An investigation of social self-efficacy and depressed mood in adults with Autism Spectrum Disorders

THESIS

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Autism Spectrum Disorders (ASDs) are characterized by deficits in social skills and communication and the presence of repetitive behaviors or a restricted range of interests. The difficulties individuals with ASDs experience with social interactions persist into adulthood. Although little is known about depression in adults with ASDs, it is generally accepted that adults with ASDs experience depression at least as often as adults in the general population. Social self-efficacy refers to an individual’s belief that he is capable of initiating and maintaining social contact. In the general population a robust negative correlation has consistently been found between social self-efficacy and depression symptoms. The current study investigated the relation between social self-efficacy and symptoms of depression in adults with ASDs. Self-report data was collected on 53 adults with ASDs. Subjects completed questionnaires assessing symptoms of autism and depression, as well as social skills, social self-efficacy and impression management. Partial support was found for a negative correlation between social self-efficacy and depression symptoms. As expected, one measure of depression symptoms correlated positively with a measure of ASD symptoms, however another measure did not. Although social self-efficacy was unrelated to educational achievement, it was positively correlated with self-rated social skills. Additionally, there was no evidence that efforts towards impression management impacted self-rated ASD symptoms. Considering these findings, it appears that the relation between social self-efficacy and depression symptoms in adults with ASDs is not straightforward. Further research is needed to clarify this relation.
This document is dedicated to Joan, whose sadness inspired me to seek knowledge.

And, to the Tabor ladies, Amy, Denise, and Gina.
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Chapter 1: Introduction

*Autism Spectrum Disorders*

*Autism Spectrum Disorder (ASD)* is a term than encompasses *Autistic Disorder (AD)*, *Asperger’s Disorder (AS)*, and *Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS)*. Taken together, ASDs represent a subset of the Pervasive Developmental Disorders as outlined by the *Diagnostic and Statistical Manual of Mental Disorders Fourth Edition Revised (DSM-IV-TR)* (American Psychiatric Association, 2000) which are characterized by three features, impairments in reciprocal social interaction, communication, and the presence of stereotyped or repetitive behavior, activities, and interests (American Psychiatric Association, 2000). Recent research has supported the claim that AD, AS, and PDD-NOS fall along a single dimension with variability in severity of affectedness (Witwer & Lecavalier, 2008). A diagnosis of AD requires all three features of ASDs, while a diagnosis of AS requires only impairment in reciprocal social interaction and the presence of repetitive behaviors. A PDD-NOS diagnosis implies that an individual has features of ASDs however does not meet full diagnostic criteria for AD or AS. Individuals with AS by definition have typical intelligence as measured by standardized assessments while individuals with AD and PDD-NOS may have average intelligence or Intellectual Disability (ID; American Psychiatric Association, 2000).

A defining feature of all ASDs is impairment in reciprocal social interactions (American Psychiatric Association, 2000). In describing Leo Kanner’s original 1943 report on children with ASDs, Baron-Cohen and Bolton (1993) state that the inability to relate socially to other people is the most important sign of the disorder. The inability to relate socially presents itself differently
in each individual; however, a similar constellation of symptoms is typically present. Individuals with ASDs often do not appear to attend to other people and may be unresponsive if approached by another person (Baron-Cohen & Bolton, 1993). When individuals with ASDs attend to other people, it seems that they often attend mainly to the non-social aspects of others. It has been asserted that individuals with ASDs may behave towards others as if they are objects rather than people (Baron-Cohen & Bolton, 1993; Kanner, 1943). Along the same lines, individuals with ASDs often do not make eye contact even while communicating. Baron-Cohen (2003) describes that individuals with ASDs tend to score lower on standardized measures of empathy and often have trouble discerning the emotional states of others as well as their own emotional states. Similarly, individuals with ASDs may have difficulty understanding the thoughts, beliefs, and intentions of other individuals; stated differently, individuals with ASDs have difficulty with theory of mind. Such difficulties are apparent not only with inter-individual social behavior but also with being aware of and conforming to cultural norms in general (Baron-Cohen & Bolton, 1993).

Researchers have found that the symptoms of ASDs do not remain stable across the lifespan (Seltzer et al., 2003). The small body of literature on outcomes for adults with ASDs implies that most adults continue to have significant problems with social interactions throughout the lifespan (Billstedt, Gillberg, & Gillberg, 2007; Howlin, Goode, Hutton, & Rutter, 2004; Marriage, Wolverton, & Marriage, 2009). Kanner (1943) described that by the age of six to eight years many children with ASDs would play at the periphery of a group of children when earlier in life the same children would have avoided peers. Kanner’s interpretation of this observation was that deficits in social functioning would decline with age, however more recent research (Howling et al., 2004; Marriage et al., 2009) including longitudinal studies (Billstedt et al., 2007) have not supported his assertion. A review of previous research by Howlin et al. (2004)
discussed 19 studies which all indicated ‘fair’ or ‘poor’ outcomes for a majority of individuals with ASDs. In a sample of 105 adults in Sweden, Billstedt et al. (2007) found that speech before the age of 5 years, higher IQ and male gender all significantly predict higher quality social interactions later in life. It is generally agreed upon that individuals with ASD who do not have ID experience better long-term outcomes (Howlin et al., 2004) including social interaction outcomes (Marriage et al., 2009). Overall, the research indicates that adults with ASDs experience social isolation as a result of persistent deficits in social interaction skills.

Depression

Major Depressive Disorder, commonly referred to as depression, is defined by the American Psychiatric Association (2000), as a disturbance of mood which lasts for at least two weeks. A diagnosis of depression requires that an individual experience either depressed mood or loss of interest or pleasure in most activities. For children, the DSM-IV-TR allows irritable mood in place of depressed mood. Other adaptations are available for the DSM-IV and ICD-10 criteria for individuals with ID (Charlot, Fox, Silka, Hurley, Lowry, & Pary, 2007; Royal College of Psychiatrists, 2001). In addition, an individual must experience changes in sleep, appetite or weight, or psychomotor activity; fatigue, feelings of worthlessness or guilt; difficulty concentrating, thinking, or making decisions; or recurrent thoughts of death, suicidal ideation, plans, or attempts. These symptoms must cause clinically significant impairment and must not be due to substance use or a general medical condition. There are several associated features such as irritability, brooding, rumination, tearfulness, anxiety, phobias, excessive worry about physical health and complaints of vague bodily pain. Disruption of both social and sexual functioning can also occur during a depressive episode. Segrin’s (1990) meta-analytic review found that depression impacts a number of social behaviors. Specifically, during social
interactions individuals who are depressed speak less, are less expressive in their communication, make less eye contact, and speak and respond slower (Segrin, 1990).

Typically an untreated episode of depression remits within 6 months to one year. According to the National Comorbidity Study results (Kessler et al., 2003), depression affects about 6.6 percent of individuals in the general population in any given year, with rates of the disorder twice as high in women as men. Kessler et al. (2003) also reported that the lifetime prevalence of depression in the United States is 16.2% with 72.1% of this group experiencing comorbid conditions. About half (51.6%) of the 12-month reviewed cases in this study received treatment for depression and of those who received treatment, only 41.9% received adequate treatment (Kessler et al., 2003).

*Depression in adults with ASDs*

In comparison to the general population, relatively little is known about depression in adults with ASDs. Some authors have asserted that depression is the most common psychiatric condition in individuals with ASDs (Wing, 1989; Howlin, 1997). Estimates of the prevalence of depression in individuals with ASDs vary widely from 4 to 58 percent (Lainhart, 1999). A recent population-based study found that among individuals with ASD and ID in Scotland, almost 4% experienced comorbid depression (Melville et al., 2008). Sterling and colleagues (Sterling, Dawson, Estes, & Greenson, 2008) found that individuals with higher cognitive ability and less social impairment are more likely to endorse symptoms of depression. The argument has been made elsewhere that depression is more common in individuals with ASD and greater intellectual functioning compared to individuals with ASD and ID (see Ghaziuddin, Ghaziuddin, & Greden, 2002). Following this argument, it would be expected that individuals with HFA/AS are likely to have rates of depression higher than the 4% reported by Melville et al. (2008). Due to challenges in diagnosing depression in adults with ASDs, some authors have asserted that the
disorder may be under diagnosed in this population (e.g. Lainhart & Folstein, 1994; Ghaziuddin, 2005).

Some of the challenges in formulating an appropriate psychiatric diagnosis for an adult with ASD come from the unique presentation of depression seen in this population. Typically, standard diagnostic criteria are adequate to diagnose depression in higher functioning adults with ASDs (Ghaziuddin, 2005), however adapted criteria may be warranted in individuals with ASDs and ID. Although variability in presentation exists, Ghazziuddin (2005) noted that individuals with depression and ASDs often have a history of sad affect, including crying spells, increased social withdrawal and changes in eating and sleeping patterns.

Individuals with ASDs experience impairment in the ability to communicate emotions and distress to others in verbal and non-verbal contexts (Lainhart, 1999). Mood changes in individuals with ASDs may be expressed in atypical ways. Changes in eating and sleeping habits are relatively easy for an observer to detect, however some researchers have noted that the tendency to follow routines in this population may obscure even these overt symptoms (Lainhart, 1999). Despite this, disturbances in sleeping patterns are likely to develop, reemerge, or worsen with the onset of a depressive episode. In a review of the relevant literature, Stewart et al. (2006) noted sleep disturbances in 11 out of 15 cases, with 10 cases noting insomnia and one case reporting hypersomnia. In this review, only one individual was noted to report experiencing fatigue. Observers may also note a decrease in self-care during the onset of an episode of depression in adults with ASDs, similar to adults in the general population (Stewart et al., 2006).

Many individuals with ASD present with some preoccupations and ritualistic behaviors, these may change in intensity or content during a depressive episode. In some individuals with ASD and depression, a change in the nature of preoccupations may be noted (Ghaziuddin, 2005;
Ghaziuddin, Ghaziuddin, & Greden, 2002). Often, this change entails a negative or depressive theme in preoccupations. It may even be the case that the individual will lose interest completely in topic that was previously a fixation (Ghaziuddin et al., 2002). In some individuals, an increase in ritualistic behavior is noted (Ghaziuddin, 2005) however in other cases repetitive behaviors may decrease during a depressive episode (Stewart et al., 2006).

Another common sign of depression in adults with ASDs is a marked increase in social withdrawal behaviors. Although social withdrawal is typical of individuals with ASDs, this behavior often increases from baseline at the onset of a depressive episode (Ghaziuddin, 2005; Lainhart, 1999). An increase in irritability during a depressive episode has also been noted in many individuals (Ghaziuddin, 2005; Lainhart & Folstein, 1994; Stewart et al., 2006). Aggression towards others may or may not accompany an increase in irritability. Ghaziuddin (2005) noted that in some individuals prone to self-injurious behaviors, there is an increase in self-harm during a depressive episode.

The core deficits in ASDs may have substantial overlap with the symptoms of depression. As stated above, social withdrawal is characteristic of both ASDs and depression. Similarly, the lack of emotional expression in individuals with ASDs is very similar to the flat affect that may be observed in neurotypical individuals with depression (Lainhart, 1999). Abnormal speech patterns displayed by individuals with ASDs can also complicate diagnosis if mistaken for psychomotor retardation (Stewart et al., 2006). Minimal expressiveness and abnormal speech patterns were similarly found to be very common in behavioral analyses of adults with depression in the general population (Segrin, 1990). Due to these overlaps in symptoms, Lainhart (1999) has stated that such symptoms should only be seen as a sign of depression if the symptoms appear suddenly or increase in severity.
At this time, very little systematic research has addressed the course and long-term outcomes of individuals with ASDs and depression. The presence of mental illness in individuals with ASDs has been found to be associated with more negative long-term outcomes (Billstedt et al., 2005) underscoring the importance of understanding factors related to mental illness in this population. While average age of onset of depression in individuals with ASDs is not yet known, many authors have commented that the development of depression often coincides with a developing awareness of social impairment during adolescence (see Ghaziuddin, 2005; Howlin, 1997, Mesibov & Handlan, 1997; Volkmar & Klin, 2000; Wing, 1981). Although a range of treatment options for depression has been found to be effective, pharmacological treatments are the most widely used in this population (Ghaziuddin, 2005; Ghaziuddin, Ghaziuddin, & Greden, 2002; Lainhart & Folstein, 1994; Stewart et al., 2006). Selective serotonin reuptake inhibitors (SSRIs) are currently the most common agents of pharmacotherapy used by adults with ASD to treat depression (Ghaziuddin, 2005). Increasingly, Cognitive Behavioral Therapy (CBT) has been used with individuals with ASDs and affective disorders. Although most of the research conducted has focused on interventions for anxiety in youth with ASDs (see Lang, Regester, Lauderdale, Ashbaugh, & Haring, 2010 for a review), one case report detailed the successful treatment of an adult with AS and depression using CBT (Hare, 1997). It is likely that the use of CBT to treat depression in this population will become more common as the research literature develops.

**Social Self-Efficacy**

Self-efficacy, coined by Albert Bandura (1977), refers to the belief that one is capable of planning and executing the steps necessary to obtain a specific goal. Judgments of self-efficacy are formulated with information from mastery experiences compared to individual competence standards (Kanfer & Zeiss, 1983). Self-efficacy can serve as a motivational force that influences
behavior. Bandura (1977) asserted that self-efficacy determines if a behavior will be initiated, how long the behavior will be sustained when obstacles are encountered and how much effort one is willing to invest in achieving a goal.

Wei, Russell, and Zakalik (2005) defined social self-efficacy as an “individuals’ belief that they are capable of initiating social contact and developing new friendships” (p. 602). Thus, an individual with high social self-efficacy will be likely to seek out social experiences with the expectation that those experiences will be successful. If social experiences are perceived as failures, an individual may lower their efficacy expectations and reduce the frequency of social interaction.

**Social Self-Efficacy in ASDs**

Given that deficits in reciprocal social interaction are one of the criteria for a diagnosis of an ASD, it is clear that adults with ASDs experience challenges in the social realm. Such social challenges have been well documented in children with ASDs (Capps, Sigman, & Yirmiya, 1995; Vickerstaff, Heriot, Wong, Lopes, & Dossetor, 2007), although less is known about these difficulties in adults. Kanfer and Zeiss (1983) argued that individuals judge self-efficacy based on a comparison of information from mastery experiences and personal competency standards. Although the personal competency standards in social interaction of adults with ASDs are currently unknown, based on diagnostic criteria, it would be expected that most adults with ASDs have had fewer social mastery experiences than neurotypical peers.

No research has been found on social self-efficacy in adults with ASDs, however Rosbrook and Whittingham (2010) reported that adults in the general population who endorsed more symptoms of ASDs also self-reported lower social self-efficacy. Additionally, research on children has found that children with ASDs have lower self-perceived social competence than normative samples (Capps, Sigman, & Yirmiya, 1995; Vickerstaff, Heriot, Wong, Lopes, &
Although the studies in children with ASD did not assess social self-efficacy directly, self-perceived social competence is a closely related construct.

**Social Self-Efficacy and Depression**

Several researchers have investigated the role of social self-efficacy in depression finding a consistent negative correlation; individuals who rate themselves higher for social self-efficacy also endorse fewer symptoms of depression (Bandura, 1997; Gable & Shean, 2000; Kanfer & Zeiss, 1983; Lewinsohn, Mischel, Chaplin, & Barton, 1980; Rosbrook & Whittingham, 2010; Segrin, 1990; Smith & Betz, 2002; Wei, Russell, & Zakalik, 2005; Whitton, Larson, & Hauser, 2008). Only one study (Payne & Jahoda, 2004) reported a conflicting finding for a sample of adults with ID in Scotland; in this sample adults with ID who were higher in social self-efficacy also endorsed more symptoms of depression. Researchers such as Lewinsohn (1974) originally noted that individuals experiencing depression also tend to display a deficit in social skills. In a meta-analytic study, Segrin (1990) found that the relationship between social skills and depression is strongest when self-perceived social skill was measured, with other’s perceptions of social skill having a weak relationship, if any, with depression. This implies that it is the perception of one’s own social abilities, social self-efficacy, which maintains the link between social skills and depression.

Bandura (1997) noted that the concept of self-efficacy is closely related to several theories of the development and maintenance of depression, particularly Beck’s self-schema theory (1984, as cited in Bandura, 1997), Peterson and Seligman’s pessimistic explanatory style theory (1984, as cited in Bandura, 1997), and Rehm’s dysfunctional self-evaluation theory (1988, as cited in Bandura, 1997). Self-efficacy is an important component of a self-schema, or a way of conceptualizing one’s self. From Beck’s perspective (1984, as cited in Bandura, 1997), depression arises as a result of negative self-schemas that are formed during the same type of failure
experiences that may lead to lower social self-efficacy. Similarly, if one does not have positive efficacy expectancies, then it is likely that a pessimistic explanatory style would develop in line with Peterson and Seligman’s theory (1984, as cited in Bandura, 1997). Positive efficacy expectations, the belief that one’s actions will be successful, are derived from self-efficacy. If an individual does not expect to be efficacious then he or she may begin to use pessimistic justifications. Finally, low self-efficacy is likely to contribute to a poor evaluation of the self as is expected from Rehm’s theory of depression (1988, as cited in Bandura, 1997). If a person does not believe that he or she is capable of choosing and performing the correct actions to achieve goals, this belief could lead to a negative self-evaluation.

Social self-efficacy may exert its influence on depression both directly and indirectly. Holahan and Holahan (1987) found that low social self-efficacy predicted depression one year later in a sample of elderly adults. Further, they found that the relation between social self-efficacy and depression was mediated by social support. Research has found that perceived social support predicts the subsequent development of depression, especially for women (Kendler, Myers, & Prescott, 2005). It has also been found that social interaction tends to produce a more positive mood (Gable & Shean, 2000). Taken together, the results of these studies suggest that social self-efficacy is an important factor in developing social support and in creating opportunities to experience mood-enhancing benefits of social interaction.

Hypotheses

Primary Hypothesis. It was predicted that individuals with ASD who self-report higher levels of social self-efficacy would endorse fewer symptoms of depression. Several studies conducted with the general population have found this relation (Gable & Shean, 2000; Kanfer & Zeiss, 1983; Lewinsohn, Mischel, Chaplin, & Barton, 1980; Payne & Jahoda, 2004; Rosbrook & Whittingham, 2010; Segrin, 1990; Smith & Betz, 2002; Wei, Russell, & Zakalik, 2005; Whitton,
Larson, & Hauser, 2008). One study, Payne and Jahoda (2004) found that individuals with ID who were higher in social self-efficacy also endorsed more depressive symptoms. The authors reasoned that perhaps these individuals had positive social efficacy expectations however had difficulty forming social relationships due to limited social experiences.

**Exploratory Hypotheses.** In the current study it was predicted that symptoms of ASDs would correlate positively with symptoms of depression. Previous research in the general population has found that individuals who have higher levels of autism traits also endorse more depressive symptoms (Rosbrook & Whittingham, 2010).

In the current study, it was predicted that individuals with higher intellectual functioning as measured by proxy would have lower levels of social self-efficacy. Vickerstaff et al. (2007) found a similar relation in children with ASDs that was presumed to exist because children with higher intellectual functioning may be more aware of their social inadequacy than children with lower intellectual functioning.

It was further predicted that a positive relation would exist between the two separate measures of social self-efficacy (PSSE & GSSES) and a self-report measure of social skills (ABAS-II, Social subscale). Because social self-efficacy is in part determined by an individual’s social abilities or lack thereof, measures of social skill should be related to measures of social self-efficacy.

Additionally, it was predicted that for adults who self-report a diagnosis of ASD, a negative relation would exist between self-ratings on a measure of ASD traits and a measure of positive impression management. Previous research has found a discrepancy between self-ratings and parent ratings on the Autism Spectrum Quotient (Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley, 2001; Bishop, in press). In both studies, the authors were unable to adequately account for this discrepancy. An individual may endorse fewer symptoms of an ASD
than an informant would report for the same individual either because the individual is unaware of some ASD-related deficits or because the individual is aware of such impairments and attempting to minimize these symptoms. Bishop (in press) suggested that positive impression management might lead an individual to minimize his or her symptoms during an ASD assessment however Bishop did not measure impression management. Adults with ASDs and average intelligence may be aware of many of their differences from neurotypical peers, and may attempt to minimize such differences on self-report measures to fit in with the general population. Thus, the current study is investigating the relation between positive impression management and self-rated ASD symptoms.
Chapter 2: Method

**Participants**

Participants were 53 adults ages 18-54 with ASDs currently living in the Midwest. Criteria for inclusion in the study included a self-reported diagnosis of an ASD and the ability to complete questionnaires independently. Individuals with a comorbid diagnosis of Fragile X syndrome were ineligible for the present study. There is a high comorbidity between ASD and Fragile X Syndrome and the current study investigated adults with ASD only. Individuals who have a legal guardian were also excluded from the study because they cannot legally consent to participate and the study design limited the researcher’s access to guardians to obtain consent. Because it was expected that some participants would need to be excluded from the study on the basis of comorbid diagnoses and that other potential participants would choose not to participate, we recruited over 50 participants.

**Participant demographic characteristics.** See Table 1 for participant demographic characteristics and Table 2 for participant psychiatric characteristics.

**Power Analyses**

The aim of the current study was to investigate the relation between social self-efficacy and symptoms of depression in adults with ASDs. For the primary hypothesis, that a relation would exist between social self-efficacy and depression, it was predicted that approximately 33 individuals would be needed to obtain .80 power when alpha is set at .05. This estimate was obtained by calculating the average effect size found in previous research of the same relation in children and adults with ASD, ID, and typical development (Payne & Jahoda, 2004; Rosbrook & Whittingham, 2010; Smith & Betz, 2002; Vickerstaff, Heriot, Wong, Lopes, & Dossestor, 2007).
For the first exploratory hypothesis, that a relation would exist between traits of ASDs and symptoms of depression, it was predicted that 49 individuals would be required to obtain .80 power when alpha is set at .05. Further, the second exploratory hypothesis, that a relation would exist between social self-efficacy and intellectual functioning, approximately 24 participants would be needed to obtain .80 power with alpha set at .05.

**Instruments**

**Autism-Spectrum Quotient (AQ; Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley, 2001).** The AQ is a brief self-report measure designed for administration to adults of average intelligence. A total of 50 questions are included on the AQ, which assess social skills, attention switching, and attention to detail, communication, and imagination. Items are based on core autism symptoms and established cognitive abnormalities in individuals with ASDs. The scale employs a forced choice format with responses of “definitely agree”, “slightly agree”, “slightly disagree” or “definitely disagree”. Items are scored as one point on any question in which the respondent indicates mild or strong behaviors that are abnormal or typical of an individual on the autism spectrum. Scores on the AQ can range from zero to 50 with a higher score indicating greater presence of traits related to autism.

The AQ was found during development to have good test-retest reliability over a period of two weeks (Baron-Cohen et al., 2001). Validity of the scale was assessed by comparing results of the AQ with those of a clinical interview based on DSM IV criteria. Of the 11 individuals interviewed who had AQ scores above 32, all had symptoms of ASDs and seven met criteria for diagnosis. The AQ is a widely used scale that has been investigated in British, Dutch, American, and Japanese populations (Baron-Cohen et al., 2001; Ketelaars et al., 2008; Kurita, Koyoma & Osada, 2005).
Initial use of the scale yielded an optimal cutoff score of 32+ to distinguish between individuals on the autism spectrum and individuals not on the spectrum. More recent work has failed to replicate this cutoff score (Ketelaars et al., 2008; Kurita, Koyoma, & Osada, 2005) implying that further refinement of the cutoff score may be necessary. Baron-Cohen and colleagues (2005) reported that as a clinical screening measure, a cutoff score of 26 may be more useful.

**Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1988).** To measure the presence of socially desirable responding, the Impression Management subscale of the BIDR was employed. Impression management may have an impact on the items that an individual endorses on the AQ. Previous research with the AQ has found that when the questionnaire was tested as a parent version, parents of individuals with ASDs rated their family member as having more traits of autism than the individual had rated themselves (Baron-Cohen et al., 2001). The lower scores that were found when an individual rated him or herself could have been due to positive impression management, as some of the traits of ASDs may be socially undesirable.

The BIDR is a 40-item measure that taps two dimensions: self-deception and impression management. All 40 items are stated as propositions to which respondents rate their agreement with each statement on a seven point scale ranging from 1 “not true” to 7 “very true”. The BIDR has a balanced scoring key. When the negatively keyed items are reversed, one point is given for each extreme score. Extreme scores are defined as a 6 or 7 (very true). In the current study, the Impression Management (IM) subscale was employed. The IM subscale has 20 items and scores range from 0 to 20.

The IM subscale has been found to have good internal consistency reliability, with coefficient alpha ranging from .75 to .86 (Paulhus, 1991). Test-retest reliability was found to be moderate over a 5-week period (.65; Paulhus, 1991). Similarly, convergent validity was
established through comparison with widely used lie scales (Paulhus, 1991). It was also found that scores on the IM subscale tend to increase most when compared across private and public conditions respectively (Paulhus, 1991). Interestingly, Paulhus (1991) noted that men tend to score lower on the IM subscale than women, indicating that men engage in less impression management. See Appendix F.

**Scale of Perceived Social Self-Efficacy (PSSE; Smith & Betz, 2000).** The primary measure of social self-efficacy, the PSSE, was originally developed for use with young adults with typical intelligence as a part of a career assessment (Smith & Betz, 2000). The PSSE is a 25 item self-report measure that assesses perceived levels of social self-efficacy across six areas of social interaction. The domains covered by the PSSE are making friends, pursuing romantic relationships, social assertiveness, performance in public situations, groups or parties, and giving or receiving help. Response categories for all items are “no confidence at all”, “little confidence”, “moderate confidence”, “much confidence”, and “complete confidence” which are scored 1 through 5 respectively yielding a possible total score from 25 to 225.

The PSSE has been found to have strong internal consistency reliability and test-retest reliability (Smith & Betz, 2000). Additionally, concurrent validity of the PSSE was assessed through comparisons with Scherer’s Social Self-Efficacy Scale (Sherer at al., 1982) and the Social Confidence Scale from the *Skills Confidence Inventory* (Betz, Borgen, & Harmon, 1996). The PSSE had significant positive correlations with both other measures. Although not specifically designed for administration to adults with ASDs and average intelligence, the PSSE is appropriate for use with college students and adults with typical intelligence. Previous research with college students found a significant negative relationship between the PSSE and the Beck Depression Inventory II (Smith & Betz, 2002). See Appendix D.
Glasgow Social Self-Efficacy Scale (GSSES; Payne & Jahoda, 2004). The GSSES was originally developed as an interview to measure social self-efficacy in adults with ID in Scotland. It is a 17-item scale with two sections. The first section requires the respondent to identify a key-worker (job-coach), family member, and best friend and then indicate ability to communicate various messages to this person. The second section of the scale requires the respondent to imagine meeting a new person in a variety of situations and indicating whether or not the respondent would be comfortable speaking with this new person. Answers to all questions in the GSSES are “a lot”, “a little bit”, or “not at all” which are scored 2, 1, and 0 respectively producing a possible range of total scores from 0 to 34 (Payne & Jahoda, 2004).

During development, the GSSES was found to have strong test-retest reliability and acceptable internal reliability (Payne & Jahoda, 2004). Concurrent validity of the GSSES has been assessed by comparison with an existing measure, Scherer’s Social Self-Efficacy Scale (Sherer et al., 1982) and was statistically significant however only correlated moderately ($r = 0.42$). For the current study the GSSES was modified for administration as a written self-report measure. A few minor changes in wording were used to make the GSSES accessible for an American respondent, for example “get on well with” was adapted to read “get along well with”. In addition, the first four questions refer to a “key-worker” at the “Resource Centre” which has been changed to the “supervisor” at “your job”. See Appendix E.

Beck Depression Inventory II (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II was the primary measure of symptoms of depression in the current study. The BDI-II is a widely used, self-report measure of depressive symptoms in the general population (Beck et al., 1996). The 21 items on the BDI-II cover a range of cognitive, affective, and physical symptoms of depression using a set of short statements representing increasing symptom severity. An example item relating to sadness is scored 0 points for endorsement of “I do not feel sad”, 1 point for “I feel
sad much of the time”, 2 points for “I am sad all the time”, and 3 points for “I am so sad or unhappy that I can’t stand it”. Total scores range from 0 to 63 points with higher scores indicating more severe depressive symptoms.

The BDI-II has excellent internal consistency reliability, $\alpha = .91$ (Beck, Steer, Ball, & Ranieri, 1996). Although over a short interval, one week test-retest reliability for the BDI-II was high, $r = .93$ (Beck, Steer, Ball, & Ranieri, 1996). A strong correlation has been found between the BDI-II and the Hamilton Psychiatric Rating Scale for Depression, $r = .71$, supporting criterion validity (Beck, Steer, Ball, & Ranieri, 1996). The psychometric properties of the BDI-II were found to be good in a sample of 120 adults with ID (Powell, 2003) and a case report (Hare, 1997) noted that the BDI-II was useful for assessing depression in an adult with AS. Additionally Cederlund, Hagberg, and Gillberg (2010) used the BDI-II in a sample of adolescents and adults with AS and found that the scale was useful for detecting depression in this population. The current study employed a modified 20-item version of the BDI-II that can yield a possible score of 0 to 60 points.

**Self-Report Depression Questionnaire (SRDQ; Reynolds & Baker, 1988).** A secondary measure of symptoms of depression, the SRDQ, was used in addition to the BDI-II. The SRDQ was chosen to allow for comparison with previous studies using the GSSES (Payne & Jahoda, 2004). The SRDQ is a 32-item self-report measure that assesses the cognitive, behavioral, and physical symptoms of depression in adults and adolescents with mild to moderate ID. Research has found that the SRDQ assesses standard DSM-IV criteria for depression and its associated features and can reliably be used as a screening tool (Esbensen, Seltzer, Greenberg, & Benson, 2005). Of the 32 items on the SRDQ, only two are reverse scored with the rest of the items scored as 1 point for “almost never”, 2 points for “sometimes” and 3 points for “most of the time” yielding a range of scores from 32 to 98.
The SRDQ has been found to have excellent internal consistency, \( \alpha = 0.89 \) (Esbensen et al., 2005; Reynolds & Baker, 1988) and good test-retest reliability, \( r = .90 \) (Esbensen et al., 2005; Reynolds & Baker, 1988). Criterion validity of the SRDQ was assessed by Reynolds and Baker (1988) using comparison with the Hamilton Depression Rating Scale, \( r = .65 \). Additional research assessed criterion validity of the SRDQ with independent psychiatric diagnosis of depression (Esbensen et al., 2005). Esbensen and colleagues established predictive validity in 2005 with the finding that depressive symptoms on the SRDQ were predictive of subsequent receipt of psychological services and internalizing symptoms as measured by the Scales of Independent Behavior. In the current study, a modified 30-item version of the SRDQ was used which allowed for a possible range of scores from 30 to 90 points with a higher score indicating more symptoms of depression. See Appendix C.

**Adaptive Behavior Assessment System, Second Edition (ABAS-II; Harrison & Oakland, 2008).** Scores on the ABAS-II and the highest academic achievement were used to measure self-reported social skills. The ABAS-II adult form for ages 16 to 89 years is available as a self-report or respondent completed measure (Harrison & Oakland, 2008). The adult form of the ABAS-II contains 239 items assessing skills across 10 areas such as “home living”, “work”, and “communication” which are grouped into three domains “conceptual”, “social”, and “practical”.

Internal consistency reliability and test-retest reliability of the ABAS-II are excellent, the social skill area has been found to have \( \alpha > .92 \) and \( r > .93 \) respectively (Harrison & Oakland, 2008). The ABAS-II has been tested with adults with neuropsychological disorders, such as ASD, and was found to perform well.

**Academic Achievement.** As proxy measure of intellectual functioning, highest academic achievement was collected. Participants were asked to report degrees attempted and highest degree earned on the demographics form.
**Procedure**

**Recruitment.** Following approval from the Institutional Review Board, the experimenter contacted local organizations that serve adults with ASDs to request permission to distribute an announcement of the study or to allow the researcher to make a short oral announcement at meetings. Study announcements were in the form of short oral presentations (Appendix H), flyers (Appendix G), and electronic announcements (Appendix I). The following organizations were contacted to obtain potential participants during recruitment: Aspirations Ohio, the Autistic Self-Advocacy Network, the Autism Society of Ohio, the Autism Society of Central Ohio, the Nisonger Center, Families with ASD, and the Ohio Center for Autism and Low Incidence (Appendix N). The Office of Disability Services at Ohio State University was contacted and asked to distribute information to students registered with their office who were eligible for participation and to post a flyer in the main office (Appendix G). In addition, informational flyers (Appendix G) were posted in the community and distributed to local medical professionals and clinicians who work with adults with ASDs (Appendix M).

Potential participants recruited in vivo supplied the experimenter with their mailing address and email address, collected for purposes of reminders only, and in turn were given an assessment packet. Potential participants recruited through flyers and electronic announcements emailed the experimenter with a mailing address and email address; once the experimenter had obtained contact information the potential participant was mailed an assessment packet. During the data collection phase of the study, individuals who received assessment packets were contacted via email at approximately three, five, and seven weeks after receiving the packet if it had not been returned to the experimenter. A final notice was sent to all participants who had not returned packets via email and postal mail approximately two weeks before recruitment was closed. The frequency of reminders was determined through
consultation with an expert in adults with ASD with experience facilitating meetings for groups of adults with ASD. Adults with ASDs are a difficult population to contact due to social isolation. This population is also unlikely to initiate social contact; because of this, the researchers made greater efforts to maintain contact with potential participants than would be done for the general population of adults.

Some participants chose to complete the study measures in person following study announcements. For these participants, the measures were collected immediately upon completion and no participant contact information was obtained. These participants were directly given the incentive and were not mailed or emailed reminders.

The assessment pack given to each participant included a cover letter (Appendix K) explaining the purpose of the study as well as a demographics form (Appendix B) and all assessment materials (See Measures; Appendices C-F) along with a pre-paid return envelope and an Incentive Form (Appendix J). All study materials in the assessment packet other than the Incentive Form were labeled with a unique subject number for data collection purposes.

**Consent.** Potential participants implied consent to participate in the study by returning a completed assessment packet. All study measures were coded prior to distribution of study packets, so the researchers remained blind to the identity of participants. Potential participants who received study materials were instructed to discard the materials if they did not consent to participation.

**Incentive.** An incentive form (Appendix J) was included with all assessment packets. The incentive forms were not coded with subject numbers, so they could be separated from the study measures upon return to the experimenter. Participants who chose to complete the study measures in person following a short oral announcement at a local organization meeting did not complete an incentive form. When the researcher received an incentive form, participants were
mailed a $20 gift card to thank them for participation in the study. Additionally, participants who returned completed assessment packets were entered into a drawing to win a $100 gift card for amazon.com. The drawing was held in December of 2011.

**Statistical Analyses**

Any scale missing more than 10% of the data was excluded from analyses. When 10% or less data were missing from a scale, the mean value for each item was substituted when calculating the total score. This procedure was used on 6.3% of total scores ($n = 20$). Participants who left an entire questionnaire or a full page of a measure blank were given the opportunity to complete the form. Additionally, 5.7% of total scores ($n = 18$) were dropped from analysis because more than 10% of the data were missing.

Correlation analyses, independent samples t-tests, and analysis of variance (ANOVA) was used to examine the data. Demographic information such as gender, ethnicity, living situation, and highest degree earned was investigated for any possible effects on measures of autism traits, depression symptoms and social self-efficacy through ANOVA. All analyses were conducted using SPSS version 19.

Independent samples t-tests were used to examine possible group differences in test scores based on gender, AQ scores above and below the proposed screening cutoff, diagnosis of depression, and employment status. No significant differences in test scores due to gender were found, so gender was collapsed for further analyses. Additionally, there were no differences on test scores for the individuals who were and were not employed, so these groups were collapsed as well.

Analyses were conducted investigating participants with AQ scores above and below the screening cutoff proposed by Baron-Cohen et al. (2005) to determine if group differences were observed.
Pearson correlations were computed for the total scores of all measures to examine the relationship between instruments. An alpha level of 0.05 was used throughout to determine statistical significance.

Internal reliability of the scales used was calculated and compared to the psychometric properties reported in previous research. The PSSE, GSSES, BIDR, and SRDQ have not been investigated in a sample of individuals with ASDs previously, so the reliability of these scales was of particular interest.

Cronbach’s alpha was computed for each measure to determine the internal consistency reliability in the current sample. Based on conventional guidelines, Cronbach’s α ranged from good to excellent for the measures of depression symptoms (BDI-II and SRDQ, α = .89 and α = .88 respectively), social self-efficacy (PSSE and GSSES, α = .94 and α = .86 respectively), and social skills (ABAS, α = .90). However, internal consistency was questionable as computed for the measure of ASD symptoms (AQ; α = 0.64) and positive impression management (BIDR; α = 0.69). Typically, an α value of below 0.7 is considered to be undesirable for research purposes (Nunnally, 1978).

Initially, only data from the 27 individuals with an AQ score above the Baron-Cohen et al. (2005) screening cutoff score of 26 were included in the analyses. There were no differences in any demographic variables comparing individuals above and below the proposed screening cutoff point. When the AQ data were dichotomized using the screening cutoff score, it was found that individuals with scores below 26 rated themselves as having fewer symptoms of depression as compared to those scoring 26 or above on the SRDQ \( t(51) = 2.86, p = .006 \). Additionally, individuals with AQ scores below the proposed cut-off rated themselves as having less social self-efficacy on both the PSSE \( t(51) = -5.52, p < .001 \), and the 13-item GSSES \( t(51) = -3.28, p = .002 \). See Table 3. However, using only the portion of the sample with scores of 26 or
above limited the statistical power of the tests to detect other relationships. Further, recent studies including only participants with a clinical diagnosis of an ASD have tended to find mean AQ scores similar to those found in the current sample. Ketelaars and colleagues (2008) reported a mean score of 22.5 and Bishop (in press) reported a mean score of 24.6, both of which are far below the mean score of 35.8 found in the initial validation study (Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley, 2001). To increase statistical power, data from all 53 individuals were used for analyses.

The GSSES had originally been investigated in a sample of adults with ID who participated with day-treatment programs in Scotland. Due to the nature of the sample, all individuals were able to answer items dealing with social self-efficacy in the workplace. In the current sample, only about half of participants were employed (58.5%, n = 31). Because of the low rates of employment in our sample, scores for a 13-item version of the GSSES that omitted workplace items were calculated. The 13-item GSSES correlates significantly with the total scale (r = .94, p < .001). Investigations of the relation between the full GSSES and the 13-item GSSES on the total scores of other measures revealed that using only the 13-items which were unrelated to employment did not alter the relation between the GSSES and other measures.

A rather large portion of scores from the ABAS-II: Social subscale was dropped from the final analysis (30.2%, n = 16) due to excessive guessing about the frequency of behaviors. Each item on the ABAS-II requires the informant to consider whether or not the person being assessed performs a behavior and with what frequency the behavior is typically performed. The ABAS-II manual states that any subscales with more than four guesses at behavioral frequency are to be considered invalid. Due to the high percentage of guessing, the frequency of guessing was calculated for each item. It was noted that the item “place reasonable demands on friends, for example, not becoming upset when a friend goes out with another friend” was guessed most
frequently. This item required participants to take the perspective of others to understand what a reasonable demand is, a skill that is frequently impaired in adults with ASDs.
Chapter 3: Results

The primary aim of this study was to investigate the relation between social self-efficacy and depression symptoms in adults with ASD. The BDI-II and SRDQ were used to measure depression symptoms and the PSSE and GSSES were used to measure social self-efficacy. It was predicted that there would be a negative correlation between social self-efficacy and depression symptoms. This hypothesis received partial support. Total scores on the SRDQ correlated significantly with total scores on the PSSE ($r = -.30, p < .05$). However, the SRDQ total scores did not correlate significantly with GSSES total scores ($r = -.22, p = .12$). The BDI-II did not correlate significantly with the PSSE ($r = -.17, p = .22$) or with the GSSES ($r = -.12, p = .38$). See Table 4.

A secondary aim of the study was to investigate the relation between self-rated ASD and depression symptoms. Given the overlap of symptoms between ASD and depression, it was predicted that a positive correlation would exist between total scores on measures of ASD and depression symptoms. This hypothesis was partially supported by the data. Total scores on the AQ correlated significantly with total scores on the SRDQ ($r = .45, p = .001$). However, total scores on the AQ were not significantly correlated with the BDI-II ($r = .13, p = .35$).

It was further predicted that individuals with greater intellectual ability as measured by proxy would have lower social self-efficacy. This hypothesis was not supported by the data. Comparisons of mean scores on the PSSE found no differences between individuals who did ($M = 65.42, SD = 16.60$) and did not ($M = 72.22, SD = 19.95$) seek further education after graduating from high school, $t(50) = -1.19, p = .24$. Similar results were obtained when comparing individuals who did ($M = 14.63, SD = 5.99$) and did not ($M = 13.75, SD = 4.18$) seek further
education after graduating from high school on mean scores of the GSSES, \( t(50) = .47, p = .64 \).

Additional analyses conducted to compare the mean scores of individuals who earned only a high school diploma \((M = 67.47, SD = 17.00)\) and those who earned post-secondary degrees \((M = 65.61, SD = 18.25)\) on the PSSE found no significant differences between groups, \( t(48) = -.37, p = .71 \). Likewise no significant differences in mean scores on the GSSES were found when individuals who earned only a high school diploma \((M = 13.39, SD = 5.51)\) and those who earned post-secondary degrees \((M = 15.07, SD = 5.66)\) were compared, \( t(48) = -1.06, p = .29 \).

Logically, an individual’s beliefs about his social skills (social self-efficacy) and self-rated social skills should be related. It was predicted that a positive correlation would exist between measures of social self-efficacy and social skills. Scaled scores on the ABAS-II: Social Subscale correlated significantly with total scores on the PSSE \((r = .45, p = .005)\). Similarly, scaled scores on the ABAS-II: Social Subscale correlated significantly with total scores on the GSSES \((r = .46, p = .005)\). The measures of social self-efficacy were significantly correlated (PSSE and GSSES; \( r = 0.58, p < 0.001 \)).

Finally, it was predicted that a negative correlation would exist between ratings of positive impression management and ASD symptoms. AQ total scores did not correlate with scores on the BIDR in the current sample \((r = .04, p = .79)\). However, a significant negative correlation was found between the BIDR and the BDI-II \((r = -.42, p = .002)\). Comparatively, scores on the BIDR were found to be less related to scores on the second measure of depression symptoms, the SRDQ \((r = -.23, p = .10)\).

Very little is known about the validity of depression symptom rating scales in adults with ASDs. Further analyses were conducted comparing the mean scores of individuals with no psychiatric diagnosis, individuals with a psychiatric diagnosis excluding mood disorder, and those reporting a diagnosis of a mood disorder (depression or bipolar disorder). A main effect of
psychiatric diagnosis was found on mean scores of the BDI-II \([F(2,49) = 3.22, \ p = .049]\). Post-hoc comparisons using the Fisher LSD test revealed that the mean BDI score for individuals who reported a mood disorder diagnosis \((M = 19.00, SD = 9.21)\) was significantly higher than the scores of individuals who had no psychiatric diagnosis \((M = 10.45, SD = 10.09)\) and those who had a psychiatric diagnosis excluding mood disorder \((M = 10.32, SD = 7.11)\). The mean BDI scores of individuals with no psychiatric diagnosis and those with a psychiatric diagnosis other than mood disorder did not differ significantly. No main effect of psychiatric diagnoses was found on mean SRDQ scores \([F(2,49) = 1.08, \ p = .35]\).
Chapter 4: Discussion

Although depression is increasingly well understood in the general population, research on depression in adults with ASDs is still in its infancy (Ghaziuddin, 2005). Some authors believe that depressive disorders are the most common category of psychiatric disorder in adults with ASDs, however the empirical evidence for this has yet to be collected. It is important that the research literature address the lack of knowledge about correlates of symptoms of depression in this population.

The relation of social self-efficacy and depression symptoms in adults with ASDs was investigated in the current study. This study also examined the relation between symptoms of ASDs and symptoms of depression in adults with ASDs. Additionally, this study aimed to better understand the relation between an individual's ratings of his social skills compared to the individual's ratings of social self-efficacy. Finally, the relation between positive impression management and self-rated symptoms of ASD were investigated.

Research in the general population has consistently found a negative correlation between social self-efficacy and depression symptoms (Bandura, 1997; Gable & Shean, 2000; Kanfer & Zeiss, 1983; Lewinsohn, Mischel, Chaplin, & Barton, 1980; Rosbrook & Whittingham, 2010; Segrin, 1990; Smith & Betz, 2002; Wei, Russell, & Zakalik, 2005; Whitton, Larson, & Hauser, 2008). This relation was not observed in the current data. Because two measures of depression symptoms and two measures of social self-efficacy were employed in the current study, four relations were examined in total. Only one of the four correlations, the SRDQ and
the PSSE, showed a significant, however small, relation \((r = -0.30)\). This finding was inconsistent with the robust relation found in the general population. It should be noted however, that studies conducted in the general population have a larger pool of potential subjects and often recruit greater numbers of participants, which could allow small correlations to reach statistical significance. For example, Smith and Betz (2002) found a correlation of \(r = -0.22\) between the BDI and PSSE which reached statistical significance in their sample. In the current study, a correlation of \(r = -0.17\) was found between the same two measures. While the magnitude of the correlations is similar, Smith and Betz’s (2002) sample size produced statistical significance. However, the clinical significance of a correlation of such magnitude may be minimal.

Additionally, the current findings are inconsistent with the research on self-perceived social competence and depression symptoms in youth with ASDs (Capps, Sigman, & Yirmiya, 1995; Vickerstaff et al., 2007). Both of the studies conducted with youth with ASDs investigated self-perceived social competence, not social self-efficacy directly. Although these two concepts are highly similar, there may be important differences. Further, even if measures of self-perceived social competence and social self-efficacy are tapping into the same underlying construct, the relation may differ between children and adults with ASDs.

Previous research by Payne and Jahoda (2004) in another disability population, adults with ID, found the opposite relation to the general public; individuals who scored high on the GSSES also rated themselves as having more depression symptoms. Although Payne and Jahoda (2004) used a very small sample of adults with ID, the positive correlation found between social self-efficacy and depression is inconsistent with the negative correlation or lack of significant findings in the current study. If the observed relationships do in fact represent the relationships in the larger populations of adults with ID and ASD respectively, then this may imply that social self-efficacy plays a different role for each of these groups.
An alternative explanation of the current findings on social self-efficacy and depression symptoms in adults with ASD is that in a population with such severe social impairments, an individual’s beliefs about his social skills may not be related to depression. Perhaps other factors are more associated with depression symptoms in this population, or the association between social self-efficacy and depression symptoms attenuates by adulthood. On the other hand, the moderately strong correlation between the AQ and the SRDQ ($r = .45$, $p = .001$) suggests that perhaps the SRDQ is sensitive to ASD symptoms as well as depression symptoms. The significant relationship found between the SRDQ and the PSSE ($r = -.30$, $p = .027$) may then reflect the relation between both depression and ASD symptoms with social self-efficacy.

Substantial overlap exists between features of ASDs and of depression, most notably social withdrawal, flat affect, and abnormal speech patterns (Lainhart, 1999; Stewart et al., 2006). Previous research in the general population found that individuals who rated themselves as having more depression symptoms endorse more autism symptoms (Rosbrook & Whittingham, 2010). It was predicted that a positive correlation would exist between measures of depression symptoms (BDI-II and SRDQ) and a measure of ASD symptoms (AQ). Consistent with previous research, a significant correlation was found between the SRDQ and the AQ ($r = .45$, $p = .001$). However the same relation was not observed for the BDI-II and the AQ ($r = .13$, $p = .35$). It is important to note that the study by Rosbrook and Whittingham (2010) where a positive correlation was found between depression symptoms and ASD symptoms was conducted with a non-clinical sample. Perhaps this relation holds only in the general population and not with adults with ASDs.

The differences in relations that were observed in the present study compared to previous reports may be due to differences in the measures of depression utilized in the present study. The SRDQ was designed for use with adults with ID and thus contains items with fewer
words and elementary vocabulary. Nearly half of the items on the SRDQ center on somatic complaints, which may be readily observed by a person with ID, however these complaints also tend to be transient in nature such as “I feel hungry”. This measure had not previously been investigated for use with adults with ASDs, however it had been identified as suitable for the current study because ID and ASD frequently co-occur. In the current sample, there were no participants who identified as having an ID. Additionally, the response format for the SRDQ allows participants to choose between “almost never”, “sometimes”, and “most of the time” which may be problematic when used in this population. Adults with ASDs often exhibit black and white thinking patterns and may be likely to choose the central response of “sometimes” when not given a specific time-frame to consider.

Given that none of the participants had a diagnosis of an ID, the BDI-II was an appropriate measure of depression symptoms for the current sample. The modified BDI-II used for this study contained a higher proportion of items related to cognition when compared to the SRDQ which has more items relating to somatic complaints. The varied conceptualizations of the construct of depression between the two scales may contribute to the difference in relations found between the SRDQ and the BDI-II with the AQ. Additionally, the forced-choice format of the BDI-II prevents a neutral response from participants thus increasing variance compared to the SRDQ.

Previous research on youth with ASDs found that individuals with higher IQ scores rated themselves as having less social self-efficacy (Vickerstaff et al., 2007). Intelligence was not directly assessed in the current study. Both highest level of education attempted and highest degree earned were used as proxy measures of intelligence. In the current study, it was hypothesized that individuals who had attempted higher education or who earned a postsecondary degree would score significantly lower on measures of social self-efficacy when
compared to those who had not attempted postsecondary education or who had not earned a postsecondary degree. This was not supported by the data. No differences in mean social self-efficacy ratings were found between those who did and did not continue their education after high school. Similarly, no significant differences in mean social self-efficacy ratings were found between those who held only a high school diploma and those who earned a post-secondary degree. These results are not directly comparable to those of Vickerstaff et al. (2007) because intelligence was not directly assessed in the current study. There may be many reasons why an individual with ASD chooses not to pursue higher education or fails to earn a postsecondary degree that are unrelated to intelligence. For example, an individual with ASD may be unable to navigate the social demands of undergraduate life or unable to tolerate the overwhelming sensory stimuli in a crowded classroom.

As expected, in the current study, both measures of social self-efficacy correlated positively with the measure of social skills. The observed magnitude of the relation between social self-efficacy measures ($r = .58$) was greater than the relation between the PSSE and ABAS-II: Social Subscale ($r = .45$) and the GSSES and the ABAS-II: Social Subscale ($r = .46$). It would be expected that the PSSE and GSSES, both designed to measure social self-efficacy would be highly correlated although not perfectly so because the scales were designed for use with different populations. The GSSES was designed for use with adults with ID while the PSSE was designed for use with typically developing young adults. One’s self-efficacy in the social realm is formed through repeated mastery and failure experiences, so self-rated social skills should overlap with the measurement of social self-efficacy as was found in the current study.

Self-ratings of ASD symptoms were found to be statistically unrelated to scores on a measure of positive impression management in the present sample ($r = -.04$, $p = .79$). Based on the discrepancy between self- and parent-ratings of ASD symptoms on the AQ found by Baron-
Cohen and colleagues (2001), it was predicted that a negative correlation would exist between the AQ and the BIDR. Although individuals with ASDs are purported to have impaired Theory of Mind, it is likely that these individuals have learned that many autistic traits are perceived as socially undesirable. From this argument, one may assume that individuals with ASDs may minimize socially undesirable traits when completing questionnaires. The results of this study imply that impression management does not explain the decreased frequency of ASD symptom endorsement when self-rated ASD symptoms are compared to parent-rated ASD symptoms. It is likely that individuals with ASDs may be unaware of some of their deficits and that this lack of awareness drives the reduced symptom endorsement. Future research should investigate the ability of individuals with ASDs to identify core deficits related to the ASDs. This research would have implications for diagnosis of ASD in adults using self-report data.

While the AQ was not statistically related to the BIDR in the current sample, it was found that the BIDR was negatively correlated with the BDI-II \( (r = -.42, p = .002) \). A similar, however non-significant, trend was observed between the SRDQ and BIDR \( (r = -.23, p = .098) \). This is consistent with previous research by Salter and Platt (1990) who found that individuals who endorse more depression symptoms scored lower on a measure of social desirability. These authors argued that when experiencing depression, an individual is likely to hold a negative self-image and will not make the effort to create a positive impression on others. Indeed, in the current sample, individuals who reported a diagnosis of depression differed significantly from individuals who did not report the diagnosis on the BIDR \( [t(28) = -3.15, p < .005] \).

Although both the BDI-II and the SRDQ are measures of depression, the BDI-II may be more appropriate for use as a clinical screening tool for depression in adults with ASDs and average intelligence. A significant main effect for psychiatric diagnosis was found on the BDI-II but not on the SRDQ when comparing scores from individuals with no comorbid psychiatric
diagnosis, a comorbid mood disorder, and other psychiatric comorbidities excluding mood disorders. Individuals who reported diagnoses of mood disorders on the demographics form scored more than 9 points higher, on average, than individuals with other psychiatric comorbidities and individuals with no psychiatric comorbidity on the BDI-II. On the SRDQ, individuals who reported a diagnosis of a mood disorder scored 6 points higher, on average, than individuals with other psychiatric comorbidities and individuals with no psychiatric comorbidity. Additionally, scores on the SRDQ were significantly correlated with scores on the AQ ($r = .45$, $p = .001$) that may suggest that the SRDQ is sensitive to ASD symptoms as well as depression symptoms in this population.

It is necessary to mention several limitations of the AQ as a self-report measure of autism symptoms. Designed to be used as a screening measure; the AQ does not provide sufficient evidence to confirm a diagnosis of an ASD (Baron-Cohen et al., 2001). Currently, there are no self-report instruments available to fill this role (Bishop, in press). A recent study found that scores on the AQ did not correlate significantly with scores on the Autism Diagnostic Inventory – Revised (ADI-R), which is considered to be the gold-standard diagnostic interview for research on adults with ASDs (Bishop, in press). Additionally, Bishop (in press) found the AQ to have poor sensitivity; only 37% of individuals were correctly classified. Many of the items on the AQ assess an individual’s preferences for certain social activities rather than assessing symptoms directly. Bishop (in press) notes that the AQ may perform poorly when used with individuals with ASDs who have higher levels of social interest and motivation. Although social interest and motivation were not assessed directly in the current study, participants were recruited from local organizations that serve adults with ASDs. Individuals who join such organizations may have more social interest and motivation than those who do not and thus the AQ may not be an accurate measure of ASD symptom severity in the current sample.
There are other limitations to note regarding the participants. Potential participants needed to contact the researcher to indicate their interest in the study. It is possible that the individuals who chose to contact the researcher are not representative of the larger population of adults with ASDs. Additionally, the current study did not include any adults with ASDs and comorbid ID, which limits generalizations that could be drawn to the larger population. Fifteen percent of the participants in the current study reported a diagnosis of a mood disorder. While more individuals may have had sub-clinical depression symptoms or undiagnosed depression, the small percentage of individuals with mood disorder limited the statistical power to detect relationships.

Participants were required to self-report the psychiatric diagnoses that had been given to them by medical professionals on the demographics form. These diagnoses were not confirmed independently. Given the above difficulties in formulating diagnoses in adults with ASDs, it is possible that some of the diagnoses reported were inaccurate. Further, it is possible that some participants would have met criteria for a major depressive episode at the time of participation and had not been given a formal diagnosis. As mentioned above, many individuals with ASDs experience difficulty reporting on their emotions, which could lead to under-diagnosis of mood disorders in this population.

Two other limitations related to the use of self-report must be noted. A subscale of the ABAS-II is considered to be invalid if the respondent guessed on more than three items (Harrison & Oakland, 2008). Almost one-third of participants reported that they had guessed on more than three items. Although statistical analyses did not find any difference between individuals who did not and not guess excessively, the high rate of guessing suggests that this measure may not be appropriate for self-report in adults with ASD. If the ABAS-II is to be used as self-report in future studies, researchers may want to eliminate the option to indicate guessing as the
respondent is reporting on his own behavior and guessing is not directly applicable. Similarly, the GSSES required participants to consider their relationship with a supervisor at work. Because over 40% of participants were unemployed, a short form of the GSSES was utilized. This limits the ability to compare the current results with studies using the full scale.

Finally, it must be noted that the correlational design of the study limits the ability to draw conclusions about causality. Future research employing prospective, longitudinal designs may be able to examine causal relationships.

Due to the preliminary nature of this investigation and to the limitations noted, further research is needed to clarify the relation between social self-efficacy and depression symptoms in adults with ASDs. Utilizing a random sample of adults with ASDs would allow for greater generalization to the population. Future research should employ direct diagnostic assessments of ASDs as well as other psychiatric diagnoses. When possible, observer report should be obtained to provide additional evidence for ASD diagnoses. The current study found that positive impression management was not related to scores on the AQ, implying that adults with ASDs may be unaware of some of their deficits and may underreport symptoms.

Previous research found a negative correlation between IQ score and social self-efficacy ratings (Vickerstaff et al., 2007). The current study did not include an assessment of IQ, but rather attempted to obtain a proxy for IQ. The proxy assessment of IQ via educational achievement proved problematic as discussed above; future research should include formal IQ assessment.

Finally, research in the general population found that the relation between social self-efficacy and depression symptoms was mediated by social support (Holahan & Holahan, 1987a). Future research with adults with ASD should measure participant’s social support in addition to depression symptoms and social self-efficacy to clarify relations between these constructs.
The results of the present study suggest several clinical implications. While measured social self-efficacy was lower for the adults with ASD in the current study than is found in the general population, the robust negative correlation to depression symptoms often found in the general population was not observed. When treating depression in adults with ASDs, clinicians may want to focus their efforts on standard modes of treatment rather than targeting social self-efficacy. It is accepted that individuals with ASDs experience social impairment across the lifespan (Billstedt et al., 2007; Howlin et al., 2004; Marriage et al., 2009). Thus, social skills training may help to improve social functioning and quality of life. However, it is unknown how such training may impact social self-efficacy and depression symptoms. Clinicians should exercise caution when interpreting the scores of adults with ASDs on depression symptom rating scales as there may be symptom measurement overlap between these disorders, especially on the SRDQ. When assessing social self-efficacy in individuals with ASDs, clinicians should be aware that educational achievements alone do not imply a high degree of social self-efficacy. Finally, when assessing adult clients for possible ASDs, clinicians should be aware that adults with ASDs may be unaware of some characteristic deficits. When possible, informant report of ASD symptoms should be obtained in addition to self-report.
References


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Kessler, R. C., Berglund, P., Demler, O., Jin, R., Koretz, D., Merikangas, K., ... Wang, P. S. (2003). The epidemiology of Major Depressive Disorder results from the National Comorbidity


APPENDIX
Appendix A: TABLES

Table 1: Demographic Characteristics of Sample

N = 53

<table>
<thead>
<tr>
<th>Category</th>
<th>Count (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age in Years (SD)</td>
<td>25.3 (6.7)</td>
</tr>
<tr>
<td>Male (%)</td>
<td>38 (71.7)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
</tr>
<tr>
<td>Caucasian (%)</td>
<td>43 (81.1)</td>
</tr>
<tr>
<td>African-American (%)</td>
<td>6 (11.3)</td>
</tr>
<tr>
<td>Asian (%)</td>
<td>1 (1.9)</td>
</tr>
<tr>
<td>Asian-American (%)</td>
<td>1 (1.9)</td>
</tr>
<tr>
<td>Chose not to identify (%)</td>
<td>2 (3.8)</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
</tr>
<tr>
<td>Single (%)</td>
<td>46 (86.8)</td>
</tr>
<tr>
<td>In a relationship (%)</td>
<td>6 (11.3)</td>
</tr>
<tr>
<td>Married (%)</td>
<td>1 (1.9)</td>
</tr>
<tr>
<td>Living Situation</td>
<td></td>
</tr>
<tr>
<td>With family (%)</td>
<td>38 (73.6)</td>
</tr>
<tr>
<td>Alone (%)</td>
<td>9 (17)</td>
</tr>
<tr>
<td>With roommate (%)</td>
<td>2 (3.8)</td>
</tr>
<tr>
<td>With romantic partner (%)</td>
<td>1 (1.9)</td>
</tr>
<tr>
<td>Group home (%)</td>
<td>1 (1.9)</td>
</tr>
<tr>
<td>Highest Education Attempted</td>
<td></td>
</tr>
<tr>
<td>High School (%)</td>
<td>12 (22.6)</td>
</tr>
<tr>
<td>College (%)</td>
<td>25 (47.2)</td>
</tr>
<tr>
<td>Graduate/Professional School (%)</td>
<td>6 (11.3)</td>
</tr>
<tr>
<td>Other (%)</td>
<td>9 (17)</td>
</tr>
<tr>
<td>Highest Degree Earned</td>
<td></td>
</tr>
<tr>
<td>High School Diploma (%)</td>
<td>27 (50.9)</td>
</tr>
<tr>
<td>Associate’s Degree (%)</td>
<td>7 (13.2)</td>
</tr>
<tr>
<td>Bachelor’s Degree (%)</td>
<td>6 (11.3)</td>
</tr>
<tr>
<td>Master’s Degree (%)</td>
<td>3 (5.7)</td>
</tr>
<tr>
<td>Doctoral Degree (%)</td>
<td>1 (1.9)</td>
</tr>
<tr>
<td>Other Degree (%)</td>
<td>6 (11.3)</td>
</tr>
<tr>
<td>Did not report degree (%)</td>
<td>3 (5.7)</td>
</tr>
</tbody>
</table>

Continued
Table 1 continued

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Employment</td>
<td></td>
</tr>
<tr>
<td>Full-time (%)</td>
<td>12 (22.6)</td>
</tr>
<tr>
<td>Part-time (%)</td>
<td>19 (35.8)</td>
</tr>
<tr>
<td>Unemployed (%)</td>
<td>22 (41.5)</td>
</tr>
<tr>
<td>Supportive Services (%)</td>
<td>28 (52.8)</td>
</tr>
<tr>
<td>Club or Organization Member (%)</td>
<td>27 (50.9)</td>
</tr>
</tbody>
</table>
Table 2: Psychiatric Characteristics of Sample

N = 53

<table>
<thead>
<tr>
<th>ASD Diagnosis</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Asperger’s Disorder (%)</td>
<td>30 (56.6)</td>
</tr>
<tr>
<td>Autism (%)</td>
<td>8 (15.1)</td>
</tr>
<tr>
<td>PDD-NOS (%)</td>
<td>4 (7.5)</td>
</tr>
<tr>
<td>Asperger’s Disorder &amp; Autism (%)</td>
<td>10 (18.9)</td>
</tr>
<tr>
<td>Autism &amp; PDD-NOS (%)</td>
<td>1 (1.9)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional Psychiatric Diagnoses</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Any Psychiatric Diagnosis (%)</td>
<td>27 (50.9)</td>
</tr>
<tr>
<td>Depressive Disorder (%)</td>
<td>6 (11.3)</td>
</tr>
<tr>
<td>Bipolar Disorder (%)</td>
<td>2 (3.8)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Psychotropic Medications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Any Psychotropic Medication (%)</td>
<td>29 (54.7)</td>
</tr>
<tr>
<td>Antidepressant Medication (%)</td>
<td>26 (49.1)</td>
</tr>
<tr>
<td>Medications for ADHD (%)</td>
<td>12 (22.6)</td>
</tr>
</tbody>
</table>

Note. PDD-NOS is an abbreviation for Pervasive Developmental Disorder – Not Otherwise Specified; ADHD is an abbreviation for Attention Deficit Hyperactivity Disorder.
Table 3. Mean scores and t-test results

<table>
<thead>
<tr>
<th></th>
<th>Total Sample</th>
<th>AQ &gt;= 26</th>
<th>AQ &lt; 26</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 53</td>
<td>n = 27</td>
<td>n = 26</td>
</tr>
<tr>
<td>BDI (SD)</td>
<td>11.9 (9.0)</td>
<td>12.8 (9.3)</td>
<td>10.5 (9.0)</td>
</tr>
<tr>
<td>SRDQ (SD)</td>
<td>53.9 (10.4)</td>
<td>57.6 (9.4)**</td>
<td>50.0 (10.1)**</td>
</tr>
<tr>
<td>PSSE (SD)</td>
<td>67.2 (17.3)</td>
<td>56.9 (9.0)**</td>
<td>77.9 (17.5)**</td>
</tr>
<tr>
<td>13-item GSSES (SD)</td>
<td>14.5 (5.6)</td>
<td>12.3 (4.2)**</td>
<td>16.9 (5.9)**</td>
</tr>
<tr>
<td>ABAS social SS (SD)</td>
<td>5.4 (2.9)</td>
<td>9.5 (3.9)</td>
<td>9.8 (3.3)</td>
</tr>
<tr>
<td>BIDR – IM (SD)</td>
<td>9.3 (4.0)</td>
<td>5.0 (2.5)</td>
<td>5.9 (3.3)</td>
</tr>
<tr>
<td>AQ (SD)</td>
<td>27.2 (8.9)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Significant at p < .01.
***Significant at p < .001.

Note. The following abbreviations are used in the above Table. Beck Depression Inventory (BDI), the Scale of Perceived Social Self-Efficacy (PSSE), Autism Spectrum Quotient (AQ), Self-Report Depression Questionnaire (SRDQ), Glasgow Social Self-Efficacy Scale (GSSES), Balanced Inventory of Desirable Responding – Impression Management Subscale (BIDR), Adaptive Behavior Assessment System – II: Social Subscale (ABAS).
Table 4. Pearson correlations between measures

<table>
<thead>
<tr>
<th></th>
<th>BDI</th>
<th>PSSE</th>
<th>AQ</th>
<th>SRDQ</th>
<th>GSSES</th>
<th>BIDR</th>
<th>ABAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI</td>
<td>1</td>
<td>-.17</td>
<td>.13</td>
<td>.60**</td>
<td>-.12</td>
<td>-.42**</td>
<td>-.10</td>
</tr>
<tr>
<td>PSSE</td>
<td>--</td>
<td>1</td>
<td>-.63***</td>
<td>-.30*</td>
<td>.58***</td>
<td>.05</td>
<td>.45**</td>
</tr>
<tr>
<td>AQ</td>
<td>--</td>
<td>--</td>
<td>1</td>
<td>.45**</td>
<td>-.52***</td>
<td>-.04</td>
<td>-.36*</td>
</tr>
<tr>
<td>SRDQ</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>1</td>
<td>-.22</td>
<td>-.23</td>
<td>.03</td>
</tr>
<tr>
<td>GSSES</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>1</td>
<td>.02</td>
<td>.46**</td>
</tr>
<tr>
<td>BIDR</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>1</td>
<td>.26</td>
</tr>
</tbody>
</table>

*Significant at $p < .05$.
**Significant at $p < .01$.
***Significant at $p < .001$.

Note. The following abbreviations are used in the above Table. Beck Depression Inventory (BDI), the Scale of Perceived Social Self-Efficacy (PSSE), Autism Spectrum Quotient (AQ), Self-Report Depression Questionnaire (SRDQ), Glasgow Social Self-Efficacy Scale (GSSES), Balanced Inventory of Desirable Responding – Impression Management Subscale (BIDR), Adaptive Behavior Assessment System – II: Social Subscale (ABAS).
Appendix B: Demographic Information

Directions: Please provide the following information using the blank spaces provided or check the answer that best fits you.

Subject Number: ______________

1. Age (in years): ____________________________

2. Gender: □ Male (1) □ Female (2)

3. Ethnicity: □ White (1) □ Black or African American (2) □ Latino (3) □ Asian (4) □ Other: _______________________________ (5) □ Prefer not to respond (6)

4. Marital Status: □ Single (1) □ In a relationship, but not married (2) □ Married (3) □ Divorced/Separated (4) □ Other: _______________________________ (5)

5. Current Living Situation: □ Alone (1) □ With roommate (2) □ With romantic partner (3) □ With family (4) □ Other: _______________________________ (5)

6. Have you ever been diagnosed with any of the following (check all that apply):
   □ Autism (1) □ Prader-Willi Syndrome (5)
   □ Asperger’s Disorder (2) □ Down Syndrome (6)
   □ PDD-NOS (3) □ Fragile X Syndrome (7)
   □ Intellectual Disability (4) □ Other (Please complete #7) (8)

7. Please list all other diagnoses that a doctor has told you that you have:
   __________________________________________________________________________
   __________________________________________________________________________
8. Please list any medications (for behavior, emotions, seizures) you are taking (ex: Paxil, Risperidal, Ritalin):

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

9. Do you receive any supportive services (such as counseling)? □ Yes (1) □ No (2)

If you answered yes, what type of supportive services?
________________________________________________________________________

10. Are you a member of any organizations or clubs? □ Yes (1) □ No (2)

If you answered yes, what organizations and/or clubs are you a member of?
________________________________________________________________________

11. How many years did you spend in school full-time?
________________________

12. How many years did you spend in school part-time?
________________________

13. What is your highest level of education attempted?
 □ Attended High School (1) □ Professional/Graduate School (3)
 □ Attended some College (2) □ Other ____________________________ (4)

14. Please circle the highest degree that you earned:
 □ High School Diploma (1) □ Associate’s Degree (2)
 □ Bachelor’s Degree (3) □ Master’s Degree (4)
 □ Doctoral Degree (5) □ Other: ____________________________ (6)

15. Do you have a job? □ Yes (1) (Please answer questions below) □ No (2) (Please skip the questions below)

16. If yes, do you work: □ Part-time (less than 40 hours/week) (1) □ Full-time (40 hours/week) (2)
17. If you are currently employed, what is your occupation?

________________________________________________________________________
Appendix C: Modified SRDQ

**Directions:** Please read each statement carefully and select the answer that best fits you.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I feel tired</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>2.</td>
<td>I feel happy</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>3.</td>
<td>I feel sick</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>4.</td>
<td>I feel like people don’t like me</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>5.</td>
<td>I feel hungry</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>6.</td>
<td>I feel like hiding from people</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>7.</td>
<td>I feel sad</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>8.</td>
<td>I feel like crying</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>9.</td>
<td>I feel like no one cares about me</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>10.</td>
<td>I feel like running away</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>11.</td>
<td>I blame myself when something bad happens</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>12.</td>
<td>I feel I am no good</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>13.</td>
<td>I feel like smiling</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>14.</td>
<td>I can’t fall asleep at night</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>15.</td>
<td>I feel I have no energy</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>16.</td>
<td>I feel worried</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>17.</td>
<td>I get stomach aches</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>18.</td>
<td>I feel sort of jumpy</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>19.</td>
<td>I feel burdened</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>20.</td>
<td>I wake up early in the morning and can’t go back to sleep</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>21.</td>
<td>I feel upset about things</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>22.</td>
<td>I feel like nothing I do helps anymore</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>23.</td>
<td>It’s hard for me to get up in the morning</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>24.</td>
<td>When something bad happens I think it is my fault</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>25.</td>
<td>I get mad real easy</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>26.</td>
<td>I don’t feel like doing anything</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>27.</td>
<td>It’s hard for me to think about what I am doing</td>
<td>Almost never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>Question</td>
<td>Almost never</td>
<td>Sometimes</td>
<td>Most of the time</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>--------------</td>
<td>-----------</td>
<td>------------------</td>
</tr>
<tr>
<td>28. I feel sorry for myself</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. I sleep too much</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. I eat too much</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subject Number:** __________
Appendix D: PSSE

**Directions:** Please read each statement carefully. Then decide how much confidence you have that you could perform each of these activities successfully. Please circle the answer that best fits you.

**How much confidence do you have that you could:**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Start a conversation with someone you don’t know very well.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>2. Express your opinion to a group of people discussing a subject that is of interest to you.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>3. Work on a school, work, community, or other project with people you don’t know very well.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>4. Help to make someone you’ve recently met feel comfortable with a group of your friends.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>5. Share with a group of people an interesting experience you once had.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>6. Put yourself in a new and different social situation.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>7. Volunteer to help organize an event.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>8. Ask a group of people who are planning to engage in a social activity (e.g., go to a movie) if you can join them.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>9. Get invited to a party that is being given by a prominent or popular individual.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>10. Volunteer to help lead a group or organization.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>11. Keep up your side of the conversation.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>12. Be involved in group activities.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>13. Find someone to spend a weekend afternoon with.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>14. Express your feelings to another person.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>15. Find someone to go out to lunch with.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>16. Ask someone out on a date.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>17. Go to a party or social function where you probably won’t know anyone.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>18. Ask someone for help when you need it.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>19. Make friends with a member of your peer group.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>20. Join a lunch or dinner table where people are already sitting and talking.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>21. Make friends in a group where everyone else knows each other.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>22. Ask someone out after he/she was busy the first time you asked.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>23. Get a date to a dance that your friends are going to.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>24. Call someone you’ve met and would like to know better.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>25. Ask a potential friend out for coffee.</td>
<td>No confidence at all</td>
<td>Little Confidence</td>
<td>Moderate Confidence</td>
<td>Much confidence</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>---------------------</td>
<td>-------------------</td>
<td>---------------------</td>
<td>----------------</td>
</tr>
</tbody>
</table>

Subject Number:_________
Appendix E: Modified GSSES

**Directions:** Please read each question carefully and circle the answer that best fits you. The statement in italics above each box refers to the questions below.

**Section One**
*Please think of your supervisor at work. If you are not currently employed, please leave this section blank.*

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>A lot</th>
<th>A little bit</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>When you feel happy can you say to your supervisor ‘I feel happy’?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>When you feel sad can you say to your supervisor ‘I feel sad’?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>If your supervisor says something wrong can you say ‘you are wrong’?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Can you talk to your supervisor when he or she is busy?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Please think of one person in your family who you get along well with.*

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>A lot</th>
<th>A little bit</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>When you feel happy can you say to your family member ‘I feel happy’?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>When you feel sad can you say to your family member ‘I feel sad’?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>If your family member says something wrong can you say ‘you are wrong’?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Can you talk to your family member when he or she is busy?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Please think of the person whom you would consider to be your best friend. This should not be the same person as you considered above.*

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>A lot</th>
<th>A little bit</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>When you feel happy can you say to your best friend ‘I feel happy’?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>When you feel sad can you say to your best friend ‘I feel sad’?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>If your best friend says something wrong can you say ‘you are wrong’?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Can you talk to your best friend when he or she is busy?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Section Two**
*Please think about meeting new people.*

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>A lot</th>
<th>A little bit</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>If a new person you don’t know started at your job could you talk to him or her?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Question</td>
<td>A lot</td>
<td>A little bit</td>
<td>Not at all</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------------------------------------</td>
<td>-------</td>
<td>--------------</td>
<td>------------</td>
</tr>
<tr>
<td>14.</td>
<td>If a new person you don't know moved in next door to you could you talk to him or her?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>If you met a new person you don't know at your best friend’s house could you talk to him or her?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>If you visited a community center in Columbus and met someone you did not know could you talk to him or her?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>If you are in a group of new people you don’t know could you talk in the group?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subject Number:_________
Appendix F: BIDR - IM Subscale

Directions: Using the scale below as a guide, write a number beside each statement to indicate how much you agree with it.

+ 1 + 2 + 3 + 4 + 5 + 6 + 7
Not true Somewhat Very true

1. I sometimes tell lies if I have to.
2. I never cover up my mistakes.
3. There have been occasions when I have taken advantage of someone.
4. I never swear.
5. I sometimes try to get even rather than forgive and forget.
6. I always obey laws, even if I’m unlikely to get caught.
7. I have said something bad about a friend behind his or her back.
8. When I hear people talking privately, I avoid listening.
9. I have received too much change from a salesperson without telling him or her.
10. I always declare everything at customs when traveling.
11. When I was young I sometimes stole things.
12. I have never dropped litter on the street.
13. I sometimes drive faster than the speed limit.
14. I never read sexy books or magazines.
15. I have done things that I don’t tell other people about.
16. I never take things that don’t belong to me.
17. I have taken sick-leave from work or school even though I wasn’t really sick.
18. I have never damaged a library book or store merchandise without reporting it.
19. I have some pretty awful habits.
20. I don’t gossip about other people’s business.

Subject Number:__________
Appendix G: Informational Flyer Text

Research Opportunity

What is the study about?

This study is trying to gather information about the moods and beliefs of adults with Autism Spectrum Disorders.

What does the study involve?

Adults with Autism Spectrum Disorders are asked, at their leisure, to complete several questionnaires about themselves, their moods and beliefs. We estimate that this should take no more than 2 hours.

Who can participate?

Adults age 18 and older who have a diagnosis of an Autism Spectrum Disorder are asked to complete all study materials. This includes people with Asperger’s Syndrome, Autism, and Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS). To be in the study, participants must be able to fill out questionnaires without help from other people. Adults with Fragile X Syndrome and those who have a legal guardian cannot participate in the study.

Participants in this study will receive a $20 Target gift card.

Additionally, participants will be entered into a drawing to win a $100 Amazon.com gift card.

Only one person out of approximately 50 will win the $100 Amazon.com gift card.

Where can I get more information?
Contact Brittany Butler, graduate student, (britt.butler@osumc.edu or 614.247.8028) or Betsey Benson, Ph.D., faculty advisor (betsey.benson@osumc.edu or 614.688.3214).

[Ohio State Nisonger Center Logo]
Appendix H: Oral Script

Hi. My name is Brittany Butler and I am a graduate student at Ohio State University studying Psychology. As a part of my Master's Thesis, I am conducting a study of the moods and beliefs of adults with Autism Spectrum Disorders. My advisor is Dr. Betsey Benson. The Institutional Review Board at Ohio State has approved this project. This project is separate from your involvement with [group name] and if you choose to participate or not to participate, it will not affect your involvement with [group name].

I am looking to find people to be participants in my study. To be in the study, you must be 18 years old or older and have a diagnosis of an Autism Spectrum Disorder which includes Autism, Asperger’s Syndrome, and Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS). To be in the study, you must also be able to fill out some questionnaires without help from other people. Unfortunately, people who have Fragile X Syndrome and people who have a legal guardian cannot be participants in this study. Participation in this study is voluntary, you may choose to participate or not participate.

If you choose to be in my study, you will need to fill out several questionnaires which we have estimated should take a maximum of two hours. I can give you the questionnaires today along with a postage-paid envelope so that you can mail them back to me when you are done. I will contact you three times with reminders to complete your questionnaires and mail them to me. Two reminders will be sent to your email and one will be mailed to you. All of your answers will be kept confidential and your name will not be used anywhere.

If you would like to complete the questionnaires in person today, then I can give you a packet now and when you are done, you can hand it back to me. If you choose to participate in
this way then I can give you your thank you gift card today and I will not ask for your name or contact you to remind you to complete the questionnaires.

To thank you for participating in the study, you will receive a $20 gift card to Target. Additionally, you will be entered into a drawing to win a $100 gift card for amazon.com. Everyone who completes the questionnaires will get the $20 Target gift card, but only one person in approximately 50 will get the $100 gift card for amazon.com.

If you are interested in participating in the study, please let me know today and I will give you a questionnaire packet. If you have any questions about the study or if you decide later to participate, you can contact me at britt.butler@osumc.edu or 614.247.8028. You can also contact my advisor, Dr. Betsey Benson, at Betsey.benson@osumc.edu or 614.688.3214.
Appendix I: Brief Description of Study

Research Subjects Needed!

Adults with Autism Spectrum Disorders (Autism, Asperger’s Disorder, and Pervasive Developmental Disorder Not Otherwise Specified [PDD-NOS]) ages 18 and older are needed to participate in a study on the moods and beliefs of adults on the spectrum. Participants must be able to complete several questionnaires and mail the questionnaires to the researchers without help from others. Unfortunately, people with Fragile X Syndrome or those with a legal guardian cannot be in this study. Participants will receive a $20 Target gift card and will also be entered into a raffle to win a $100 Amazon.com gift card. Contact Brittany Butler (britt.butler@osumc.edu or 614.247.8028) or Dr. Betsey Benson (Betsey.benson@osumc.edu or 614.688.3214) for more information or to participate in the study. Participation in this study is voluntary and will not impact prior involvement with any organization.
Appendix J: Incentive Form

Directions: Once you have completed the questionnaires, please fill out this form. Please place the questionnaires and this form into the postage-paid envelope, seal the envelope, and mail to: Brittany Butler, Ohio State University, Nisonger Center - Room 279, 1581 Dodd Drive, Columbus, OH 43210.

*Please note: Upon receipt, this form will be separated from the questionnaires you filled out and no one other than the researchers will know that you chose to participate in this study. Please do not write your name on any of the questionnaires; only write your name on this form so that your answers to the questions can be kept confidential.

Name: _____________________________________________________________

Mailing Address: ____________________________________________________

______________________________________________________________

______________________________________________________________
Appendix K: Cover letter

Date

Dear Potential Study Participant;

My name is Brittany Butler and I am a graduate student at the Ohio State University studying Psychology. For my Master’s Thesis I am conducting a study on adults with Autism Spectrum Disorders to find out more about their moods and their beliefs about themselves. My faculty advisor, Betsey Benson, PhD is supervising this study. It is our hope that the results of this study will help us to understand the lives and needs of adults with Autism Spectrum Disorders.

You have been given this packet because you indicated that you may be interested in participating in the study. Inside this packet you will find several questionnaires, an incentive form and a postage-paid return envelope. Participation in this study is voluntary. If you choose not to participate, or choose to discontinue participation at any point during the study, you will not be penalized or lose any benefits to which you may otherwise have been entitled.

To participate in this study, please fill out all questionnaires at your leisure. We estimate that filling out the questionnaires should take no more than two hours. The questionnaires ask about your moods, beliefs, and behaviors which could potentially be embarrassing to answer but we do not foresee any other potential discomforts of participation. Try to answer every question. Please do not write your name on the questionnaires, this will help to keep your answers private.

When you are finished completing all questionnaires, please complete the incentive form and return the questionnaires and incentive form to me in the postage-paid return envelope. Please complete the questionnaires and mail them back to me within two months. You should write your name only on the incentive form. Once I have received your completed packet, I will mail you a $20 gift card to Target. You will also be entered in a drawing to win a $100 gift card to Amazon.com. Every participant who completes the questionnaires will get a $20 Target gift card, but only one person out of approximately 50 will win the $100 Amazon.com gift card.

If you choose not to participate in this study, then you can discard the entire packet.

We appreciate your cooperation in this research. If you have any questions or would like the results of the study once it is complete, please let us know using the contact information below. Although it is unlikely, if you feel that you have been harmed as a result of study participation, you may contact Brittany at the information below. For questions about your rights as a participant in this study, or to discuss other study-related concerns or complaints with someone who is not part of the research team, please contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.

Thank you for your time - this study would not be possible without your help!

Sincerely,

Brittany Butler, B.S.  Betsey Benson, Ph.D.
Appendix L: Reminder Letter/Email

Date

Dear Potential Participant;

I am a graduate student at The Ohio State University conducting a study for my master’s thesis. This study is investigating the moods and beliefs of adults with Autism Spectrum Disorders.

About three/five/seven weeks ago you should have received a packet containing a letter and several questionnaires to fill out questionnaires as part of this study. If you have already completed and returned them, we thank you very much for your time.

As a reminder, all participants in this study who complete the questionnaires will receive a $20 gift card to Target and be entered into a raffle to win a $100 gift card for amazon.com. Everyone who participates will get the $20 gift card to Target but only one person out of approximately 50 will win the $100 amazon.com gift card.

If you have not completed the questionnaires it is not too late to participate. If you have misplaced the envelope or one of the questionnaires, please feel free to contact us for replacements.

For questions about your rights as a participant in this study, or to discuss other study-related concerns or complaints with someone who is not part of the research team, please contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.

We appreciate your time and energy. This project would not be possible without your help!

Sincerely,

Brittany Butler, B.S.
Psychology Graduate Student
Psychology
Nisonger Center
The Ohio State University
Britt.Butler@osumc.edu
614.247.8028

Betsey Benson, Ph.D.
Associate Professor of
Nisonger Center
The Ohio State University
Betsey.Benson@osumc.edu
614.688.3214
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Appendix M: Email to clinicians and medical professionals

Dear Healthcare Professional;

My name is Brittany Butler and I am a graduate student at the Ohio State University studying Psychology. For my Master’s Thesis I am conducting a study on adults with Autism Spectrum Disorders to find out more about their moods and their beliefs about themselves. My faculty advisor, Betsey Benson, PhD is supervising this study.

I am contacting you to request that you distribute information about this study to your adult clients/patients. You were contacted because you have identified as a healthcare professional that works with individuals with Autism Spectrum Disorders (ASDs). As you might know, this population can be difficult to reach which is why I am requesting your help. With this study, I am hoping to gain a better understanding of adults with ASDs that may help professionals like you to provide services.

I am attaching both a short description of the study and an informational flyer to this email. Please distribute these to your clients/patients. If you have any questions about distribution or about the study, please contact me at britt.butler@osumc.edu or 614.247.8028. You can also contact my advisor, Dr. Betsey Benson, at Betsey.benson@osumc.edu or 614.688.3214. Additionally, you can contact the Office of Responsible Research Practices (ORRP) at 614-688-8457, located at 300 Research Foundation Building, 1960 Kenny Road, Columbus, OH, 43210-1063.

I appreciate your time and energy. This project would not be possible without your help!

Sincerely,

Brittany Butler, B.S.
Psychology Graduate Student
Nisonger Center
The Ohio State University
Britt.Butler@osumc.edu
614.247.8028

Betsey Benson, Ph.D.
Associate Professor of Psychology
Nisonger Center
The Ohio State University
Betsey.Benson@osumc.edu
614.688.3214
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Appendix N: Email / Letter to organizations

Dear Organization Leader;

My name is Brittany Butler and I am a graduate student at the Ohio State University studying Psychology. For my Master’s Thesis I am conducting a study on adults with Autism Spectrum Disorders to find out more about their moods and their beliefs about themselves. My faculty advisor, Betsey Benson, PhD is supervising this study.

I am contacting you to request that you distribute information about this study to your adult members. In addition, with permission, I would like to make a short announcement about the study at upcoming meetings. You were contacted because you have identified as a leader in an organization that focuses on Autism Spectrum Disorders (ASDs). As you know, many adults with ASDs are socially isolated and difficult to contact, which is why I am requesting your help. We hope that the results of this study will expand knowledge about adults with ASDs and help us all to provide better supports.

I am attaching both a short description of the study and an informational flyer to this email. Please distribute these to your members. If you have any questions about distribution or about the study, please contact me at britt.butler@osumc.edu or 614.247.8028. You can also contact my advisor, Dr. Betsey Benson, at Betsey.benson@osumc.edu or 614.688.3214. Additionally, you can contact the Office of Responsible Research Practices (ORRP) at 614-688-8457, located at 300 Research Foundation Building, 1960 Kenny Road, Columbus, OH, 43210-1063.

I appreciate your time and energy. This project would not be possible without your help!

Sincerely,

Brittany Butler, B.S.
Psychology Graduate Student
Nisonger Center
The Ohio State University
Britt. Butler@osumc.edu
614.247.8028

Betsey Benson, Ph.D.
Associate Professor of Psychology
Nisonger Center
The Ohio State University
Betsey.Benson@osumc.edu
614.688.3214
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