Abstract

Objective: Explicit and implicit attitudes play a role in disability discrimination. The purpose of this study was to look at the relationship between explicit and implicit attitudes towards people with disabilities. *Method:* Participants ($N = 78$) were asked to complete an online survey with 10 questions asking them to rate the extent to which they agree or disagree with questions measuring explicit attitudes. Participants then completed an Implicit Association Test (IAT) looking at disabilities. The IAT measured participants' accuracy and speed when sorting pictures indicating abled-body people or disabled-body people and words associated with "good" or "bad" connotations. Participants' scores on each measure were used to run a correlational analysis. *Results:* Looking at the average explicit score, $M = 60$, can show that participants explicitly have positive attitudes towards people with disabilities, while the implicit average score, $d = -.63$, shows participants might implicitly favor people without disabilities over people with disabilities. The results also showed a statistically nonsignificant positive relationship between explicit and implicit attitudes, $r(76) = .095$, $p = .4$. Participants who did not know someone with a disability had a stronger correlation, $r(28) = .2$, $p = .2$, than those who did, $r(46) = .03$, $p = .2$. *Conclusions:* The lack of significant correlation between implicit and explicit scores reveals that people may explicitly act one way but implicitly think the other. Being aware of these attitudes can help us to open up and talk more about the biases people with disabilities face and help reduce the stigma.

Keywords: explicit attitudes, implicit attitudes, bias, people with disabilities, discrimination, IAT

Explicit and Implicit Attitudes towards People with Disabilities

In 2017, the number of people living in the United States with a disability was 40,675,305 (Lauer & Houtenville, 2018). Even though there are many people with disabilities in society, there is still stigma and discrimination surrounding disabilities, which could be due to negative explicit and implicit attitudes some may have towards people with disabilities. Explicit attitudes or biases are ones we are aware of at the conscious level, while implicit attitudes or biases are at the unconscious level; we are not aware of them. These two types of biases can help to explain different behaviors people might have.

Friedman (2019) conducted a study looking at the implicit and explicit biases family members of people with disabilities might have. To test this, Friedman (2019) used the Disability Implicit Association Test (IAT) (Greenwald et al., 1998). This version of the IAT measures the response time a person has when sorting the different pictures and words as well as the accuracy of their responses to detect implicit biases. Friedman (2019) found that while family members of people with disabilities may believe they have no negative explicit biases toward people with disabilities, they still have negative implicit biases towards people with disabilities.

Kallman (2017) looked more in-depth at implicit biases towards people with disabilities and if negative biases were changeable. Using an online participant pool at a university, participants were sorted into either a control group or experimental group. Each group was asked to complete the disability IAT (Greenwald et al., 1998). The control group took the IAT and completed a survey afterwards to answer more questions regarding explicit attitudes. In the experimental group, participants watched three short videos depicting people with disabilities living their lives and how people with disabilities are not defined by their illness, but by their accomplishments and talents (Kallman, 2017). After the videos, the experimental group took the

IAT and then followed up with the survey. Kallman (2017) found that there was not a statistically significant difference between the groups. From this study, Kallman seemed to notice that implicit biases are more engrained and difficult to change than explicit biases.

Coleman et al. (2015) examined whether people with disabilities who have an assistance animal receive less negative implicit bias than a person with a disability without an animal. The participants of this study were 244 college students who first took a survey on animal ownership and then were asked to complete a Disabilities and Assistance Dog IAT. This IAT showed pictures of people with a disability with and without a service animal. Coleman et al. (2015) found a higher positive implicit bias towards people with disabilities with an assistance animal or dog than without. This study shows that animals can help increase positive interactions with people who are disabled (Coleman et al., 2015). This also shows that environmental factors can increase or decrease discriminatory biases towards people with disabilities.

Another use of a disability IAT comes from VanPuymbrouck et al. (2020). They studied the explicit and implicit attitudes healthcare professionals had towards people with disabilities and how that could determine patients' interactions and decisions when it comes to healthcare. VanPuymbrouck et al. (2020) examined existing data from Project Implicit's Disability IAT. From the database, the researchers chose 25,006 participants who were healthcare professionals including physical therapy assistants, technicians, nursing and home health assistants, and practitioners. For the explicit measure, VanPuymbrouck et al. (2020) also used questions from Project Implicit in which participants rated their preference towards people with disabilities and people without disabilities using a Likert scale. VanPuymbrouck et al. (2020) found that 83.6% of providers implicitly preferred abled people. When looking at both attitudes, healthcare

professionals had low explicit but high implicit attitudes towards people with disabilities (VanPuymbrouck et al., 2020).

One place where explicit attitudes towards people with disabilities can be seen commonly is in the workforce. Some examples could be unfair pay, selection of applicants, harassment, and neglect of accommodations (McMahon et al., 2008). Many laws have been passed trying to decrease the amount of discrimination that people who are disabled face. The United States passed the Americans with Disabilities Act (ADA) in the 1990s to try and combat discrimination. A subsection of the ADA specifically protects people from discrimination in job settings. This makes it illegal to deny a person a job, promotion, or accommodations based only on their disability. Companies have to legally grant accommodations for their employees as long as the request is reasonable (McMahon et al., 2008).

Years following the passing of the ADA, there is still discrimination towards people with disabilities. One study found the unemployment rate for people with disabilities, 14.2%, was higher than for people without a disability, at 9% (McMahon & McMahon, 2012). The amount of time unemployed was higher as well. For people with disabilities, the average number of weeks spent without a job was 25, whereas the average amount of weeks for abled people was 21 (McMahon & McMahon, 2012).

Graham et al. (2019) looked at pre-existing data from filed complaints of workplace discrimination towards people with disabilities. They collected their data from the Equal Employment Opportunity Commission and looked at four different categories regarding the types of disabilities: physical, behavioral, neurological, and sensory impairments. They also separated the allegation types into categories including harassment, suspension and demotion, layoff and termination, and benefits and wages (Graham et al., 2019). People with physical

disabilities tended to file the most allegations in all of these categories, except for harassment. People with behavioral disabilities, which the researchers classified as mental illnesses and addiction impairments, had higher numbers of allegations of harassment than the other three categories of disabilities (Graham et al., 2019). This study further looks at how people with different types of disabilities might have different experiences with discrimination at their jobs and what discrimination looks like to them.

One study looked at disability discrimination, specifically hiring employees based on the certain type of disability they had (Gouvier et al., 2003). Gouvier et al. (2003) recruited 295 undergraduate participants who were majoring in business or related majors. The participants rated applicants for different jobs on factors such as assumed job performance and employability. The fabricated candidates for each job had similar backgrounds related to the position they were applying for and had a disability in one of four categories: head injury, developmental disability, back injury, or mental illness. Some of the job types this study used for the applicants to apply for included a janitorial job and a phone operator. Gouvier et al. (2003) found applicants with developmental disabilities were expected to have higher job performance ratings than those with head injuries or a mental illness. The applicants with back injuries were rated highest for employability. Overall results showed across the ratings, physical disabilities received higher scores than mental disabilities or illnesses (Gouvier et al., 2003). While people with disabilities in general can be discriminated against in the workforce, people with certain kinds of disabilities might receive more discrimination.

College students with disabilities can also face large amounts of discrimination. Deckoff-Jones and Duell (2018) looked at the types of disabilities a college student might have and how this can possibly change the accommodations they receive. Participants were 223 college

students asked to read eight vignettes depicting people with different types of disabilities trying to receive accommodations. The types of disabilities included visible physical disabilities, invisible physical disabilities, psychiatric disabilities, and learning disabilities (Deckoff-Jones & Duell, 2018). After reading about the fake student, participants were asked to rate how appropriate they think a certain accommodation would be for each disability. Examples of some of the accommodations included using a handicap parking spot, relocating the class to a lower level of a building, receiving extra time during an exam, and receiving extended time on a project or paper. Deckoff-Jones and Duell (2018) found that the participants' perceptions of the appropriateness of an accommodation was impacted by the type of disability as well as the type of accommodation. The vignettes of students with an invisible physical disability or a psychiatric disability were less likely to be judged worthy of an accommodation even if the symptoms addressed would be appropriate for a certain accommodation (Deckoff-Jones & Duell, 2018). The different type of disability that a person might have can increase the amount of explicit discriminatory biases they might face.

The present study aimed to determine the differences between explicit and implicit biases and their relationship with discriminatory attitudes towards people with disabilities. To measure explicit attitudes, this study used the Disability Rights Attitude Scale (Hernandez et al., 1998). Implicit attitudes towards people with disabilities were measured with an IAT (Greenwald et al., 1998). I hypothesized that there would be a positive correlation between participants' discriminatory explicit attitudes towards people who have a disability and their discriminatory implicit attitudes towards those with a disability. That is, I predicted that as explicit attitudes became less discriminatory, so will implicit attitudes; if explicit attitudes become more discriminatory, implicit attitudes will as well. I also predicted a stronger correlation between

explicit and implicit attitudes if participants have or are close to someone with a disability than those who do not know someone with a disability.

Method

Participants

This study was approved by the Psychology Program Scientific Review Committee and Lindenwood University's Institutional Review Board before being posted on the internet. Participants were recruited from two social media sites, Facebook and Reddit, as well as the Psi Chi website and through the Center for Diversity and Inclusion at Lindenwood University. On Reddit, the survey was shared via the subreddit, r/samplesize. This subreddit allows students to share their survey projects with other members of the subreddit. To take the survey, participants had to be on a computer with a keyboard and not a mobile device or tablet. If participants were on a device that was not compatible, a screen would pop up asking them to take the survey on a compatible device because of the IAT used.

There were 196 participants in the study; however, only 78 were usable. The other 110 participants did not complete the whole survey and their data could not be used. Out of the 78 participants whose data were usable, 55 identified as female, 22 identified as male, and 1 participant identified as nonbinary. The oldest participant in the study was 69 years old and the youngest was 19 years old, with an average age of 35. There were 48 participants who stated that they or somebody very close to them has a disability, while the other 30 said they did not have or know someone close with a disability.

Materials

The survey was created using Qualtrics. The survey contained an informed consent, which was the first thing the participants saw, the explicit and implicit bias measures, demographic questions, and a thank you statement.

Explicit attitude measure

The explicit measure of the attitudes towards people with disabilities came from the Disability Rights Attitude Scale (Hernandez et al., 1998). This scale asks questions about people with disabilities and the participant's beliefs towards them and accommodations. This study incorporated 10 questions from the scale. To answer these questions, a 7-point Likert scale, instead of 6-point like the original (1 is Strongly Disagree, to 7 which is Strongly Agree) was created. A point was added in this study to give participants a neutral choice—neither agree nor disagree. This scale was chosen because it specifically asked questions pertaining to explicit attitudes towards people with disabilities.

Implicit attitude measure

For the implicit attitude measure, the study created an IAT (Greenwald et al., 1998) using IATgen (Carpenter et al., 2019), a website that makes IAT tests which can be inserted into Qualtrics surveys. This website also had YouTube videos (Carpenter, 2017a, 2017b, 2017c, 2017d) showing how to make the IAT in more detail.

The IAT test was broken down into targets and attributes. Targets are the two attitudes measuring implicit biases. The attributes are the stimuli which is either pleasant or unpleasant. These appeared on the IAT either alone or with the target biases measured. For this test, the attributes are called "good" or "bad". The words chosen for good were *adore, beautiful,*

friendship, joyful, kind, and *lovely*. The words chosen for bad were *awful, detest, disgust, horrible, sadness*, and *tragic*.

Demographic questions

The survey asked three demographic questions: 1) whether the participant or a loved one has a disability, 2) the participant's gender identity, and 3) the participant's age.

Procedure

Creation of the IAT for disabilities measure

Targets. The IAT uses targets to determine implicit biases; these are labeled as target A (abled) and target B (disabled) (Carpenter et al., 2019). For this test, instead of words, pictures were selected for the target categories. The disabled target included four pictures: a person using crutches, a person in a wheelchair, a symbol for people who are deaf or hearing impaired, and a person who is blind using a walking stick. The abled target had four pictures: a person golfing, a person walking, a person standing, and two children walking. The pictures were taken from Clker.com which has free clipart people can use (Clker; see Figure 1).

Figure 1.

Disabled and Abled Target Pictures

Disabled Pictures

Abled Pictures
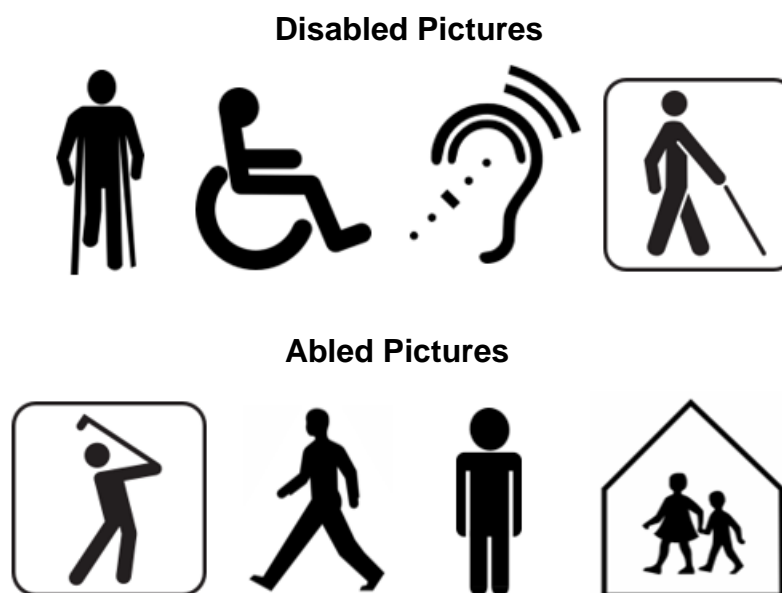
IATgen (Carpenter et al., 2019) and Shinyapps (Applibs, 2019). IATgen directs users to an app called Shinyapps to start making the test (Applibs, 2019). The page contains information to fill out including the test or survey's name and the attributes and targets. While working on this part of the survey, the YouTube video called "01- Building with Shiny" was used for guidance (Carpenter, 2017a). After filling everything out on Shinyapps (Applibs, 2019), the survey was downloaded and converted to a format compatible with Qualtrics.

Creation of the Qualtrics survey

To import the IAT into Qualtrics, the Qualtrics survey file button, which transfers the information into a QVF file, has to be checked. Once imported, the rest of the survey was created. The informed consent was then added to the beginning of the survey. The explicit measure was added after the informed consent and before the IAT. The last step was to create the demographic questions that succeed the implicit measure as well as the thank you statement.

Study procedure

 If participants were on a device without a keyboard, they were directed to take the survey on a compatible device. If participants were on a compatible device, once they clicked on the link to the survey, they were shown the informed statement. Upon being shown the informed consent form, participants had the option to agree to participate or decline. If "agree" was selected, participants would be sent to the next part of the survey. If "do not agree" was selected, participants would be sent to the end of the survey and shown the thank you statement.

After they agreed to participate in the study, participants encountered the 10 explicit measure questions. Participants rated each question by how much they agreed or disagreed with the given statement. Then, participants moved on to the disability IAT. The IAT consisted of four trials where each trial showed different combinations of pairings between the target and the

attributes as well as the position of the keys associated with each pairing. The screen that popped up had instructions for the participant to read on how to take the IAT. It asked the participants to place their left and right index fingers on the "E" and "I" keys. It mentioned that there were two categories at the top of the screen and that they would have to use the keys to put an image or word in the correct category. If participants made a mistake, a red X would appear, and they had to fix it to continue.

To begin, participants pressed the space bar, as mentioned on the screen, and were asked to complete the IAT as fast as they could while making the least number of errors. The first category they saw were the targets, disabled or abled, and they had to place the pictures in the correct categories. The next section was separating words into the two different attribute categories: good and bad. After doing this, the participants had both the targets and attributes at the same time (see Figure 2 for an example).

Figure 2.

Example of the IAT (Clker)
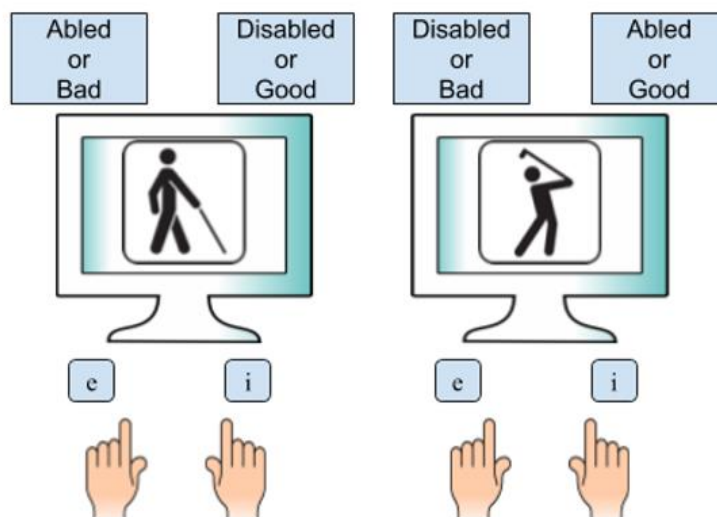
Note: Participants identified the picture presented as Disabled or Abled by pressing on the corresponding key.

After completing the IAT, participants were asked to complete the demographic questions. Once they had done all this, the survey was completed and the thank you statement appeared. This thanked the participants for being a part of the survey and explained the hypotheses of the study. This also included the primary investigator's contact information if participants were interested in learning more or would like to see the finished paper.

Scoring

Explicit Attitude Measure. To score the explicit attitude measure, I took each participant's answers and summed them up to get a number which would be considered the participant's explicit attitude score. If a person did not answer a question, it would result in a score of zero. Lower scores indicated higher explicit prejudicial attitudes than higher scores.

Implicit Attitude Measure. To score the implicit attitude measure, I exported the Qualtrics data as a CSV file to Shinyapps (Applibs, 2019). On Shinyapps (Applibs, 2019), I clicked the "Analyze IAT" tab and uploaded the Qualtrics data CSV file. This gave a lot of information including the number of participants, d-score mean and standard deviation, and Cohen's d. It also gave participants' individual d-score, which is determined by their performance and was used as the implicit measures score. If the score was positive, then the participant had a preference towards the disabled target. If the score was zero, the participant had no preference, and if the score was negative, then the participant had a preference towards the abled target.

Data analyses

I ran three different correlations using Microsoft Excel 365: 1) the participants' overall implicit and explicit scores, 2) the implicit and explicit scores of participants who said yes to

having or knowing someone with a disability, and 3) the implicit and explicit scores of participants who said they do not have or know anyone with a disability.

Results

A positive but statistically insignificant correlation was found between explicit and implicit attitudes for all three groups: all the study participants, ($r(76) = .095$, $p = .4$), participants who have or know someone with a disability, ($r(46) = .03$, $p = .2$), and participants who did not have a disability or knew someone with a disability, ($r(28) = .2$, $p = .29$).

When looking at the averages for explicit and implicit scores in the three groups, the overall average of all participants' explicit scores was 60, which means that the participants had more positive explicit attitudes than negative. The overall average of all participants' implicit scores was -.63, meaning participants favored abled-body imagery over disabled-body imagery. The average explicit score for participants who have or know someone with a disability was 62, and their average implicit score was -.61. The average explicit score for participants who did not have a disability or know someone with a disability was 60, and their average implicit score was -.67.

The explicit measure scores of all the participants did not have much variability. The highest score was a 70 and the lowest was a 46. The highest score a participant could have received was 70 and the lowest score was 7. If the participant scored a 0, it means they did not fill it out and complete the survey, which was taken out of the data analyses.

Discussion

The first hypothesis for this study was a positive correlation between explicit and implicit attitudes towards people with disabilities. While the results of the study supported this hypothesis, the correlation was not significant. The second hypothesis was that the correlation

between explicit and implicit attitudes would be stronger for people who have or are close to someone with a disability than those who are not. This hypothesis was not supported by the results, meaning that implicit and explicit scores were more closely related for people who did not know someone with a disability or have one themselves than for people who did. These correlations were, however, weak as well.

When looking at the average scores from the explicit and implicit biases measures, the group who have or know someone with a disability had higher explicit scores and lower implicit scores than participants who did not have or know someone with a disability. Higher explicit scores indicate a more positive explicit attitude. While the average implicit scores of these participants was still negative, which means that they favored able-body imagery over disabled-body imagery, it is lower and closer to 0 than the other group.

However, the results in the study showed that the differences found were not drastic. This is different than what I hypothesized and might explain the weak correlations that the study found. It also can show that people might explicitly act a certain way but implicitly think another, which has been found in other studies. Friedman (2019) used an IAT to look at the implicit attitudes of family members of people with disabilities. While people who are close to those with a disability might believe they have no explicit attitudes or biases, there still might be some implicit attitudes of which they are unaware.

Another reason for these results could be the explicit measure. These questions could have given away the researcher's intended outcome and led the participants to answer in a way that they thought was societally acceptable and not how they really felt. This could explain why there were so many high positive explicit attitudes without flexibility and variability in scores.

For future studies, I would recommend using a different explicit measure that is more subtle and can make participants feel more comfortable answering how they feel. There were also issues with the implicit measure. Because of the IAT, participants had to use a computer with a keyboard, which narrowed down the number of participants who took part in the study. It made it hard to get participants, and I would recommend using a measure that is mobile-friendly for future online studies. Since the sample size was small, the results might not be found representative of the broader population. This survey can contribute to current research by having both an explicit and implicit measure on discriminatory attitudes towards people with disabilities in one study.

This study can help to try and decrease negative attitudes towards people with disabilities. It seems that people who are close to someone with a disability might still have negative implicit attitudes. If people are made aware of this, it can help to alter these biases. Providing the public with knowledge regarding disabilities and informing them on stereotypes and biases can change how society views people with disabilities.

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