

Running head: STIGMA OF AUTISM SPECTRUM DISORDER

STIGMA OF AUTISM SPECTRUM DISORDER: THE COST OF A SPOILED IDENTITY

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# STIGMA OF AUTISM SPECTRUM DISORDER

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## Abstract

Autism Spectrum Disorder (ASD) is a neurological developmental disorder that is characterized by impairments in communication, social interaction, and repetitive or restricted patterns of behavior. Stigma is a social process that involves identifying human variations and associating these variations with negative attributes. As a result of this process, individuals who are stigmatized can experience discrimination from others. Previous studies have shown that individuals with ASD experience stigma throughout their lifespan. Additionally, they experience particularly poor employment outcomes, even among individuals with disabilities. The current study examined the role of stigma in the workplace by testing a willingness-to-accept (WTA) behavioral economics measure that modeled stigma as a “cost” of working with someone with ASD. Participants were 256 individuals that read a vignette describing a potential coworker with social deficits characteristic of ASD, with mild social deficits, or with diabetes. Vignettes, with the exception of the individual with diabetes, did not include diagnostic labels. Participants were then asked to rate their attitudes towards the coworker described and to request a salary increase from a hypothetical employer that would offset the “cost” of working with the individual that had those difficulties. The results indicate that while participants reported more negative attitudes towards an individual with characteristics of ASD, they did not request any additional compensation for working with them compared to an individual with diabetes or with mild social deficits. Additionally, participants believed that other participants would request *less* additional money for working with an individual with ASD than for working with an individual with diabetes. These results provided mixed support for the study hypotheses. Overall, participants appeared to be influenced by the belief that the hypothetical transaction (WTA measure) was a taboo trade-off, or a morally unacceptable transaction. Implications for utilizing a WTA measure for studying stigma and directions for future research are discussed.

### Acknowledgments

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## **Chapter I: Introduction**

### **Background**

Autism Spectrum Disorder (ASD) is a neurological developmental disorder that is characterized by functional impairments in two domains: communication/social interaction and repetitive or restricted patterns of behavior (American Psychiatric Association, 2013). According to the Centers for Disease Control and Prevention, the prevalence of ASD in the United States was about 1 in 68 children in 2010 (Baio, 2014). Unlike other development disabilities such as Downs syndrome (Jain, Thomasma, & Ragas, 2002), ASD is diagnosed through observation of an individual's behavior and through self-report. There are no reliable genetic or biological markers which distinguish an individual with ASD from an individual who is typically developing (Geschwind, 2008). Instead, clinicians and researchers diagnose ASD by noting the presence of symptoms such as difficulty with nonverbal communication, difficulty with normal “back-and-forth” conversations, reduced sharing of interests, and “difficulty developing, maintaining, and understanding relationships” (American Psychiatric Association, 2013).

Studies have shown that typically developing children hold negative attitudes towards other children with ASD (Campbell, Ferguson, Herzinger, Jackson, & Marino, 2004; Swaim & Morgan, 2001) and that these attitudes continue through adulthood (Butler & Gillis, 2011). At least one study has also demonstrated that caregivers of children with ASD are also likely to be viewed negatively by others due to the behavioral issues of their children (Gray, 1993). Additionally, when Werner (2011) interviewed female students in a number of health and social professions such as social work, education, nursing, and occupational therapy, she found that working with individuals with ASD as clients was perceived as “difficult, challenging, and frustrating, yet rewarding and important.” Although there were positive components to the

attitudes reported, it is noteworthy that even among health care professionals there are significant negative attitudes towards working with clients that have ASD.

As children with ASD grow into adulthood, their social deficits begin to affect a number of important functional realms, including their ability to work. In particular, the social deficits described above can create difficulties beginning with the interview process and continue through the social interaction aspects of successful employment (Cullum & Ennis-Cole, 2014; Higgins, Koch, Boughfman, & Vierstra, 2008). For example, one source suggests that individuals with ASD may be seen as arrogant, not asking for help, or lacking assertiveness due to their difficulties with “small-talk” and reduced sharing of interests (Meyer, 2001). Overall, individuals with ASD report unemployment rates ranging from 48% to 75% (Holwerda, van der Klink, Groothoff, & Brouwer, 2012; Sung, Sanchez, & Kuo, Wang, & Leahy 2015). For those that are employed, many report that they are working half-time, without benefits, and in jobs that do not fully utilize their education or skills (Baldwin, Costley, & Warren, 2014). In short, individuals with ASD have generally poor employment outcomes.

### **Workplace Discrimination and Disclosing Disability**

When confronted with the poor employment outcomes for individuals with ASD, it is worth investigating why individuals with ASD have so much difficulty securing full-time meaningful employment. According to Richards (2012), individuals with ASD report unemployment rates that are one and a half times higher than the wider disabled population (Richards, 2012). In the United States of America, there are laws that prevent discriminatory hiring practices and require employers to make “reasonable accommodations” for workers with disabilities (Americans with Disabilities Act, 1990; ADA). Despite these legal protections, individuals from a variety of stigmatized groups continue to report negative attitudes,

discriminatory behaviors, and other difficulties in the workplace (Chan, McMahon, Cheing, Rosenthal, & Bezyak, 2005). Perhaps one reason for this discrepancy is that in order for individuals to receive protection under the ADA, they must disclose their disability. However, individuals with ASD report that they are hesitant to request accommodations under the ADA or to disclose their disabilities because they fear the potential repercussions of doing so. For example, individuals with ASD may fear that others may pity them or view them as incompetent and less reliable (Baldrige & Veiga, 2001). In fact, some job coaches of individuals with ASD routinely recommend avoiding disclosure of ASD to prospective employers (Davidson & Henderson, 2010).

The reluctance to disclose is common among individuals with mental disorders. Toth and Dewa (2015) reported that most individuals with mental disorders in their study took a default position of nondisclosure. The individuals they surveyed indicated that they felt that mental health issues are viewed more negatively than physical health issues in the workplace. Indeed, studies have shown that individuals who disclose their psychiatric disabilities are seen as being less employable than those who disclose physical disabilities (Dalgin & Bellini, 2008). Another study found that asking individuals to disclose their history of mental illness can actually impair their performance on a subsequent academic task (Quinn, Kahng, & Crocker, 2004). Johnson and Joshi (2015) reported mixed findings regarding the effect of disclosing ASD on discrimination and work well-being. For adults who were diagnosed later in life, disclosing their disability led to increased levels of perceived discrimination. However, individuals who were diagnosed with ASD earlier in life reported that disclosure allowed them to access appropriate accommodations and was associated with greater levels of workplace wellbeing. Besides age of diagnosis, the reason for disclosure can also affect disclosure outcomes. For example, studies

have shown that individuals who disclose concealable conditions for interpersonal reasons (e.g., strengthening a relationship or being more authentic) generally experience more positive disclosure experiences, improved psychological and physical well-being, and less fear of future self-disclosure (Chaudoir & Quinn, 2010; Chaudoir, Fisher, & Simoni, 2011). Those who disclosed for self-focused reasons such as decreasing anxiety about being discovered generally had less positive disclosure experiences and reported greater psychological distress due to increased perceptions of stigma.

### **The Definition of Stigma**

When negative attitudes comprise a system of beliefs that ultimately results in discrimination against individuals, it can be said that stigma, or a spoiled identity, has been associated with the group (Link & Phelan, 2001). According to Link and Phelan, stigma is a process that consists of four parts: the ability to differentiate and label human variations, the association of these variations with negative attributes, out-grouping of the group with these attributes, and finally discrimination against the individuals in the group.

In childhood, negative attitudes towards those with ASD translate into negative and discriminatory behaviors in the form of bullying in both traditional and cyber mediums at higher rates than typically developing children (Kowalski & Fedina, 2011). Although several authors have investigated stigma in ASD (e.g. Russell & Norwich, 2012) and others have investigated the impact of discrimination against individuals with disabilities more broadly (e.g., Ren, Paetzold, & Colella, 2008), no studies to date have investigated how negative attitudes towards adults with ASD manifest in the workplace from the perspective of coworkers. Individuals with ASD report substantial concerns about being stigmatized by their coworkers if they were to disclose their disability or if they were “discovered” as having ASD (Davidson & Henderson,

2010). However, research has not yet explored to what extent coworkers *actually* stigmatize and discriminate against employees who have ASD.

### **Willingness-to-Accept (WTA) Valuations**

Framing the study of the stigma of ASD within the workplace lends itself to using a behavioral economics paradigm for investigating attitudes towards individuals with ASD. Behavioral economics is a field of study that utilizes a combination of economic and psychological theories to develop more realistic and more accurate predictions of human behavior in economic situations (Camerer, 1999). One potential benefit of employing behavioral economics paradigms to study stigma is that it would allow the researcher to quantify participants' attitudes on a continuous scale, allowing for a more nuanced understanding of the stigma associated with various groups. A behavioral economics paradigm frequently used in the literature is a *willingness-to-accept* (WTA) design (Horowitz & McConnell, 2002). In short, a WTA design asks participants to state the minimum amount of money they would be willing to accept in order to put up with something negative. For example, previous studies have utilized the WTA design to determine the cost of undesirable things such as placing hazardous facilities near a person's place of residence (Kunreuther & Easterling, 1996) or with accepting a decrease in visual air quality (Horowitz & McConnell, 2002). This is in contrast to a *willingness-to-pay* (WTP) design (Kahneman, Ritov, Jacowitz, & Grant, 1993) which asks the question: what is the maximum you are willing to pay for some desired good or service? Although no studies to date have used a WTA design to measure stigma, some researchers have attempted to model the effects of stigma by using the construct of cost. For example, Rasmusen (1996) explored the economic stigma of criminality as a potential cost when modeling the attractiveness of criminality. In another example, Kim and Kim (2002) explored an individual's decision to

divorce by modeling stigma as an indirect cost or a sanction that acts on the individual when individuals make the decision to divorce their partners.

In a typical WTA design, economics make use of what are called indifference curves (Knetsch, 1989) in order to determine the apparent cost of an undesirable outcome. An indifference curve graphs the points at which two goods or services are interchangeable in value, or in other words, points that signal at which the consumer is indifferent as to which one they want to receive. For example, in order to determine the true cost of putting a waste disposal site on the same block as a participant's house, the researcher would ask stakeholders to state a price at which they would be *indifferent* as to whether they received the money or avoided the waste disposal site. If participants are simply asked to state how much they want to put up with something negative, this may not only reflect the perceived cost, but also an additional “bonus” or “incentive” to accept the negative outcome. Thus, the question is framed to ask when two outcomes are equal: a neutral outcome and a negative outcome plus some financial incentive. One can imagine a scale with two weights on it – the indifference curve is trying to determine the weight or “cost” of the negative outcome by adding a financial incentive to “balance out the scales” (see Figure 1).

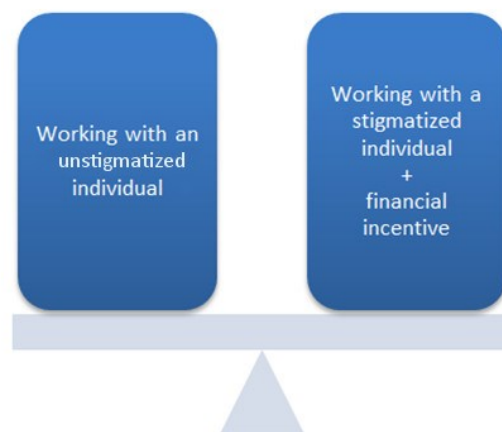


Figure 1. Balancing Stigma with a Financial Incentive

In order to facilitate the interpretation of the stated costs, researchers can compare the reported WTA values across different comparison groups. For example, researchers can use a between-subjects design and expose each participant to one of several potentially undesirable situations in order to determine their relative costs. The current study utilized this paradigm in order to investigate the stigma of ASD in the workplace. This methodology allows us to explore the relative “cost” or burden of working with an individual with ASD compared to the two control conditions.

While the reported “cost” cannot be considered a direct measure of discrimination, it can be considered an expression of negative attitudes or stigma against individuals with ASD. For example, Kahneman, Ritov, and Schkade (1999) made the argument that responses to willingness to pay questions and other economic valuations such as damages in civil trials are actually better understood as expressions of attitudes than expressions of economic values. In other words, they argued that responses to these questions are shaped by affective valuations that determine the intensity or direction of these economic valuations.

Finally, the use of a WTA measure allows for a continuous and quantitative measure of negative attitudes that can be used in other studies of stigma. In the current study, this measure supplemented a direct attitudinal measure and allowed the researcher to investigate how explicitly expressed attitudes compared with a quantitative economic cost associated with working with an individual that has ASD.

### **Individual Factors That May Influence Attitudes**

There are a variety of individual factors which have been shown to influence attitudes towards individuals with ASD. For example, previous studies have demonstrated associations between attitudes towards individuals with ASD and such variables as age, gender,

socioeconomic status (SES), and familiarity with ASD (Butler & Gillis, 2011; Mavropoulou & Sideridis, 2014; Tonnsen & Hahn, 2015). More specifically, a number of these studies (e.g., Campbell et al., 2004; Tonnsen & Hahn, 2015) suggest that children who are younger, female, of higher SES, and more familiar with ASD are the most likely to express positive attitudes towards individuals with ASD. However, these associations have been primarily reported in samples of school-age children. One study, which examined the attitudes of college students, found that males, as opposed to females, reported the greatest level of comfort with individuals with ASD (Nevill & White, 2011). The same study also found that having a relative with ASD was highly predictive of an increased openness and more positive attitudes towards individuals with ASD. In contrast, Butler and Gillis (2011), in their study of college students, found no associations between reported attitudes and age, gender, ethnicity, level of education, or familiarity with ASD. As a result, more research is needed to better understand how demographic and other individual factors may influence attitudes towards individuals with ASD in adult participants.

Additionally, previous research has indicated that some individuals may have a negative reaction when asked to assign a price or a cost to certain types of interactions (e.g., Tetlock, 2003). Tetlock named this phenomenon taboo tradeoff because it involves trading or compromising an important value seen as transcendent (e.g., love, loyalty, respect, etc.) for a secular value (e.g., money or convenience). While the taboo tradeoff phenomenon is not uniquely related to attitudes towards individuals with ASD, it may influence the interpretation of the WTA measure. For example, in a study such as the one reported here, participants may have refused to answer the WTA measure altogether or reported smaller dollar values if they perceived the experimental question as a taboo tradeoff. As a result, it is important to ask participants whether they believe the study task represents a taboo tradeoff for them.

### Current Study

The purpose of the current study was to investigate stigma against individuals with ASD in the workplace using a behavioral economics paradigm. Previous research has demonstrated that individuals hold negative attitudes towards individuals with ASD (Butler & Gillis, 2011) but has not investigated attitudes in the workplace. As a result, this study can contribute to the literature in two ways: first, by investigating the presence of negative attitudes towards individuals with ASD in a hypothetical workplace scenario and second, by evaluating a behavioral economics paradigm as a way to quantify stigma.

In the current study, I presented individuals with vignettes describing a person with ASD, with mild social deficits, or with diabetes. Participants were asked to state the minimum salary increase they would accept in order to be *indifferent* as to whether they work with an individual with ASD or a typically developing individual and receive no salary increase. I proposed that this salary increase provided an economic measure of the “cost” or burden of working with someone who has ASD. This value was then compared to the ones reported by participants who were asked to make the same judgment when considering vignettes about individuals with mild social deficits or with diabetes.

I hypothesized that study participants would be less willing to work with someone who exhibits social deficits characteristic of an individual with ASD compared to an individual with milder social deficits or with no social deficits and diabetes. Specifically, I hypothesized that study participants who read a vignette describing a person with ASD would:

1. Endorse more negative attitudes compared to those participants who read vignettes about an individual with mild social deficits or diabetes.

2. Request a higher salary to accept working with that individual compared to those participants who read vignettes about an individual with mild social deficits or diabetes.
3. Expect that others (the average person) will request higher salary increases to accept working with that individual compared to those participants who read vignettes about an individual with mild social deficits or diabetes.
4. Exhibit a positive relationship between negative attitudes towards individuals with ASD and a desired salary increase. In other words, individuals who express more negative attitudes towards individuals with ASD would also request higher salary increases in order to accept working with them. I hypothesize that this will be true for the other two vignettes as well.

Finally, I had two hypotheses about secondary variables:

5. I expected that the relative amount of salary increase or degree of negative attitudes would be negatively correlated with the participant's familiarity with ASD.
6. I expected that stronger taboo trade-off beliefs would be correlated with lower reported salary increases. I hypothesized that there would be no relationship between taboo trade-off beliefs and explicitly expressed negative attitudes.

## Chapter II: Methods

### Participants

A total of 256 individuals were recruited from an online psychology research site (Social Psychology Network, <http://www.socialpsychology.org/>) and through the Rutgers Psychology Human Subject Pool system (<http://researchpool.rutgers.edu/>). The sampling frame for this study was intentionally broad in order to capture a diversity of attitudes and beliefs towards ASD. The only inclusion criterion was a minimum age of 18 years old. There were no exclusion criteria.

Demographic characteristics of the sample are presented in Table 1. Despite the broad inclusion criteria, the sample was predominantly female (70%) and enrolled in college (98%). The average (mean age) was 19.3. Most respondents indicated that they were currently a freshman in college (61%).

Table 1

<i>Demographic Characteristics (N=217)</i>	
Age (mean)	19.3 (3.8)
Female	151(70%)
Enrolled in college	212 (98%)
Freshman	132 (61%)
Sophomore	40 (18%)
Junior	24 (11%)
Senior (4+ years)	16 (7%)

Results are expressed as mean (standard deviation) or frequency (percentage).

### Procedures

After Rutgers Institutional Review Board approval was obtained, the researcher created an online survey distributed via Qualtrics.com. Participants were recruited through the online psychology study websites described above. After clicking on the survey link, participants were presented with an informed consent and required that they verify being at least 18 years old. Participants were then asked to answer a number of demographic questions and invited to read a hypothetical scenario wherein they have just graduated college and are about to be offered their

“dream job”. Prior to starting the job, the HR manager describes an individual in one department who has some negative attributes and asks the participant to specify the minimum salary increase they would require to be indifferent as to whether they work in a department with that individual or in a department with no such individual. Participants also have the option of responding that they would desire no salary increase to work with the individual and that they would be equally satisfied working in either department. Each participant was randomly assigned to read a description of an individual with ASD, with mild social deficits, or with diabetes and no social deficits. All three descriptions were modified versions of those previously used by Butler and Gillis (2011) and used with their permission.

After reading the vignette and providing a desired salary increase, participants were asked questions about their attitudes towards the individual described, to report their knowledge of ASD, and to indicate their reaction to salary increase question. The entire survey took approximately ten minutes to complete. The data were stored in a password-protected excel file and converted to SPSS format after removal of any identifiers such as IP addresses. See Appendix A1 for a reproduction of the survey instrument with each of the three vignettes.

## **Measures**

*Demographic questions:* Participants were asked about their age, gender, and their class year in order to explore if any of these characteristics may be related to primary study variables.

*Salary increase (WTA):* Participants were asked to report the minimum salary increase they would accept in order to be indifferent to whether they work with an individual described in the vignette compared to a job placement with a typically developing individual with no salary increase. This type of question has been used in WTA studies (e.g., Horowitz & McConnell, 2002) to explore participants’ willingness to accept other negative outcomes. Participants have

the option of stating that they would require no salary increase, or 0\$, in order to accept working with this individual (WTA-self). Participants were also asked to report what they believed the average individual would request as a salary increase in the hypothetical scenario (WTA-average).

*Social Distance (SD) Scale:* Participants were asked to complete a 10-item modified SD scale as used by Butler and Gillis (2011). Questions included: “How willing would you be to be supervised by someone like Frank?” and “How willing would you be to hold a conversation with someone like Frank?” Participants were given four response options on a four-point likert scale ranging from “Definitively willing” (0) to “Definitely unwilling” (3). Butler and Gillis (2011) reported a Cronbach’s alpha of 0.91 for their 20-item scale. The reliability in the current sample for a revised 10-item scale was 0.94.

*Knowledge of ASD:* Participants were asked to rate their knowledge of ASD on a 1-item scale with five response options ranging from “very familiar” (5) to “very unfamiliar” (1).

*Taboo Trade-Off:* Participants were asked to rate their agreement with the statement, “There is something inappropriate about a person receiving extra salary money to work with someone because of a prospective fellow employee's characteristics,” on a five-point scale ranging from strongly agree (5) to strongly disagree (1).

## **Analysis**

Prior to data analysis, the researcher examined and cleaned the dataset. First, cases which had insufficient data for later analyses were removed. As a result of this process, 39 participants who had not responded to any experimental questions were removed, leaving a final sample of 217 responses.

Second, data from the willingness-to-accept (WTA) measures were examined to ensure

that individuals responded with numerical responses. As a result of this data cleaning process, two responses were converted to numeric format (e.g., 25k to 25000), and four responses were removed (e.g., a bit more, no, yes) as these indicated a fundamental misunderstanding or noncompliance with the task. There were a total of 213 responses which were further retained following this process.

Once data cleaning was completed, the researcher examined the data to determine whether the distributions were normal for the two primary outcome measures: the SD Scale and the WTA measures. While the SD scale was normally distributed, the WTA measures were not. Desired salary increases for the participants (WTA-self) had a positive skewness of 3.79 (SE=.17) and kurtosis of 15.93 (SE=.33). The desired salary increase for what the participants believed an average individual would request (WTA-average) had a positive skewness of 3.19 (SE=.17) and a kurtosis of 10.07 (SE=.33). As a result, the researcher chose to use a mixture of standard statistical tests (i.e., t-test and linear regression) for the SD scale and nonparametric tests (i.e., Mann-Whitney U test) for the WTA measures in order to test the study hypotheses. The latter approach is well-established for analyzing non-normal distributions in WTA studies (e.g., Manson and Levy, 2015).

### Chapter III: Results

#### Hypothesis 1 – Negative attitudes towards individuals with ASD

The first hypothesis stated that participants who read vignettes about an individual with ASD would be more likely to endorse negative attitudes on the SD Scale compared to participants who read a vignette about a person with diabetes or with mild social deficits. Due to the a priori specification of all study hypotheses, I did not conduct an omnibus ANOVA test and proceeded directly to evaluating each hypothesis through a series of t-tests. Means and standard deviations for the SD scale by condition are presented in Table 2. As hypothesized, individuals who read a vignette about an individual with ASD endorsed more negative attitudes compared to participants who read a vignette about a person with diabetes,  $t(142)=5.47$ ,  $p<0.01$ . However, no difference was detected between individuals who read a vignette about an individual with ASD compared to those who read a vignette about an individual with a mild social deficit,  $t(138)=.75$ ,  $p=.46$ .

Table 2

*Means and Standard Deviations of Social Distance Scale by Condition (N=216)*

Condition	N	Mean	Std. Deviation
ASD	68*	1.43	.69
Mild social deficit	72	1.35	.60
Diabetes	76	.82	.65
Overall	216	1.19	.70

\*One case excluded due to 5 N/A responses

#### Hypothesis 2 and 3 – Desired salary increase for working with an individual with ASD

The second hypothesis stated that participants who read a vignette about a person with ASD would request a higher salary increase (WTA-self) compared to participants who read about an individual with diabetes or mild social deficits. In order to test this hypothesis, I conducted two Mann-Whitney U tests. The Mann-Whitney U test is the non-parametric analogue

of the standard t-test and does not require data to be normally distributed. Descriptive statistics for the WTA-self measure by condition are presented in Table 3. Pairwise comparisons using a Mann-Whitney U test revealed no difference between the ASD and diabetes vignettes ( $U=2178.00$ ,  $p=.10$ ). Similarly, no difference was detected between the distributions of desired salary increases between individuals that read the ASD vignette compared to those who read the mild social deficit vignette ( $U=2384$ ,  $p=.89$ ). Taken together, these two findings do not support the second hypothesis.

Table 3

*Descriptive Statistics for WTA-Self Measure by Condition (N=213)*

Condition	N	Mean (\$)	Median (\$)	Mode (\$)	SD
ASD	68	3191	0	0	6206
Mild social deficit	71	4035	0	0	9703
Diabetes	74	3851	0	0	10970
Overall	213	3702	0	0	9210

The third hypothesis stated that participants who read a vignette about a person with ASD would also expect that the average person would request a higher salary increase than those who read vignettes about individuals with diabetes or mild social deficits. Again, I conducted two Mann-Whitney U tests in order to test this hypothesis. Descriptive statistics for the salary increase measure for the hypothetical average person (WTA-average) are presented in Table 4. Surprisingly, the results indicate that participants who read a vignette about an individual with ASD expected that the average person would want a *smaller* salary increase than participants who read a vignette about an individual with diabetes ( $U=2026.5$ ,  $p=.04$ ). There was no difference detected between individuals who read the ASD vignette and the mild social deficit vignette ( $U=2244.5$ ,  $p=.47$ ).

Table 4

*Descriptive Statistics for WTA-Average Measure by Condition (N=213)*

Condition	N	Mean (\$)	Median (\$)	Mode (\$)	SD
ASD	68	4214	1500	0	7079
Mild social deficit	71	6114	1000	0	11940
Diabetes	74	5973	15	0	14216
Overall	213	5459	1000	0	11542

**Hypothesis 4 – Correlation between SD Scale and desired salary increase**

The fourth hypothesis stated that there would be a correlation between negative attitudes (SD Scale) and the desired salary increase (WTA-self) measure. In order to test this hypothesis, I calculated a Kendall's tau b correlation, a statistical test appropriate for non-parametric data and interpreted similarly to the Pearson r. The results of those correlation analyses are presented in Table 5. As hypothesized, there was a positive correlation between negative attitudes and the desired salary increase measure (WTA-self,  $r_{\tau} = .34$ ,  $p < 0.01$ ). In other words, individuals who reported more negative attitudes towards the individual described in the vignette were also more likely to request higher salary increases. Additionally, there was also a small but significant positive correlation between self-reported negative attitudes and the desired salary increase for the average person (WTA-average,  $r_{\tau} = .11$ ,  $p = .024$ ). Finally, as expected, there was a positive correlation between the two WTA measures ( $r_{\tau} = .36$ ,  $p < 0.01$ ).

Table 5

*Kendall's tau b Correlations of WTA Measures and Social Distance Scale (n=213)*

	WTA-Average	SD Scale
WTA – Self	.36**	.34**
WTA – Average	-----	.11*

\*\*  $p < 0.01$  (2-tailed)\* $p < 0.05$  (2-tailed)

### Hypotheses 5 and 6 – Relationship between Taboo Trade-off, ASD familiarity and outcome

Hypothesis 5 stated that there would be a negative correlation between the participants' familiarity with ASD and their desired salary increase (WTA-self) as well as their degree of reported negative attitudes as measured by the SD scale. In order to test this hypothesis, I began by calculating another set of Kendall's tau b correlations. These analyses were conducted with only the participants exposed to the ASD vignette ( $n=68$ ) because the hypothesis specifically targets this subgroup. The results of the correlational analyses are presented in Table 6. There was no significant correlation between reported knowledge of ASD and desired salary increases (WTA-self,  $r_t = -0.04$ ,  $p = .732$ ) but there was a negative association which approached significance between reported knowledge of ASD and negative attitudes (SD scale,  $r_t = -0.17$ ,  $p = 0.07$ ). In other words, while not statistically significant, individuals who reported greater knowledge of ASD tended to report less negative attitudes towards the individual in the ASD vignette. This finding is consistent with previous studies that reported familiarity with ASD as a predictor of less negative attitudes towards individuals with ASD (e.g., Campbell et al., 2004; Nevill & White, 2011; Tonnsen & Hahn, 2015). Butler and Gillis, in contrast, reported no association between familiarity and less negative attitudes in their 2011 study.

Table 6

*Kendall's tau b Correlations of Knowledge of ASD and Outcome Measures ( $n=68$ )*

	SD Scale	Knowledge of ASD
WTA-self	.37**	-.04
SD Scale	----	-.17

\*\*  $p < 0.01$  (2-tailed)

The sixth hypothesis stated that individuals who reported stronger taboo trade-off beliefs would request lower salary increases (WTA-self) but would not be influenced in their negative

attitudes. In other words, the taboo-tradeoff measure would be negatively correlated with the WTA-self measure and not correlated with the SD scale measure. In order to test this hypothesis, I calculated Kendall's tau b correlations between the taboo-tradeoff measure, the SD scale, and the WTA-self measure. The results are presented in Table 7. I found that taboo-tradeoff beliefs were negatively correlated with both the WTA-self measure ( $r_t = -.39, p < 0.01$ ) and the SD scale measure ( $r_t = -.24, p < 0.01$ ). This provided mixed evidence in support of the sixth hypothesis. Consistent with the hypothesis, the perception of the experimental task as being a taboo trade-off was associated with lower salary increase. However, in contrast to the hypothesis, perception of the experimental task as involving a taboo trade off was also significantly associated with less negative attitudes towards the individual in the ASD vignette.

Table 7

*Kendall's tau b Correlations of Taboo-Tradeoff and Outcome Measures (n=213-216)*

	Taboo Tradeoff
WTA – self	-.39**
SD Scale	-.24**

\*\* p<0.01 (2-tailed)

### **Chapter IV: Discussion**

The current study was designed with two purposes in mind. The first was to investigate whether adults would report negative attitudes towards individuals with ASD in a hypothetical workplace scenario and the second was to pilot a novel behavioral economics paradigm as a continuous, quantitative measure of stigma. With respect to the first purpose, the results of the present study replicate and expand upon previous research which found that adult participants report negative attitudes towards individuals with ASD (e.g., Butler & Gillis, 2011). In the current study, participants who read a vignette about an individual with ASD reported being less likely to want to carpool, to work with, or to attend social events with that individual compared to participants who read about an individual with diabetes. This finding has important implications for researchers, clinicians, and for policy makers. While this study was not designed to evaluate how negative attitudes towards individuals with ASD translate into discriminatory behavior in the real world, it is an important question for future research given the high rates of unemployment reported by individuals with ASD (Holwerda et al., 2012; Sung et al., 2015).

Although there are legal protections against employment discrimination, it is likely that these are not sufficient to protect individuals who have a disability that is potentially concealable. In order for a disability to be protected under the Americans with Disabilities Act, (ADA, 1990) individuals must disclose their disability. However, disclosing may have certain risks. For example, individuals who disclose their disability may be viewed as less employable, capable, reliable, or trustworthy (Baldrige & Viega, 2001; Dalgin & Bellini, 2008; Davidson & Hederson, 2010). Additionally, disclosing a disability may even impair performance on certain tasks due to identity threat or vigilance for upcoming stigmatization (Quinn et al., 2004). However, studies suggest that individuals who disclose for interpersonal reasons and with a

consideration of the needs of their confidant tend to have more positive disclosure experiences (Chaudoir & Quinn, 2010; Chaudoir, et al., 2011). Furthermore, individuals who have positive and supportive disclosure experiences also report higher levels of self-esteem, decreased fear of disclosure, and improved psychological and physical well-being. As a result, individuals with concealable disabilities such as ASD are charged with the difficult task of deciding when, where, and to whom they should disclose their disability.

The participants in the current study were not informed of the hypothetical individual's disability in the ASD vignette, but they were given behavioral descriptors which suggested that the individual had social deficits. These behavioral descriptors were sufficient to elicit an expression of negative attitudes. It is impossible to determine from the current results whether identifying the individual in the vignette as having ASD would have influenced the responses of participants in a positive or negative way. Instead, the current study examines the stigmatizing responses of participants that do not know whether a hypothetical individual has a disability or not. This ambiguity requires the participant to make judgments about whether they would like to work with an individual (or the cost of working with them) in the absence of an identified label. It is likely that this situation reflects one that individuals often encounter in the real world: an individual observes that a coworker has social deficits (e.g., poor eye contact and difficulty with small talk) and begins to exhibit behavioral avoidance towards that individual. This may, in turn, have ramifications for the individual with ASD's work performance if he is not able to socialize with coworkers, to request help from peers, or to work effectively on teams. Additionally, if the individual does not disclose their disability they would be unlikely to receive any accommodations under the Americans with Disabilities Act. Although it is outside the scope of the present study to determine the prevalence or the impact of these sorts of experiences, it

would be of substantial value for future research to explore how disclosure of ASD may impact different phases of work life from job interviews to on-the-job performance reviews.

It is also important to note that there was no difference in attitudes detected between participants who read a vignette about individuals with mild social deficits compared to those who read a vignette about individuals with ASD. This is in contrast to Butler and Gillis (2011), who did detect statistically significant differences between all three conditions in their study. There are several potential explanations for this. First, it's possible that the vignettes in the current study, after modification from the Butler and Gillis originals, did not sufficiently maintain the difference between the clinical disorder (high-functioning ASD) versus a sub-clinical condition or personality variation (mild social deficits). Specifically, the vignettes were shortened and adapted to fit within a workplace setting. It is possible that shortening the vignettes may have left out some additional information (e.g., Frank talks about baseball all the time because he is a big fan of the Atlanta Braves) that may have helped to better contextualize and normalize some of the unusual behavior described in the mild social deficits condition. A second possibility is that the study may have lacked sufficient power to detect a small difference in the data between ASD and mild social deficit conditions. The actual difference (degree of negative attitudes) between the conditions may have been smaller in this study due to the change from a social context in the Butler and Gillis study compared to the workplace in the current study. This appears likely given the small, but non-significant difference between the two conditions on the SD scale. If this is the case, it also seems likely that the difference between the conditions would be of little practical importance. A third and related possibility is that participants were not sensitive to the degree of social impairment and would exhibit similarly negative attitudes towards individuals with *any* degree of social deficits in the workplace. Further

study may be warranted to explore this third possibility and to determine how degree of impairment may influence negative attitudes towards individuals with ASD.

With respect to the second study purpose, or the development of a novel behavioral economics paradigm for measuring stigma using a continuous, quantitative measure, the results were mixed. On the one hand, reported willingness-to-accept (WTA) values did correlate with reported attitudes as measured by the SD Scale. For example, on both measures, there was no difference detected between the ASD condition and the mild social deficit condition. This suggests that the two measures are measuring the same thing. However, on the other hand, participants who read a vignette about an individual with ASD did *not* request a higher salary increase compared to those asked about working with an individual with diabetes. In fact, for the WTA-average measure, participants who read about an individual with ASD requested *lower* salary increases compared to those who read about an individual with diabetes. These findings stand in contrast to the more negative attitudes on the SD scale in the ASD condition compared to the diabetes condition described above. If taken at face value, the lower WTA-average value for individuals exposed to the ASD condition compared to the diabetes condition suggests that participants believed that the average person would perceive a greater cost to working with an individual with diabetes compared to one with ASD. So how do we make sense of this discrepancy?

It is likely that participants' salary increase requests were influenced by a *taboo tradeoff* effect as described by Tetlock (2003) and summarized in the introduction of this study. In other words, participants were uncomfortable with the notion of assigning an economic cost or receiving a financial benefit in exchange for working with an individual with undesirable characteristics. Initial support for this explanation comes from the fact that almost two-thirds

(62%) of the participants in the current study requested no salary increase (WTA-self) in exchange for working with the individuals described in the study vignettes.

Zeros pose a substantial interpretative difficulty for a willingness-to-accept paradigm. The reason for this is that zeros may have two considerably different meanings. They may reflect either an actual valuation (no cost) or refusal to participate in the task (protest zero). Protest zeros, as defined by Mitchell and Carson (1989), occur when respondents provide responses of zero dollars even though they do perceive some cost to accepting the good or service. According to these authors, protest zeros can comprise 50% or more of the data set in WTA studies. In contrast, a “true zero” would be when a participant perceives no cost to accepting something, and replies accordingly. The high percentage of zeros makes it difficult to determine the true economic cost, or WTA value for the experimental conditions. Given that almost one-third (32%) of the participants reported strong agreement with the taboo-tradeoff question (32%), it seems likely that a substantial but unknown proportion of the participants were reporting a zero WTA sum as a form of protest. Further support for this hypothesis comes from the strong correlation between the taboo-tradeoff question and reported WTA values as seen in the results for the sixth hypothesis. Specifically, beliefs that the experimental task was a taboo-tradeoff were associated with lower reported WTA-self values. In other words, as could be expected, those individuals who believed that the experimental task was inappropriate also requested smaller salary increases. As a result, it seems likely that a taboo-tradeoff effect significantly influenced participant WTA values and that it may have resulted in participants providing protest zero responses. However, due to the nature of the study design, it is not possible to determine which of the responses collected were actually protest zeros and which ones were “true zeros”.

Given the unknown prevalence of protest zeros in the data set, we should interpret the

observed WTA results with caution. It is plausible that the null hypothesis is true and that individuals do *not* perceive a greater economic cost to working with individuals with ASD compared to working with individuals with diabetes. While this seems to contradict the findings of the attitudinal measures, it is possible that these two constructs are measuring somewhat different facets of stigma. In other words, participants may be saying that they do not prefer working with individuals with ASD, but that they do not require any extra money to be OK with doing so. However, this seems unlikely given a statistically significant positive correlation between these two measures.

Another explanation may be that participants perceived the experimental task with an individual with ASD as being more taboo than those who read the vignette about an individual with diabetes. In other words, perhaps there was something more inappropriate about assigning an economic cost to working with an individual due to social impairment (ASD) than for assigning an economic cost to working with an individual with a physical condition. As a result, WTA values in the ASD condition would be more impacted by protest zeros than those in the diabetes vignette. However, the data does not seem to support this hypothesis because agreement with the taboo-tradeoff question did not differ significantly between conditions and the proportion of zero responses was actually *higher* in the diabetes condition compared to the ASD condition. In other words, it does not seem likely that participants perceived the experimental task as being more taboo in the ASD condition compared to the diabetes condition.

A third and final explanation for the absence of a detected difference between ASD and the diabetes condition on the WTA measure may be the obscuring influence of protest zeros. If the protest zeros are conceptualized as statistical “noise” or error in the estimate of stigma using the WTA measure, then it is possible that this error obscures an actual difference between

conditions. However, given the design of the present study, it is impossible to determine the actual prevalence of protest zeros and eliminate the noise in order to test this hypothesis.

In order to improve future studies utilizing similar paradigms, researchers should consider the impact of protest zeros on their data set and structure experimental tasks to better identify and distinguish protest zeros from true zeros. Venkatachalam (2004) reviewed various ways that researchers have modified the standard willingness-to-accept procedure to minimize some of the limitations of the methodology. Some of these modifications include: 1) using yes/no questions prior to eliciting a WTA response to determine whether the study participant would prefer refusal 2) using closed-ended questions to elicit WTA values “step-by-step” rather than asking one open-ended question and 3) conducting interviews in person to gather qualitative data on individuals’ rationale behind their economic valuations.

Finally, it is worth noting that familiarity with ASD did not appear to be a strong predictor of either negative attitudes or desired salary increases. Although there was a small negative correlation which approached significance between knowledge of ASD and reported negative attitudes, it was not statistically significant. This is surprising given previous studies that reported a negative association between ASD familiarity and reported stigma (e.g., Nevill & White, 2011). However, the findings of the present study should be interpreted with caution as knowledge of ASD was self-reported and assessed by a one-item measure.

### **Limitations**

In addition to the influence of protest zeros and the taboo-trade off effect discussed above, another important limitation of the current study was the somewhat restricted group of participants that consisted primarily of college students and females. This may limit the generalizability of the findings and it may be worthwhile to see if these results would differ with

more heterogeneous samples (e.g., more males, less educated, older participants). However, at least one study (e.g., Leeper & Mullinix, 2013) has shown empirically that convenience samples can provide an adequate source of data and can be comparable to nationally representative samples.

A second limitation has to do with the hypothetical nature of the task. Participants were asked to imagine themselves being confronted with a situation that they are unlikely to have previously encountered in the world. It is possible that if participants were confronted with the task in real life (e.g., asked how much extra [real] money they would want to spend time with an individual with ASD versus a typically developing individual) they may have responded differently.

A third and final limitation concerns the nature of self-report in general. Participants were simply asked to report their negative attitudes and their desired salary increase. While they may have been honest and earnest to comply with the task at hand, they may have also been responding under the influence of experimenter expectations or social desirability.

### **Summary and Future Directions**

The findings of the current study emphasize the importance of studying the role of stigma in the workplace, particularly as it relates to individuals diagnosed with ASD. Negative attitudes towards individuals with ASD that begin in childhood persist through adulthood and into the workplace as reported by the participants in this study. Although the WTA paradigm piloted in the current study presented a number of limitations and difficulties in interpretation, I hope that this investigation will benefit future researchers. Indeed, the findings of the current study should not suggest that a behavioral economics approach or even the willingness-to-accept measure is not a potential tool for measuring stigma quantitatively. Instead, future researchers would do

well to include yes/no questions and other modifications as suggested by Venkatachalam (2004) in order to decrease the influence of taboo tradeoff and protest zeros on participants' reported WTA values. Furthermore, researchers should continue to explore novel paradigms for quantifying stigma as they may lead to a more sophisticated and nuanced understanding of the role of stigma in social decision-making.

## References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- Americans With Disabilities Act of 1990, Pub. L. No. 101-336, 104 Stat. 328 (1990).
- Baio, J. (2012). Prevalence of autism spectrum disorder among children aged 8 years – autism and disabilities monitoring network, 11 Sites, United States, 2010. *Surveillance Summaries*. 63(SS02), 1-21.
- Butler, R.C., & Gillis, J.M. (2011). The impact of labels and behaviors on the stigmatization of adults with asperger's disorder. *Journal of Autism and Developmental Disorders*, 41, 741-749.
- Baldrige, D.C., & Veiga, J.F. (2001). Toward a greater understanding of the willingness to request an accommodation: Can requesters' beliefs disable the americans with disabilities act?. *Academy of Management Review*, 26(1), 85-99.
- Baldwin, S., Costley, D., & Warren, A. (2014). Employment activities and experiences of adults with high-functioning autism and asperger's disorder. *Journal of Autism and Developmental Disorders*, 44, 2440–2449
- Camerer, C. (1999). Behavioral economics: Reunifying psychology and economics. *Proceedings of the National Academy of Sciences*, 96 (19), 10575-10577.
- Campbell, J.M., Ferguson, J.E., Herzinger, C.V., Jackson, J.N, Marino, C.A. (2004). Combined descriptive and explanatory information improves peers' perceptions of autism. *Research in Developmental Disabilities*, 25, 321-339.
- Chaudoir, S.R., Fisher, J.D., & Simoni, J.M. (2011). Understanding HIV disclosure: A review and application of the disclosure processes model. *Social Science & Medicine*, 72(10),

1618-1629.

- Chaudoir, S.R., & Quinn, D.M. (2010). Revealing concealable stigmatized identities: The impact of disclosure motivations and positive first-disclosure experiences on fear of disclosure and well-being. *Journal of Social Issues*, 66(3), 570-584.
- Cohen, J. (1992) A power primer. *Psychological Bulletin*, 112(1), 155-159.
- Cullum, P.M., & Ennis-Cole, D. (2014). Preparing adults with autism spectrum disorders for employment. *Online Journal for Workforce Education and Development*, 7(1), 1-23.
- Davidson, J., & Henderson, V.L. (2010). 'Coming out' on the spectrum: Autism, identity and disclosure. *Social and Cultural Geography*, 11(2), 155-170.
- Geschwind, D. H. (2008). Autism: Many genes, common pathways?. *Cell*, 135(3), 391-395.
- Gray, D.E. (1993) Perceptions of stigma: The parents of autistic children. *Sociology of Health and Illness*, 15, 102-120.
- Higgins, K.K., Koch, L.C., Boughfman, E.M., & Vierstra, C. (2008). School-to-work transition and Asperger syndrome. *Work*, 31, 291-298.
- Holwerda, A., van der Klink, J., Groothoff, J., & Brouwer, S. (2012). Predictors for work participation in individuals with an autism spectrum disorder: A systematic review. *Journal of Occupational Rehabilitation*, 22(3), 333-352.
- Horowitz, J. K., & McConnell, K. E. A Review of WTA/WTP Studies (2002). *Journal of Environmental Economics and Management*, 44, 426-447.
- Jain, R., Thomasma, D. C., & Ragas, R. (2002). Down syndrome: Still a social stigma. *American Journal of Perinatology*, 19(2), 99-108.
- Johnson, T.D., & Joshi, A. (2015). Dark clouds or silver linings? A stigma threat perspective on the implications of an autism diagnosis for workplace well-being. *Journal of Applied*

- Psychology*, Advance online publication. <http://dx.doi.org/10.1037/apl0000058>
- Kahneman, D., Ritov, I., Jacowitz, K. E., & Grant, P. (1993). Stated willingness to pay for public goods: A psychological perspective. *Psychological Science*, 4(5), 310-315.
- Kahneman, D., Ritov, I., Schkade, D. (1999). Economic preferences or attitude expressions?: An analysis of dollar responses to public issues, *Journal of Risk and Uncertainty*, 19, 203-235.
- Knetsch, J.L. (1989). The endowment effect and evidence of nonreversible indifference curves, *The American Economic Review*, 79(5), 1277-1284.
- Kim, J., & Kim, H. Stigma in divorces and its deterrence effect (2002). *The Journal of Socio-Economics*, 31, 31-44.
- Kowalkski, R.M. & Fedina, C. (2011) Cyber bullying in ADHD and Asperger Syndrome populations. *Research in Autism Spectrum Disorders*, 5, 1201-1208.
- Kunreuther, H., & Easterling, D (1996). The role of compensation in siting hazardous facilities. *Journal of Policy Analysis and Management*, 15, 601-622.
- Leeper, T., & Mullinix, K. (2013, December 9). *To Whom, With What Effect? Parallel Experiments on Framing*. Lecture presented at Comparative Politics Workshop in Aarhus University, Aarhus, Denmark.
- Manson, K. F., & Levy, I. (2015). "Selling" value: The influence of language on willingness-to-accept. *PLoS ONE*, 10(3), e0120292. doi:10.1371/journal.pone.0120292
- Mavropoulou, B S. & Sideridis, G. D. (2014). Knowledge of autism and attitudes of children towards their partially integrated peers with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 44, 1867-1885.
- Meyer, R (2001) *Asperger Syndrome Employment Workbook: An Employment Workbook for*

- Adults with Asperger Syndrome*. London: Jessica Kingsley Publishers.
- Mitchell, R., & Carson, R. (1989). *Using surveys to value public goods: The contingent valuation method*. Washington, D.C.: Resources for the Future.
- Nevill, R. & White, S. (2011) College students' openness toward autism spectrum disorders: Improving peer acceptance. *Journal of Autism and Developmental Disorders*, 41, 1619-1628.
- Quinn, D.M., Kahng, S.K., & Crocker, J. (2004). Discreditable: Stigma effects of revealing a mental illness history on test performance. *Personality and Social Psychology Bulletin*, 30(7), 803-815.
- Rasmusen, E. Stigma and self-fulfilling expectations of criminality (1996). *The Journal of Law and Economics*, 39, 519-543.
- Ren, L., Paetzold, R.L., & Colella, A. (2008). A Meta-analysis of experimental studies on the effects of disabilities on human resource judgments. *Human Resource Management Review*, 18, 191-203.
- Richards, J. (2012). Improving inclusion in employment for people with asperger syndrome: Towards practices that recognize theories of asperger syndrome and contemporary employment. *Paper presented in 30<sup>th</sup> Intentional Labour Process Conference*, Stockholm, Sweden, March 27-29, 2012.
- Russell, G & Norwich, B. (2012). Dilemmas, diagnosis, and de-stigmatization: Parental perspectives on the diagnosis of autism spectrum disorders . *Clinical Child Psychology*, 17 (2), 229-245.
- Santuzzi, A. M., Waltz, P. R., Finkelstein, L. M., & Rupp, D. E. (2014). Invisible disabilities: Unique challenges for employees and organizations. *Industrial and Organizational*

- Psychology*, 7(2), 204-219.
- Sung, C., Sanchez, J., Kuo, H-J., Wang, C-C., Leahy, M.J. (2015). Gender differences in vocational rehabilitation service predictors of successful competitive employment for transition-aged individuals with autism. *Journal of Autism and Developmental Disorder*, 45(10), 3204-3218.
- Swaim, K. F., & Morgan, S. B. (2001). Children's attitudes and behavioral intentions toward a peer with autistic behaviors: Does a brief educational intervention have an effect? *Journal of Autism and Developmental Disorders*, 31, 195–205.
- Tetlock, P.E. (2003). Thinking the unthinkable: Sacred values and taboo cognitions. *TRENDS in Cognitive Science*, 7(7), 320-324.
- Tonnissen, B. L., & Hahn, E. R. (2015). Middle school students' attitudes toward a peer with autism spectrum disorder: Effects of social acceptance and physical inclusion. *Focus on Autism and Other Developmental Disabilities*, p.1-13.
- Toth, K.E., & Dewa, C.S. (2014). Employee decision-making about disclosure of a mental disorder at work. *Journal of Occupational Rehabilitation*, 24, 732-746.
- U.S. Department of Labor's Office of Disability Employment Policy, Job Accommodation Network. (2011). *Accommodation and compliance series: The ADA Amendments Act of 2008*. Retrieved from <http://askjan.org/bulletins/adaaa1.htm>
- Venkatachalam, L. (2004). The contingent valuation method: A review. *Environmental Impact Assessment Review*, 24(1), 89-124.
- Werner, S. (2001) Assessing female students' attitudes in various health and social professions toward working with people with autism: A preliminary study. *Journal of Interprofessional Care*, 25, 131-137.

## Appendix A

### Survey Instrument

**Q1.** Please select your gender

- Male
- Female

**Q2.** Are you currently enrolled in college?

- Yes
- No

**Q2a.** If yes, Please select your class year

- Freshman (1st year in college)
- Sophomore (2nd year in college)
- Junior (3rd year in college)
- Senior or higher (4+ years in college)

**Q2b.** Have you picked a major yet?

- [ ☐ ] Decided on first major (please write it in): \_\_\_\_\_
- [ ☐ ] Decided on second major (please write it in): \_\_\_\_\_
- [ ☐ ] Undecided

**Q3.** Please enter your age: \_\_\_\_\_

Imagine that, soon after you graduate college your dream job comes along. There's exciting work, mentoring by recognized leaders, and opportunities for advancement, not to mention an anticipated starting salary of \$50,000.

You like them. They like you. Before settling the deal, you pay one last visit.

You go into the boss's office. He says:

"I want to discuss something with you. There are two possible starting placements for you in the company, Alpha and Beta. The jobs are identical, and everything about the work situation is the same. The only difference is that, in the Alpha division you'll be working closely with Frank Smith, and he has asked me to brief you about his background."

**[At this point, participants will be presented with 1 of the following 3 vignettes.]**

#### Vignette 1 – Asperger's or High Functioning Autism

"In my book, Frank is a hard-working, stand up guy, and anybody who works for him will learn a lot. The one thing to know about Frank is that he has a condition that makes him sometimes behave in unusual ways."

You ask, "Unusual how?"

The boss replies, "Well, he sometimes appears shy and quiet when he is around others. For example, Frank tends to look down when he talks to or is around other people. Frank also has

difficulty with changes, and he feels anxious whenever there is a change in policy or a protocol at work.”

“Also,” the boss continues, “Frank can act somewhat unusually in conversations. When Frank meets new people, he really enjoys talking about birds even when the other person is not necessarily interested. During any conversation, Frank talks about the birds that are common to the area, even when it does not fit in the conversation.”

“Is there anything else I should know?” you ask.

The boss replies, “Well, sometimes Frank also makes inappropriate comments. For example, while Frank was at the work cafeteria an employee at a different table told her friend that she was done eating. Frank had finished his meal, and since he was still hungry he asked, ‘Can I have your left-overs?’ She gave Frank a nasty look and he didn’t understand why.”

### Vignette 2 – Shy or Mild Social Impairment

“In my book, Frank is a hard-working, stand up guy, and anybody who works for him will learn a lot. The one thing to know about Frank is that he has a condition that makes him sometimes behave in unusual ways. “

You ask, “Unusual how?”

The boss replies, “Well, he sometimes appears shy and quiet when he is around others. Frank is not outgoing, but people enjoy Frank's company.”

“Also,” the boss continues, “Frank can act somewhat unusually in conversations. For example, when Frank meets new people he enjoys talking about baseball and when Frank has a conversation, he brings up sports whenever it fits in.”

“Is there anything else I should know?” you ask.

The boss replies, “Well, sometimes Frank catches himself accidentally making an inappropriate comment. For example, one time in the work cafeteria Frank said, “I can’t imagine anyone eating all the food they give you here.” A woman sitting at a nearby table who had just finished all of her food overheard Frank’s comment. As the woman left the cafeteria she gave Frank a nasty look, and Frank immediately felt embarrassed.”

### Condition 3 – Control

“In my book, Frank is a hard-working, stand up guy, and anybody who works for him will learn a lot. The one thing to know about Frank is that he has a medical condition that, about a year ago, Frank was diagnosed with diabetes, that it interfered with his work, and he had to take off nearly a month to get better. Although diabetes is the sort of thing that could flare up in the future, he tells me he’s squared away now, and is taking a medication that has his symptoms under control. “

“Besides the medical condition, is there anything else I should know about him?” you ask.

“Well,” the boss explains, “he is usually an outgoing guy, but can sometimes be quiet in new situations. Overall, people enjoy being around Frank.”

“Also,” the boss continues, “Frank is easy to get along with. When Frank meets new people he enjoys talking about a variety of topics and he is as home at a formal dinner as he is at a football game. Frank is polite, and always remembers to compliment others.”

**Prompt [Presented to Each Participant]**

“I’ve got confidence in Frank and wouldn’t bother to mention his private business except that he’s asked me to make things clear to anyone who signs on at Alpha Division since they will be spending a lot of time with him. I realize not everyone sees things the way I do and that, given a choice between two otherwise identical jobs in Alpha and Beta, some people may shy away from Alpha because of Frank. However, I want the spots filled with solid people, and so I’m willing to consider giving the salary a bump upwards, just to balance out the two placements.”

The boss continues, “This may seem like a bit of an odd question, but what do you think is the lowest salary bump I could offer you so that you would be equally satisfied at Alpha Division with Frank or Beta Division with someone who does not have Frank’s condition? Like I said, I want the spots in Alpha and Beta Divisions both filled with good people, and so I want to see how I could make both options equally appealing. In other words, I’m not asking how much of a bump it would take for you to prefer the job at Alpha. I’m asking how much of a bump it would take to make the two equally attractive -- so, for example, you’d be comfortable if someone flipped a coin.”

**Q4.** For this scenario, what is the minimum amount of additional money that would make working in either Alpha Division with Frank or Beta Division with someone who does not have Frank’s condition equally satisfactory choices so that you would not care which one you end up with?

(If it wouldn’t make any difference, you’d put \$0.00.) \_\_\_\_\_

**Q5.** Forgetting about what you’d want, what’s the smallest amount the average person would accept to be equally satisfied with either the job in Alpha Division with Frank or the Beta Division with someone else? (If you think the average person wouldn’t see any difference, you’d put \$0.00.) \_\_\_\_\_

Answer the following questions by rating how much you would be willing for that event to occur on a scale from definitely willing to definitely unwilling. For the purposes of these questions, imagine that Frank is not your coworker, but someone like him with whom you don’t have a previous relationship. Please answer the questions as honestly as possible.

Rating choices: Definitely Willing; Probably Willing; Probably Unwilling; Definitely Unwilling; Not Applicable\* **[On the computer presentation each question will be accompanied by all 5 options with radial buttons].**

**Q6.** How would you feel having a class with someone like Frank?

**Q7.** How would you feel having someone like Frank in your study group?

**Q8.** How would you feel doing a class project with someone like Frank?

**Q9.** How would you feel about going to a social event (i.e. a party, movie, or concert) with someone like Frank?

**Q10.** How would you feel about being a co-worker on the same job as someone like Frank?

**Q11.** How would you feel about having someone like Frank as a neighbor?

**Q12.** How would you feel about living in the same apartment/house as someone like Frank? (If you are more comfortable living with a female, think of a female with the same characteristics as Frank.)

**Q13.** How willing would you be to be supervised by someone like Frank?

**Q14.** How willing would you be to carpool with someone like Frank on a daily basis?

**Q15.** How willing would you be to hold a conversation with someone like Frank?

**Q16.** How would you rate your knowledge of autism?

- Very familiar (e.g. work with someone, know someone, or personally have autism)
- Familiar
- Neither familiar nor unfamiliar
- Unfamiliar
- Very unfamiliar (e.g. never heard of it before)

**Q17** There is something inappropriate about a person receiving extra salary money to work with someone because of a prospective fellow employee's characteristics.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

**Q18.** If you have any comments or feedback regarding your experience of responding to the survey or the vignette, please write them below. **[Text box provided below]**