Perceptions of Physical Disabilities Using Eye-Tracking Technology

Ashton Nichole Prestage

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Perceptions of physical disabilities using eye-tracking technology

by

Ashton Nichole Prestage

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to

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of

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Honors Capstone Director: Dr. David Kyle, Lecturer
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# Table of Contents

Dedication 2
Abstract 3
Introduction 4
Methodology 11
Discussion 15
Conclusion 18
References 19
Appendix A i
Appendix B ii
Appendix C vi
Appendix D vii
Appendix E ix
Appendix F xv
Dedication

This Honors Thesis is dedicated to my research advisor, Dr. David Kyle, who is a true role model of acceptance and respect for all people.
Abstract

In order to more fully integrate people with physical disabilities into our society and raise their well-being, individual negative attitudes towards those with physical disabilities need to be reduced. People with physical disabilities face internal and external barriers on a day to day basis that can prevent them from reaching their goals and full potential. Because of this, it is necessary to understand the attitudes and perceptions people without physical disabilities have towards those that do. Therefore, the purpose of this paper is to describe a study conducted to test if there is a relationship in Interaction with Disabled Person (IDP) scale scores and gaze and fixation patterns analyzed using Gazepoint software while viewing pictures of individuals with physical disabilities. To test this, participant background information was gathered through a questionnaire. This provided information to analyze if prior experience with those who have physical disabilities, gender, age, and/or education level had an effect on the scores and eye behavior of the participants. It was found that there was no statistical difference in the IDP scores or eye behavior based on gender or prior exposure, but it was found that as the participant’s age increased, they spent more time looking at and revisiting the athlete’s face.
Introduction

Background

In the recent years of our society’s history, we have seen a monumental wave of diversity and inclusion become more important than ever to the citizens of this country. Movements fighting for continued race equality, a call to further recognize the rights of the LGBTQ+ community, and an overall right to have the option to make a choice. One way these movements have been implemented and supported is through university diversity and inclusion offices. This can even be seen on our own campus, with the Office of Diversity, Equity, and Inclusion, with its mission including initiatives that “promote, cultivate and support respect for differences of culture, socioeconomic status, religion, gender, sexual orientation, physical ability, race and ethnicity,” (UAH ODEI, 2020). While this transformation has been powerful and improved the health of our country, there is still work to be done to give people with physical disabilities options, opportunities, and the feeling of inclusion.

As stated by the Americans with Disabilities Act, a disability is defined as a “physical or mental impairment that substantially limits one or major life activities,” (United States Department of Justice, 2017). Additionally, the World Health Organization states that the word “disability” is an umbrella term that can include impairments such as a physical function or structure problem, activity limitations, and restrictions with participation (World Health Organization, 2016). To give context to this study, a physical disability hinders physical function and/or movement. Examples of a physical disability include and are not limited to Cerebral Palsy, limb amputation, Spina Bifida, spinal cord injury, and
Muscular Dystrophy, etc. While some physical disabilities can be temporary, the focus of this paper is for those who experience a visibly present and permanent disability.

When an individual has a physical disability, they are much more likely to have chronic conditions such as arthritis, hypertension, diabetes, heart disease, stroke, etc. These conditions can cause someone a great amount of pain while burdening them with excessive costs in medical care to receive treatment (Froehlich-Grobe et al., 2016). In addition to health problems and costs that can incur, multiple other areas of one’s life can be affected negatively by having a physical disability. It has been found that quality of life for those that use a wheelchair tend to be lower due to having less social interaction (McVeigh, Hitzig, & Craven, 2009). Furthermore, in 2014 it was reported that only 34.4% of people with disabilities were employed, while 75.4% of people without disabilities were employed (Institute on Disability, 2015).

In 2017, the U.S. census reported that there were 40,675,305 individuals that reported having a disability; of those individuals, 20,890,933 were reported as having an ambulatory disability, making up 51.4%. For this disability type, Alabama reported having the highest percentage at 57.8% (Disability Statistics & Demographics, 2019). With these numbers, people with disabilities are the largest minority group in the U.S. (Hahn, 1996). In order to help improve the lives of those with physical disabilities, the U.S. government established the Americans with Disabilities ACT (ADA) in 1990, which is enforced by several organizations such as the U.S. Equal Employment Opportunity Commission (EEOC), U.S Department of Transportation, etc., in order to prohibit the discrimination against people with disabilities in several areas. These areas include: employment, transportation, public accommodations, communications and access to state and local
government programs and services (U.S. Department of Labor, n.d.). Additionally, the U.S. Surgeon General made a call to action in 2005 to improve the health and wellness of individuals with physical disabilities. The report called for providing an understanding that people with disabilities are more than capable of living a healthy, productive life due to the misconception that people with physical disabilities are not able to be active (U.S. Surgeon General, 2005). These advances have been made in human resources and diversity offices and even on our own campus by protecting those with disabilities from discrimination ("UAH Non-Discrimination / Title IX," 2017; “UAH Office of Diversity and Multicultural Affairs,” 2017).

While positive growth has been made in recent years in the fields of educational, psychosocial, and vocational services of people of all ages into our schools, neighborhoods, sports, and workplaces, full integration will not occur until negative attitudes are recognized and negated. Additionally, these attitudes must be addressed in everyone - in both people who do and who do not have physical disabilities alike. When negative attitudes are present towards individuals with disabilities, obstacles are presented when reaching to achieve fulfillment of life goals. These obstacles, or barriers, are what keep people with physical disabilities to attain goals and to live a “normal life.” These barriers can be external or internal. For example, an external barrier is faced when an individual can’t enter a building because it only has stairs and is not wheelchair accessible. This is why the ADA was created in order to prevent these barriers from occurring (United States Department of Justice, 2017). In addition to this, environmental barriers can include attitudes, negative labels and language, perceived professional competency, accessibility, and administrative support. Some of the most significant barriers being attitudes and
misconceptions, forced upon by others and have to be dealt with everyday by those with disabilities. Negative labels and language have degrading effects and reduce the person to their disability, taking the focus from their humanity to their disability. Low perceived professional competency is also inflicted upon those with disabilities, making them believe they are incapable of working just because they have a disability (Kasser & Lytle, 2013). These external factors promote internal barriers such as fatigue, lack of endurance and motor skills, feeling ashamed, having the feeling of not knowing how to participate in sports, etc., causing individuals with physical disabilities to feel like they lack knowledge about their body that will restrict them in the activities in which they choose to participate (Junker & Carlburg, 2011; Bloeman et al., 2015).

To combat the effects of negative external and internal obstacles, positive facilitators must be uncovered. A facilitator is something that makes an action or process easier to carry out. In the context of this study, facilitators are something that increase the activity and livelihood for those with physical disabilities. These facilitators can include but are not limited to support from family members, encouragement from teachers and peers, making friends, participating in adapted activities and facilities, having easy access to transportation, etc. (Buffart et al., 2009; Bloetman et al., 2015). In order to understand the nature of interaction between people with physical disabilities and those without them, it is necessary to uncover the inner workings and to be knowledgeable of the attitudes people have towards those with physical disabilities (Antonak & Livneh, 1999).

**Purpose**

As mentioned previously, people with physical disabilities experience low health outcomes that can be induced by the negative attitudes and perceptions of others. In an
effort to change those perceptions, we must begin to understand the attitudes people have towards people with physical disabilities. The purpose of this study was to establish if an individual’s comfort level of interacting with persons who have visible physical disabilities in social interactions, as measured by the Interaction with Disabled Persons (IDP) scale (Appendix A) had a relationship with the gaze and fixation patterns observed while looking at pictures of people with physical disabilities (Forlin et al., 1999). The higher an individual scores on the IDP scale, the more discomfort they experience while interacting with people who have a physical disability in social situations. Additionally, participant background information (Appendix B), including if they had a family member, worked and/or volunteered with individuals who have a physical disability, and how often they interact with them (e.g. daily, weekly, monthly, yearly, etc.) was taken in order to see if this prior interaction influenced gaze fixation and revisit patterns in participants. It was hypothesized that individuals who have higher IDP scores look at an ambulatory aid (e.g. wheelchair, prosthetic, etc.) for a longer amount of time than someone with a lower score.

**Equipment**

In order to track participant's eye movements while observing images of people with physical disabilities, the Gazepoint eye-tracking software in the VUELab was utilized. After calibration, the eye-tracking bar is able to track eye movements of individuals. While the bar tracks the movements, the software is used to analyze where a user looks, how long someone looks at certain elements, and how a user’s gaze travels on an image by projecting infrared light on the participant’s eyes. A camera is then able to track the inflection of light and movement the participant’s eyes make when moving. Interpretations of these results can be made by analyzing metrics that are produced: direction of gaze, number of fixations,
time to first fixation, blink rate, blink duration, and pupil diameter. While this is true, in this study it was measured how long participants looked at certain elements of an image and how many times they revisited certain components as well (Gazepoint, n.d.) Specifically, in this study, there were regions drawn known as Areas of Interest (AOI, Appendix C) around people’s faces and ambulatory aids in order to measure the time spent viewing these elements and how many times a participant looked at these areas.

**Instrumentation**

The IDP was designed to effectively measure attitudes people have towards individuals that have a physical disability and what one experiences while participating in social interaction with people who have physical disabilities (Forlin et al., 1999). It was originally constructed for use in Australia, but since its founding it has been reformed to produce uniformed data collection in Australia, Canada, Croatia, England, Germany, Hong Kong, Poland, Scotland, and most important in regard to this study, the United States. Across these countries, the mean scores indicated that they fell within ten points of each other. Prior contact with people with physical disabilities also showed to be the strongest predictor of IDP scores, and it has been concluded that it is a valid measure (Gething et al., 1997).

Results of the IDP consistently show that individuals that have had prior contact with disabilities have lower scores on the IDP (Gething, 1991; Gething 1991a). Therefore, level of contact is a significant factor in determining attitudes towards people with disabilities. There has also been data that supports other significant factors that are related to IDP scores including age, level of education, and gender differences. Younger people tend to have more negative attitudes, with levels of education showing similar effects. Those
with less education tend to show greater discomfort when interacting with people who have a physical disability (Beckwith & Matthews, 1994). In regards to gender differences, male undergraduates tend to display more discomfort in their social interactions than female undergraduates, who have more positive attitudes towards those with disabilities (Gething, 1992). Lastly, it has also been found that professionals a part of a Faculty of Education academic staff have more positive attitudes towards people with a disability than staff in other faculties within a university (McLennan & Rapley, 1997).

**Population**

A convenience sample was used by recruiting participants via membership of Facebook groups and by asking students in person on the campus of The University of Alabama in Huntsville. In total, 33 participants were recruited, but only 32 of the participants’ information was able to be used. $N = 32$ (12M/20F) with the age range for the study being 13 to 44 (parental consent was obtained for the 13-year-old after the parent participated in the study and was present).
Methodology

Procedure

First, the participant was given a general overview of the study and the Informed Consent statement (Appendix D). The participant was asked if they had any questions and if they felt comfortable continuing. Once confirmed, the participant was asked to sign the Informed Consent. Next, the participant was given the Participant Questionnaire to complete (Appendix B). The questionnaire contained two parts. First, it gathered basic demographic information (i.e. age, gender, highest education level). Additionally, the questionnaire was used to see how often participants interact with individuals that have physical disabilities through volunteer or work activities, or if they had a family member with a physical disability or disabilities and how often they interact with them. The second part of the questionnaire contained the 20 question likert scale IDP. From there, a score for how comfortable participants are interacting with individuals who have physical disabilities was able to be obtained.

After the participant completed the questionnaire, they were instructed to sit at a computer with Gazepoint eye-tracking capabilities. From here, they would be shown a PowerPoint containing 15 pictures of individuals (Appendix E) with a variety of physical disabilities and settings, each using an ambulatory aid. Each picture was shown for five seconds in order to allow a sufficient viewing time for the participant. Once the individual finished viewing the presentation, the study was complete. After all scheduled participants participated in the study, data collection was complete and analysis was conducted.
Analysis

To understand if there were any significant differences in how participants perceived the individuals in the images and their ambulatory aids (AA), first Area of Interest boxes were placed using the Gazepoint software on the participants eye tracking recordings. For each picture, a box was drawn around each face present in the picture (i.e. if one person was in the picture, only one box was drawn around the face), and each AA present in the picture also had a box drawn as well. This was done in order to see how much time participants spent looking at faces and AAs. As seen in the pictures in the Appendix below, the longer a participant looked at a certain location, the larger the dot (Appendix F). Additionally, the lines present in the pictures show the pattern the participants’ eyes followed while observing the slide.

Once the AOIs were fully calculated, those descriptive statistics were merged with the survey responses and a series of inferential statistical tests were performed. An independent t-test was performed to see if gender had an effect on the behavior or belief of the individual. There was no statistically significant difference in the participant’s score on the interaction with disabled person’s scale (IDP) based on participant gender: t(30) = 1.381, p = .177. Additionally, there was no statistically significant difference due to participant’s gender for the time viewing the athlete’s face (t(31) = -1.212, p = .235), the number of fixations on the face (t(31) = -1.641, p = .111), revisits to the face (t(31) = -1.185, p = .245), time viewing the ambulatory aid (t(31) = .667, p = .510), fixations on the

1 Area of Interests were drawn by Ashton Prestage and Dr. Candice Lanius assisted with the inferential statistical tests.
ambulatory aid ($t(31) = .534, p = .597$), or revisits to the ambulatory aid ($t(31) = .499, p = .621$).

Next, an independent sample $t$-test was performed to see if the participant having a family member or working/volunteering with people who have a disability impacted their eye behavior. The participant’s exposure with a disability had no impact on time viewing the face in the images ($t(31) = .475, p = .638$), fixations on the face ($t(31) = .279, p = .782$), revisits to the face ($t(31) = .266, p = .792$), time viewing the ambulatory aid ($t(31) = -1.096, p = .281$), fixations on the ambulatory aid ($t(31) = -1.115, p = .274$), revisits on the ambulatory aid ($t(31) = -0.890, p = .380$) or the score on the IDP ($t(30) = -0.619, p = .541$).

Next, it was tested to see if there was a correlation between age and any of the Area of Interest measures. Due to six of the eight variables of interest being non-normal according to a shapiro-wilks test, a Spearman correlation test was performed. Age was not correlated with IDP score ($\rho(32) = -.225, p = .217$), but age did positively, moderately correlate with time viewing the face ($\rho(33) = .432, p = .012$) and fixations on the face ($\rho(33) = .479, p = .005$). Therefore, as the participant’s age increased, they spent more time looking at the athlete’s face and revisiting the athlete’s face. Additionally, there was a slight positive correlation between age and fixations on the ambulatory age ($\rho(33) = .356, p = .042$). There was no relationship for age and revisits to the face ($\rho(33) = .325, p = .065$), time viewing the ambulatory aid ($\rho(33) = .281, p = .114$), or revisits to the ambulatory aid ($\rho(33) = .263, p = .14$). There was no relationship between score on the IDP and the area of interest measures. Time viewing the face was very highly positively correlated with fixations on the face ($\rho(33) = .943, p < .001$) and revisits to the face ($\rho(33) = .83, p < .001$). Likewise, those who had higher time spent viewing the ambulatory aid.
aids also had more fixating on ambulatory aids (\(\rho(33) = .994, p < .001\)) and revisits to the ambulatory aid (\(\rho(33) = .825, p < .001\)).
Discussion

In contrast to previous research, it was found that gender did not have an effect on IDP scores or on the fixation and gaze patterns tested in the study. This could be because there were only 12 M compared to 20 F, resulting in the sample being less than half male. Second, exposure from working/volunteering with individuals or from having a family member also did not have a significant effect on the IDP score or fixation and gaze patterns. Out of the 32 participants, it was found that 17 had prior exposure to social interactions with people who have physical disabilities. Although this is true, out of the 17, only three interacted with them monthly, eight interacted with them yearly, three saw them 2-3 times a year, two never saw them, and one had a family member pass away. Due to the infrequency of interactions, this could have played a role in the level of comfort the participants have when interacting with people who have physical disabilities. Because they are not in contact with them enough, there is not a significant decrease in the discomfort they experience. Finally, although there was not a relationship with age and IDP as originally predicted, it could be because an overwhelming majority of participants were current undergraduate students, 25/32 participants to be exact. While this is true, as participant age increased, a relationship of longer amounts of time spent looking at and revisiting the faces of people in the pictures emerged. This could be accounted for by the older participants feeling the need to practice social politeness and to “not stare” at others. Most of us are taught from a young age that it is impolite to stare at others, especially those who are different from us. So, the older participants would have been exposed to this societal norm longer than younger participants, accounting for why they spent more time looking at the faces in the images rather than the ambulatory aids. Despite finding no
significant results with the participants in this study, past research has shown that, in
general, most individuals that have had prior contact with disabilities have lower scores on
the IDP, those with less education tend to show greater discomfort when interacting with
people who have a physical disability, and male undergraduates tend to display more
discomfort in their social interactions than females (Gething, 1991; Gething 1991a;

Limitations

Results may have been skewed due to the small convenience sample and the uneven
distribution of gender ratio. The vast majority of participants coming from a university
setting, a difference in education level was not able to be tested. Furthermore, as
mentioned in the research conducted previously, professionals a part of a Faculty of
Education academic staff have more positive attitudes towards people with a disability.
These attitudes can potentially be infused into university culture, influencing the attitudes
and perceptions members of the university have towards physical disabilities.

Second, there have been other studies where the IDP did not produce as significant
results as expected (Hall & Zweigenhaft, 2016). In a study examining attitudes that
influenced a disabled person getting hired, the IDP was used to predict the attitudes of the
professionals in charge of hiring and working with employees and clients that could
potentially have physical disabilities. The results of the study showed that there were no
gender differences in scores, that age was independent, and that there were no significant
differences between the groups that had a friend or relative, worked/volunteered with
people who have physical disabilities, or had no interaction among the scores as well. This
suggests that there could be shortcomings in the scale that need to be addressed. As
suggested in the study above, some questions on the scale could be deleted in order to produce a higher alpha score. A different scale that measures discomfort among individuals while interacting with people who have physical disabilities could potentially be used to see if results become more significant.

Speaking of future research, it would be beneficial to conduct a larger study with a random sample representative of the population. It would be interesting to compare scores and eye behavior in a similar study at another university. Would scores on the IDP and gaze and fixation patterns differ or be similar at another university? If so, an answer in regards to university culture could begin to be cultivated. Also, it could be conducive to conduct a blind study simultaneously with an open study similar to what was conducted here. Participants behavior could have potentially been influenced by being told that their attitudes and perceptions were being studied prior to participating, producing a classic Hawthorne effect (McCambridge et al., 2014). This could have changed where they naturally would have looked, whereas if it were a blind study more significant results could have been produced. For example, if the participant didn't know their eye movements were being tracked, they might have been more likely to have more gaze fixations and revisits on the AAs displayed in PowerPoint images.
Conclusion

As our society struggles to fully accept people with disabilities as equal members of society, it is important to find ways to reduce barriers for them while identifying facilitators that enable them to have greater life satisfaction through more opportunities, allowing them to more fully live (Antonak & Livneh, 2000). We have already made great strides in this area with the passage of the Americans with Disability Act and inclusion of people with disabilities in diversity programs, but more work is needed to change the attitudes and perceptions of the public (United States Department of Justice, 2017). Doing this facilitates the full inclusion of people with disabilities and allows everyone to benefit from their personal experiences and skills with adaptations in order to reach their goals. This study allowed for the initial analysis of attitudes and perceptions the UAH community has towards individuals with physical disabilities, and it is the hope that this journey of reducing negative perspectives will not stop here.
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https://doi.org/10.1016/j.jclinepi.2013.08.015


Appendix A. Interactions with Disabled Persons (IDP) scale

<table>
<thead>
<tr>
<th></th>
<th>I disagree very much</th>
<th>I disagree somewhat</th>
<th>I disagree a little</th>
<th>I agree a little</th>
<th>I agree somewhat</th>
<th>I agree very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>It is rewarding when I am able to help</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>It hurts me when they want to do something and can’t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I feel frustrated because I don’t know how to help</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Contact with a disabled person reminds me of my own vulnerability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I wonder how I would feel if I had this disability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I feel ignorant about disabled people</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I am grateful that I do not have such a burden</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I try to act normally and to ignore the disability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>I feel uncomfortable and find it hard to relax</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>I am aware of the problems that disabled people face</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>I can’t help staring at them</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>I feel unsure because I don’t know how to behave</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>I admire their ability to cope</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>I don’t pity them</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>After frequent contact, I find I just notice the person not the disability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>I feel overwhelmed with the discomfort about my lack of disability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>I am afraid to look at the person straight in the face</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>I tend to make contacts only brief and finish them as quickly as possible</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>I feel better with disabled people after I have discussed their disability with them</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>I dread the thought that I could eventually end up like them</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Appendix B. Participant Questionnaire

Perceptions of Physical Disabilities Using Eye-Tracking Technology:
Participant Questionnaire

Participant Number:________

Age: ____ Gender: M □ F □ Other □ Prefer not to say □

Highest Education Level Completed: ____________________________

Experience With Persons with a *physical disability:
*Physical disabilities that can be seen which may include but are not limited to amputation, cerebral palsy, spina bifida, and muscular dystrophy.

1. Have you ever worked or volunteered with people with physical disabilities?
   Daily □ Weekly □ Monthly □ Yearly □ None □ Other______

2. Do you have, or have you had a family member with a physical disability?
   Yes □ No □

3. If yes, how often do you interact with them?
   Daily □ Weekly □ Monthly □ Yearly □ None □ Other______

Please continue on the following page.

Below is a list of statements that some people have said describe how they feel when they have contact with a person with a disability. Of course, how we respond to people depends on how well we know them as individuals. However, we would like to know how you feel in general when you meet with a person with a disability. Please read each statement carefully and decide how much it describes how you feel.
Under each question please choose from between 1 - 6 that describes how you usually feel.

1. I disagree very much
2. I disagree somewhat
3. I disagree a little
4. I agree a little
5. I agree somewhat
6. I agree very much

1. It is rewarding when I am able to help.

   1 □  2 □  3 □  4 □  5 □  6 □

2. It hurts me when they want to do something and can’t.

   1 □  2 □  3 □  4 □  5 □  6 □

3. I feel frustrated because I don’t know how to help.

   1 □  2 □  3 □  4 □  5 □  6 □

4. Contact with a disabled person reminds me of my own vulnerability.

   1 □  2 □  3 □  4 □  5 □  6 □

5. I wonder how I would feel if I had this disability.

   1 □  2 □  3 □  4 □  5 □  6 □

6. I feel ignorant about disabled people.

   1 □  2 □  3 □  4 □  5 □  6 □

7. I am grateful that I do not have such a burden.

   1 □  2 □  3 □  4 □  5 □  6 □
8. I try to act normally and ignore this disability.
   1 □  2 □  3 □  4□  5 □  6 □

9. I feel uncomfortable and find it hard to relax.
   1 □  2 □  3 □  4□  5 □  6 □

10. I am aware of the problems that disabled people face.
    1 □  2 □  3 □  4□  5 □  6 □

11. I can’t help staring at them.
    1 □  2 □  3 □  4□  5 □  6 □

12. I feel unsure because I don’t know how to behave.
    1 □  2 □  3 □  4□  5 □  6 □

13. I admire their ability to cope.
    1 □  2 □  3 □  4□  5 □  6 □

14. I don’t pity them.
    1 □  2 □  3 □  4□  5 □  6 □

15. After frequent contact, I find I just notice the person not the disability.
    1 □  2 □  3 □  4□  5 □  6 □

16. I feel overwhelmed with the discomfort about my lack of disability.
    1 □  2 □  3 □  4□  5 □  6 □

17. I am afraid to look at the person straight in the face.
18. I tend to make contacts only brief and finish them as quickly as possible.

19. I feel better with disabled people after I have discussed their disability with them.

20. I dread the thought that I could eventually end up like them.
Appendix C. Areas of Interest (AOAs)
Appendix D. Informed Consent

Consent Form: Perceptions of Physical Disabilities Using Eye-Tracking Technology

Hi! My name is Ashton Prestage and I am the primary investigator of this study. I am a senior biology major and I am working to complete my Honors Capstone Thesis for my Honors Diploma from The University of Alabama in Huntsville.

I am asking you to participate in this research study since you are someone who is not experiencing a disability and 18 years old or older. I want to better understand the perceptions and attitudes people have about persons with physical disabilities. In this study, I would like to gain an understanding of how you feel when you have contact with a person with a physical disability. This research will only take about 15 minutes and will involve your participation in a questionnaire and looking at pictures of people with disabilities while having your eye movement tracked. Your participation in this research project is voluntary.

PROCEDURE TO BE FOLLOWED IN THE STUDY: Participation in this study is completely voluntary and there will be no penalties for withdrawing. Once written consent is given, you will be asked to complete a questionnaire about your interactions with people who have disabilities. Afterwards, you will be shown a PowerPoint presentation that contains 15 images of people with disabilities while your eye movements are being tracked by the GazePoint Eye Tracking Bar. This session will take approximately 10 minutes.

DISCOMFORTS AND RISKS FROM PARTICIPATING IN THIS STUDY: While there are no expected risks associated with your participation, there might be a slight risk for discomfort when viewing pictures of people who have physical disabilities. Also, please note having your eye movement tracked is similar to having your photo taken and will not induce any expected feelings or pain.

EXPECTED BENEFITS: Results from this study can benefit society by enabling us to learn how people with physical disabilities are perceived. Through this, educational areas that need to be improved upon can be identified for those who do not have physical disabilities.

INCENTIVES AND COMPENSATION FOR PARTICIPATION: There are no incentives or compensation provided for participating in this study.
CONFIDENTIALITY OF RESULTS: The maintenance of your confidentiality is very important to us. All information gathered in this study will be kept strictly confidential unless it is required by law to be disclosed. The questionnaire you complete will not contain any identifiable information and will be stored in a secure university building under lock and key. Access to this information will be restricted to individuals who are involved with the study and the information you give will be destroyed after 6 months. All electronic data will be securely stored utilizing UAH Box storage, which is a secure, cloud-based system that is encrypted and maintained by the UAH Office of Information Technology.

FREEDOM TO WITHDRAW: You are free to withdraw from the study at any time. You will not be penalized because of withdrawal in any form. Investigators reserve the right to remove any participant from the session without regard to the participant's consent.

CONTACT INFORMATION: If you have any questions, please ask them now. If you have questions later on, you may contact the Principal Investigator, Ashton Prestage, at anp0018@uah.edu, or the faculty supervisor, Dr. David Kyle, at david.kyle@uah.edu. If you have questions about your rights as a research participant, or concerns or complaints about this research, you may contact the Office of the IRB (IRB) at 256.824.2465 or email the IRB chair, Dr. Ann Bianchi, at irb@uah.edu.

If you agree to participate in our research, please sign and date below.

This study was approved by the Institutional Review Board at UAH and will expire in one year from January 16, 2020.

__________________________________________
Name (Please Print)

__________________________________________
Signature Date
Appendix E. Pictures Used in PowerPoint Presentation
Appendix F. AOA Examples
Ashton,

I approve your honors thesis manuscript.

Despite the setbacks experienced, you have done an excellent job on completing your research study and paper. Congratulations!

dk

David L. Kyle, Ed.D., CAPE
Director, Ability Sport Network
Lecturer, Department of Kinesiology
The University of Alabama in Huntsville
(256)824-2186

-------- Forwarded message --------
From: Ashton Prestage <anp0018@uah.edu>
Date: Tue, Apr 21, 2020 at 12:24 PM
Subject: Ashton Prestage: Honors Thesis Final Draft
To: David Kyle <david.kyle@uah.edu>

Hi Dr. Kyle,

Below you can find my final manuscript for my thesis. The pdf file also contains the required Title Page and Copyright Permission Form.

If you approve the manuscript, these are the instructions I received via email: "If the Project Director approves it, s/he emails approval back to the student, and copies their Department Chair, the Honors Dean at wilkerw@uah.edu, and David Cook at dac0010@uah.edu. (Project Directors please note - copy all 3 of us!)."

Thank you so much for your help during this journey!

Best,

Ashton Prestage

--

Ashton Prestage
The University of Alabama in Huntsville, Class of 2020
Peer Advisor for the Office of Pre-Professional Advising