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# Recognition of and Attitudes Toward Autism Spectrum Disorder in College Students

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Recognition of and Attitudes Toward Autism Spectrum Disorder in College Students

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## Abstract

The present study explored the intended reactions to a hypothetical character with autism spectrum disorder (ASD), and the effect of several variables on those intended reactions, using a convenience sample of 172 introductory psychology college students. Preliminary analyses of the results were concerning regarding the low recognition of this disorder, and a high endorsement of myths, stigma, and social distance. We predicted that those who correctly identified ASD would state an intention to provide more supportive responses than those who failed to correctly identify the disorder as autism. Frequency counts, chi-squared analyses, and an independent t-test were used to summarize the participants' intended responses to the character, assess the relation between categorical variables, and compare the means of continuous variables by each of the behaviors endorsed. Significantly more participants who correctly identified autism in the vignette said they would offer support to the character than if they did not correctly identify it as autism. Those who said they would provide general support had less personal stigma about the character and lower scores on the Autism Quotient. Participants who said they would do nothing in response had higher preferred social distance scores. No significant effects of participant gender and character gender were found. This research is important for the purposes of education of the public on autism spectrum disorders and how best to support such individuals, especially when transitioning to post-secondary education.

### Recognition of and Attitudes Toward Autism Spectrum Disorder in College Students

Autism Spectrum Disorders (ASD) are defined by developmental impairments in social, communicative, and behavioral domains that typically co-occur with deficits in cognitive functioning, learning, attention, and sensory processing (Center for Disease Control and Prevention, 2016). The major characteristics associated with these impairments include repetitive, ritualistic, compulsive, and routine-oriented behaviors, social withdrawal, and abnormal responses to sensory events (Kopetz & Endowed, 2012). The estimated prevalence rate is high: one in 68 children (CDC, 2016). Children on the autism spectrum represent a range of functioning levels, therefore it is anticipated that post-secondary education institutions will be accepting more students with this disorder (Gardiner & Iarocci, 2014). In fact, a study conducted by the United States Department of Education (as cited in Gardiner & Iarocci, 2014) indicated that about 35% of people with ASD were enrolled in a college program. In the college setting, high functioning individuals with ASD typically have the intellectual capacity to succeed with the curriculum, however they may not experience academic success due to social communication difficulties and co-morbid anxiety (Gardiner & Iarocci, 2014). Furthermore, typically developing individuals may contribute to such difficulties due to a lack of awareness or understanding of behaviors associated with ASD (Gardiner & Iarocci, 2014). For this reason, it is essential for the public at large to be educated about ASD, but also to provide interventions that will enable individuals with autism to flourish and succeed in college environments that promote diversity (Kopetz & Endowed, 2012).

### **Mental Illness and Stigmatization**

Knowledge of and attitudes toward various mental disorders have been investigated for several disorders. These have implications for how individuals with mental disorders are treated

by the general public, their self-worth, and their coping with not only the disorder, but also the stigma it may carry. Stigma has several dimensions, including perceived or public stigma, personal stigma, social distance, and perceived dangerousness (Yap, Reavley, Mackinnon, & Jorm, 2013; Yap, Reavley, & Jorm, 2013). A belief that other people perceive an individual as socially unacceptable defines perceived or public stigma (Yap, Reavley, Mackinnon, & Jorm, 2013; Yap, Reavley, & Jorm, 2013). Personal stigma refers to one's own belief that an individual is socially unacceptable. Social distance refers to one's desire to disassociate from the stigmatized individual, and perceived dangerousness refers to one's belief that the stigmatized individual is dangerous (Yap, Reavley, Mackinnon, & Jorm, 2013; Yap, Reavley, & Jorm, 2013). Research on this topic typically uses a vignette depicting an individual with a specific mental disorder, guided by the diagnostic criteria for the disorder, and asks participants to respond to measures of their attitude toward the individual, which often include stigma and social distance measures (e.g., Yap, Reavley, & Jorm, 2013). Yap, Reavley, & Jorm (2013) found that mental illness is often attributed to personal weakness. Yap, Reavley, & Jorm (2013) also found that a stronger preference for social distance was associated with a lower intention to seek help if the participant had a similar disorder, particularly from informal sources. However, findings suggest that young people's preference to seek help from informal sources such as family members and friends may increase due to stigmatizing attitudes that inhibit professional help seeking, but these patterns varied depending on the type of disorder in the vignette (Yap, Reavley, & Jorm, 2013). These discoveries suggest that specific attitudes and attributions about mental illness are important aspects to target when promoting stigma reduction, along with the promotion of skills among the general public to support stigmatized individuals and guide them to pursuing appropriate professional help (Yap, Reavley, & Jorm, 2013).

If the general public is educated and taught appropriate supportive skills, the accuracy of their recognition of psychiatric disorders may also increase. Yap, Reavley, Mackinnon, and Jorm (2013) found that one of the best predictors of stigma was recognition of the mental disorder. Knowledge and accurate recognition were associated with lower stigmatizing attitudes that blame the individual affected, such as the “personal weak-not sick” attribution, however there was a smaller effect for social distance (Yap, Reavley, Mackinnon, and Jorm, 2013). Findings also suggested that those who have been in close contact with an individual affected by a mental disorder have fewer stigmatizing views, are more likely to consider mental disorders to be real illnesses as opposed to personal weaknesses, and are more willing to associate with an individual with depression or social phobia (Yap, Reavley, Mackinnon, and Jorm, 2013). Therefore, utilizing community awareness campaigns to improve accurate labeling and recognition of psychiatric disorders may help reduce stigmatizing attitudes (Yap, Reavley, Mackinnon, and Jorm, 2013).

### **Knowledge and Recognition of ASD**

Far more children are now being recognized as having ASD, partly due to the increased awareness of physicians, teachers, and the general public about the disorder over the last several years (Wolff, 2004). There are still many misconceptions of autism however, including savant symptoms, so with this increase in awareness it is important to not assign the label of autism to every child considered to be a “genius” or “prodigy” (Treffert, 2014). Koyama et al. (2009) conducted a study using four vignettes describing different mental disorders. The vignette describing ASD was created to depict an individual with a mild intellectual disability and moderate to severe autism (Koyama et al., 2009). Fewer than half of the participants in the study correctly identified the character with autism in the vignette, and findings suggested that in

general, females had more accurate knowledge of ASD (Koyama et al., 2009). This study helped demonstrate that the dissemination of accurate information regarding ASD is an essential component in changing inaccurate public perceptions, especially among males (Koyama et al., 2009).

Tipton and Blacher (2014) conducted a study in which an Autism Awareness Survey was distributed online to university undergraduates, graduate students, faculty, and staff. The survey included items addressing the respondents' knowledge of autism, if the respondent thought autism was increasing, and statements of beliefs about autism such as "there is a cure for autism" (Tipton & Blacher, 2014). Tipton and Blacher (2014) found a reasonable overall level of knowledge of ASD. Respondents with ASD themselves or who knew someone with autism scored higher on knowledge than the rest of the sample. Tipton and Blacher (2014) found little effect of participant gender on knowledge.

Nevill and White (2011) conducted a study regarding the openness to a character with autism, and similar to Tipton and Blacher (2014), they found that those who knew someone with autism had more openness toward the character depicted. To explore attitudes towards a peer with ASD, Nevill and White (2011) used a modified openness scale that described a college student living in the same building as the respondent. Nevill and White (2011) did not find a significant gender difference in overall openness scores. No significant correlation was found between openness scores and self-report autism symptoms using the Autism Spectrum Quotient questionnaire (Nevill & White, 2011).

In contrast to Nevill and White (2011), Matthews, Ly, and Goldberg (2015) reported a significant gender difference, with the unusual finding that male students reporting significantly more positive affective attitudes toward the characters with ASD than female students. This

study used three different vignettes describing an interaction with an individual with ASD that included the high functioning autism label, the typical college student label, or no label (Matthews et al., 2015). Prior to the respondents rating their attitudes toward the character in the vignette, they completed the Broad Autism Phenotype Questionnaire (BAPQ), which is a measure of personality characteristics and pragmatic language deficits associated with mild autism traits (Matthews et al., 2015). Those found to have fewer autism symptoms themselves, according to the BAPQ, were more positive in their attitude overall regardless of whether the disorder in the vignette was labeled (Matthews et al., 2015). The respondents who reported more autism symptoms on the BAPQ reported more negative attitudes toward the vignette characters, which may have reflected their greater preferred social distance from anyone (Matthews et al., 2015). Overall, if the ASD was identified in the vignette, there were more positive attitudes toward the character compared to when just the symptoms were described (Matthews et al., 2015).

Unlike Matthews et al. (2015), Butler and Gillis (2011) found that labeling the vignette character as having ASD had no effect on stigma responses, however their sample reported little knowledge or familiarity with ASD overall. Butler and Gillis (2011) examined whether behaviors or labels described in vignettes contributed to the stigmatization of individuals with Asperger's disorder using a social distance measure (Butler & Gillis, 2011). Although labeling had no effect, the results indicated that the atypical behaviors associated with Asperger's did increase stigmatizing attitudes (Butler & Gillis, 2011). These findings also suggest that treatment providers may want to focus on addressing atypical behaviors that may elicit stigmatizing attitudes.

Very different results were reported by Gardiner and Iarocci (2014) as their sample was quite knowledgeable about ASD. Gardiner and Iarocci (2014) examined the effects of the quantity of past contact, knowledge of ASD, and personal symptoms of ASD on university students' intention to volunteer with, and acceptance of, a peer with ASD. Knowledge of ASD and respondent gender had no effect on acceptance, but prior contact with an individual with ASD had a significant positive effect on acceptance (Gardiner & Iarocci, 2014). Gardiner and Iarocci (2014) found that prior contact was a crucial factor to acceptance, and that this acceptance played a considerable role in the intent to volunteer with peers with ASD. The intent to volunteer was also affected by a different set of variables, including gender and academic program (arts and sciences vs. other) (Gardiner & Iarocci, 2014). A gender difference emerged, with females being more willing to say they would volunteer with a person with ASD than males (Gardiner & Iarocci, 2014). Respondents who were enrolled in arts and social sciences programs were also more likely to say they would volunteer compared to other academic disciplines (Gardiner & Iarocci, 2014).

Aside from the studies described above, few such studies have been conducted on reactions to ASD. The few that have been done have some serious limitations, including the depiction of the disorder, the gender of the character, the attitude measures used, the sample, and/or the failure to ask participants to identify the disorder presented if it was not explicitly labeled for them (Koyama et al., 2009; Matthews et al., 2015; Nevill & White, 2011).

The present study addressed some of those limitations by presenting a vignette that carefully depicted the diagnostic criteria for high functioning ASD, which were verified by a doctoral school psychologist with expertise in autism. The vignette also had two versions with either a male or female character. Participants were asked an open-ended question to identify the

nature of the disorder in the vignette; responses were coded by two independent raters with high reliability. Empirically derived measures of stigma and social distance were used that have been used in several studies with other disorders (Yap, Reavley, Mackinnon, & Jorm, 2013; Yap, Reavley, & Jorm, 2013). The Autism Spectrum Quotient questionnaire (Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley, 2001) was administered to assess the participants' own symptoms of ASD to determine if that would affect their recognition of and attitudes toward the disorder depicted in the vignette. Myths about ASD were also investigated using a newly developed measure for this study.

The present study will use a coding system formed by Yap, Wright, and Jorm (2011), to identify how the participants would react, if at all, to the character in the vignette if it was someone they knew well. Yap et al. (2011) based this coding system on categories identified by Jorm, Blewitt, Griffiths, Kitchener, and Parslow (2005) in an earlier study of public mental health first aid responses. Yap et al. (2011) adjusted the categories to become more relevant to different mental disorders and a younger population. Preliminary analyses of the results of the present study, as reported in Dunham, McMahon, O'Connell and Charette (2015), were concerning as the endorsement of myths about this disorder as well as stigma and social distance scores were all quite high. That paired with the relatively low correct recognition of the disorder leads to even more concern about misinformation about this disorder. Therefore, it is hypothesized that, due to this general lack of knowledge about autism in this sample, it is likely that fewer strongly supportive responses will be reported and more inappropriate or misguided responses will be stated, using the coding system developed by Yap et al. (2011). However, those who correctly identified the disorder as autism also had less personal stigma, less perceived stigma and lower desired social distance from the character (Dunham et al., 2015), so it is

hypothesized that these participants will state an intention to provide more supportive responses than those who failed to correctly identify the disorder as autism.

## **Methods**

### **Participants**

A convenience sample of 172 introductory psychology students (71% female, 70% Caucasian) participated; their mean age was 19.02 years ( $SD= 2.75$ , range 18-51). They were randomly assigned to either a male or female version of the vignette.

### **Measures**

A vignette was developed that carefully depicted the diagnostic criteria for high functioning ASD, which was verified by a doctoral school psychologist with expertise in autism. The vignette had two versions with either a male or female character.

Empirically derived measures of stigma and social distance were used that have been used in several studies with other disorders (Yap, Reavley, Mackinnon, & Jorm, 2013; Yap, Reavley, & Jorm, 2013). Statements of personal and perceived stigma towards the person described in the vignette were provided, and participants selected the option that best described their views using a 5-point Likert scale ranging from 1="strongly agree" to 5="strongly disagree" (Yap, Reavley, Mackinnon, & Jorm, 2013; Yap, Reavley, & Jorm, 2013). Personal stigma items included "Robert could snap out of it if he wanted", and perceived stigma items included "most other people believe that Robert could snap out of it if he wanted" (Yap, Reavley, Mackinnon, & Jorm, 2013; Yap, Reavley, & Jorm, 2013). Social distance items asked participants about their interest in participating in various forms of social contact with the character in the vignette. The measure of social distance included five questions adapted for college-aged participants and rated according to the respondents' willingness to "go out with

Robert on the weekend”, etc. (Yap, Reavley, Mackinnon, & Jorm, 2013; Yap, Reavley, & Jorm, 2013). A 4-point scale (1=“yes definitely” to 4= “definitely not”) was provided for participants to select the option that best described their views (Yap, Reavley, Mackinnon, & Jorm, 2013; Yap, Reavley, & Jorm, 2013). Higher scores on the social distance measure indicate more stigmatizing attitudes (Yap, Reavley, Mackinnon, & Jorm, 2013; Yap, Reavley, & Jorm, 2013).

Participants were asked an open-ended question to identify how the participant would react, if at all, to the character in the vignette if it was someone they knew well. The reaction to the character will be scored using the coding system developed by Yap et al. (2011). Responses were coded with a ‘yes (1)’ or ‘no (0)’ in each category, and multiple categories were possible. The categories included: Listened/talked with person; Provided general support; Spent time/socialized with person; Encouraged or facilitated socialization/activity; Gave advice; Encouraged or facilitated professional help seeking; Cheered person up/ boosted person’s confidence; Encouraged person to tell someone/told someone or asked their advice; Helped with responsibilities; Gave or sought information; Other (e.g., encouraged self-help; encouraged person to stop alcohol or drugs; did an intervention; assessed problem/risk of harm; confronted person; ask if they want help); Don’t know; and Nothing.

Myths about ASD were also investigated using a newly developed measure. Three independent researchers compiled a list of the most commonly found myths from a variety of web sources on autism. Common myths included “people do not feel emotions as others do”, “autism can be cured”, “autism is caused by vaccines”, etc. Six options were provided for participants to selecting indicating the options that best described their views. These options included “strongly disagree”, “disagree”, “neither agree nor disagree”, “agree”, “strongly agree”, and “do not know”.

The Autism Spectrum Quotient questionnaire (Baron-Cohen et al., 2001) was administered to assess the participants' own symptoms of ASD to determine if that would affect their recognition of and attitudes toward the disorder depicted in the vignette. The ASQ is comprised of 50 questions, with 10 questions assessing 5 different areas: social skill, attention switching, and attention to detail, communication, and imagination (Baron-Cohen et al., 2001). It is a forced choice format, with about half of the items designed to produce a disagree response and half an agree response in a high-scoring person with Asperger's Disorder or high-functioning autism (Baron-Cohen et al., 2001). A score of 32+ is the cut-off for distinguishing individuals who have clinically significant levels of autistic traits, but this is not a diagnostic tool (Baron-Cohen et al., 2001).

The demographic characteristics requested by the participants included their age, gender, and ethnicity (see Appendix for full survey).

### **Procedure**

A convenience sample of 172 introductory psychology students filled out a consent form and completed the survey in groups. They were randomly assigned to either a male or female version of the vignette. The survey first asked the demographic characteristics of age, gender, and ethnicity. Participants were then asked to read the vignette and answer the open-ended questions that followed it about the person described in the paragraph they just read. The questions asked the participants to identify the nature of the disorder in the vignette, and how they would react, if at all, to this situation if the character was someone they knew well. The personal stigma items were asked about the participants' own beliefs about people with ASD, while perceived stigma items asked about their views of how most people think. Social distance items asked about their interest in participating in various forms of social contact with the

character in the vignette. Myth statements were provided that asked participants to indicate essentially whether they agreed or disagreed with the statement, or did not know. Finally, the participants were asked to complete the Autism Spectrum Quotient to assess the participants' own symptoms of ASD. The independent variables were the gender of character, gender of participant, identification of disorder, personal and perceived stigma scores, myths scores, and AQ scores. The dependent variables were the categories of behaviors stated in the open-ended responses on how the participant would react to the character.

### **Data Analysis Plan**

Frequency counts on each of the open-ended response codes will be used to summarize the participants' intended responses to the character. The following analyses will be conducted with behavior categories that at least 10% of participants said they would do (as suggested by Yap et al., 2011). Chi-squared analyses will be used to assess the relation between categorical variables (e.g., recognition of disorder and presence/absence of each behavior). An independent t-test will be used to compare the means of continuous variables by each of the behaviors endorsed by at least 10% of the sample (presence/absence in response). This will include the personal stigma score, the perceived stigma score, the social distance score, the Autism Quotient score, and the myths score.

### **Results**

Table 1 presents the percentage of participants who endorsed each behavior category using the coding system developed by Yap et al. (2011). Six of the thirteen behavior categories were endorsed by at least 10% of participants (see Table 1). Chi-square analyses of each of the six behavior categories (present or absent in response) were conducted to assess their association with each of the following variables: gender of participant, gender of character, and whether or

not autism was correctly identified. Of those participants who correctly identified autism in the vignette, significantly more said they would offer support to the character than if they did not correctly identify it as autism (28% vs 13%),  $\chi^2(1, N = 172) = 6.63, p < .05$ . Fewer participants were likely to state that they would facilitate social contact or activities for the character if they correctly identified autism in the vignette than if they did not (13% vs 25%),  $\chi^2(1, N = 172) = 3.21, p < .10$ , indicating a marginally significant association. None of the other chi-squared tests were statistically significant.

Independent t-tests were conducted to compare the means of continuous variables by each of the six behavior categories. Participants who said they would provide general support to the character had significantly less personal stigma about the character ( $M = 25.48, SD = 3.50$ ) compared to those by whom support was not mentioned as an intended strategy ( $M = 23.99, SD = 3.53$ ),  $t(170) = -2.13, p < .05$ . Regarding personal stigma, higher scores indicate a less stigmatizing attitude. Participants who stated an intention to provide general support to the character also had marginally significantly lower scores on the Autism Quotient ( $M = 14.39, SD = 5.49$ ) compared to those by whom support was not mentioned as an intended strategy ( $M = 16.50, SD = 5.80$ ),  $t(170) = 1.85, p < .10$ . Finally, those who said they would do nothing in response to the character had significantly higher preferred social distance scores ( $M = 12.50, SD = 4.51$ ) compared to the other participants ( $M = 10.25, SD = 3.31$ ),  $t(170) = -2.73, p < .01$ . None of the other independent t-tests were statistically significant.

### **Discussion**

The present study assessed intended reactions to a hypothetical character with autism spectrum disorder, and the effect of several variables on those intended reactions. Participants described their intended response to the character in an open-ended question. A coding system

formed by Yap et al. (2011) was applied to identify how the participants would react, if at all, to the character in the vignette if it was someone they knew well. The results reported by Dunham, McMahon, O'Connell and Charette (2015), were concerning as the endorsement of myths about autism as well as stigma and social distance scores were all quite high. That paired with the relatively low correct recognition of the disorder lead to even more concern about misinformation about this disorder. It was hypothesized that, due to this general lack of knowledge about autism in this sample, it would be likely that fewer strongly supportive responses would be reported and more inappropriate or misguided responses would be stated. Those who correctly identified the disorder as autism also had less personal stigma, less perceived stigma and lower desired social distance from the character (Dunham et al., 2015), so it was hypothesized that these participants would state an intention to provide more supportive responses than those who failed to correctly identify the disorder as autism.

Only six of the thirteen behavior categories developed by Yap et al. (2011) were endorsed by at least 10% of participants. Of participants who correctly identified autism in the vignette, significantly more said they would offer support to the character than if they did not correctly identify it as autism, supporting the hypothesis. Participants who said they would provide general support to the character had significantly less personal stigma about the character and marginally significantly lower scores on the Autism Quotient compared to those by whom support was not mentioned as an intended strategy. Interestingly, fewer participants were likely to state that they would facilitate social contact or activities for the character if they correctly identified autism in the vignette than if they did not, with a marginally significant association. Not surprisingly, participants who said they would do nothing in response to the character had significantly higher preferred social distance scores compared to the other

participants. For the effects of participant gender and character gender, none were statistically significant.

In the present results, of those participants who correctly identified autism in the vignette, significantly more said they would offer support to the character than if they did not correctly identify it as autism. Yap, Reavley, Mackinnon, and Jorm (2013) and Dunham et al. (2015) found less stigmatizing attitudes about autism in participants who could correctly recognize the disorder in their vignette. This seems to also extend to a greater willingness to show various forms of support toward an individual with ASD among those who recognize the disorder. Interestingly, of those participants who correctly identified autism in the vignette, fewer were likely to state that they would facilitate social contact or activities for the character than if they did not correctly identify autism in the vignette; this difference was only marginally significant. This response may reflect an understanding of the challenges faced by individuals with autism in social relationships and a sense that it may be overstepping to try to arrange social activities for them with others.

Participants who stated they would offer support had significantly less personal stigma about the character. This would be expected, but has not been directly investigated in studies on reactions to individuals with autism. Those who said they would do nothing in response to the character had significantly higher preferred social distance scores. Again, this is a logical finding, and has not been investigated in similar studies previously.

Mathews et al. (2015) found that participants with more self-reported autism symptoms expressed significantly more negative attitudes toward the character with autism. The researchers argued that this might reflect a greater preferred social distance from anyone by participants with more autism symptoms. Nevill and White (2011) found no significant correlation of autism self-

report scores with openness to a hypothetical character with ASD. The present results showed that participants who stated an intention to provide support to the character had marginally significantly lower scores on the Autism Quotient. This concurs with the arguments made by Mathews et al. (2015).

In comparison to previous studies, there have been mixed results regarding gender differences in knowledge of ASD, openness to a character with ASD, acceptance of a person with ASD, etc. Some found no gender differences in these variables (e.g., Nevill & White, 2011; Tipton & Blacher, 2014) while others found gender differences but were inconsistent in their nature (e.g., Dunham et al., 2015; Gardiner & Iarocci, 2014; Koyama et al., 2009; Mathews et al., 2015). So, given the contradictory evidence of gender differences in attitudes towards individuals with ASD in these studies, it is perhaps not surprising that the present results did not show a significant gender difference in the intended response to the character in the vignette. There have been no previous studies that have varied the gender of the character with ASD, so unfortunately no comparison is available. However, the presence of the disorder may have overshadowed the character's gender in the vignette.

The present study addressed many limitations of the few studies that have been conducted on reactions to ASD, including the depiction of the disorder, the gender of the character, the attitude measures used, and/or the failure to ask participants to identify the disorder presented if it was not explicitly labeled for them (Koyama et al., 2009; Mathews et al., 2015; Nevill & White, 2011). Importantly, two versions of a vignette with either a male or female character were presented, which carefully depicted the diagnostic criteria for high functioning ASD, verified by a doctoral school psychologist with expertise in autism. Open-ended questions were asked to identify the nature of the disorder in the vignette and to categorize the intended

response to the character; two independent raters coded responses with high reliability.

Empirically derived measures of stigma and social distance were used that have been used in several studies with other disorders (Yap, Reavley, Mackinnon, & Jorm, 2013; Yap, Reavley, & Jorm, 2013), and the Autism Spectrum Quotient questionnaire (Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley, 2001) was administered to assess the participants' own symptoms of ASD. Myths about ASD were also investigated using a newly developed measure for this study.

Limitations of the present study include the use of a convenience sample of college students in introductory psychology classes. Further, the use of a hypothetical vignette may have led to possible social desirability biases in responses, as reactions to a real person may be quite different. Therefore, future studies may want to consider asking participants about experiences with a real person with ASD, and their actual responses to those individuals. It is also recommended that this study be replicated with different samples in order to test generalizability. It may also be worthwhile to assess the social reactions experiences by individuals with autism and their sense of stigmatizing attitudes of others toward their disorder.

This research is important for the purposes of education of the public on autism spectrum disorders and how best to support such individuals. Fairly low correct recognition of autism in the vignette and relatively high stigma and preferred social distance, as reported by Dunham et al. (2015) for the larger study, is concerning. Therefore, it is essential for all educators to not only learn about and understand ASD, but to pass on this knowledge to students and other professionals in order to increase awareness and promote an accepting environment that will allow an individual with ASD to thrive in a university setting. Secondary educational settings should also take this research into consideration when preparing students with ASD to transition

from a high school to university setting. Teaching coping strategies for this type of environment and promoting self-advocacy skills may be critical for the success of these students.

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Table 1

*Frequency of Intended Responses to Character in Vignette*

Behavior	%
Listened/talked with person	50.6
Provided general support	18.0
Spent time/socialized with person	17.4
Facilitated socialization/activity	20.9
Gave advice	3.5
Encouraged professional help seeking	7.0
Cheered person up	.6
Encouraged person to tell someone	3.5
Helped with responsibility	.6
Gave or sought information	2.9
Other (intervention; assessed problem, etc.)	33.1
Don't Know	1.2
Nothing	12.2

*Note.* Each response could be coded in more than one category.

## Appendix

**Please do not put your name on this survey. Please complete the survey in the order presented, and please do not go back to earlier questions and change your answers.**

What is your age? \_\_\_\_\_

What is your gender? \_\_\_M \_\_\_F

What is your ethnicity? \_\_\_ Caucasian \_\_\_\_\_ Hispanic or Hispanic-American  
 \_\_\_\_\_ African or African-American \_\_\_\_\_ Other: \_\_\_\_\_  
 \_\_\_\_\_ Asian or Asian-American

**Please read the paragraph below and then answer the questions that follow it about the person described in the paragraph you read. Please pay close attention to the response options you are given to choose from, as they change in different parts of the survey.**

Robert lives in your suite in the dorm. Robert does not spend much time or talk often with you, your other suitemates, or other students in your dorm, and finds it hard to make friends. If someone speaks to Robert, he speaks in a flat tone, does not make much eye contact with the other person, and struggles to keep the conversation going. When you have tried to talk to Robert, he may have briefly acknowledged what you said, but quickly changed the subject to something he is interested in and wants to keep talking about. He almost always only wants to talk about the brain -- books he reads about the brain, documentaries he watches about the brain, and so on. Robert prefers to spend most of his time in his room alone even when the other residents are around and talking together. Robert does not show much emotion or seem to understand what others are feeling either. He has a strict schedule for himself each day, and if something comes up unexpectedly, it makes him quite anxious. He has organized his room just the way he likes it and if anyone moves anything in his room, he gets very upset. Robert is bright and does quite well in his classes.

What, if anything, do you think is wrong with Robert?

Imagine that Robert is someone you know well. How would you react, if at all, to this situation with Robert? There are no right or wrong answers here, so please answer honestly.

**PLEASE COMPLETE REVERSE SIDE OF THIS PAGE.**

Please read the statements below carefully and select the option that best describes your views by circling a response. Please answer honestly, as your responses are confidential.

Robert could snap out of it if he wanted.	<b>1</b> Strongly agree	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b> Strongly Disagree
Robert's problem is a sign of personal weakness.	<b>1</b> Strongly agree	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b> Strongly Disagree
Robert's problem is not a real medical illness.	<b>1</b> Strongly agree	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b> Strongly Disagree
Robert is dangerous.	<b>1</b> Strongly agree	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b> Strongly Disagree
It is best to avoid Robert so that you don't develop this problem yourself.	<b>1</b> Strongly agree	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b> Strongly Disagree
Robert's problem makes him unpredictable.	<b>1</b> Strongly agree	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b> Strongly Disagree
Most other people believe that Robert could snap out of it if he wanted.	<b>1</b> Strongly agree	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b> Strongly Disagree
Most other people believe that Robert's problem is a sign of personal weakness.	<b>1</b> Strongly agree	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b> Strongly Disagree
Most other people believe that Robert's problem is not a real medical illness.	<b>1</b> Strongly agree	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b> Strongly Disagree
Most other people believe Robert is dangerous.	<b>1</b> Strongly agree	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b> Strongly Disagree
Most other people believe it is best to avoid Robert so that they don't develop this problem themselves.	<b>1</b> Strongly agree	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b> Strongly Disagree
Most other people believe Robert's problem makes him unpredictable.	<b>1</b> Strongly agree	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b> Strongly Disagree

	<b>1</b> Yes, Definitely	<b>2</b>	<b>3</b>	<b>4</b> No, Definitely Not
Would you go out with Robert on the weekend?				
Would you invite Robert to your house?				
Would you go to Robert's house?				
Would you work closely with Robert on a project?				
Would you develop a close friendship with Robert?				

Please read the statements below carefully and select the option that best describes your views by circling a response. Please answer honestly, as your responses are confidential.

People with autism have no empathy for others.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Do not know
People with autism cannot stand to be touched.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Do not know
People with autism do not understand humor.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Do not know
People with autism do not feel love for others.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Do not know
People with autism do not feel emotions as others do.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Do not know
People with autism cannot speak normally.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Do not know
People with autism cannot express their emotions as others do.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Do not know
Autism can be cured.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Do not know
The appearance of autism is relatively new.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Do not know
Autism is a mental health disorder.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Do not know
Autism is caused by vaccines.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Do not know
Autism is caused by poor parenting.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Do not know
People with autism are violent.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Do not know
People with autism are unable to form meaningful social relationships.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Do not know
People with autism have specific intellectual abilities that are very strong.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Do not know
People with autism prefer their own company and do not want	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Do not know

any friends.						
A person with autism cannot be educated successfully.	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neither agree nor disagree</b>	<b>Agree</b>	<b>Strongly agree</b>	<b>Do not know</b>
People who display signs of autism as children will grow out of it.	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neither agree nor disagree</b>	<b>Agree</b>	<b>Strongly agree</b>	<b>Do not know</b>
After being supported through school, people with autism can effectively adapt to adult life.	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neither agree nor disagree</b>	<b>Agree</b>	<b>Strongly agree</b>	<b>Do not know</b>
You can only be diagnosed with autism as a child.	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neither agree nor disagree</b>	<b>Agree</b>	<b>Strongly agree</b>	<b>Do not know</b>
People with autism are deliberately being rude when avoiding eye contact.	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neither agree nor disagree</b>	<b>Agree</b>	<b>Strongly agree</b>	<b>Do not know</b>
People with autism have intellectual disabilities.	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neither agree nor disagree</b>	<b>Agree</b>	<b>Strongly agree</b>	<b>Do not know</b>

**Please respond to the questions below about yourself as accurately and honestly as possible. Remember that all of your responses are strictly confidential.**

I prefer to do things with others rather than on my own.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I prefer to do things the same way over and over again.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
If I try to imagine something, I find it very easy to create a picture in my mind.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I frequently get so strongly absorbed in one thing that I lose sight of other things.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I often notice small sounds when others do not.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I usually notice car license plates or similar strings of information.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
Other people frequently tell me that what I've said is impolite, even though I think it is polite.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
When I'm reading a story, I can easily imagine what the characters might look like.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I am fascinated by dates.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
In a social group, I can easily keep track of several different people's conversations.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I find social situations easy.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree

	Disagree	Disagree	Agree	Agree
I tend to notice details that others do not.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I would rather go to a library than a party.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I find making up stories easy.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I find myself drawn more strongly to people than to things.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I tend to have very strong interests, which I get upset about if I can't pursue.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I enjoy social chit-chat.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
When I talk, it isn't always easy for others to get a word in.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I am fascinated by numbers.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
When I'm reading a story, I find it difficult to work out the characters' intentions.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I don't particularly enjoy reading fiction.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I find it hard to make new friends.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I notice patterns in things all the time.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I would rather go to the theater than a museum.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
It does not upset me if my daily routine is disturbed.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I frequently find that I don't know how to keep a conversation going.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I find it easy to "read between the lines" when someone is talking to me.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I usually concentrate more on the whole picture, rather than the small details.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I am not very good at remembering phone numbers.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I don't usually notice small changes in a situation, or a person's appearance.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I know how to tell if someone listening to me is getting bored.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I find it easy to do more than one thing at once.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
When I talk on the phone, I'm not sure when it's my turn to speak.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I enjoy doing things spontaneously.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree

	Disagree	Disagree	Agree	Agree
I am often last to understand the point of a joke.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I find it easy to work out what someone is thinking or feeling just by looking at their face.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
If there is an interruption, I can switch back to what I was doing very quickly.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I am good at social chit-chat.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
People often tell me that I keep going on and on about the same thing.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
When I was young, I used to enjoy playing games involving pretending with other children.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
<b>PLEASE COMPLETE REVERSE SIDE OF THIS PAGE.</b> I like to collect information about categories of things (e.g. types of cars, types of birds, types of trains, types of plants, etc).	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I find it difficult to imagine what it would be like to be someone else.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I like to plan any activities I participate in carefully.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I enjoy social occasions.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I find it difficult to work out people's intentions.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
New situations make me anxious.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I enjoy meeting new people.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I am a good diplomat.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I am not very good at remembering people's date of birth.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree
I find it very easy to play games with children that involve pretending.	Definitely Disagree	Slightly Disagree	Slightly Agree	Definitely Agree