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Effects of Disclosing Autism on Coworker Attitudes

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Abstract

Individuals with autism tend to have difficulty with social relationships in the workplace, which makes it hard to obtain and maintain employment. In order to help individuals with autism navigate the workplace, it is important to examine possible stigma management strategies. Using principles from the Stereotype Content Model (SCM) theory, I investigated the effects of disclosing autism on coworker attitudes by having participants view and react to a video of an individual with autism. I also investigated the effects of displayed interpersonal warmth (e.g., greeting others) on potential coworker attitudes. Participants were randomly assigned to one of four conditions formed by the presence or absence of autism spectrum disorder (ASD) disclosure and the presence or absence of interpersonal warmth. After viewing the videos, the participants completed several measures designed to assess their interpersonal judgments, emotional reactions, behavioral intentions, and overall workplace attitudes towards the individual with ASD. Results showed that disclosure had a more pervasive positive impact on the participants' reactions than did displayed interpersonal warmth. When ASD was disclosed, participants perceived the individual as more warm and competent, felt more admiration and less irritation toward him, were more likely to help and associate with him, and were more willing to work with him.

Keywords: autism, disclosure, employment, interpersonal warmth, attitudes

Effects of Disclosing Autism on Coworker Attitudes

Imagine that you walk into your break room at work. Who are you? What defining characteristics do you have? Are you stern and unsociable? Are you polite and competent? Perhaps you are elderly, Asian or a single mom. Maybe you have a disability. Maybe you have autism. How do your coworkers perceive or judge you? Research suggests that judgments of others focus on perceptions of warmth and competence, occur quickly, and affect how the observer feels and acts toward the person being observed (Cuddy, Glick, & Beninger, 2011). Stereotypes associated with different disabilities appear to influence perceptions of warmth and competence (Fiske, 2012). For example, individuals with autism are at risk for being perceived as having low competence and low warmth. Such judgments can hinder individuals with autism, as well as individuals with other disabilities, in finding and maintaining employment. Thus, if the cues that influence these judgments can be understood, others' impressions might be managed in a way that decreases the likelihood of stigma and improves interpersonal relationships in the workplace.

Research is needed on ways to increase employment for people with disabilities, specifically people with autism. On average, workers with disabilities earn as little as 70% of what nondisabled workers earn, and the employment rate for these workers is only a fraction of what it is for nondisabled workers (Colella, 1994). Previous research suggests that employers are more likely to hire a nondisabled person over a person with a disability (Pearson, Yip, & Lo, 2003). Despite this, individuals with disabilities can greatly benefit from employment and places of employment can greatly benefit from individuals with disabilities. Employment enables adults with disabilities to earn wages

they can use to support themselves and pursue their interests (Hendricks, 2010). Besides the obvious economic benefits, employment offers individuals with disabilities pride, self-confidence, independence, social activity, and a better overall quality of life (Copeland, Chan, Bezyak & Fraser, 2010). People with disabilities offer work environments diversity, along with skilled workers and potential friends. In reflecting on past performances of people with disabilities, coworkers rated those colleagues with disabilities very positively (Ren, Paetzold, & Colella, 2008), suggesting that negative stereotypes can be overcome through working with people with disabilities.

The primary focus of the current research was on how people with autism can positively influence coworker perceptions. More specifically, I investigated whether autism disclosure and displays of interpersonal warmth in individuals with autism influenced coworker judgments. To provide a rationale for the proposed experiment, I will first review the literature on the dimensions of interpersonal judgment. Using the Stereotype Content Model and the Behaviors from Intergroup Affect and Stereotypes (BIAS) Map Theory, I will explain how these judgments occur. I will then provide a brief overview of how individuals with autism are affected in the workplace by judgments made by coworkers and how coworkers' attitudes affect their behavior toward individuals with autism. Finally, I will discuss how individuals with autism spectrum disorders (ASD) might combat those judgments through stigma management strategies such as disability disclosure and behaviors that demonstrate interpersonal warmth.

Dimensions of Interpersonal Judgments

Recent research has shown that there are two fundamental dimensions underlying social judgment, regardless of whether the target of judgment is an individual or group

(Fiske, 2012). The first dimension—warmth—reflects people's perception of another person's likeableness and is based on how well that person is able to satisfy the principal motivations of the perceiver. This dimension generally includes personal traits such as friendliness, sociability, and sincerity (Louvet, Rohmer & Dubois, 2009). The second dimension—competence—reflects people's perception of another person's ability to be successful in different aspects of life (e.g., social, economic, career, etc.) and is based on how well that person is able to satisfy the requirements of a given society or organization (Fiske, 2012). A person who is considered to be high in competence is also perceived as possessing higher levels of capability, confidence, and independence (Louvet et al., 2009).

Warmth (or the absence of it) determines the likelihood of the observer having positive or negative intentions towards the target individual. From an evolutionary standpoint, warmth is distinguished first because it determines friend or foe (relevant for deciding whether to fight or flee). The warmth judgment is made more quickly than the competence judgment and has a greater impact on how we view that person (Cuddy et al., 2011). For example, one can often assess warmth just by looking at facial expressions, while competence takes longer to assess. People also infer warmth and competence from interactions with others.

Even though warmth judgments are made first, the importance of the warmth and competence dimensions is relative. For example, dependent upon the context, competence outweighs warmth and takes main priority. Competence is weighed more heavily when judging the self and related others (e.g., friends, family, etc.) because warmth is already assumed (Cuddy et al., 2011). People would prefer for themselves and

closely related others to possess more of the trait that benefits the self (competence), than the trait that benefits others (warmth) when the latter is already present (Cuddy et al., 2011).

Stereotype content model. Although multiple psychological theories have identified the importance of warmth and competence in forming interpersonal judgments (Peeters, 2002; Wojciszke, Bazinska & Jaworski, 1998), one is especially relevant for the current study, the Stereotype Content Model (SCM; Cuddy, Fiske, & Glick, 2008). The SCM states that one does not judge others solely on a scale of "bad to good," which leads to accepting some people and rejecting others. Instead, one uses a combination of "warmth" and "competence" evaluations, judging people as relatively high or low on each to help sort their social worlds (Cuddy, Fiske, & Glick, 2008). Stereotypes of specific groups of people also appear to be influenced by these evaluative dimensions. That is, stereotypes can be mostly positive (high in warmth and competence), mostly negative (low in warmth and competence), or mixed (high warmth but low competence, or low warmth but high competence). The SCM depicts these dimensions of warmth and competence on a graph, depicting warmth on one axis and competence on the other. These four quadrants can be seen in Figure 1 (Fiske, 2012). *Mixed cases* are when groups are seen as high on one dimension but low on the other (Fiske, 2012). In contrast, *consistent views* are when groups are seen as high or low on both dimensions.

The SCM highlights distinct, and predictable patterns of interpersonal judgment (Cuddy et al., 2011) based on stereotypes of an individual's race, gender, nationality, religion, profession, socioeconomic status, and similar social categories. For example, Cuddy et al. (2008), asked American adults to evaluate different social groups (e.g.,

elderly, disabled, welfare recipients) based on where they fell according to these two traits. The participants rated the lists of societal groups on traits related to warmth (warm, nice, friendly, and sincere) and competence (competent, confident, skillful, able; Cuddy et al., 2008). In part to minimize social desirability biases, the participants were asked to rate the groups in how they believed others view them. The researchers found that across the ten US samples, four clusters emerged: high competence-low warmth, low competence-high warmth, high competence-high warmth, low competence-low warmth. Most groups were viewed as either competent but not warm (e.g., Asians, rich people), or warm but not competent (housewives, disabled people; Cuddy et al., 2008). A small number of groups were seen as high (e.g., Americans, students, middle-class) or low on both traits (e.g., homeless, poor, drug addicts; Cuddy et al., 2008). The concept that people hold both consistent and mixed stereotypes has since been validated across twenty different cultures, yielding similar results (Cuddy et al., 2008).

While, overall, people with disabilities are at risk for being judged as high in warmth and low in competence (Cuddy et al., 2008; Fisk, 2012), additional research indicates that stereotypes vary with the type of disability. Individuals with disabilities have been categorized in all four quadrants of the SCM (Fiske, 2012). For example, individuals with schizophrenia are viewed as having low competence and low warmth, while individuals with physical disabilities and cognitive disabilities tend to elicit perceptions of warmth, but low competence (Fiske, 2012; See Figure 2). Further, individuals with autism are viewed as less warm than individuals with mental retardation and Downs Syndrome (Fiske, 2012). This could be because of the deficits in social interactions and specific behavioral characteristics (e.g., poor eye contact) that separate

individuals with autism from those with Downs Syndrome. These deficits can interfere when individuals with autism interact with others and therefore lead others to perceive them as less competent and/or less warm.

In summary, the Stereotype Content Model reveals how stereotypes may influence judgments of interpersonal warmth and competence. The consistency of warmth and competence judgments, and the presence of mixed stereotype content, is a well-validated, cross-cultural phenomenon (Cuddy et al., 2008, Fiske 2012). The potential impact of stereotypes does not end with judgments of warmth and competence, however. Instead, these judgments elicit emotional responses and behavioral intentions, as explained by an extension of the SCM called the BIAS Map (Cuddy et al., 2011).

The BIAS map. Behaviors from Intergroup Affect and Stereotypes (or the BIAS map), integrates several principles derived from existing intergroup bias theory (Cuddy, Glick & Fiske, 2007). The BIAS map extends the SCM by taking into consideration the emotional and behavioral outcomes of warmth and competence evaluations in social interactions (Cuddy et al., 2007). According to the BIAS model, each warmth/competence stereotype combination elicits a unique set of emotions (admiration, envy, pity, or contempt) and behaviors (active versus passive and facilitating versus harmful; Cuddy et al., 2011; See Figure 3).

More specifically, according to the theory, individuals that are viewed as high competence-high warmth elicit *admiration* and pride (Cuddy et al., 2007). Admiration and pride motivate contact and are directed toward others whose positive outcomes do not detract from the self (Cuddy et al., 2007). On the opposite end, those who are viewed as low competence-low warmth activate *contempt* and disgust (Cuddy et al., 2007). These

emotions are elicited most strongly by individuals whose negative outcomes are perceived as controllable. Individuals who are seen as having high competence-low warmth are thought to evoke *envy* and jealousy (Cuddy et al., 2007). Envy is ambivalent and involves both resentment and respect. It also involves begrudging admiration for the other. Envied groups are often seen as scapegoats when societies experience widespread instability because envied groups are perceived to have the ability (competence) as well as the intent to disrupt society (Cuddy et al., 2007). Lastly, those who are viewed as having low competence-high warmth are thought to elicit *pity* and empathy (Cuddy et al., 2007). Pity and empathy are ambivalent emotions, comprising both compassion and sadness, which often result from appraising another's negative outcome as uncontrollable (Cuddy et al., 2007). In summary, each warmth and competence combination theoretically elicits unique emotions, which then prompt specific behavioral responses.

The BIAS map indicates that the four combinations of high versus low warmth and competence judgments elicit four unique patterns of behavioral responses: active facilitation (e.g., helping), active harm (e.g., harassing), passive facilitation (e.g., association and convenient cooperation), and passive harm (e.g., neglect; Cuddy et al., 2008). Judgments of warmth are thought to be connected with *active* responses. Specifically, groups judged as warm elicit active facilitation (e.g., help), compared to those who lack warmth, which elicit active harm (e.g., attack). Judgments of competence are thought to be associated with more passive responses. People who are judged as highly competent elicit passive facilitation (e.g., cooperating with an individual when it is convenient to do so). People who are judged as being incompetent elicit passive harm (e.g., neglect), which can take be seen through excluding or ignoring the individual

(Cuddy et al., 2007). Research has supported these predictions, with groups who are judged as being competent eliciting more passive facilitation (e.g., convenient cooperation, association), whereas those who are judged as lacking competence eliciting more passive harm (e.g., neglect, avoidance) (Cuddy et al., 2008).

Given that disabilities are associated with different patterns of warmth and competence judgments, Cuddy and colleagues (2007) argued that others might respond with active facilitation, passive harm or sometimes active harm. When others respond with passive or active harm, people with disabilities lose valuable opportunities to develop friendships, interpersonal skills or to create long lasting relationships. In the SCM BIAS literature, disability labels have been shown to trigger the judgments-emotions-behaviors sequence. In daily life, however, the initial triggers are not so clear. For example, others' automatic judgments may be triggered by a disability label, visible signs of a disability, or unexpected or unexplained behaviors related to the disability. Thus, it may be that behaviors seen as "odd" or different impact perceptions more strongly than disability labels per se. Individuals with autism are an interesting example of this, due to their "normal" appearance. Sometimes, disclosing their disability can help others to understand why the behaviors they see as potentially being "odd" are occurring. This can influence others' perceptions and behaviors towards them, which can help them having more positive interactions in daily life, particularly in the workplace. To better understand these experiences of people with ASD, the relevant autism literature will be reviewed below.

Autism in the workplace

One in 50 children meet the criteria for an Autism Spectrum Disorder (ASD), with prevalence of diagnosis increasing greatly over the last decade (Center for Disease Control, 2013). These children are growing up and going into the working world, which has created an urgent demand for more information and understanding of individuals with autism in the workplace.

There are many challenges that employees with ASD and their coworkers face. Autism is a neurologically based developmental disorder that is characterized by deficits in social interactions, communication, and cognitive processes (Iobst, Nabors, Rosenzweig, Srivorakiat, Champlin, Campbell & Segall, 2009). Individuals with autism have difficulty in non-verbal behaviors such as eye contact, facial expressions, body language and gestures that go along with social interactions (American Psychiatric Association, 2000). In addition, individuals with autism often engage in stereotypical or restrictive behaviors and interests, such as an unusually strong attachment to an object or an interest that is abnormal in intensity or focus (American Psychiatric Association, 2000; Harnum, Duffy & Ferguson, 2006). For example, an individual may have to engage in a ritualistic pattern as a part of daily routine and may cause the individual not to be able to switch attention to another task (American Psychiatric Association, 2000). Individuals with autism also can be inflexible, not willing to stray from a routine or schedule. This inflexibility can cause difficulty when having to make on-the-spot decisions and adjusting when plans change, particularly in a workplace environment.

Individuals with ASD are often mistaken for neuro-typical adults and misjudged because they have a "normal" physical appearance, but their social behaviors fail to

conform to social norms (Chambers, Auxiette, Vansingle & Gil, 2008). When examining strategies for improving vocational placement and job retention for individuals with ASD, Müller, Schuler, Burton and Yates (2003) found that almost all the participants (employed individuals with ASD) described their overall work experiences in negative terms. The most frequently mentioned obstacle the individuals encountered was the inability to master the social demands of the workplace. The majority of the participants reported that their social deficits led to isolation and alienation in the workplace. Some characteristics that individuals with autism display can affect how they are perceived and how they function socially. These characteristics can lead coworkers to make judgments about the individuals based on their behaviors. Due to the social deficits that individuals with autism display (e.g., atypical conversational skills, poor eye contact and difficulty reading social cues) they may be judged by coworkers and supervisors as being less competent and less warm than others (Fiske, 2012). To the degree that these judgments elicit the corresponding emotions and behaviors in colleagues, individuals with ASD are at risk for isolation from coworkers and work evaluations that threaten their job performance and retention.

Depending on how they view the individual with ASD, according to the Stereotype Content Model, the coworkers may feel contempt and disgust (low warmth, low competence) or pity and empathy (high warmth, low competence; Cuddy et al., 2008). It is important to understand these judgments and emotions because individuals with autism are at risk for being perceived in the low warmth and low competence category, which can elicit others to engage in active harm (e.g., attacking or harassing the individual) as well as passive harm (e.g., excluding, ignoring or neglecting the

individual). On the other hand, if the coworkers are helped to view the individual with ASD as higher in warmth, they might engage in active facilitation by helping, assisting, or defending the coworker (Cuddy et al., 2007). Similarly, if coworkers are helped to view individuals with ASD as higher in competence, they might engage in passive facilitation by cooperating or associating with the coworker (Cuddy et al., 2007).

Stigma management strategies

Two potential strategies to enhance perceptions and support for people with autism in the workplace are (a) disclosing the disability to fellow coworkers and staff and (b) warmth oriented self-presentation.

Disability disclosure. Individuals with disabilities are confronted with the dilemma of whether to hide or reveal their conditions to employers and coworkers. Self-disclosure typically involves the revelation of information about oneself that is not observable or initially known to the other person (Hebl & Skorinko, 2005). The revealed evidence is often perceived as undesirable or to have negative connotations (Allen & Carlson, 2003). While disclosures are not necessarily alarming, the most intimate self-disclosures often are based on knowledge that is not already known and has surprising or negative elements. Disclosure is an essential ingredient in gaining intimacy in social relationships (Hebl & Skorinko, 2005).

Disclosing a disability or illness may have negative or positive effects on an individual's sense of self-identity in a social context as well as an occupational context. Disclosure could bring about feelings of embarrassment and social irresponsibility especially when an individual feels forced to disclose due to not being able to mask the behaviors of their disability during daily tasks (Allen & Carlson, 2003). On the other

hand, disclosure can be liberating, removing stress associated with attempting to hide or mask part of one's identity (Roberts & Macan, 2006) and increasing access to needed resources. For example, individuals who disclose a disability may wish to invoke certain rights conferred by the Americans with Disabilities Act (ADA) of 1990 (Roberts & Macan, 2006). Individuals that choose not to disclose their disability may come to see their hidden attribute as negative, leading to a negative self-perception. Thus, disclosure of a disability, rather than concealment, may lead to more positive self-esteem (Roberts & Macan, 2006).

Another potential benefit of disclosure is that people may prefer to work with individuals who acknowledged observable disabilities because the disclosure allows them to feel more comfortable around that individual (Hastorf, Wildfogel & Cassman, 1979; Hebl & Kleck, 2002; Roberts & Macan, 2006). Researchers have found that in conditions where a disability was obviously present and not acknowledged, both the nondisabled person and the disabled person felt greater discomfort during their interactions compared to when the disability was acknowledged. For example, in a classic disclosure study, Hastorf and colleagues (1979) found that nondisabled individuals interacting with a disabled person exhibited less variability in their behaviors, expressed their actual beliefs less, gestured less, and even ended the interaction sooner when the disabled person did not acknowledge their disability compared to when they did acknowledge their disability (Hastorf et al., 1979). A potential source of the discomfort could stem from the nondisabled individual's uncertainty as to what kind of behavior is expected and appropriate. In turn, uncomfortable behavior of the nondisabled individual can lead the individual with a disability to have negative thoughts such as, "I am the type of person

who causes others to feel uncomfortable, and am therefore avoided. When people do get to know me, they appear to like me less the better they get to know me" (Hastorf et al., 1979).

Sharing information that will explain reasons for odd behavior will shift the blame off of the individual and onto a biological condition (Weiner, 1993). More specifically for autism, disclosing explanatory information as well as neuropsychological information helps others better understand children with autism's behavior (Iobst et al. 2009; Campbell, Ferguson, Herzinger, Jackson & Marino, 2004; Campbell, 2006). Iobst et al. (2009) found that having the explanatory and neuropsychological scripts prior to watching a video of a child with autism reduced negative attitudes towards that child. The scripts may have helped participants understand why the child was behaving in an unexpected manner and reduced the participants' tendencies to believe the child was acting that way on purpose. Further, when perception of responsibility for disruptive behavior is reduced, individuals may report more positive perceptions of a person with autism (Iobst et al., 2009).

In summary, in contrast to the research that suggests disability labels elicit negative reactions, research on disability disclosure suggests it can lead to more comfortable interactions between individuals with and without disabilities, which can improve the development of personal relationships in the workplace (Hastorf, Wildfogel & Cassman, 1979; Hebl & Kleck, 2002; Roberts & Macan, 2006). These personal connections can further facilitate socialization of coworkers, ultimately leading to improved self-esteem for individuals with disabilities (and without) as well as a better overall quality of life (Hendricks, 2010).

Warmth Oriented Self-Presentation. Another potential strategy to bring about insight and support for individuals with autism is warmth oriented self-presentation. Increasing one's interpersonal warmth skills can bring about more positive interactions for individuals with disabilities, particularly individuals with ASD, due to their lack of social skills. Non-verbal behavior plays a central role in the communication of emotions and interpersonal relationships (Bayes, 1972). When defining and specifying specific behavioral cues of warmth, Bayes (1972) found that smiling was the single best predictor of warmth, and therefore should be used when trying to increase one's presentation of warmth. Many vocational rehabilitation programs for adults with ASD emphasize social skills that can be taught to increase interpersonal warmth. These programs center specifically around teaching behaviors such as making eye contact, becoming aware of non-verbal cues, listening to others, starting and maintaining conversations, and taking others' perspectives (Tse, Strulovitch, Tagalakis, Meng, & Fombonne, 2007; Ozonoff & Miller, 1995). Although these interventions are typically undertaken as efforts to compensate for the social communication deficits of ASDs, they can also be viewed from the SCM literature perspective. Social skills training can increase prosocial behaviors and, in turn, people's perceptions of interpersonal warmth. Research on social skills, however, usually focuses on skill development outcomes rather than the likeability of the individual or others' willingness to work with them. The current study bridges that gap and examines how interpersonal warmth behaviors affect others' perceptions of the individual with ASD and their willingness to work with him.

Current study

As evident from the preceding literature review, people with disabilities face many challenges in the workplace, including stigmas that affect their relationships with coworkers. Many people with disabilities are often judged negatively and as a result may lose valuable opportunities to develop friendships, interpersonal skills or to create long lasting relationships (Cramm, Tebra & Finkenflügel, 2008). People with autism are at special risk, due to the nature of the social-communication deficits and atypical behaviors associated with ASD. Inability to navigate the social demands of the workplace may lead the individual with ASD to feel isolated and alienated (Müller, Schuler, Burton & Yates, 2003). The SCM and BIAS model provide insight into what coworker reactions we should assess and what types of strategies we might use to improve attitudes toward individuals with autism. Research is needed to better understand coworker reactions to individuals with autism and identify effective strategies to decrease potential stigma.

The current study was designed to assess strategies that individuals with autism can use to improve coworker perceptions and relationships. In this experiment, I manipulated disclosure of autism and presence of interpersonal warmth behaviors in order to examine the effects on coworker attitudes, as predicted from the Stereotype Content Model and the BIAS Map Theory.

Participants watched a video of an adult with autism after having been informed (or not) that the person they saw had an ASD. I hypothesized that the presence of disclosure would lead to more positive interpersonal judgments, emotions and behavioral intentions toward the individuals with autism, as well as a greater willingness to work with the individuals compared to when disclosure was not present. In some of the videos

the individual was shown engaging in more interpersonal warmth behaviors, compared to videos where the individual was not shown engaging in those behaviors. I hypothesized that increased interpersonal warmth would result in more positive attitudes toward individuals with autism compared to no interpersonal warmth.

Method

Participants

Data was collected from 120 college students (64 female, 56 male; $M = 18.83$ years, $SD = 1.02$) at Illinois Wesleyan University. The racial composition of the sample was 75.8% Caucasian, 12.5% Asian/Pacific Islander, 8.3% Latino/Hispanic, 5.8% African American, .8% Native American and 4.2% other (percents sum to over 100 because the participants were able to select more than one racial category). Eighty percent of participants had prior disabilities experience and 85.6% have been employed within the last year. Data was originally collected from 138 students; however, some participants had to be excluded from the sample for the following reasons. First, three participants reported that they did not believe the cover story and had difficulty imagining the hypothetical scenario. In addition, 15 participants were chosen at random to be removed in order to have an even distribution of gender across cells.

Two 2x2 ANOVAs indicated that prior disabilities experience and the tendency to respond in a socially desirable manner did not differ significantly across conditions (i.e., no significant main effects or interactions involving these potentially confounding variables). Participants were recruited using the Illinois Wesleyan University Psychology classes and all participants were compensated for their participation with class credit.

Design

A 2 (ASD Disclosure) x 2 (Warmth Behaviors) experimental between-subjects factorial design was used. The two levels of the disclosure variable were presence and absence of disclosure of an ASD. The two levels of the warmth behaviors variable were the presence or absence of the warmth shown by the trainee (e.g., engaging the coworkers in conversation, offering the coworker a piece of gum, etc). The dependent variables were the scores on the measures used to assess potential coworker's interpersonal judgments, emotional reactions, behavioral intentions and workplace attitudes toward the trainee.

Procedure and Materials

Participants viewed all material and gave feedback on individual computers (MediaLab) in a university computer lab. The materials viewed by participants are described in sequential order below.

Cover story. After indicating their consent on the informed consent page, the participants were exposed to the cover story. The participants were told that they were needed to evaluate the effectiveness of an employment training program at a fictional community college. They were then asked to give their honest and unbiased feedback about the trainee in the video, as the feedback would not be shared with the trainee, but would be used to improve the (fictional) training program.

Disclosure Manipulation. All participants then saw a screen depicting a photo of the individual with ASD (the trainee) and basic information about him. On that same screen, all participants saw a photo of the trainee's (purported) business card and were told that he typically shares this card when he is introduced to people at work. For the disclosure condition, participants also saw a text box explaining that the trainee's

supervisor approaches them and provides the following specific information about the trainee (see Figure 4):

"_____ *(Coworker's name) has an autism spectrum disorder, a neuro-biological condition. He has the skills needed for his job, but his autism may affect how he interacts with others. He may also behave in ways you find somewhat unexpected. Please be patient and understand that he is not trying to be rude. His condition is not dangerous. You may contact me, as his immediate supervisor, for information you might need about his work."*

In the no disclosure condition, participants saw a textbox that included only a description of the information on the front of the business card (shown in Figure 5).

Videos. After reading the text the participants watched a video of one of three actual individuals with ASD. The videos were seven minutes long and were the same length across conditions. The videos showed the ASD actor in an office setting filmed on site at Illinois Wesleyan University. However any images depicting the identity of the location were removed and replaced with posters about the fictional community college running the training programs. Each of the videos displayed the individual with ASD interacting with another coworker, receiving instructions from a supervisor, relaxing in a break room and completing two office tasks (stuffing envelopes and entering data on a computer).

The three actors portrayed as the trainees in the videos were all Caucasian males in their mid-twenties, all with a diagnosis of high functioning autism, but no diagnosis of mental retardation. Although each participant only viewed one trainee, we used three different actors with ASD for the videos to minimize the chance that any specific

behavior or personal characteristic might influence results. The presentation of videos with different actors was balanced across all experimental conditions. The actresses in the video who played the supervisor and the coworker were students who attend Illinois Wesleyan University. Both females were Caucasian and approximately 20 years old. Interpersonal warmth was manipulated in the videos and will be explained in the next section.

Interpersonal Warmth Manipulation. Depending on which condition the participant was assigned to, the video they saw included, or did not include, scenes of the trainee displaying additional behaviors that could be seen as warm or caring totaling approximately 10 seconds. These behaviors were greeting a coworker, offering the coworker a piece of gum, and asking the coworker questions to continue engaging in conversation. Video content was identical in the two warmth conditions with the exception of the addition of the 10 seconds of video portraying the additional warmth behaviors (warmth behaviors present condition) or 10 seconds of unremarkable behavior during uneventful tasks (i.e., envelope stuffing, data entry; warmth behaviors absent condition).

Completion of Outcome Measures. After viewing the videos, the participants answered the questionnaires, which allowed the participant to convey his or her thoughts, feelings, intended behaviors and concerns about the trainee. Measures were administered in the following order: Bias Theory Outcome Questionnaire, Disabilities Questionnaire, Overall Affective Reaction scale, MCSD, Disabilities Experience, demographics and the integrity check (detailed below). The participants then viewed the debriefing information.

Debriefing Information. The participants were informed that the story they were told at the beginning of the study was fictional, all people in the videos were paid actors from the community, all scenes were filmed on Illinois Wesleyan's campus, and that all the scenarios viewed were purely hypothetical. The participants were then asked to keep the information in the study confidential as to not influence other participants' answers.

Measures

Bias Theory Outcome Questionnaire. Because there are no established sets of items to assess warmth and competence or predicted emotions and behavioral intentions, I used sets of items similar to those used in the Stereotype Content Model and BIAS map literature (e.g., Cuddy, Fiske and Glick, 2008). For the current study, participants were asked to respond to 28 items, all on scales of 1 to 7, with 1 indicating not at all and 7 indicating extremely. The measure has 10 subscales in three areas.

The first area is Interpersonal Judgments of the trainee, which has two 4-item subscales. The first subscale, *warmth*, consists of four items assessing the degree to which the trainee was perceived as warm, friendly, good-natured, and honest. The second subscale, *competence*, consists of four items and assessed the degree to which the trainee was perceived as competent, skilled, intelligent, and capable. Both scales had acceptable reliability: Warmth (4 items, $\alpha = .84$) and Competence (4 items, $\alpha = .89$).

The second area is Emotions toward the trainee. Four emotions were from the SCM literature. For those subscales, participants were asked to indicate the degree in which they felt *envy* (e.g., envy and jealousy) *admiration* (e.g., admiration and respect), *pity* (e.g., pity and sympathy), and *contempt* (e.g., contempt, aggravation). All reliabilities with the exception of contempt were acceptable ($\alpha = .75$ to .77). The contempt scale was

not reliable ($\alpha = .33$) and was therefore excluded from analysis. We also included two exploratory scales, which tapped into different emotions that are sometimes felt by those interacting with individuals with disabilities: *fear* (e.g., fear and nervousness) and *irritation* (e.g., irritation and aggravation). Both had acceptable reliabilities ($\alpha = .62$ and $\alpha = .85$ respectively).

The third area covered by this measure is Behavioral Intentions towards the trainee, which had 2 subscales. One subscale tapped *association* (e.g., associate, cooperate, ignore, exclude), which had acceptable reliability ($\alpha = .72$). The other subscale tapped *helping behaviors* (e.g., help, protect, act aggressively, insult). We dropped the two negative items because of the universal low endorsement of these items and low subscale reliability ($\alpha = .43$). With the negative items omitted, the reliability for the helping subscale was still low but considered acceptable for use ($\alpha = .54$).

Disabilities Questionnaire. The Affective Reactions subscale of the Disabilities Questionnaire (Popovich, Scherbaum, Scherbaum, & Polinko, 2003) was used to assess participants' evaluation of the trainee as a potential employee and coworker. Specifically, participants indicated on a scale of 1 to 7 how strongly they agreed or disagreed with 17 items regarding working with the trainee. This original scale was adapted so that participants responded about working closely with the trainee rather than with people with disabilities in general (e.g., "working with a *person with a disability* would slow down the rate at which I complete work" was changed to "working with *the trainee* would slow down the rate at which I complete work"). The scale has three subscales, all with acceptable reliability in a prior study: a) Negative Cognitive and Affective Reactions (e.g., "working with the trainee would increase my workload", "I am uncomfortable with

the idea of sharing my workspace with the trainee"), b) Positive Attitudes toward

Accommodations (e.g., "I would be willing to cover work for the trainee if he had to miss

work because of his life situation") and c) Positive Attitudes towards Equal Treatment of

People with Disabilities (e.g., "All workers, including the trainee, should be evaluated on

the same performance standards"). We planned to use all three subscales, however, two

yielded poor reliability so we only used the overall scale score, which yielded acceptable

reliability ($\alpha = .86$).

Willingness to Work with Target Scales. The Willingness to Work with Target

Scales (adapted from Copeland, Chan, Bezyak, & Fraser, 2010) assessed the participants'

overall reactions toward the trainee as well as what they predicted most people's overall

reactions would be toward the trainee. In the *first* three items, the participant was asked to

rate on a scale of 0 (much less than average) to 100 (much more than average) how

"enthusiastic", and "interested" they would be in working with the trainee and how

"closely" they would want to work with the trainee. The *second* three items asked the

same questions, but the participant was to answer how they think most people would

react to the working with the trainee. They also had an opportunity to explain their

answers at the end of the first three-item section. Both sets of items showed acceptable

reliability ($\alpha = .95$).

Marlowe-Crowne Social Desirability Scale (MCSD). The Marlowe-Crowne

Social Desirability Scale was originally developed by Crowne and Marlowe (1960). The

X1 Short Form (used in Strahan & Gerbasi, 1972) is a 10-item scale shortened from the

original version of 33-items. Participants respond to statements such as "I'm always

willing to admit it when I make a mistake" with true or false. It assesses social

desirability and will be used to assess whether individuals' tendencies to give false answers to appear more socially desirable is associated with their responses on the outcome measures. The Short Form has been frequently used in other studies; however, internal consistency was low for the current study (α = .56).

Disabilities Experience. The Disabilities Experience Questionnaire assessed how familiar the participants were with people with disabilities. The questionnaire has eight items. The first four items are from the Reported and Intended Behaviour Scale (RIBS; Evans-Lacko, Rose, Little, Flach, Rhydderch, Henderson, & Thornicroft, 2011). The participants were asked to answer yes or no to items regarding their association with people with disabilities (e.g., are you currently living with, or have you ever lived with, someone with a disability, do you currently have, or have you ever had, a close friend with a disability). This has shown good reliability (α = .75). The next four items were developed for a prior research study (Henegan, 2010) and assessed quantity and quality of exposure to individuals with autism and other physical, intellectual, sensory or psychiatric disabilities on a scale of 1 (not at all) to 7 (very much; α = .67).

Demographic Items. Participants were asked general basic information about themselves (e.g., gender, racial or ethnic background, age, major, employment history).

Integrity Check. Participants were asked several items related to the integrity of the study. First, they were asked if they were told if the trainee had a special condition or not and, if not, whether they suspected that the trainee might have had some sort of condition. Second, the participants were asked on a scale of 0 to 100 how believable the cover story was. Third, they were asked if they recognized anyone in the videos or if they had previously heard anything about the study. Finally, participants were asked to

indicate if they believed—regardless of any doubts they had about the cover story—that their answers accurately reflected how they might respond in a real-life as a coworker of the trainee.

Other Measures. This study was part of a larger study in which additional conditions and measures were examined. Another disclosure condition (self-disclosure) was examined as well as implicit attitudes through the Affect Misattribution Procedure (AMP) originally created by Payne, 2010. In this study, I will not be analyzing the data from the other disclosure condition or the AMP.

Results

A series of 2 (ASD Disclosure) x 2 (Warmth Behaviors) ANOVAs were conducted in order to test for effects of disclosure and interpersonal warmth on potential coworkers' interpersonal judgments, emotional reactions, behavioral intentions and workplace attitudes.

Interpersonal Judgments of Warmth and Competence.

The 2 (disclosure) x 2 (warmth) ANOVA for perceptions of trainee warmth yielded a significant main effect for supervisor disclosure (see Table 1), such that the trainee was perceived as more warm when the supervisor disclosed the condition ($M = 5.81$, $SD = 0.98$) than when disclosure was not present ($M = 5.19$, $SD = 1.22$), $F(1,116) = 10.06$, $p = 0.002$. There was also a main effect for the warmth manipulation, such that the trainee was perceived as more warm when the warmth behaviors were present ($M = 5.80$, $SD = 1.01$) than when they were absent ($M = 5.21$, $SD = 1.21$), $F(1,116) = 9.01$, $p = 0.003$. There was no interaction effect.

The ANOVA for competence yielded a main effect for disclosure, such that the trainee was viewed as more competent when the supervisor disclosed the condition ($M = 4.90$, $SD = 1.22$) than when the condition was not disclosed ($M = 3.63$, $SD = 1.29$), $F(1,116) = 30.54$, $p < .001$. There was no significant main effect for interpersonal warmth and there was no interaction effect.

Emotional Reactions.

Five 2 (disclosure) x 2 (warmth) ANOVAs were conducted to assess effects of disclosure and interpersonal warmth on emotional reactions of the participants. As shown in Table 2, two of the ANOVAs yielded main effects for disclosure. First, participants felt more admiration for the trainee when the supervisor disclosed the condition ($M = 4.60$, $SD = 1.17$) compared to when the supervisor did not disclosure the condition ($M = 3.48$, $SD = 1.49$), $F(1,116) = 20.87$, $p < .001$. Second, participants in the disclosure condition reported feeling significantly less irritation toward the trainee ($M = 2.43$, $SD = 1.30$) than did participants in the non-disclosure condition ($M = 3.41$, $SD = 1.47$), $F(1,116) = 14.80$, $p < .001$. There were no other main effects for disclosure and no main effects for warmth.

Only one interaction effect was significant, which was for the emotion envy, $F(1,116) = 4.58$, $p = .034$ (see Figure 7). When warmth behaviors were present, participants reported more envy in the disclosure condition ($M = 1.55$, $SD = .81$) than in the no disclosure condition ($M = 1.12$, $SD = .25$). In contrast, when warmth behaviors were absent, participants reported slightly more envy in the no disclosure condition ($M = 1.50$, $SD = .84$) than in the disclosure condition ($M = 1.38$, $SD = .74$), It is worth noting,

however, that across all four groups, levels of envy were low (<1.56 on a 7-point scale and noticeably lower than average levels compared to all other emotions assessed).

Behavioral Intentions.

Two 2 (disclosure) x 2 (warmth) ANOVAs were conducted to assess the effects of disclosure and interpersonal warmth on the participants' behavioral intentions toward the trainee (see Table 3). Both ANOVAs yielded significant main effects for disclosure. Specifically, participants were more likely to help the trainee when the supervisor disclosed the condition ($M = 5.58$, $SD = 0.86$) compared to when disclosure was not present ($M = 5.01$, $SD = 1.24$), $F(1,116) = 8.63$, $p = .004$. Similarly, participants were more likely to associate with the trainee when the supervisor disclosed the condition ($M = 5.56$, $SD = 0.87$) compared to when disclosure was not present ($M = 4.97$, $SD = 1.16$), $F(1,116) = 10.00$, $p = .002$. There were no main effects for warmth or interaction effects for either helping or associating behaviors.

Workplace Attitudes.

Three 2 (disclosure) x 2 (warmth) ANOVAs were conducted to assess the effects of disclosure and interpersonal warmth on the participants' perceptions of the trainee as a potential coworker (see Table 4). There was a significant main effect for disclosure on workplace attitudes as assessed by the adapted Disabilities Questionnaire, such that participants reported significantly more positive reactions about working with the trainee when the supervisor disclosed the condition ($M = 4.59$, $SD = 0.84$) compared to when the supervisor did not disclosure the condition ($M = 3.82$, $SD = 0.78$), $F(1,116) = 27.00$, $p < .001$. There was no main effect for warmth and no interaction effect for the Disabilities Questionnaire.

The last two ANOVAs evaluated the effects of participants' *own* willingness to work with the trainee and their perceptions of *others'* willingness to work with the trainee. There was a significant main effect for disclosure in respects to participants' *own* willingness to work with the trainee, such that participants reported more willingness to work with the trainee when the supervisor disclosed the trainee's condition ($M = 54.83$, $SD = 19.22$) compared to when the supervisor did not disclose the trainee's condition ($M = 38.67$, $SD = 24.74$), $F(1,116) = 16.18$, $p < .001$. There were no significant main effects for warmth or interaction effects for participants' own willingness. There were also no main effects or interaction effects for participants' perceptions of *others'* willingness to work with the trainee.

Supplementary Analyses

Correlational analyses were conducted to examine the associations between social desirability and participants' responses on the outcome measures, because there were no interpersonal warmth effects, the results were broken out by disclosure groups. As shown in Table 5, no significant correlations were found between social desirability and participants' responses, regardless of whether participants were in the disclosure or no disclosure conditions. This indicates that participants' responses on outcome measures were not associated with their general tendency to present themselves in a desirable light, even when they knew the person they were rating had autism. Correlational analyses were also conducted to examine the associations between prior disabilities experience and participants' answers. There were several weak to moderate correlations found between participants' answers and prior disabilities experience for participants in both the disclosure and non-disclosure conditions. Higher levels of prior disabilities experience

tended to be associated with more positive responses on the outcome measures, but once again this general pattern did not differ across groups.

Discussion

Individuals with disabilities, including autism, generally have difficulty obtaining and maintaining employment. These difficulties are often linked to social issues in the workplace. The Stereotype Content Model suggests that stereotypes of disabilities influence others' perceptions of an individual; which in turn potentially affects their emotional reactions and behavioral intentions toward the individual with a disability (Cuddy et al., 2011). According to Fiske (2012), this could potentially be due to individuals with autism being viewed as having low competence and low warmth, and difficulties in the work environment potentially stem from these judgments. In this study, I investigated two stigma management strategies that could be used by individuals with autism to improve coworker attitudes, specifically disclosure and increasing interpersonal warmth behaviors.

In line with my hypotheses, results indicated that participants who received the autism disclosure prior to watching the video—compared to participants who received no disclosure—viewed the trainee as more competent and warm, reported more positive emotional reactions and behavioral intentions toward the trainee, and were more willing to work with the trainee. These results are in line with previous research concerning the effects of disclosure of ASD and other disabilities (Campbell et al., 2004; Chambres et al., 2008; Hastorf et al., 1979; Hebl & Kleck, 2002; Iobst et al., 2009; Mills et al., 1984). In contrast, only one hypothesis concerning the interpersonal warmth manipulation was significant. Interpersonal warmth behaviors were only seen to have an effect on how

warm participants viewed the trainee. The hypotheses that interpersonal warmth behaviors would positively affect participants' emotional responses and behavioral intentions were not supported. Key results will be interpreted below with respect to impact or lack of impact of the two stigma management strategies on assessed dimensions of coworker reactions: interpersonal judgments, emotions, behavioral intentions, and workplace attitudes.

Interpersonal Judgments.

The SCM theory suggests two important dimensions of interpersonal judgments, both of which were influenced by stigma management strategies tested in this study. Perceptions of warmth were significantly influenced by both the disclosure and the interpersonal warmth behaviors manipulations. Participants viewed the trainee as more warm when they were informed, versus not informed, about his condition and when the interpersonal warmth behaviors were present rather than absent.

Perceptions of competence were significantly affected by disclosure, but not the presence of or absence of interpersonal warmth behaviors. More specifically, participants viewed the trainee with autism as more competent when disclosure was present, compared to when disclosure was absent. This result coincides with the results of Chambres and colleagues (2008), who found that participants asked to evaluate a child with autism working (using a computer) or acting in an appropriate way (talking in front of a camera) perceived him as more capable when they knew he had autism than when they were unaware of the disability.

Another way to view these results is in terms of the warmth and competence quadrants of the SCM/BIAS map (Cuddy et al., 2007). Figure 6 shows the current study's

results for warmth and competence plotted onto the SCM dimensions. The figure illustrates that when disclosure was present, the trainee was seen as more warm and more competent, compared to when disclosure was not present. Further, the combination of disclosure and interpersonal warmth behaviors appeared to be most effective in helping to move potential coworkers perceptions of the individual with autism toward the high-warmth, high competence quadrant. These disclosure-related effects are not something the SCM would predict. Given the ASD label, the SCM would predict that the participants might view the trainee as being low on warmth and competence due to the stereotype activated by the ASD label. It also would predict that the label could potentially activate pity. In the current study, neither was the case. One implication of this is that disclosure can be used to boost perceptions of warmth and competence for individuals with autism helping them move away from the low warmth/low competence quadrant in the SCM, which would elicit admiration.

Emotions.

Disclosure had a mixed pattern of effects on emotional responses to the trainee. Disclosure had a significant impact on admiration and irritation, such that when disclosure was present the participants admired the trainee more and felt less irritation than when disclosure was absent. In contrast, disclosure did not significantly affect reports of either pity or fear. The lack of significant findings for pity and fear is encouraging because sometimes, when people are given a label (e.g., autism), the disability label can elicit perceptions of low-competence and high-warmth, thus increasing pity, however, this was not the case in this study. Disclosure can increase perceptions of warmth and competence, as well as increase admiration and decrease

irritation, without necessarily increasing pity or fear. It is important to note that there are always risks associated when disclosing a disability (e.g., fear and pity); just because they were not significantly influenced by disclosure in this study does not mean that they cannot occur.

There was an unexpected interaction between disclosure and warmth behaviors on reports of envy. When interpersonal warmth behaviors were present, envy was reported as being higher in the disclosure condition compared to the no disclosure condition. When interpersonal warmth behaviors were absent, higher reports of envy were found in the no disclosure condition compared to the disclosure condition. In terms of the envy interaction effect, it is difficult to interpret due to the low levels of envy reported. It could be argued that a small amount of envy is desirable because it indicates presence of competence. Envy is ambivalent and involves both resentment and respect. It also involves begrudging admiration for the other (Cuddy et al., 2007); therefore, presence of envy in this case is not necessarily a negative judgment. Given the low levels of envy relative to the other emotions and given that it is the only interaction effect, it could potentially be due to chance and may not be worth speculating about. Nevertheless, future research could examine this interaction further.

Surprisingly, there were no main effects for the interpersonal warmth manipulation for emotions. From the SCM perspective interpersonal warmth should have yielded more significant results because it is a basis of primary judgments and should have mattered more when participants were assessing the trainee. Interpersonal warmth behaviors are a large focus in clinical and applied social skills training and have been seen to be effective (Tse et al., 2007), and therefore should not be discounted. The lack of

significant findings in terms of interpersonal warmth behaviors are most likely accounted

for by some limitations of the study which will be explained later.

Behavioral Intentions.

Strong results were found for the effects of disclosure on behavioral intentions,

such that when disclosure was present, the participants were more likely to help and

associate with the trainee than when disclosure was absent. In contrast, no effects of

interpersonal warmth behaviors were found on behavioral intentions, however, disclosure

effects are in line with previous research that suggests that the combination of descriptive

and explanatory information about autism had a positive effect on children's behavioral

intentions toward a child with autism (Campbell et al., 2004). Current findings that

potential coworkers were more likely to want to help and associate with the trainee that

disclosed could be due to feeling more comfortable around him, similar to the findings of

Hastorf and colleagues (1979). The participants' general behavioral intentions toward the

trainee could have impacted their more specific workplace attitudes.

Overall Workplace Attitudes.

While interpersonal warmth behaviors had no significant impact on workplace

attitudes toward the trainee, disclosure had a mixed pattern of effects in this area. The

primary measure for overall workplace attitudes was an adapted version of the

Disabilities Questionnaire (Popovich et al., 2003), a validated measure used to assess

reactions toward people with disabilities in the workplace. Disclosure led to more

positive attitudes toward the trainee as a potential coworker compared to the no

disclosure condition. Disclosure also had significant positive effects on participants' own

willingness to work with the trainee, however, participants' view of others' willingness to

work with the trainee was not significant. The lack of significant effects on perceptions of others' willingness to work with the trainee could possibly be due to social desirability, with participants rating themselves as more willing to work with the trainee when they were told he had autism in order to seem more socially desirable. If social desirability influenced this result—or other results indicating positive responses after disclosure—then significant correlations would have been expected between participants' responses and the measure of social desirability. Supplementary correlational analyses, however, failed to detect significant associations between social desirability and the outcome measures, either for participants in the no disclosure *or* the disclosure conditions. The more likely explanation of the non-significant finding for others' willingness to work with the trainee could be due to the way the question was phrased. When participants were asked how others would respond to the trainee, the question did not explicitly instruct participants to assume that the disclosure of autism would be given to other people. Therefore, participants could have responded to the question as if others were not given the same disclosure that they received, accounting for lower ratings.

Strengths, Limitations, and Future Research

When examining the potential strengths of the current study, there are several aspects that are novel when it comes to the autism employment literature. Specifically, the use of videos of individuals with ASD and the experimental design extend the previous literature, which is characterized by the use of written vignettes, anecdotal accounts and/or qualitative research designs.

The current study used videos displaying individuals with autism interacting in a workplace setting. This use of a video compared to a written vignette fills a gap in the

current autism and employment literature. It allowed the participants to actually see the person they were evaluating and possibly created more realistic responses compared to a written vignette. Of special importance, the use of adult actors who actually have a diagnosis of ASD is distinctive and may help to create a more realistic response to the stimuli as opposed to reading a description of a situation. Although videos have occasionally been used in previous studies that examined children's attitudes toward other children with ASD (Campbell, 2006) or adults' attitudes toward children with ASD (Iobst et al., 2009), no prior research was located using actors with actual ASD diagnoses and examining adults' opinions and attitudes toward other adults with ASD.

The previous literature on autism disclosure and people's perceptions of the person with autism has been primarily clinical, qualitative or anecdotal. The current study addresses this with the experimental design. By using a controlled manipulation, confidence is increased that observed significant effects were caused by disclosure. Another strength of the current study were the attempts to control for possible confounding variables. The study had even proportions of men and women in each group in order to control for possible gender differences. Two 2x2 ANOVAs were conducted in order to account for social desirability and prior disabilities experience; both did not differ across cells, insuring successful random assignment.

While the current study has many strengths, it also has some limitations. The most vital of these limitations would be the interpersonal warmth manipulation. The absence of significant findings pertaining to interpersonal warmth behaviors could potentially be due to the shortness of the video clips that included these behaviors (i.e., only 10 seconds in a 7 minute video). Further, these behaviors did not always come across in the videos as

clearly as we would have liked. Social skills and interpersonal warmth behaviors are difficult for those with ASD to grasp, and therefore might not have been obvious enough for participants to notice. Interpersonal warmth behaviors have been shown in prior research to be effective in increasing positive attitudes toward individuals with disabilities (Tse et al., 2007; Ozonoff & Miller, 1995); therefore, future studies should try to incorporate these behaviors. Nevertheless, when limited resources are available for supporting adults with autism in the workplace, disclosure might be a better option than specific social skills training to increase positive attitudes toward the individual with autism.

Another limitation of this study was the sample. The research focused on workplace attitudes, however, the sample was comprised of college students, who are not in the corporate working world. With this being said, 86% of these college students had held jobs and were probably able to imagine how they would respond in such a setting. Nevertheless, to maximize external validity, future research in autism disclosure in the workplace should use participants that are actually in the corporate working world.

One potential confound of the study was social desirability. Although in the current study, the correlation between the participants' responses and social desirability was not significant, social desirability has the ability to skew results. The lack of significant results could potentially be due to low reliability of the X1 Short Form of The Marlowe-Crowne Social Desirability Scale, rather than a true lack of association. Future research should use a more reliable measure when examining social desirability. In addition, future research should also examine implicit attitudes to better assess participants' true reactions without the filter of social desirability (Payne, 2010). One of

the goals of the larger study of which the current study is a part of is to assess potential changes in implicit attitudes related to disclosure; this will hopefully provide some insight into the relationship between disclosure and social desirability.

Conclusion

This study provides important information for adults with autism and the people who care about them. Disclosing any disability—including ASD—in the workplace can be scary and intimidating, in part because of the risks, such as stigma and discrimination. However, the benefits can bring great rewards. The current study, as well as prior research, has shown that when an ASD is visible, having explanatory information can help others understand and accept the individual (Campbell, 2006; Campbell et al., 2004; Iobst et al. 2009). Results from this study suggest that disclosure of autism can increase perceptions of warmth and competence, have positive emotional and behavioral reactions from coworkers, and increase the likelihood of coworkers accepting and interacting with the individual with ASD. All of these positive perceptions are likely to enhance workplace interactions and can benefit the person with autism by giving them self-confidence, independence, social relationships and an overall greater quality of life.

Disclosure is always a personal choice and it is the person's legal right to disclose or not. No one should disclose for the individual without his or her permission or the permission of his or her legal guardian. Given the social communication deficits of autism, the disclosure should be tailored to the individual and based on his or her abilities and needs. Individuals with ASD may need assistance disclosing, which is when their job-coach, supervisor or supportive employment staff member may work with the individual in customizing their own personal disclosure method and plan. Whether

disclosure is given verbally or by a business card or booklet, it is always important to consider when, to whom and how disclosure happens (Jans et al., 2012). Use of individualized, effective disclosure strategies have the potential to bring lasting benefits to individuals with autism in the workplace as well as other aspects of life.

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Appendices
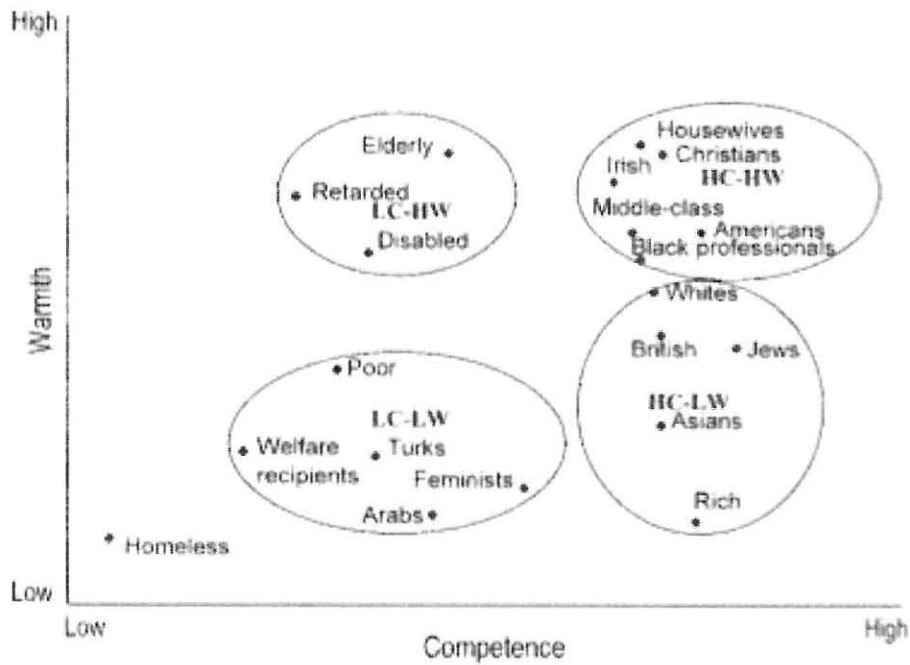
Figure 1. Scatter plot and cluster analysis of groups on competence and warmth ratings.

HC-HW= high-competence, high-warmth; HC-LW= high-competence, low-warmth; LC-

HW= low-competence, high-warmth; LC-LW= low-competence, low-warmth. Adapted
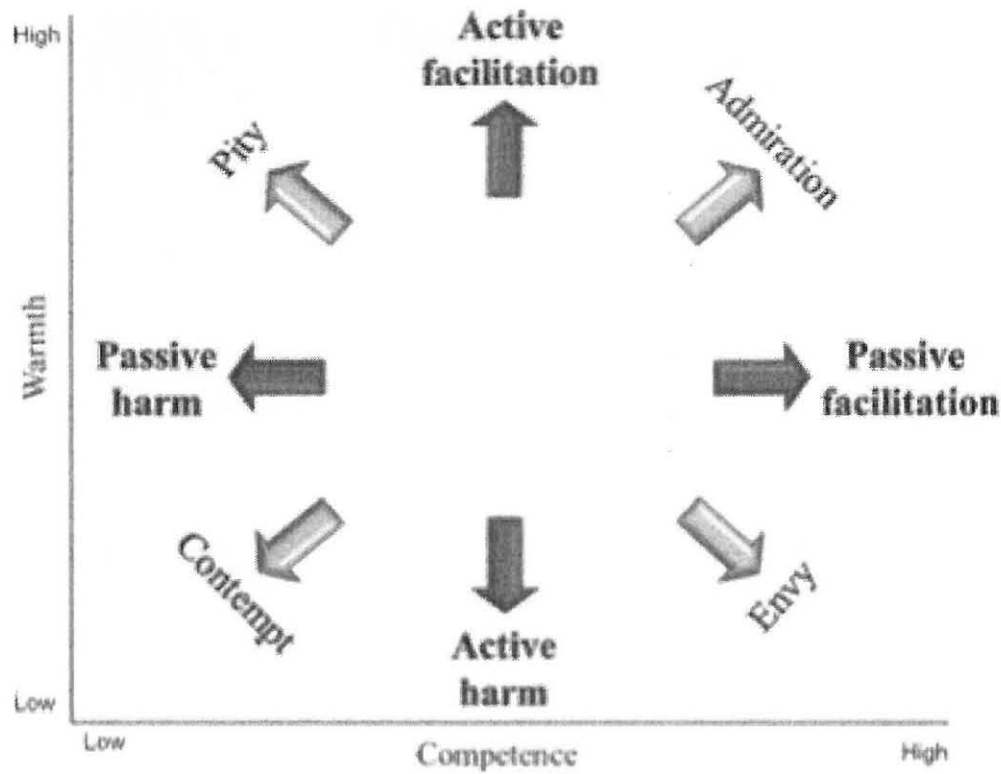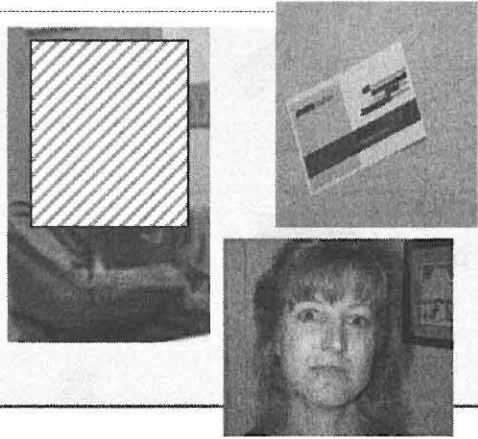
from "The BIAS Map: Behaviors from Intergroup Affect and Stereotypes," by A. Cuddy,

P. Glick, S. Fiske, 2007, *Journal of Personality and Social Psychology,* p. 638. Copyright

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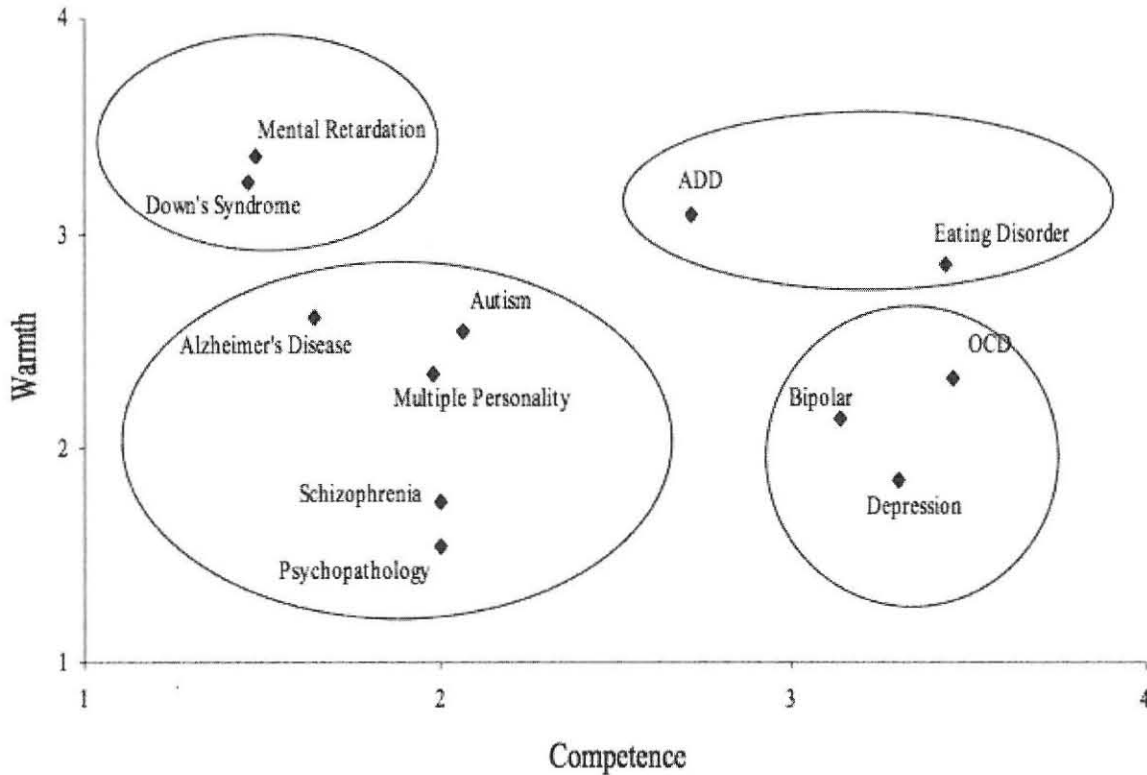
Figure 2. Mental illness stereotypes, as rated by American undergraduates. Not the four

quadrants identified by cluster analysis. Adapted from "Warmth and Competence:

Stereotype Content Issues for Clinicians and Researchers," by S. Fiske, 2012, *Canadian*

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Figure 3. The BIAS Map. Adapted from "The BIAS Map: Behaviors from Intergroup Affect and Stereotypes," by A. Cuddy, P. Glick, S. Fiske, 2007, *Journal of Personality and Social Psychology,* p. 634. Copyright 2007 by the American Psychology Association. Reprinted with permission.

Figure 4. Disclosure slide that participants saw if in the disclosure condition, included

actual picture of the trainee specific to the participants' condition.

Figure 5. Non-disclosure slide participants saw if they were in the non-disclosure

condition, actual picture of the trainee specific to the participants' condition.
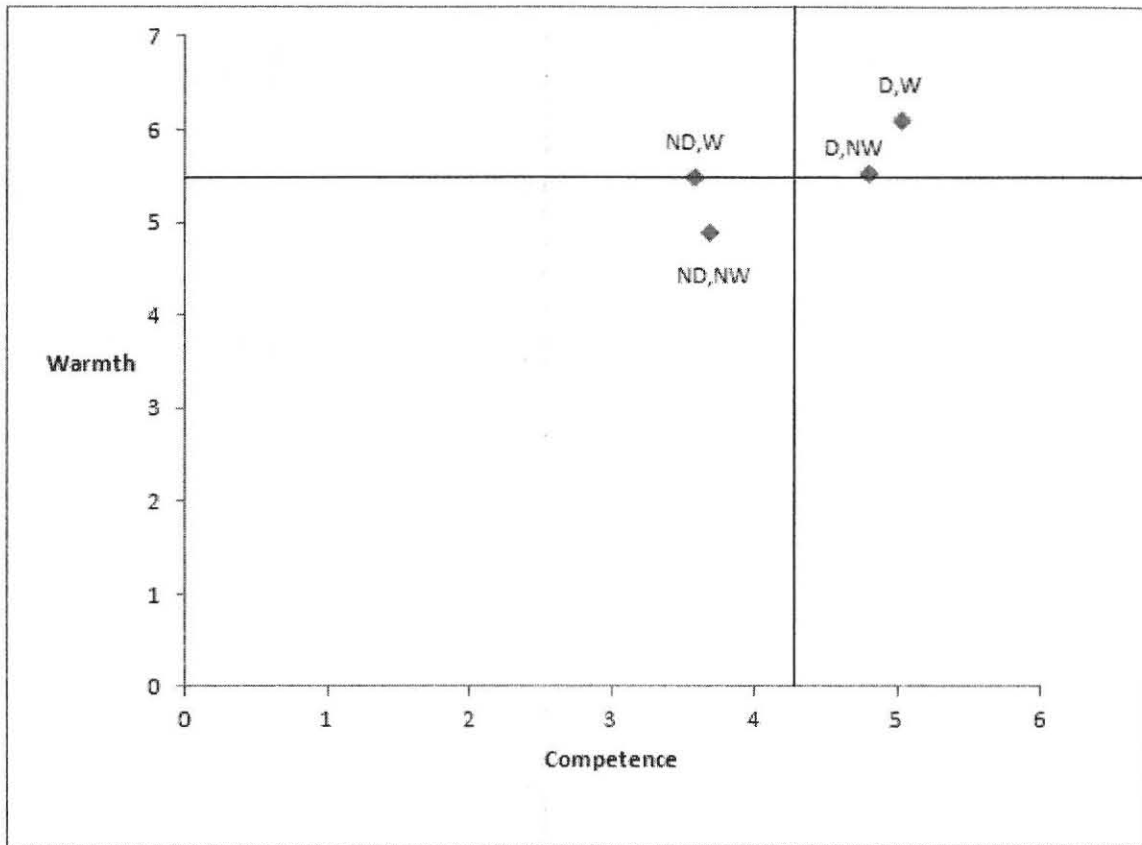
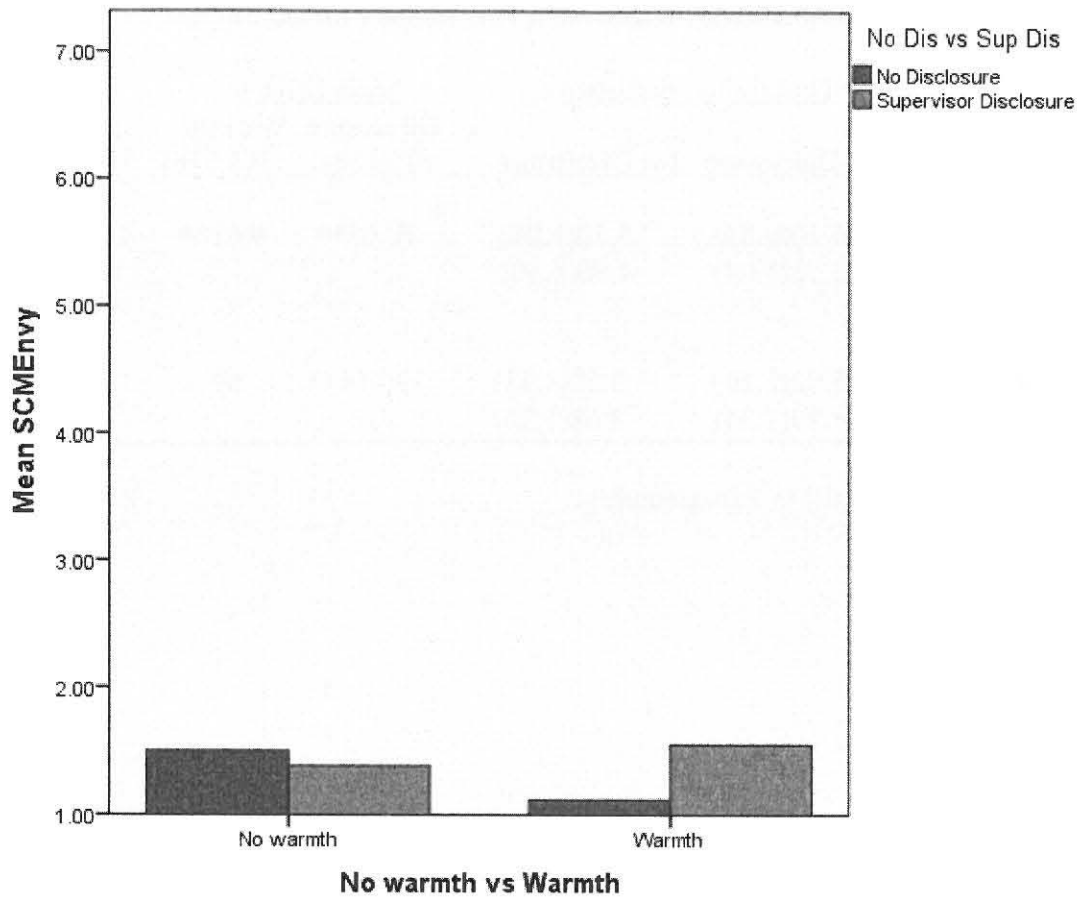*Figure 6.* The current study's placement on the Stereotype Content Model.

Figure 7. Interaction effect for Envy measure.

Table 1

ANOVA Results for Interpersonal Judgments of Stereotype Content Model

| | Descriptive Statistics | | Main Effects | | |
| | | | Disclosure | Warmth | |
	Disclosure	No Disclosure	F(1,116)	F(1,116)	Interaction
Warmth Scale					
Warmth Group	6.10(0.85)	5.50(1.08)	10.05**	9.01**	.00
No warmth Group	5.50(1.04)	4.90(1.30)			
Competence Scale					
Warmth Group	5.02(1.20)	3.58(1.33)	30.54**	.07	.50
No warmth Group	4.79(1.24)	3.68(1.26)			

*p < .05, **p < .01
Note. Scales 1 (not at all) to 7 (extremely)

Table 2

AVOVA Results for Emotional Reactions of Stereotype Content Model

| | Descriptive Statistics | | Main Effects | | |
| | | | Disclosure | Warmth | |
	Disclosure	No Disclosure	$F(1,116)$	$F(1,116)$	Interaction
Admiration Scale					
Warmth Group	4.61(1.18)	3.57(1.45)	20.87**	.19	.09
No warmth Group	4.58(1.18)	3.38(1.54)			
Envy Scale					
Warmth Group	1.55(0.81)	1.12(0.25)	1.52	.71	4.58*
No warmth Group	1.38(0.74)	1.50(0.84)			
Pity Scale					
Warmth Group	3.67(1.47)	4.35(1.44)	3.41	.10	.58
No warmth Group	3.95(1.42)	4.23(1.41)			
Irritation Scale					
Warmth Group	2.37(1.23)	3.5(1.47)	14.80**	.02	.34
No warmth Group	2.50(1.39)	3.31(1.50)			
Fear					
Warmth Group	1.87(0.89)	2.15(1.21)	.01	.35	1.83
No warmth Group	2.25(1.10)	2.00(1.08)			

$*p < .05, **p < .01$

Note. Scales 1 (not at all) to 7 (extremely)

Table 3

AVOVA Results for Behavioral Intentions of Stereotype Content Model

	Descriptive Statistics		Main Effects		
			Disclosure	Warmth	
	Disclosure	No Disclosure	$F(1,116)$	$F(1,116)$	Interaction
Helping Scale					
Warmth Group	5.55(0.93)	5.30(1.08)	8.63**	1.91	2.69
No warmth Group	5.60(0.79)	4.71(1.34)			
Associating Scale					
Warmth Group	5.71(0.73)	5.04(1.12)	10.00**	1.34	.16
No warmth Group	5.42(0.98)	4.90(1.21)			

*p < .05, **p < .01
Note. Scales 1 (not at all) to 7 (extremely)

Table 4

AVOVA Results for Overall Workplace Attitudes Toward Target

| | Descriptive Statistics | | Main Effects | | |
| | | | Disclosure | Warmth | |
	Disclosure	No Disclosure	F(1,116)	F(1,116)	Interaction
Disabilities Questionnaire					
Warmth Group	4.65(0.84)	3.90(0.82)	27.00**	.92	.02
No warmth Group	4.53(0.85)	3.74(0.74)			
Own Willingness Scale					
Warmth Group	58.00(19.09)	42.89(26.01)	16.18**	3.38	.07
No warmth Group	51.67(19.14)	34.44(22.13)			
Others' Willingness Scale					
Warmth Group	40.00(19.69)	31.67(15.46)	2.64	2.31	.99
No warmth Group	32.00(12.73)	30.00(20.58)			

*p < .05, **p < .01

Note. Scales for Disabilities Questionnaire 1 (strongly disagree) to 7 (strongly agree).

Scales for Own and Others' Willingness 0 (much less than average) to 100 (much more

than average).

Table 5

Correlation Between Marlowe-Crowne Social Desirability and Prior Disabilities Experience and Outcome Measures (separated by disclosure group)

| | MCSD | | Prior Disabilities Experience | |
	Disclosure Group	No Disclosure Group	Disclosure Group	No Disclosure Group
SCM Warmth	.51	.02	.26*	.22
SCM Competence	.04	-.01	.35**	.28*
SCM Admiration	.19	-.14	.31*	.35**
SCM Envy	.04	-.16	.13	-.02
SCM Pity	-.11	-.21	-.12	.06
SCM Fear	-.25	-.22	-.15	-.10
SCM Irritation	-.14	-.15	-.32*	-.43**
SCM Helping	-.00	.12	.33**	.28*
SCM Associating	.08	.05	.31*	.19
DQ Overall Reactions	.18	.01	.38**	.28*
Own Overall Willingness	.10	.19	.34**	.36**
Other Overall Willingness	.01	-.06	.20	-.02

Note. *r<.05, **r<.01, all groups had N=60.