorable disability attitudes than men. Thus, this implication must be considered when interpreting our findings.

All of our participants were recruited through a national sibling organization; it is possible there is something unique about these participants since they are following this sibling organization. Although we found no relationship between involvement in sibling organizations and explicit or implicit prejudice, only about 20% of our participants indicated they were *active* in a sibling advocacy group. This finding should be examined more in depth to determine if it is replicable with wider samples of siblings. It would be useful for future studies to also explore if there is a relationship between motivations for involvement in sibling organizations (e.g., advocacy; comradery with other siblings; relationship with sibling) and explicit and implicit disability attitudes.

Explicit and implicit attitudes may be directed at people with different types of impairments (e.g., physical, intellectual, sensory, psychiatric, etc.) differently. For example, both within mainstream society and the disability community there is a hierarchy of disability, which favors people with physical disabilities over those with other disabilities, such as people with intellectual disabilities (Caldwell, 2011; Charlton, 1998; Deal, 2003; McClimens & Taylor,

2003). However, as a social minority group people with disabilities have particular and shared experiences with prejudice and discrimination because of the naturalization of disability inferiority, the perpetration of harmful disability narratives, and the ways ableism is institutionalized (Batavia & Schriener, 2001; Hahn, 2005; Linton, 1998; Llewellyn & Hogan, 2000; Longmore, 2003). Thus, there are many dimensions of disability prejudice – ableism – that are relevant to all people with disabilities. For this reason, this study explored explicit and implicit attitudes directed towards people with disabilities in general rather than attitudes directed towards people with particular disability types. We suggest future studies continue this work by exploring the ways siblings' explicit and implicit attitudes differ between and across different types of disabilities. Doing so would be particularly fruitful because of the way siblings have different experiences depending on their siblings' disability type (Hodapp & Urbano, 2007; Orsmond & Seltzer, 2007; Seltzer et al., 1997).

Our findings were not all negative, we did find almost one-third of siblings were truly low prejudiced. Moreover, the mean implicit disability score of siblings in this study ($D = .53$, $SD = .44$) appears lower than previous findings about other groups, such as nurse educators ($D = .76$, $SD = .46$), rural and urban Chinese students ($D = .94$, $SD = .29$), undergraduate students ($D = .60$ to $.68$, $SD = .24$ to $.39$; depending on disability type), and the general population ($D = 1.12$, SD unknown) (Aaberg, 2012; Chen et al., 2011; Nosek et al., 2007; Vaughn, Thomas, & Doyle, 2011). Future studies should explore direct comparisons between siblings and non-siblings, and/or siblings and their family member with a disability to examine these differences further.

The finding that siblings of people with disabilities often had implicit disability prejudice and were aversive ableists should not be misconstrued to blame siblings for their preference for nondisabled people but instead should serve as a reflection of a more complex societal problem.

Many theories about the roots of aversive prejudice place its etiology within normal cognitive processes. Cognitive mechanisms help people perceive the world in the most effective manner because attention is finite (Dovidio et al., 1992). As a result, aversive style prejudice, such as aversive ableism, may relate to historical and current ableism (Dovidio et al., 1992; Friedman, 2016). Its etiology may also be rooted in ingroup-outgroup categorization, which is how people tell the difference between their own group(s) and others (Dovidio & Gaertner, 2004). Research has found that people process information about ingroups and outgroups differently and group categorization alone is enough to create bias and alter how information about people is processed (Dovidio & Gaertner, 2004). While outgroups are seen as very different from ingroups and more similar to each other, ingroups are viewed more positively (Dovidio et al., 1992). Aversive prejudice then may be based not on outgroup hostility or dislike but ingroup favoritism (Dovidio & Gaertner, 2004; Dovidio & Gaertner, 2008). In fact, our finding that almost one-third of participants were truly low prejudice suggests siblings may serve as a particularly useful window for examining the phenomenon of low explicit disability prejudice combined high implicit disability prejudice – aversive ableism. Siblings of people with disabilities’ implicit prejudice may be indicative of internalization from an ableist society yet their unique relationships with disability may help counteract some of this ableism.

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Table 1

DA-IAT Stimuli (Nosek et al., 2007)

Target-concept discriminations		Attribute dimensions	
Abled persons	Disabled persons	Good	Bad
		Joy	Rotten
		Love	Angry
		Pleasure	Terrible
		Peace	Bomb
		Wonderful	Nasty
		Excellent	Evil

Table 2

Sequence of Blocks in the Disability Attitudes Implicit Association Test (DA-IAT)

Blocks	Number of Trials	Function	Items Assigned to Left-Key Response	Items Assigned to Right-Key Response
1	20	Practice	Abled-persons	Disabled-persons
2	20	Practice	Good	Bad
3	20	Test Block 1a	Abled-persons AND good	Disabled-persons AND bad
4	40	Test Block 2a	Abled-persons AND good	Disabled-persons AND bad
5	40	Practice	Bad	Good
6	20	Test Block 1b	Disabled-persons AND good	Abled-persons AND bad
7	40	Test Block 2b	Disabled-persons AND good	Abled-persons AND bad

Note. The computer system randomizes if participants receive stereotype congruent or incongruent blocks first.

Table 3

Greenwald et al.'s (2003) Updated IAT Scoring Procedure

Step	Procedure
1	Data from Blocks 3, 4, 6, and 7
2	Eliminate trials with latencies larger than 10,000 ms or subjects who have latencies less than 300 ms for more than 10% of trials
3	Compute mean latencies by block
4	Compute one pooled standard deviation for the trials in block 3 and 6, and one for block 4 and 7
5	Replace each error latency with 600 ms + block mean (computed in previous step)
6	Average the values of each the four blocks
7	Compute differences for block 6 and 3, and 7 and 4
8	Divide each difference by its associated pooled-trials standard deviation
9	Average the two quotients from the prior step

Note. See Greenwald et al. (2003) for a detailed explanation of the new protocol.

Table 4

Results of the Explicit Attitude Regression Analyses by Model

Variable	<i>F</i>	<i>df</i>	<i>p</i>	<i>R</i> ²
Political orientation (1 to 100)	5.14	1, 46	0.03*	0.10
Guardianship (yes, no)	0.11	1, 46	0.74	0.002
Own disability status (yes, no)	0.04	1, 43	0.84	0.001
Where sibling/s with disability live (house, city, state, country)	1.85	3, 43	0.15	0.12
Own involvement in advocacy (yes, no)	<0.001	1, 45	0.98	<0.001
Sibling with disability involvement in advocacy (yes, no)	1.48	1, 46	0.23	0.03
Employment in disability related field/industry (yes, no)	0.07	1, 46	0.80	0.001
Closeness (1 to 100)	0.36	1, 46	0.55	0.01
Family with disabilities (1, 2, 3+)	0.69	2, 45	0.51	0.03
Friends with disabilities (0, 1-2, 3+)	2.24	2, 45	0.12	0.09
Acquaintances with disabilities (1-3, 4-5, 6+)	0.34	2, 45	0.71	0.02

Note. **p* < .05. ***p* < .01.

Table 5

Results of the Implicit Attitude Regression Analyses by Model

Variable	<i>F</i>	<i>df</i>	<i>p</i>	<i>R</i> ²
Political orientation (1 to 100)	7.74	1, 45	0.008**	0.15
Guardianship (yes, no)	0.77	1, 45	0.39	0.02
Own disability status (yes, no)	2.95	1, 41	0.09	0.07
Where sibling/s with disability live (house, city, state, country)	0.44	3, 40	0.72	0.03
Own involvement in advocacy (yes, no)	1.68	1, 44	0.20	0.04
Sibling with disability involvement in advocacy (yes, no)	0.65	1, 45	0.42	0.01
Employment in disability related field/industry (yes, no)	0.01	1, 45	0.92	<0.001
Closeness (1 to 100)	1.20	1, 45	0.28	0.03
Family with disabilities (1, 2, 3+)	1.39	2, 44	0.26	0.06
Friends with disabilities (0, 1-2, 3+)	0.06	2, 44	0.94	0.003
Acquaintances with disabilities (1-3, 4-5, 6+)	0.31	2, 44	0.74	0.01

Note. **p* < .05. ***p* < .01.

Figure 1. Beanplot of explicit scores. The Beanplot's shape details explicit scores' density while the beans mark the distribution of scores.

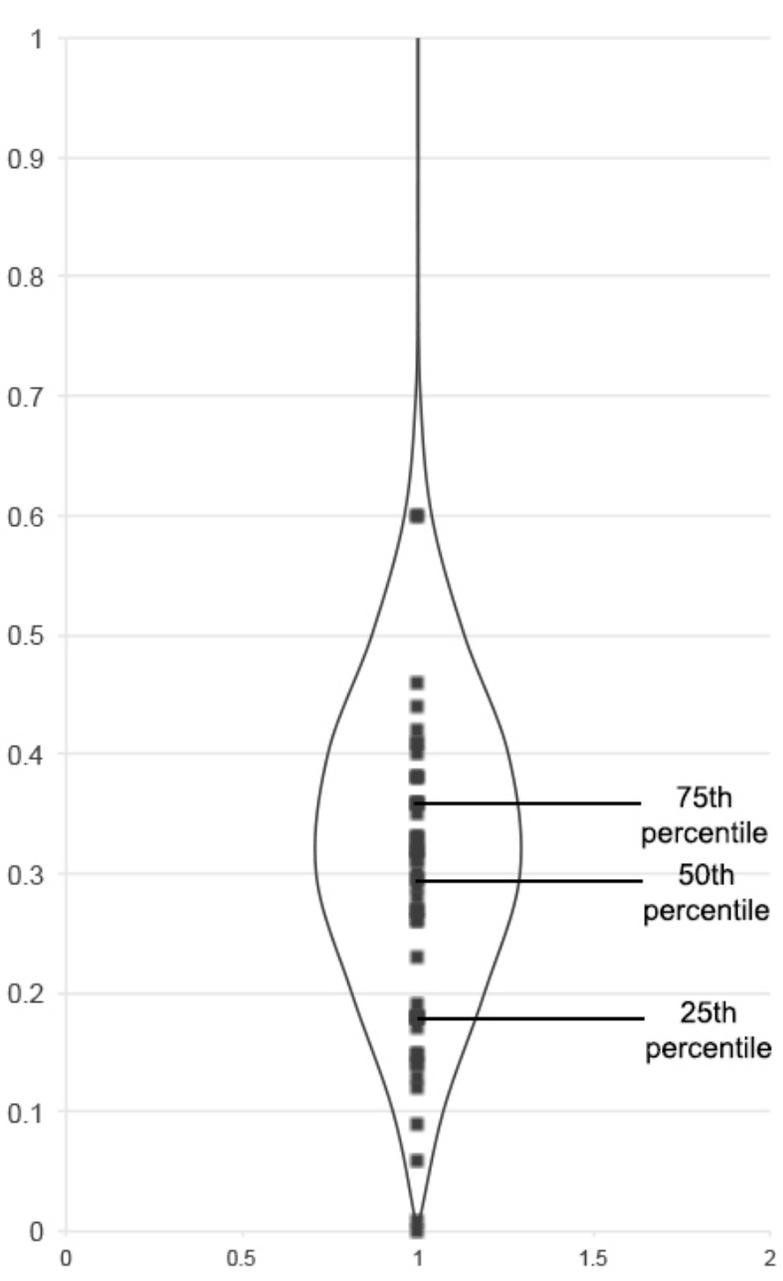


Figure 2. Implicit preferences for people with disabilities and nondisabled people.

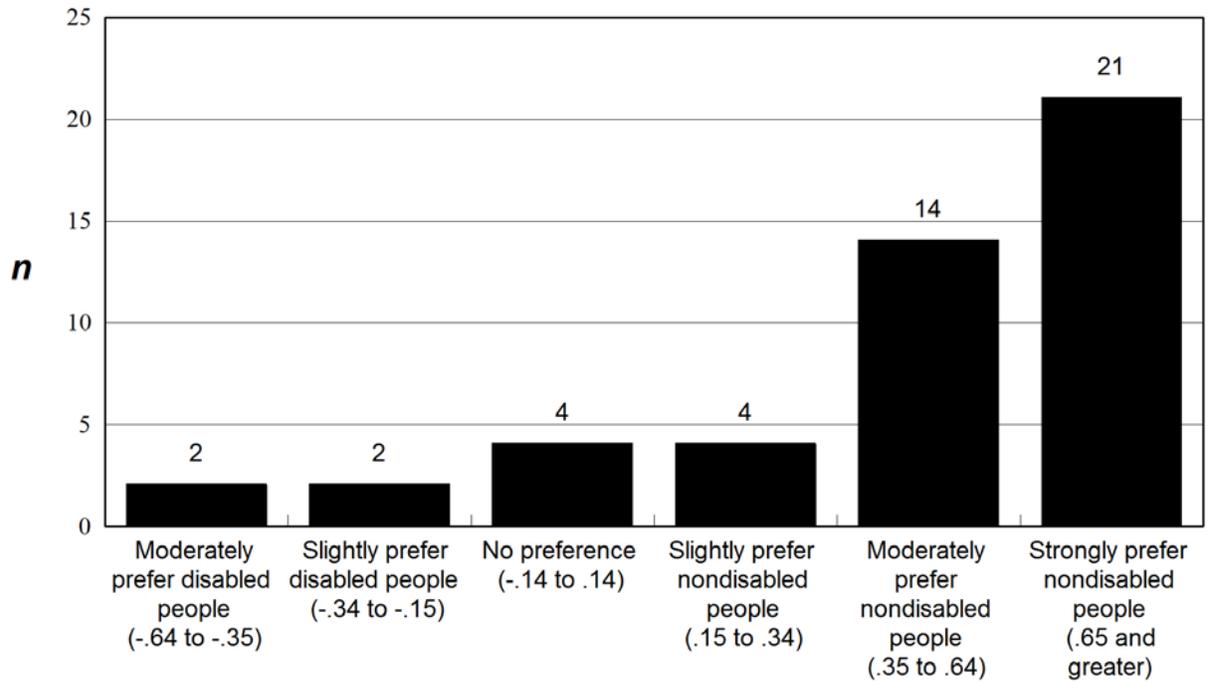


Figure 3. Scatter plot of the cubic relationship between explicit and implicit prejudice.

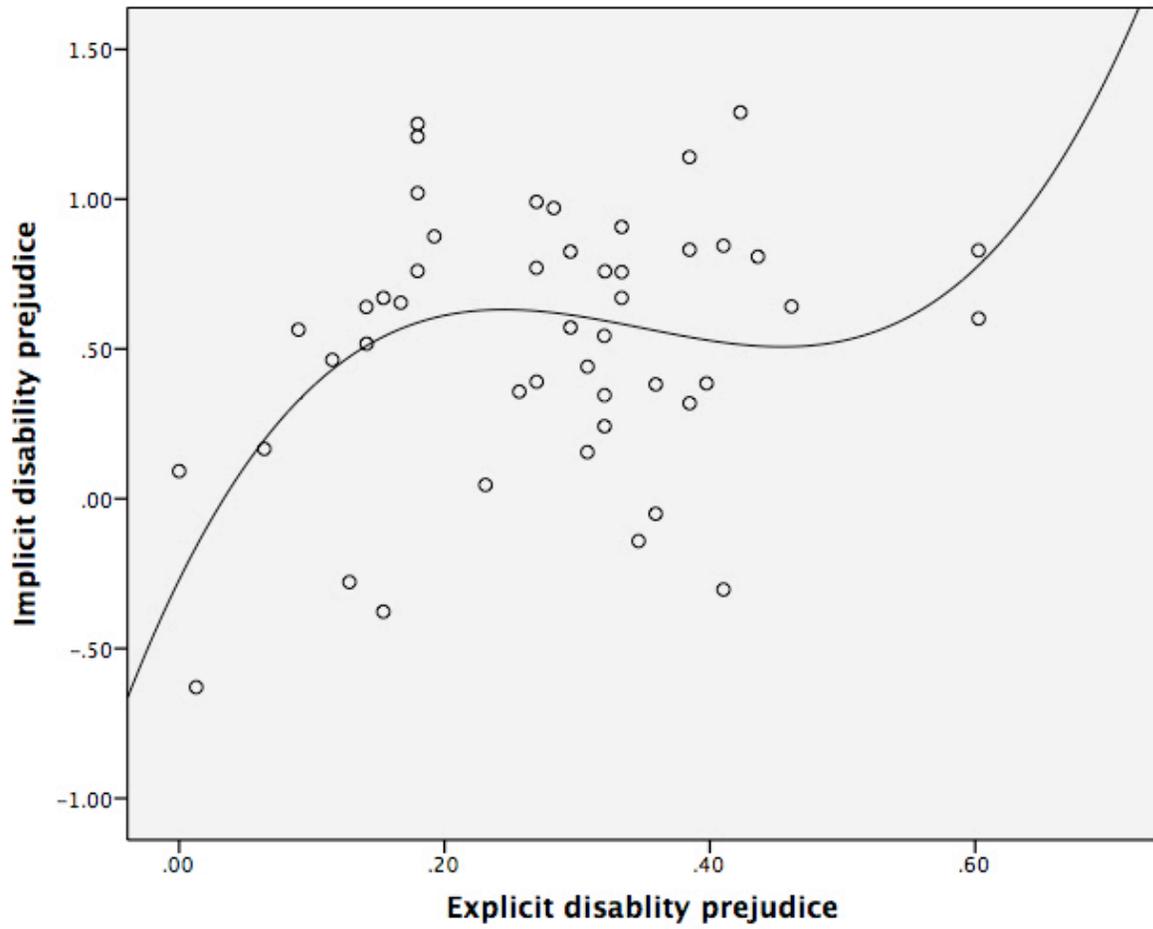


Figure 4. Styles of prejudice ($n = 47$).