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Development of a Rating Scale for the Measurement of Adult Social Skills

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DEVELOPMENT OF A RATING SCALE FOR THE MEASUREMENT OF ADULT
SOCIAL SKILLS

By

Jessica Cuitareo

Presented to the Faculty of the Graduate School of

Stephen F. Austin State University

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DEVELOPMENT OF A RATING SCALE FOR THE MEASUREMENT OF ADULT
SOCIAL SKILLS

By

Jessica Cuitareo

APPROVED:

Jaime Flowers, Ph.D., Chair, Dissertation Director

Daniel McCleary, Ph.D., Committee Member

Elaine Turner, Ph.D., Committee Member

Sarah Savoy, Ph.D., Committee Member

Sheryll Jerez, Ph.D.
Interim Dean of Research and Graduate Studies

ABSTRACT

Social skills are a person's ability to adapt to the environment appropriately utilizing verbal and nonverbal communication (Matson et al., 2007). In accordance with the Diagnostic and Statistical Manual of Mental Disorders – fifth edition (DSM-5), individuals diagnosed with Autism demonstrate social skills deficits (APA, 2013). Such deficits may impact an individual negatively in developing and maintaining relationships, as well as occupational skills. However, assessments for adults are few and far between, as assessment has primarily focused on children. Therefore, the purpose of this dissertation was to create and pilot a measure of adult social skills, with the intention of utilizing the measure for autistic adults in research and clinical practice. It was hypothesized that the ASSRS would obtain a reliability above or beyond .80 after review, conducted by an expert panel, for item relevancy and elimination of items loading less than .32. It was also hypothesized that the ASSRS would reveal 10 factors, which would be broken by the categories the ASSRS intended to measure. Lastly, it was hypothesized that the ASSRS would demonstrate strong convergent validity against the MSCS as the scales are both measuring similar constructs. The ASSRS preliminary norms was conducted on 103 Stephen F. Austin State University psychology undergraduates. Results revealed that the ASSRS had a strong internal reliability ($\alpha = .872$). After elimination of poorly loaded items, the ASSRS had revealed a 12-factor structure. The ASSRS and

MCSC had a small significant correlation ($r = 0.338, p < .001$), demonstrating convergent validity, however, the ASSRS failed to demonstrate divergent validity when correlated with the AQ ($r = 0.122, p = .218$). It was hypothesized that the score was impacted by a low sample size as the goodness of fit models are sensitive to sample size. More research is needed to validate the ASSRS. Future research should aim to utilize the ASSRS on its intended population, with different cultures, and clinical populations.

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CHAPTER I

Introduction

Social skills are a person's ability to adapt to the environment appropriately utilizing verbal and nonverbal communication (Matson et al., 2007). Social skills are essential for social interaction and communication. In accordance with the Diagnostic and Statistical Manual of Mental Disorders – fifth edition (DSM-5), individuals diagnosed with autism demonstrate social skills deficits (American Psychological Association [APA], 2013). These deficits included, lack of eye-contact, appropriate speech, appropriate intonation and tone, facial expressions, conversations, and interaction (Matson et al., 2007). Such deficits may impact an individual negatively in developing and maintaining relationships, as well as occupational skills.

Social skills measurements are intended to assess the level of deficit of the individual, which would then guide intervention. Luiselli and colleagues (2005) stated prior to training and intervening on social skills, skills should be assessed. Instruments recommended for assessing social skills were the School Social Behavior Scales (SBSS; Merrell, 2002), and Social Skills Rating Scale (SSRS; Gresham & Elliot, 1990). However, all of these instruments were only validated with children. There are few social skills rating scales for adults. Graetz (2010) stated that services and therapies help individuals with autism spectrum disorder (ASD) to have a higher quality of life. Typically, these services are provided within the schools, however, once out of school the

services are no longer provided, and individuals no longer have access school-based services. As a result, creation of services outside of the school for autistic adults is imperative to allow the opportunity for individuals to have a higher quality of life. Therefore, the purpose of this dissertation was to create and pilot a measure of adult social skills, with the intention of utilizing the measure for autistic adults.

Research Questions

- 1.) Does the Adult Social Skills Rating Scale (ASSRS) have adequate reliability for research and clinical practice?
- 2.) Does the ASSRS demonstrate adequate internal consistency?
- 3.) What is the factor structure of the ASSRS?
- 4.) Does the ASSRS demonstrate convergent validity in terms of having a strong or moderate correlation to other measures of social skills?

CHAPTER II

Literature Review

ASD is commonly known as a developmental disorder. To meet criteria for ASD, according to the DSM-5 (APA, 2013), an individual must demonstrate persistent deficits in social communication and interaction, as well as demonstrate restricted and repetitive behaviors. To further qualify under the DSM-5, symptoms must be present in early developmental periods but noted that ASD may not fully manifest until social demands exceed limited capacities. These qualifying symptoms often affect an individual's ability to function properly socially, occupationally, or in other areas of life (APA, 2013).

Currently, ASD can be diagnosed at any age, however, it is common for symptoms to appear during the first two years of life and become more evident as the individual ages (NIH, n.d). It is evident that although children can be diagnosed with ASD, as life goes on and life demands get harder, it becomes more difficult for the individual living with ASD to adapt to the environment. As a result, individuals diagnosed with ASD often seek assessments, interventions, and therapies to help strengthen social skills and other affected areas. However, there is very little research on assessment and intervention of Autistic adults. A study from the Center for Disease Control and Prevention (CDC), one of the first studies gathering information on adults living with ASD, estimated the prevalence of ASD for those aged 18 and older was

2.21% of adults (CDC, 2017). This study demonstrated the large need for evidence-based practices for autistic adults in both treatment and intervention, and the need to improve this area of research to supply older populations with necessary services.

Social Theories

Broadly, development disabilities have been studied alongside social theories, including Vygotsky's Sociocultural Theory and Erikson's Stages of Psychosocial development (Gibson, 2012; Taylor, 2009). These theories focus and demonstrate that social development is a crucial part of development to function properly in society standards. Therefore, these theories may demonstrate how individuals with a developmental disability, autism included, can be at a disadvantage socially.

Vygotsky Sociocultural Theory

Lev Vygotsky is recognized as the founder of sociocultural theory which examined the relationship between learning and development (Mahn, 1999). Before Vygotsky, most theoretical approaches viewed the environment as an influence on an individual's development (Miller, 2016). Vygotsky's theoretical approach focused on a sociocultural view which claimed that individuals are not independent of their sociocultural environment (Miller, 2016). Vygotsky reasoned that it was essential for the development of higher psychological processes and emphasized the importance of collaborating with diverse groups within their own sociocultural environment (Gupta & Singhal, 2005). This acknowledged that skill development in children need a rich sociocultural environment that gives them tools to properly function (Miller, 2016).

However, unlike other theories, Vygotsky attempted to be inclusive and examine atypical patterns of development, and as a result has become influential within the field of educational and developmental psychology (Dixon & Verenikina, 2007). Vygotsky defined disability as a sociocultural developmental phenomenon. He stated disability consists of two definitions, primary disability, and secondary disability. Primary disability is simply defined as natural impairment, and secondary as distortions of higher psychological functions affected by outside factors (Dixon & Verenikina, 2007).

Vygotsky's theory states that some social skills may develop slowly because of the nature of their disability. However, the individual's social environment can contribute to the delay in social skills, due to poor access, lack of social interaction, and opportunities given to obtain these skills, leading toward dependent behavior (Dixon & Vernikina, 2007).

As a result, individuals diagnosed with ASD do not go through the Vygotskian process as a typically developing individual would (Hacking, 2009). It is noted that those diagnosed with ASD do not pretend, and typically do not understand others who engage in pretending. Furthermore, they tend to misunderstand others and lack theory of mind (Hacking, 2009). Consequently, these individuals do not engage in their sociocultural environment which affects the developmental of proper social skills within their society.

Erikson's Theory of Psychosocial Development

Erik Erikson's Psychosocial Theory of development is also discussed because his theory influenced the trends toward social-cultural influences (Miller, 2016). Expanding

on Freud's theory, Erikson developed a set of eight psychosocial stages that covered the life span of an individual. From the psychosocial view, maturation has both personal and social consequences. Miller (2016) states that maturation brings a new skill that brings possibilities but in return increases society's demands on the child or adult. However, with ASD an increased in demands leads to deficits in social aspects. Maturation and society's expectations together create eight crises that a child must resolve under Erikson's theory.

There are eight stages including basic trust versus basic mistrust (stage 1), autonomy versus shame and doubt (stage 2), initiative versus guilt (stage 3), industry versus inferiority (stage 4), identity versus identity confusion (stage 5), intimacy versus isolation (stage 6), generativity versus stagnation (stage 7), and integrity versus despair (stage 8). Erikson's theory, compared to previous theories, conceptualized children in a changing world and cultural context that were devoted to the socialization of children into that culture (Miller, 2016). Going through each stage, the nature of the settings and the individual do affect the outcome of the crises of each stage (Miller, 2016).

Taylor's (2009) study examined Erikson's psychosocial theory and used it to inform families about transitioning into adulthood with ASD. Taylor (2009) discussed that two stages are relevant to transitioning which include identity versus identity confusion and intimacy versus isolation. It was discussed that the identity stage is crucial in developing a sense of self, set of personal values, and an identity that defined where the individual fits in. Without developing a sense of self, it leads to the development of

confusion and insecurity about future roles (Taylor, 2009). The second important stage is where individuals tend to develop close relationships, outside of their family circle. This is often seen as a crucial stage in psychosocial development because without resolving this stage, individuals are often isolated and lonely.

Although Erikson's stages fail to apply to those with developmental disabilities, therefore, Taylor (2009) drew conclusions from the symptoms and behaviors exhibited with individuals diagnosed with ASD. Taylor (2009) states that finding an identity and gaining independence is often difficult for individuals with ASD. This is often due to the difficulty in being able to obtain and maintain a job (Lerman et al., 2017; Taylor, 2009). Furthermore, with the difficulties of being able to socially interact appropriately, individuals with ASD have limited relationships, and greater feelings of loneliness. These crises are not resolved within Erikson's theory which may result in the impact of coming stages.

Therefore, it can be concluded from both theories, that more opportunities must be given to the individual to develop socially. Specifically, in their communication (verbal and nonverbal) to engage more appropriately with others and establish more relationships. It is imperative to continue research on these theories and their applicability for individuals with ASD and other developmental disabilities. This is to provide a greater understanding, and to start researching what services would be most appropriate for adults compared to children.

Theory of Mind

As explained social communication deficits are a common feature of autism, researchers believed that these deficits are attributable to cognitive impairments (Hale & Tager-Flusberg, 2005). Specifically, it is believed that these impairments are linked to the theory of mind development. As explained by Baron-Cohen (2000) theory of mind refers to the ability to predict and explain human behavior in terms such as intention, desire, and beliefs. With neurotypical children, there is evidence suggesting that such thinking is not automatic and requires skills to reach an adult level of understanding (Miller, 2006). Theory of mind builds over time and such skills needed to develop prior to adulthood are joint attention, recognition that others have different perspectives, and pretend play (Miller, 2006). Furthermore, another crucial part in developing theory of mind is false belief understanding which typically occurs around age four (Miller, 2006; Tager-Flusberg, 2007).

It is evident that theory of mind is essential for complex social interaction and communication (Senju, 2012). Although neurotypical individuals begin to pass theory of mind tasks around the age of 4 and 5, individuals with ASD tend to fail theory of mind tasks, such as false belief, through middle childhood and adolescence (Peterson et al., 2005). Furthermore, theory of mind and social understanding deficits have also been determined in individuals with ASD. Research has been able to demonstrate that individuals with ASD have deficits in understanding jokes, deceptions, sarcasm, irony, and white lies (Hughes & Leekam, 2004). Reviewing the connection between theory of

mind and ASD, Hughes and Leekam (2004) suggested that theory of mind deficits is related to autism diagnosis due to the failure of social abilities.

Results from research indicate that there are impairments in social deficits that are seen in theory of mind tasks in individuals with ASD. Although studies such as Begeer et al. (2011) examined theory of mind training in children with ASD, results continue to demonstrate that although certain aspects improve during training, social behavior and empathic skills do not important, and does not provide evidence that training will be effective in daily life social skill abilities. As a result, the impairment in social abilities in individuals with ASD affects theory of mind, individuals may struggle with appropriate social interaction and understanding.

Research on Social Skills with Autistic Adults

As recognized, it is common to find social skill research on children and adolescents and perspectives and services that are provided via school and outside departments. However, it is apparent that there is a gap in the literature concerning adult social skill research and an even bigger gap in the ways to provide services and give assessment. Though lacking, current research has been able to identify social challenges, perspectives, and recommendations from autistic adults.

In general, Corbett et al. (2015), and other researchers, state that impairment in appropriate social interaction is a defining characteristic for ASD. Being socially impaired has demonstrated several areas of concern in the ability to engage in typical joint social interactions (Cotugno, 2009). Areas of concern included the inability to

understand and interpret nonverbal behaviors, lack of interest or enjoyment in social relationships, and lack of emotional reciprocity (Cotugno, 2009). This demonstrated that there is a significant impact on individuals diagnosed with ASD socially, affecting their long-term adjustment.

More specific to autistic adults, Sperry and Mesibov (2005) sought to understand autistic adults and their perceptions of social challenges. The researchers met with a total of 18 autistic adults and discussed social issues. Participants were asked to generate social questions and challenges they had encountered because of their diagnosis. Researchers collected written and audio samples for this qualitative study to identify the most common problem areas for 18 adults. After analyzing the data, researchers found four common themes which included: relationships at work, developing and maintaining interpersonal relationships, appropriate behavior with the opposite sex, and personal perspectives. These results demonstrated and supported the existing data that individuals with ASD often experience difficulties socially. For example, in a workplace environment an individual with ASD may understand tasks that they are asked to do but may not understand when someone asks them for help (Sperry & Mesibov, 2005). In terms of interpersonal relationships, individuals with ASD have a harder time recognizing and meeting the needs of others, be that emotional or mentally. Lastly, one of the participants shared that assessing personal space is difficult in relationships. This individual stated that they had difficulties assessing social cues through non-verbal

gestures understand the other individual's personal boundaries and space. This result may be attributed to the social challenges individuals with ASD have.

Furthering research on autistic adults, Muller et al. (2008) described the perspectives of individuals with Asperger syndrome and ASD. The study included 18 autistic adults and interviewed them. Participants were asked to describe their social experiences and provide strategies for improving socially. Qualitative analyses revealed that these adults experience social challenges and identified several areas under communicative deficits such as being able to initiate conversation and being able to understand language and nonverbal language. Furthermore, participants also revealed a sense of isolation and longing for intimacy. As defined in Erikson's theory a sense of isolation and intimacy is a crisis that will continue to impact coming stages by not achieving a sense of identity. As a result of these crisis and issues, recommendations made by participants focused on joint focus activities and structured social environments to contradict the feelings of isolation and lack of intimacy. This study was able to demonstrate that individuals with ASD are aware of their social skills deficits and how it may be affecting their long-term social adjustment. Additionally, it highlights communication difficulties and the negative consequences of being able to appropriately interact with another individual.

Aggregating data, Tobin et al. (2014) conducted a systematic review of the literature to examine published research that focused on social participants for autistic adults. Reviewing articles published after 1995. A total of 14 studies were identified that

discussed two main themes that included social functioning and quality of life. According to Tobin et al. (2014), the articles tended to report that participants did have a desire for social connection, however due to having sparse relationships and social deficit, they had higher levels of loneliness. Reports also revealed that common ways of social engagement were through participation in social skill groups and support groups. However, there was limited access to interaction and experience that led to negative mood consequences. These mood disturbances can be alleviated with family and friend support, as well as increasing participation and interaction outside of family and friends. The meta-analysis also found that autistic adults tend to report a lower quality of life compared to their neurotypical peers, to which is impacted by deficits in social functioning. Overall, this study demonstrates again the need to identify social skill deficits to guide treatment and improve overall quality of life for autistic adults.

Lin and Huang (2017) expanded the research by addressing quality of life factors for adults who were diagnosed with ASD. The study consisted of 66 autistic adults, against neurotypical peers. Participants were given a questionnaire that assessed their perceived quality of life and factors related. Results demonstrated that autistic adults scored lower in all domains of quality of life in comparison to the neurotypical group. Furthermore, they were reporting higher levels of anxiety, loneliness, and sensory compared to the neurotypical group. Dissecting the results reveals that autistic adults need more supportive social environments and interventions to improve their quality of life. Social relationships are an important factor in the development of psychiatric

disorders, and therefore, these domains should be assessed and included in treatment. Research overall has demonstrated that social relationships and skills are imperative in the overall perception of themselves, development of mood disturbances, and poorer quality of life. Therefore, it is important to recognize the role of social skills and relationships on autistic adults, and appropriately assess this population with proper tools.

Along the lines of negative mood disturbance, Bishop-Fitzpatrick et al. (2015) shared individuals diagnosed with ASD are at a greater risk for psychological distress due to social functioning deficits. As researchers demonstrated, children with ASD compared to neurotypical developing peers have a discrepancy between their responses to stress. Based on these findings, Bishop-Fitzpatrick et al. (2015) hypothesized that the result would be similar for autistic adults. Collecting 38 participants who were diagnosed with ASD, and 37 identified as neurotypical, researchers hypothesized that autistic adults would have greater stress compared to their peers. Examining the relationship between stress and social functioning, results indicated that autistic adults experienced greater stress, which was also observed by researchers, compared to their peers. Results also suggested that the stress being experienced was related to social functioning in autistic adults. This meant that individuals who perceived themselves to be better in social functioning were more likely to experience less stress. Stress then in hand increased social impairments already existing in autistic adults. Concluding, social skill deficits must be addressed to provide treatment to contradict or alleviate the negative consequences of impairment.

Researchers also shed light on examining social cognition, social skills, and social motivation together to assess social interaction for individuals diagnosed with ASD. Morrison et al. (2019) study sought to explain if social cognition, social skills, and social motivation does contribute to real-world social interactions and outcomes of those interactions for autistic adults. The study administered standardized measures for all three social domains to 67 adults with ASD, and 58 adults who were not diagnosed with ASD. Furthermore, participants were also asked to engage in a five minute get to know each other conversation that was unstructured. Results demonstrated that autistic adults performed lower than their peers on all three domains and were evaluated by their peers lower during conversations. Despite recognizing that evaluations of these domains are lower for autistic adults ASD, demonstrating the social skill deficit, Morrison et al. (2019) also claims that there is a need for better assessments for real-world application when assessing social deficits in individuals with ASD.

Continuing, researchers sought to examine how autistic adults perceive their experiences. Specifically touching on this subject, Hurlbutt and Chalmers (2002) conducted a nine-month qualitative research study that include three autistic adults identified as high functioning. Results from this interview revealed that these adults were proud to present themselves as high-functioning autistic adults. Further explaining, participants stated that they wanted to “fit in” in society, however, “fitting in” drew frustration as participants felt that the narrow-mindedness of their peers due to their perceived unwillingness to open their minds to high-functioning adults being themselves

and not molding into society standard of “normal.” Moreover, participants identified that having a strong support system was necessary to be a successful adult.

Hurlbutt and Chalmers (2002) study demonstrated that autistic adults are often unemployed and underemployed. Employment for individuals diagnosed ASD provides a better quality of life as well as promoting personal dignity (Hendricks, 2010). However, there are several barriers to employment for individuals with ASD. Research has examined how social skill deficits impact an adult with ASD and their ability to obtain and maintain a job. Research has indicated high rates of unemployment for autistic adults. Harmuth et al. (2018) discussed that engaging in interactions with coworkers and supervisors and interactions with customers were contributing factors toward the difficulty of maintaining a job for individuals with ASD. This may be attributed to the difficulties of reciprocal social interaction (Hendricks, 2010).

Thus, research has demonstrated that autistic individuals are socially impaired, and impairment has affected their quality of life. Autistic individuals use camouflaging and coping strategies to appear socially competent and conceal their social deficits (Hull et al., 2017). To further understand camouflaging, Hull et al. (2017) examined 92 participants who received a DSM-IV or DSM-V autism diagnosis. For Hull et al. (2017) research camouflaging was defined as a combination of masking and compensation techniques. Masking was defined as hiding characteristics and presenting as a different person to conceal social deficits in social situations. Compensation techniques were defined as strategies that are used to mediated social skill deficits in social situations.

Results from this study demonstrated that camouflaging in social situations is common amongst autistic adults. The purpose of camouflaging is to fit in with others in the social situation. Despite the goal of being seemingly “normal” causes great effects such as exhaustion and anxiety, that lead to mental health problems in the long-term. Overall, despite efforts to mask social deficits, it is evident that long-term consequences are detrimental to individuals with ASD.

As shown collectively in Table 1, it is evident that social skills deficits are impacting autistic adults. Collectively it demonstrates social skills deficits in adults can induce stress, prevent job opportunities, reduce quality of life, poor social relationships, and increase psychological disorders or symptoms such as anxiety, depression, and loneliness. Consequently, it is imperative to assess and intervene with individuals to prevent burnout of masking, and mental health consequences, as well as the other aspects of social skill deficits. It is crucial to assess deficits to provide these individuals with the proper resources to live a better quality of life.

Diversity

Despite the research going into depth on social skills deficits it is important to acknowledge how the research may be biased or skewed in a way that researchers are missing a component to understanding ASD. Currently, it is common for researchers to disregard race when viewing autism because signs of autism will be present regardless of race (Dyches et al. 2004). Although true that ASD does not only affect certain races, the components of how they are presented throughout cultures may be different. As a result,

discounting culture can lead to misclassification of ASD with other disorders, such as specific learning disorder (Wilder et al., 2004). Furthermore, disregarding culture can lead to children not getting diagnosed with ASD at a young age and entering adulthood not knowing of their deficits. Culture can play a factor in accessing services, examples are that African Americans and Latinos tend to seek religious or cultural help and help from families and friends before considering professional services. These groups access services at low rates (Wilder et al., 2004). These children are undiagnosed and do not access early intervention services and grow into adulthood with greater social deficits.

Often professionals will view a diagnosis only through the lens of DSM criteria and how it is typically presented. However, the DSM-5 may not be reflective of diverse populations, as it is based off Western norms. For example, individuals from an Asian American background are more likely to engage in avoiding eye contact with authoritative figures (Wilder et al., 2004). More than likely professionals will interpret such signs as being symptoms of autism. Furthermore, there may be behaviors considered inappropriate within the United States, which is considered appropriate in another culture, such as Indian males delayed language abilities. It is common for Indian males to be delayed as the females are supposed to learn earlier than the males (Wilder et al., 2004). As a result, it is imperative to be culturally competent when creating scales for ASD to account for diversity and culture, and not have culturally insensitive questions.

Specifically targeting cultural differences, Perepa (2014) study sought to examine how autism disorders are perceived in different cultures. This was important as

researchers believed that social deficits were not universal within autism, but rather a social construct (Perepa, 2014). A total of 63 parent participants from four communities, including the White British, Somali, West African, and South Asian communities, were gathered to conduct qualitative research on the perceptions of social skills that are needed within different cultures. Results demonstrated cultural differences in importance associated with various social behaviors. One specific outcome was White British participants felt that facial expressions had limited importance in communication, while participants from the other cultural groups considered that facial expression were critical to understand others. This indicates that certain cultures will not emphasize the understanding of facial expressions. Diversity and cultural inclusivity are not always included or acknowledged during the scale making process. Though not common practice, it is essential to review questions for their cultural inclusivity to refrain from misinterpreting appropriate and inappropriate social skill deficits between cultures.

Assessment

The assessment of social skills is important to adequately provide services to individuals with social skill deficit. Due to the importance of assessment, the creation of rating scales for ASD social skills has been on the rise. These rating scales, as demonstrated in the research, have focused on young children and adolescents' social behaviors (Demaray et al., 1995). Typically, rating scales have been developed for parents, teachers, and self-reports (Demaray et al., 1995). It is not uncommon for multiple people to rate an individual, nor it is uncommon to gather outside information to support

the composite scores given by other assessments. Supporting documents can provide greater insight into the direction of intervention and other related services.

Although there are several social skills rating scales, only four main scales are used due to strong norms and psychometric properties (Gresham, 2016). These four scales are the Social Skill Improvement System Rating Scales (SSIS-RS; Gresham & Elliot, 2008), Walker-McConnell Scale of Social Competence (Walker & McConnell, 1988), School Social Behavior Scales (SSBS; Merrell, 2002) and the Preschool and Kindergarten Behavior scales (Merrell, 2003). However, it is consistently seen throughout the literature that social skills scales have primarily been developed and normed for younger children with ASD. If there was an individual over the age of 18, it would be unethical to utilize these assessments for children because adults were not part of the norming group. Therefore, it is crucial to create assessments for adults.

Currently, there is a social skill rating scale commonly used and researched on adults, the Social Communication Questionnaire (SCQ; Snow, 2013). This rating scale can be utilized with adults as the age range is for any individual that is over the age of 4 years, or with a mental age over 2 years. The questionnaire is 40 questions long, with a yes or no format that is to be completed by the parent or caregiver, which approximately takes ten minutes. The SCQ was normed originally on 200 participants that had previously participated in ASD studies. The SCQ indicated high internal reliability of .87, as well as good discriminative validity. The discriminative validity of the SCQ was compared to the Autism Diagnostic Interview (ADI) by the ROC curve, researcher report

for ASD versus non-ASD were 0.88 and 0.87. Results mean that the scale could differentiate between an individual that has ASD and an individual who does not (Moody et al., 2017).

An assessment also used is the Multidimensional Social Competence Scale (MSCS; Yager & Iarocci, 2013). The MSCS covers seven domains, including social motivation, social inferencing, empathic concern, social knowledge, verbal conversation skills, nonverbal skills, and emotion regulation (Yager & Iarocci, 2013). This scale was originally validated for individuals who ranged from 11 to 18 years of age with ASD. However, Trevisan et al. (2018) study validated the MSCS on 1178 individuals who ranged from 17 to 25 years of age. Convergent validity was assessed by correlating scores between the full-scale Autism Spectrum Quotient (AQ). Specifically, researchers used two subscales from the AQ, the social skills and communication skills scales to assess convergent validity. Additionally, the Behavior Rating Inventory of Executive (BRIEF; Gioia et al., 2000) was used to assess convergent validity for emotion regulation. For emotion regulation, convergent validity was 0.83, and conversation skills was 0.79. Though it is important to recognize that this assessment is also limited in its ability to assess adults as more studies need to validate using this measure for autistic adults.

Lastly, an assessment that is validated for autistic adults is the Social Responsiveness Scale – Second Edition (SRS-2). Although the age range is from 2.5 years of age to adulthood now, Chan et al. (2017) stated that the application of the SRS

with adults has not been validated completely. However, from the movement from the SRS to the SRS-2, there is a new adult self-report that can be completed by autistic adults. South et al. (2017) explained that although the SRS-2 can be used, there are concerns as the discriminant validity demonstrated to be poor, as the scale failed to differentiate between ASD and anxiety symptoms. As a result, the researchers stated that there is a need for caution when utilizing this assessment.

The few assessments for adult with social skills deficits demonstrate the evident need for a scale that can assess autistic adults and social skill deficit accurately. The current rating scales are not sufficient. Thus, research on social skills in general for autistic adults indicates a gap in the literature. Many of the developed scales are normed and used for young populations. It is imperative to assess, intervene, and provide services to autistic adults, as the community does with children. However, through a review of the literature, it has become apparent that research lacks on autistic adults and the tools that can be utilized for assessment. The creation of this scale may fill this gap. The purpose of this dissertation was to create and pilot a measure of social skills for autistic adults which may be useful in research and practice.

Research Questions

- 1.) Does the Adult Social Skills Rating Scale (ASSRS) have adequate reliability for research and clinical practice?
- 2.) Does the ASSRS demonstrate adequate internal consistency?
- 3.) What is the factor structure of the ASSRS?

- 4.) Does the ASSRS demonstrate convergent validity in terms of having a strong or moderate correlation to other measures of social skills?

Hypothesis

It is hypothesized that the ASSRS will obtain a reliability above or beyond .80 after review is conducted by an expert panel for item relevancy. It is also hypothesized that the ASSRS will reveal 10 factors, which will be broken by the categories the ASSRS intends to measure. Lastly, it is hypothesized that the ASSRS will demonstrate strong convergent validity against the MSCS as the scales are both measuring similar constructs.

CHAPTER III

Method

Introduction

As stated in Chapter one, the current study sought to create a measure to assess social skills with autistic adults. Chapter three is presented in sections: (a) participants, (b) recruitment methods (c) scale development procedures, (d) validation measures, (e) data collection procedures, and (f) data analysis methods.

Participants

The ASSRS was piloted on 103 undergraduate students from Stephen F. Austin State University. The ASSRS, MSCS, and AQ were completed electronically via Qualtrics survey platform. Institutional Review Board approval was obtained. The participants provided informed consent electronically for their participation in the current study.

The demographic makeup of the sample is presented in Table 2. Eighty-three participants were female (80.6%) and 20 were male (19.4%). Of the total sample, 81 participants were between the ages of 18-22 (78.6%), 13 were between 22-26 (12.6%), six were between 31-40 (5.8%), one was between 41-50 (1.0%), one was between 26-30 (1.0%), and one was between 51-60 (1.0%). Of the total sample, 63 participants identified as White (61.2%), 20 identified as Black (19.4%), 13 identified as LatinX (12.6%), three

identified as Asian (2.9%), one identified Native Hawaiian or Pacific Islander (1.0%), and three identified as Other (2.9%).

Participants were also asked about previous autism diagnosis, other mental health diagnoses, and preferred language for referring to an autistic individual. Of the total sample, 100 participants did not have a diagnosis of autism (97.1%), one participant did have a diagnosis of autism made by a physician or psychologist (1.0%), one participant self-diagnosed themselves with autism (1.0%), and one participant preferred not to say (1.0%). Of the total sample, 54 participants did not have a mental health diagnosis (52.9%), 16 participants identified being diagnosed with ADHD (15.7%), 15 acknowledged being diagnosed with anxiety (14.7%), 12 acknowledged being diagnosed with depression (11.8%), and five participants marked having a learning disability (4.9%). Lastly, when asked what type of language was preferred when referring to an autistic individual, 46 participants marked that this was not relevant to them (44.7%), 30 participants marked that they had no preference (29.1%), 21 participants marked using person-first language (she/he has autism, 29.1%), five participants marked using identity-first language (she/he is autistic, 4.9%), and one preferred to not respond (1.0%).

Recruitment Methods

An electronic version of the survey was created utilizing the Qualtrics survey software. The primary investigator uploaded it through Stephen F. Austin State University's SONA system utilized by the Psychology department to conduct research. Students in the psychology department, in introduction to psychology course, are

required to participate in research. Students were given an opportunity to earn one research credit (“R points”) as a study posted through SONA that took 30 minutes earned one R point compared to a study that took an hour, which would be two R points. Students would earn their R point by signing up to participate in the study and were granted automatic credit after completion.

Item Pool Development

The ASSRS scale was developed using the MSCS and AQ rating scales. One hundred and seven items were created with a 4-point Likert response scale (*Strongly agree, Agree, Disagree, Strongly Disagree*). The ASSRS was a created measure to define high and low social skills, and therefore includes items that are reverse scored to measure both ends of the construct (DeVellis, 2017). The ASSRS assess these areas: communication, cooperation, assertion, responsibility, empathy, self-control, relationships and dating, problem behaviors. The reverse score items on the ASSRS are hypothesized to be related to high social skills. Examples are: “I keep my thoughts to myself,” and “I say things without considering how others might feel.” Endorsing these items should result in a higher overall score because of the reverse scoring and indication of higher social skill ability.

Content Validation

DeVellis (2017) recommended that after the item pool is created, the items should be reviewed by a group of people who are knowledgeable in the content. This is intended to examine and maximize the content validity of the scale (DeVellis, 20017). The

primary investigator reached out to three experts in the field of psychology to review the measure for relevancy of the item, evaluate the items for clarity and conciseness, and suggest items that have failed to be included to measure the topic. Experts included were Ph.D. level school psychologists, and Ph.D. level clinical psychologists. After receiving the panels input, edits were made accordingly to the scale before the recruitment process began.

Validation Measures

To assess the validity of the ASSRS, participants were also asked to complete the Multidimensional Social Competence Scale (MSCS; Yager & Iarocci, 2013) and the Autism-Spectrum Quotient Test (AQ; Barron-Cohen et al., 2001). The purpose of utilizing these two scales is to run a Pearson's r correlation with the ASSRS scale to assess convergent and divergent validity.

MSCS

Yager and Iarocci (2013) normed the MSCS on a sample of 183 adolescents. Of the 183 participants, 135 were diagnosed with ASD and 48 participants were identified as neurotypical. The internal consistency of the MSCS rating scale demonstrated a strong internal consistency with a 0.84. The convergent validity measured demonstrated that the MSCS and SRS-2 had a strong positive correlation of 0.89 which demonstrated that the scale was similarly assessed to the already published measure. Following, Trevisan et al. (2018), collected data from studies that used the MSCS on adults, and demonstrated the sample of participants collected were 1178 adults, ranging in age between 17.5-25.5.

Therefore, demonstrating the MSCS can be used on adults and appropriately assess social competence.

AQ

The AQ includes the following areas: communication, social, imagination, local details and attention switching. In accordance with the scale, the cut off score used that is indicative of autism traits is 32 (Baron-Cohen et al., 2001). Baron-Cohen et al. (2001) normed the AQ with 1088 participants, of which, 58 of the participants were autistic adults. The scale demonstrated the test-retest to be strong correlation as defined by Akoglu (2018), where 0.70 to 0.90 is a strong correlation, $r = 0.7$. Following to further validate the AQ, participants were clinically interviewed, and seven of the 32 participants met criteria for the diagnosis of autism.

Following Baron-Cohen et al. (2001), Woodbury-Smith et al. (2005) administered the AQ to 100 participants who ranged from 18 to 69 years of age. The AQ here demonstrated good differentiation between diagnosis correctly those with autism and those without. The area under the ROC curve was 0.78, which demonstrated an accuracy of the AQ in the moderate range.

Data Collection Procedures

Participants signed up for the study under their SONA system account through Stephen F. Austin State University. Participants were asked to complete an online survey through a Qualtrics survey software link. Participants read the informed consent form and electronically sign consent. Consenting participants were asked to complete the ASSRS

via Qualtrics. Following, participants then completed the MSCS (Yager & Iarocci, 2013) and AQ (Barron-Cohen et al., 2001) and lastly, they were asked to complete a brief demographics survey regarding their gender, age, ethnicity, mental health diagnoses, autism diagnosis, and language on referring to an autistic individual.

Responses to the survey items are kept anonymous and confidential. Only the researchers have access to the raw data collected in this survey. In any sort of report that is published or presentation that is given, we will not include any information that will make it possible to identify a participant. After being collected, all electronic data were stored in Qualtrics and on a password-protected computer file.

Reliability

Reliability is important in developing a sound psychological measurement (DeVellis, 2017). DeVellis (2017) defines a reliable instrument as one that performs consistently and predictably. DeVellis (2017) also states that a perfectly reliable scale would reflect a true score which means that the score from the instrument should not change unless there is a change in the variable the instrument is intending to measure; the change is then attributed to that variable and no outside confounding variables.

Internal consistency

Internal consistency pertains to the homogeneity of items within a scale (DeVellis, 2017). Currently, the most commonly used internal consistency estimate is Cronbach's alpha (DeVellis, 2017). Research has demonstrated that alpha values ranging from .70 to .95 are within the acceptable range of reliability (Tavakol & Dennick, 2011). A score lower

than .70 may be attributed to a low number of questions, poor interrelatedness between items, and therefore should be either revised or removed from the scale (Tavakol & Dennick, 2011). These guidelines were used to interpret the data in this study and researchers aimed for a Cronbach's alpha of .80.

Validity

Validity is how well a scale is measuring a certain construct, such as anxiety or depression. To demonstrate validity, scores should be consistent each time the scale has been taken. If scores do not produce similar score each time, the scale may not be measuring the construct/variable accurately (DeVellis, 2017). A scale should have both acceptable content validity and construct validity.

Content validity

Content validity examines the extent to which an item set reflects the content domain the scale seeks to measure (DeVellis, 2017). Content validity is easier to evaluate when a domain is well-defined by research (DeVellis, 2017). A means of achieving adequate content validity is using of experts in the field to validate the items on the scale (DeVellis, 2017). As noted earlier in the chapter, an expert panel who is knowledgeable in the field was used to determine that the items are valid and could be used for research purposes. In addition, researchers also examined the current literature of social skills on autistic adults to which guided the development of the ASSRS subdomains and questions.

Criterion-related validity

A scale has adequate criterion-related validity when it demonstrates an association with a similar evidence-based measure. To look at criterion-related validity, MSCS was given to the participants in the study. It was hypothesized that the ASSRS will have adequate criterion validity if it showed a high correlation with the MSCS. The results should be similar between the MSCS and ASSRS scales, as they measure the same constructs. When comparing these scales, a Pearson's r correlation was used to demonstrate the strength of the correlation. The correlation coefficient can either be positive or negative, and ranges between the values of -1.0 to 0.0 (negative) or 0.0 to 1.0 (positive) (Taylor, 1990). Akoglu (2018) stated that 0.0 to 0.30 demonstrates a weak correlation, 0.40 to 0.60 is a moderate correlation, 0.70 to .0.90 is a strong correlation and 1.0 is a perfect correlation, these scores also translate the same negatively. The current study sought a strong positive correlation between the MSCS and ASSRS scales.

Divergent Validity

Divergent validity stems from criterion validity. Essentially, it involves a comparison between measures that do not measure similar construct (DeVellis, 2017). Individuals completing one scale should score differently on another scale that measures an unrelated construct. To assess divergent validity, the ASSRS was compared to the AQ. It is hypothesized that individuals with high social skills scores on the ASSRS will have a lower score on the AQ. Thus, it is also hypothesized, that participants who indicate having a diagnosis of autism would have lower scores on the ASSRS. Akoglu (2018)

stated that 0.0 to 0.30 demonstrates a weak correlation, in which the current study sought a weak correlation between the MSCS and AQ scales.

Construct validity

Construct validity examines the relationship of a variable to other variables (DeVellis, 2017). A method to determine construct validity is factor analysis which is used to evaluate the internal structure of a test (DeVellis, 2017). A major use of factor analysis is to add or deleted items from the scale being tested, and a second test is created from those results and is repeated until there are a set of factors that represent the areas intended to be measured (Tabachnick & Fidell, 2013).

One of the primary functions of factor analysis is to determine how many latent variables underlie a set of items (DeVellis, 2017). Moreover, factor analysis also defines the basic content within the structure model (DeVellis, 2017). This would be done by identifying groups of items that covary with another (DeVellis, 2017). It would also help identify which items are performing better or worse, and any individual items that did not fit into any of the factor categories or fit into more than one category will be identified and should be considered for elimination (DeVellis, 2017). The first task in factor analysis is to identify how many categories are sufficient to capture all the information from the original set of questions/statements (DeVellis, 2017). Factor analysis extracts factors until the factors have done an adequate job in accounting for the covariance amongst items. Therefore, conducting content validity through factor analysis will provide insight into the overall structure of the scale.

The two main types of factor analysis are exploratory factor analysis and confirmatory factor analysis (Decoster, 1998). Both exploratory and confirmatory factor analysis were conducted on the ASSRS. One of the main functions of factor analysis is to determine how many variables are in an item set, which is determined by examining what items covary with each other (DeVellis, 2017). For exploratory factor analysis allows researchers to see how many factors are in the scale. Confirmatory factor analysis allows researchers to choose the number of factors and analyses will then demonstrate how strong these factors are. A strong scale should have factors confirmed by exploratory and confirmatory analyses.

Both exploratory and confirmatory factor analyses were conducted on the ASSRS. Confirmatory analyses will be run to identify the hypothesized factors based on the subscales created. The 10 hypothesized factors included: communication, cooperation, assertion, responsibility, empathy, engagement, self-control, relationships and dating, externalizing behaviors, and internalizing behaviors. Viewing the eigenvalue shows the amount of information captured by the item and explains the structure of the factor itself. If the eigenvalue is five for an item set of 25, then the item represents 20 percent of the information in the factor. Furthermore, utilizing the Kaiser criterion, any eigenvalue under one will be eliminated (DeVellis, 2017). Lastly, the factor loadings should be considered to determine if a factor should be kept or should be examined. As recommended in Costello and Osborne (2005) article, a minimum loading for an item should be 0.32. Items loading less than 0.32 or -0.32 will be removed from the scale. For

the current study, due to the potential hypothesized factors within the ASSRS, an oblique rotation was used to examine the data.

Data Analysis Methods

The collected data was saved on Qualtrics survey software and downloaded into Excel for recoding variables and data cleaning. Following, data from Excel was transferred to Jamovi for all data analyses.

CHAPTER IV

Results

Data were collected for 110 participants through Qualtrics survey platform. Data from Qualtrics were directly downloaded into Excel. All the data were checked for missing data, recoded reverse items, and researchers conducted data cleaning before conducting final analyses. Data analysis was completed using Jamovi for frequencies, descriptive, correlations, factor analyses (exploratory and confirmatory), and reliability analysis.

A total of five participants were removed from analyses due to the responses on the validity questions included in the ASSRS as well as participants straight lining. The validity items included “I have flown on a plane 7 times a year,” and “I walk 10 miles to work.” Participants who answered Agree or Strongly Agree were removed from final analyses ($n = 5$) and participants who answered Strongly Agree to every question ($n = 2$) were also removed. After data cleaning, 103 participants were kept for final data analyses.

Analyses

Prior to conducting reliability and validity analyses, researchers determined the final items of the instrument. (DeVellis, 2017). The current study identified final items by removing items loadings under 0.32 or -0.32, eliminating factors with eigenvalues under one and having an overall factor structure that accounted for 60% of the variance.

Assumption Checks

To determine if the data were adequate for factor analysis, two standard techniques were used. The Kaiser-Meyer-Olkin (KMO) test should be at least .70 and Bartlett's test of sphericity should be significant at the $p \leq .05$ level for a data set to be considered appropriate for factor analysis. The KMO result was less than .70 however, it was determined due to low sample size, that the lower KMO was adequate for factor analysis. Bartlett's test of sphericity was significant, $\chi^2(3321) = 6876$ $p < .001$, indicating the data were adequate for factor analysis.

Factor Analysis

An exploratory factor analysis (EFA) was used, and the eigenvalues were examined to explore the internal factor structure of the ASSRS. Using the Kaiser criterion and removal of items with a loading less than 0.32 or -0.32, the EFA results in 12 factors. The first 12 factors accounted for 59.61% of the variance. Where researchers hypothesized that there would be 10 factors based on items, results revealed 12 factors with and eigenvalue greater than one. The first factor has an eigenvalue of 5.59 and explained 6.90% of the variance. The following items were eliminated because they had loadings less than 0.32 or -0.32: "I am able to express what I want through words or gestures," "I understand others' facial expressions," "I pay attention when others present their ideas," "I ignore people who annoy me," "I do my work without bothering others," "I work well with my coworkers," "I can understand complex directions," "Even when I listen to others' opinions, I choose what I want to do," "I say nice things about myself

without bragging,” “I ask for help when I need it,” “I do my part in a group,” “I complete work within deadlines,” “I am responsible,” “I am on time for appointments,” “I forget to do things I said I would do,” “I am nice to others when they are feeling bad,” “I don’t care how others feel,” “I recognize when people want to be left alone,” “I say things without considering how others might feel,” “I prefer to be alone,” “I find activities to go to,” “I find a good way to end a disagreement,” “I can recognize and identify my own emotions,” “I get angry easily,” “I cannot wait,” “I walk away from situations that could provoke me,” “I end friendships or relationships when the relationship is not longer positive,” “Relationships with others are not beneficial to me,” “I swear or use bad words,” “I question authority,” and “I break the rules.”

After elimination of those items, a confirmatory factor analysis (CFA) was conducted with the anticipated 12 factors. Using a CFA researchers used the goodness of fit to evaluate the overall model. Marcoulides and Yuan (2017) stated that to support model fit the following are needed: a nonsignificant chi-square value, a comparative fit index (CFI) greater than 0.90, and a root mean square error of approximation (RMSEA) below 0.05. Thus, these statistics were used to evaluate the factor structure of the ASSRS. The chi-square goodness of fit test revealed a significant statistic at the 0.001 level. Therefore, indicative of poor fit. The structure also revealed a CFI value of 0.460, which is indicative of poor fit when examining internal reliability. The value of RMSEA is 0.104, which is indicative of poor structure and fit. However, this poor factor structure may be attributed to low sample size. Kyriazos (2018) stated that for adequate power, it is

important to have a sample that is equal to or greater than 200. Furthermore, Kyrizaos (2018) explains that the chi-square test and goodness of fit indices are sensitive to sample size. Therefore, when the chi-square revealed a significant statistic, it demonstrates inadequate model fit. Furthermore, with the RMSEA and a lower sample size may provide incorrect rejections. As a result, larger sample sizes are crucial well reviewing fit indices. In essence, these data should be interpreted with caution.

Final Scale Items

Items eliminated left the ASSRS with 81 items, with a total score of 324. Based on the revised scale, 103 participants had a mean score of 231 with a standard deviation of 20.00, and a mode of 226, a median of 229, and a range of 170 to 312. A score of 220 on the ASSRS placed an individual in the 25th percentile, a score of 229 placed an individual in the 50th percentile, and a score of 244 placed an individual in the 75th percentile. Therefore, respondents who scored below 220 may be considered as having poor social skills while respondents who score 244 and above may be considered as having strong social skills.

Reliability

After determining the factor structure of the ASSRS, the internal consistency overall, and of factors was examined from the final items.

Internal consistency

The internal consistency of the ASSRS was examined with the final 81 items. The Cronbach's alpha of the ASSRS ($n = 103$) was 0.872. This result indicated that the ASSRS possessed adequate internal consistency.

Internal consistency of factors

The internal consistency of the 12 factors was also examined. The Cronbach's alpha of the factors ranged from 0.337 to 0.858. Factor one had an internal consistency of 0.888, factor two had an internal consistency of 0.737, factor three had an internal consistency of 0.783, factor four had an internal consistency of 0.836, factor five had an internal consistency of 0.837, factor six had an internal consistency of 0.858, factor seven had an internal consistency of 0.853, factor eight had an internal consistency of 0.852, factor nine had an internal consistency of 0.819, factor 10 had an internal consistency of 0.787, factor 11 had an internal consistency of 0.337, and factor 12 had an internal consistency of 0.392.

Validity

The validity of the ASSRS was examined through review of an expert panel, correlations between the MSCS and AQ, and factor analysis.

Content validity

As previously discussed, an expert panel reviewed the items before the start of the study. The initial version of the ASSRS consisted of 107 items that was presented to three individuals considered experts in test construction and social skill assessment. The panel consisted of three school psychology faculty members. The expert panel was a result of

convenience and was comprised of members of the School Psychology program at Stephen F. Austin State University.

Criterion-related Validity

To examine criterion-related validity, the total ASSRS score was correlated with two other measures.

The MCSC was used to demonstrate convergent validity. Participants had a mean score of 62.5, a median of 62, a mode of 61.0 and with a standard deviation of 61.0. Participants ranged from 25 to 105 in scores.

The ASSRS total score was correlated with the MSCS total score using a Pearson's r correlation. The Pearson's r correlation was significant ($r = 0.338, p < .001$), indicating a weak relationship. This result indicated that social skills were weakly correlated with social competence.

The AQ was used to demonstrate divergent validity. Participant had a mean score of 120, a median of 119, and a mode of 119, with a standard deviation of 17.7. Participants ranged from 59 to 200 in scores.

The total ASSRS was also correlated with the total AQ score using a Pearson's r correlation. The Pearson's r correlation revealed a nonsignificant ($r = 0.122, p = .218$) weak correlation between scales.

Construct Validity

A 12-structure factor analysis was accepted for the ASSRS. Twelve factors explained 59.61% of the variance. This is an acceptable structure for the ASSRS. All items loaded 0.37 or higher.

Factor one is comprised of the following items: “I say things that hurt people’s feelings,” “I hurt people when I am angry,” “I try to make others afraid of me,” “I fight with others,” “I do not let others join my group of friends,” “I lie to others,” “I cheat when playing games,” “I break things when I’m angry,” and “I say mean things to others,” “I have temper tantrums.” This factor was named externalization.

Factor two is comprised of the following items: “I meet and greet new people on my own,” “I try to make new friends,” “I make friends easily,” “I ask to join others when they are doing things I like,” “I ask others to do things with me,” “I play games with others,” “I like to keep to myself,” “I try new things,” and “I get along with others.” This factor was named engagement.

Factor three is comprised of the following items: “I feel lonely,” “I often feel tired,” “I have difficulty falling asleep,” “I think no one cares about me,” “I find it hard to sit still,” “I can’t stop thinking about things,” “I feel sad,” and “I am able to remember what was said during conversation.” This factor was named behavior.

Factor four is comprised of the following items: “I often feel sick,” “I often cancel plans because I don’t feel well,” “I am afraid of a lot of things,” “I get embarrassed easily,” “I miss out on activities because I feel nervous,” “I think bad things will happen

to me,” “I feel nervous around coworkers or people outside my family,” and “I feel bad when others are sad.” This factor was named internalization.

Factor five is comprised of the following items: “I would like to be (or am) in a long-term relationship with someone,” “I am willing to compromise to make my relationship stronger,” “I believe married or committed partners support each other,” “I show physical affection to romantic partners,” “I have people in my life I trust,” “I wish I were single or wish to remain single,” and “I am willing to have uncomfortable conversations with a significant other to improve our relationship.” This factor was named relationships and dating.

Factor six is comprised of the following items: “I follow laws and rules,” “I ask for help from my coworkers when needed,” “I let people know when there’s a problem,” “I pay attention during group meetings,” “I am well-behaved,” “I am careful when I use things that aren’t mine,” “I am patient with others,” and “I do what my boss or manager asks me to do the first time I am asked.” This factor was named responsibility.

Factor seven is comprised of the following items: “I stay calm when dealing with problems,” “I stay calm when others bother me,” “I stay calm when I disagree,” “I stay calm when I am teased,” and “I stay calm when people point out my mistakes.” This factor was named self-control.

Factor eight is comprised of the following items: “I say ‘thank you’ when someone helps me,” “I am polite when I ask for things,” “I watch others’ facial expressions,” “I take turns when I talk with others,” “I smile or wave at people when I

see them,” and “I smile and try to make others feel comfortable when in conversation.”

This factor was named communication.

Factor nine is comprised of the following items: “I speak up and share my opinion,” “I let people know when there’s a problem,” “I ask for information when I need it,” “I show others how I feel,” “I stand up for others when they are not treated well,” and “I tell others when I’m not treated well.” This factor was named assertion.

Factor 10 is comprised of the following items: “I keep my promises,” “I help my friends when they are having a problem,” “I am dependable,” “I try to think how others feel,” “I try to make others feel better,” and “I tell others when I have made a mistake.” This factor was named empathy.

Factor 11 is comprised of the following items: “I am often asked to repeat myself to be heard,” “I purposely annoy others,” “I often do things without thinking,” “I explain things in ways that others understand,” “I keep my thoughts to myself,” and “I and calm myself down.” This factor was named interpersonal skills.

Factor 12 is comprised of the following items: “I forgive others when they say ‘sorry,’” and “I support the dreams and goals of people who are important to me.” This factor was named support and forgiveness.

CHAPTER V

Discussion

Autism is a developmental disorder that consists of deficits in social communication and interaction (APA, 2013). A review of the literature indicated a lack of literature contributions towards autistic adults. The literature has primarily focused on children and adolescent population. As a result of the gap within the literature, as well as the lack of assessment tools that are normed for adult populations, this dissertation sought to create a new measure specifically for assessing social skills in adults.

The ASSRS was piloted with 110 undergraduate students at Stephen F. Austin State University enrolled in the psychology department. After elimination of respondents who straight lined the survey, as well as answered agree or strongly agree to validity questions, a total of 103 participants were left for data analyses. Conducting the EFA, removal of questions loading under 0.32 or -0.32 the reliability and validity of the scale was examined. Item elimination left the ASSRS with 81 items, with a total score of 324. Results revealed a Cronbach's alpha of 0.872, indicating strong internal consistency. The ASSRS also revealed a weak significant relationship with the MSCS, which measured social competence ($r = 0.338, p < .001$). However, the ASSRS and AQ revealed a nonsignificant correlation ($r = 0.122, p = .218$). Confirmatory factor analyses revealed that the overall fit of the final items was poor with a 12-factor model. These results are

assumed to be attributed to low sample size, as the CFA goodness of fit indices and chi-square test are sample-based indices.

This dissertation sought to answer the following questions:

- 1.) Does the Adult Social Skills Rating Scale (ASSRS) have adequate reliability for research and clinical practice?

The ASSRS obtained an alpha of 0.872 which is indicative of strong internal validity. However, the score warrants caution with the interpretation of the ASSRS divergent validity. The ASSRS total scores were correlated with the AQ total score with a Pearson's r correlation. The Pearson's r correlation was nonsignificant, which is indicative of no correlation between the measures ($r = 0.122, p = .218$). This result suggests that the ASSRS is not correlated with a measure of autism. Furthermore, few participants had high scores on the AQ, and therefore, there was insufficient data to determine this question. Thus, a larger sample and different population representative of the ASSRS intended purpose.

- 2.) Does the ASSRS demonstrate adequate internal consistency?

It was hypothesized that the ASSRS would obtain a reliability above or beyond 0.80 after review was conducted for item relevancy. The internal consistency of the ASSRS was examined with the final 81 items. The Cronbach's alpha of the ASSRS was 0.872. This result is indicative of strong internal consistency.

- 3.) What is the factor structure of the ASSRS?

The EFA produced a 12-factor structure. Twelve factors explained 59.61% of the variance. All factors did have an eigenvalue that was above one. This was an acceptable structure for the ASSRS. The 12 factors were named: externalization, engagement, behavior, internalization, relationships and dating, self-control, communication, assertion, empathy, interpersonal skills, and support and forgiveness. Researchers anticipated 10 factors having the following names: communication, cooperation, assertion, responsibility, empathy, engagement, self-control, relationships and dating, externalizing behaviors, and internalizing behaviors.

- 4.) Does the ASSRS demonstrate convergent validity in terms of having a strong or moderate correlation to other measures of social skills?

The ASSRS total scores were correlated with the MSCS total score with a Pearson's r correlation. These results indicate that the ASSRS measured similarly to the social competence scale and thus provides evidence for convergent validity of the measure.

Limitations

Despite its strengths, this dissertation is not without limitations. Firstly, the study utilized a convenience sample and not reflective of the ASSRS intended population (autistic adults). The sample was comprised of college students, psychology majors/minors, and assumed to have higher social skills. Furthermore, the study was conducted at the researchers' university and graduated from the university psychology

department used within the study. The sample from Stephen F. Austin State University was not reflective of diversity. There were more females (80.6%) comparative to males (19.4%), and more participants between the ages of 18 – 22 (78.6%) comparatives to other age groups. Finally, a majority of participants identified as White (61.2%) compared to other ethnicities.

Due to convenience sampling, sampling bias also occurred within the study. As stated by Simundic (2012) sampling bias leads to over-representation of particular individuals over the general population. Relative to current study, the sample was not representative of the general population. As the ASSRS is intended for adults, individuals between the ages of 18 – 22 may not be reflective of adults in general or autistic adults. This sample is reflective of the overall Stephen F. Austin State University demographic makeup, and researchers should aim to obtain a more representative sample for future studies. Researchers should also aim to utilize the ASSRS on autistic adults, as few participants had high scores on the AQ, and therefore, there was insufficient data.

Secondly, researchers were limited in data collection through the department of psychology. As a result, the researchers obtained a small sample size. As de Winter and colleagues (2009) explained factor analyses are typically performed with larger sample sizes, and that the literature demonstrates caution when EFA is utilized with smaller sample sizes. Although de Winter et al. (2009) demonstrated through simulations that EFA can yield good results with samples sizes less than 50, however, unless factors are not well defined, it proves to be more difficult in estimating number of factors the

instrument has. As the current study obtained a sample size of 103, when a sample of 200 is preferred, interpretation of the results warrant caution. It is imperative that future research aim to use the ASSRS with its intended population and greater access to participants.

Third, although the ASSRS was able to demonstrate a small convergent relationship with the MSCS, the ASSRS was not able to demonstrate adequate divergent validity. This demonstrates that the ASSRS was not able to provide evidence that the AQ and social skill measure are unrelated constructs. Therefore, it is evident that the ASSRS is overlapping with the AQ, and scale review should be considered for future research.

Fourth, the study only collected participant data via self-report measures, which can be prone to social desirability bias. As stated by Fisher (1993) individuals have a tendency to present oneself in the best light possible. This impacts overall results as researchers are not able to fully capture concepts due to distortion. Items of concern within the ASSRS include, but are not limited to, “I say things to hurt people’s feelings,” “I break things when I am angry,” and “I fight with others.” Items that are sensitive in nature to the participants may cause the participant to answer items in a socially desirable way. This can lead to misleading research results, as participants may avoid criticism or gain social approval (de Mortel, 2008). These results can be a threat to validity, as now the instrument is not measuring what it had aimed to measure.

Straight lining is a response style by a participant that is a threat to validity as participants tend to choose one answer choice and choose that same answer choice

throughout the survey. For example, participants who chooses “Strongly Agree” throughout the entire survey may not have read all the questions, and simply choose that answer all the way to the end. As shared by Zhang and Conrad (2014) experimental study, participants who are younger compared to older participants were more likely to speed through surveys. Furthermore, the study revealed that participants who are prone to speeding through surveys also tend to straight line answer. It is assumed that for this study, participants who straight lined may be attributed to the completion of the study automatically awarded them R points that is a grade in their introductory psychology course, despite if the answers are thoroughly thought out or speed through. For these reasons the result of this study should be interpreted with caution.

Future Research Directions

The preliminary norms gathered in this study have shown that the ASSRS possess some strong psychometric properties. However, research is warranted for the factor structure of the scale with a larger sample size, as results may be attributed to low power. With a greater sample size, researchers may be able to extrapolate with confidence the number of factors the ASSRS does have. Research should also be directed towards norming the ASSRS on a representative sample of adults, and autistic adults. This is recommended as college students lack generalizability, and applying obtained percentile ranks for other population may be inappropriate, as it is assumed they obtained higher score due to having greater social skills. Thus, with a more inclusive population, and larger sample, results may be interpreted without caution. Following, researchers may

also examine the validity of the ASSRS once more with a larger sample to determine if sample size is affecting the validity or if there is additional scale revision needed.

Additionally, future research should also aim to utilize the ASSRS with different cultures. As expressed earlier, different cultures have different ways of interpreting signs of autism. Eye contact may be important to one culture, but not to another. These aspects of socialization are taught and followed. Therefore, it may be beneficial for researchers to examine the differences between cultures utilizing the ASSRS, as well in determining culturally sound items.

It may be also important to determine if there are critical items within the ASSRS that would indicate if someone had high or low social skills. If the ASSRS has critical items, then the ASSRS could be reduced to a few items, which may be more appropriate and efficient in research and practice.

Researcher may also aim to use the ASSRS with other disabilities, not limiting to autism. Social skills deficits are not only attributed to autism, but there is also a variety of factors and disabilities that can impact social skill development. The ASSRS may be able to differentiate autism and other disabilities.

Furthermore, since the purpose of this scale was intended to create an assessment that could be used in practice, creation of a parent report version may be beneficial. This way a practitioner could rely on two reports in order to identify if an adult does have a social skill deficit and better guide treatment and intervention.

Finally, extending validation studies and the use of the ASSRS to the autistic adult population. This may allow practitioners to use this scale for determination of an autism diagnosis should the individual not have a diagnosis, as well as guiding intervention to build social skills, whether that be through social skills training or other forms of intervention.

Conclusion

Social skill identification has lacked throughout the literature in adults. Research has primarily studied children and adolescents, creating a gap within the literature. The review indicated that there is little research in general concerning autistics adults, and limited research in social skill deficits in autistics adults. Furthermore, the review revealed a lack of assessments that can be ethically used on adult populations. Therefore, the ASSRS was created so that it may fill the gap within the literature. The study piloted the ASSRS and results revealed the ASSRS had a strong internal reliability, weak factor structure, demonstrated convergent validity but not divergent validity. This scale will provide direction for future research to identify items that will assess social skills, and potentially provide benefit to practice and research.

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Appendix A

Table 1

Adult Social Skill Deficits Defined in the Research

Citation	Participants	Methods	Findings
Sperry & Mesibov (2005)	18 adults diagnosed with ASD	Interviews/Qualitative	Four themes revealed as social challenges: relationships at work, developing and maintaining interpersonal relationships, appropriate behavior, and personal perspective on ASD.
Muller et al. (2008)	18 adult's total. 13 adults diagnosed with Asperger syndrome, 2 informally diagnosed with Asperger syndrome, 2 diagnosed with high-functioning ASD, and 1 diagnosed with PDD-NOS	Semi Structured interview/Qualitative	Results revealed that individuals with ASD experience social challenges that include social isolation, communication, and intimacy. However, participants are self-aware and are growing to develop social understanding.

Table 1 Continued

Citation	Participants	Methods	Findings
Tobin et al. (2014)	14 articles	Systematic review	Results demonstrated that supporting social functioning and participants is crucial for individuals with ASD to make relationships and have higher quality of life. Individuals who have no support had social deficits.
Lin and Huang (2017)	66 adults with ASD (20-38 years of age) and 85 neurotypical adults (20-38 years of age)	Participants with ASD were interviewed to complete questionnaires, and neurotypical adults completed the questionnaires themselves.	Adults with ASD scored lower in quality of life compared their neurotypical peers. The lowest quality of life score was in social relationships, in which individuals with ASD indicated higher ratings of loneliness and isolation which correlated with high rates of psychiatric disorders (e.g., Anxiety, depression).

Table 1 Continued

Citation	Participants	Methods	Findings
Bishop-Fitzpatrick et al. (2015)	38 adults diagnosed with AD, 37 “healthy volunteers” (18 to 55 years of age)	Researchers measured stress and social functioning examining if there would be an inverse relationship. Baseline and interviews were used to assess the different between groups.	Results revealed that adults with ASD had higher stress response that was related to social functioning. Results for individuals with ASD showed poorer social functioning and social disability.
Morrison et al. (2019)	122 total participants. 67 adults diagnosed with ASD, 58 neurotypical adults	Participants were asked to have a 5-minute conversation to get to know each other, which was unstructured and also given a survey to complete about their thoughts on their partner and conversation.	Results showed that adults with ASD were less favorable than their neurotypical peers. Adults with ASD were viewed as awkward and less warm. Lastly, neurotypical adults highly preferred other neurotypical adults for future interactions compared to adults with ASD.

Table 1 Continued

Citation	Participants	Methods	Findings
Hurlbutt and Chalmers (2002)	3 adults diagnosed with ASD	Qualitative research. Visits, interviews, follow up interviews, and written material by participants.	High-functioning adults revealed that they do not desire to be neurotypical and would like to be consulted on issues related to ASD. Lastly that supportive systems contribute to developing skills and social connections to be successful.
Harmuth et al. (2018)	161 articles on employments and adults with ASD	Review	Barriers to employment, socially, were considered to be difficulty following instruction, communication/social difficulties, and preferring no social interaction. Facilitators were higher functioning ASD, insight and support.

Table 1 Continued

Citation	Participants	Methods	Findings
Hull et al. (2017)	92 adults diagnosed with ASD, Asperger's and PDD-NOS.	Survey via Qualtrics over camouflaging	Results revealed two motivators for camouflaging which was assimilation and connections. Results suggests that individuals with ASD want to avoid discrimination and would then camouflage to "fit in" to make better social relationships. However, participants felt exhausted after camouflaging and despite building connections felt that they were not being themselves. Participants stated with education they would hope that acceptance of individuals with ASD would be better and camouflaging could stop.

Table 2*Participant demographics*

		%	Frequency (<i>n</i> = 103)
Gender	Female	80.6	83
	Male	19.4	20
Age	18 – 22	78.6	81
	22 – 26	12.6	13
	26 – 30	1.00	1
	31 – 40	5.8	6
	41 – 50	1.00	1
	51 – 60	1.00	1
Ethnicity	White	61.2	63
	Black	19.4	20
	LatinX	12.6	13
	Asian	2.9	3
	Native Hawaiian or Pacific Islander	1.00	1
	Other	2.9	3
Autism Diagnosis	No	97.1	100
	Yes, I was diagnosed by a physician or psychologist	1.00	1
	Yes, I am self-diagnosed	1.00	1
	I prefer not to say	1.00	1
Other diagnoses	No	52.9	54
	ADHD	15.7	16
	Anxiety	14.7	15
	Depression	11.8	12
	Learning Disability	4.9	5
Preferred language	Person – first language	20.4	21
	Identity – first language	4.9	5
	This is not relevant to me	44.7	46
	No preference	29.1	30
	I prefer not to say	1.00	1

Table 3*Exploratory factor analysis eigenvalues*

Factor	Eigenvalue	% of Variance	Cumulative %
1	5.59	6.90	6.90
2	4.82	5.96	12.86
3	4.67	5.77	18.63
4	4.53	5.60	24.23
5	4.44	5.78	29.71
6	4.22	5.21	34.92
7	3.98	4.93	39.84
8	3.99	4.93	44.77
9	3.67	4.54	49.30
10	3.58	4.42	53.72
11	2.87	3.54	57.26
12	1.90	2.36	59.61

Table 4*Internal Consistency*

Factor Structure	Cronbach's Alpha
Overall (81 items)	0.872
Factor 1	0.888
Factor 2	0.737
Factor 3	0.783
Factor 4	0.836
Factor 5	0.837
Factor 6	0.858
Factor 7	0.853
Factor 8	0.852
Factor 9	0.819
Factor 10	0.787
Factor 11	0.337
Factor 12	0.392

Table 5*Correlations between measures*

	ASSRS	MSCS	AQ
ASSRS	-	-	-
MSCS	0.338	-	-
AQ	0.122	0.241	-

Table 6*Item loadings in factor analysis*

	Factor											
	1	2	3	4	5	6	7	8	9	10	11	12
EX_14	0.851											
EX_11	0.771											
EX_13	0.771											
EX_9	0.668											
EX_12	0.644											
EX_4	0.626											
EX_6	0.572											
EX_7	0.572											
COM_9	0.490											
EX_3	0.477											
ENG_4		0.780										
ENG_7		0.753										
ENG_2		0.689										
ENG_6		0.649										
ENG_3		0.519								0.330		
ENG_5		0.487										

Table 6 Continued

	Factor											
	1	2	3	4	5	6	7	8	9	10	11	12
IN_12		-0.441		0.367								
ENG_8		0.427										
ENG_1		0.423										
IN_6			0.730									
IN_8			0.704									
IN_5			0.678									
IN_7			0.659									
EX_5			0.556									
IN_11			0.542									
IN_10			0.503	0.371								
COM_3			-0.426			0.387						
IN_2				0.700								
IN_14				0.690								
IN_1				0.639								
IN_3				0.638								
IN_13				0.623								
IN_4				0.558								
IN_9				0.455								
EMP_2				0.374								
RD_1					0.853							
RD_5					0.711							
RD_2					0.642				0.327			

Table 6 Continued

	Factor											
	1	2	3	4	5	6	7	8	9	10	11	12
RD_3					0.605							
RD_7					0.554							
RD_4R					0.546							
RD_6					0.505							
COOP_5						0.688						
ASSERTION_11						0.670						
RES_4						0.581						
COOP_6						0.576						
RES_3						0.550						
RES_1						0.528						
EMP_8						0.449				0.338		
COOP_3						0.403		0.347				
SC_4							0.759					
SC_5							0.733					
SC_6							0.676					
SC_1							0.668					
SC_2							0.652					
COM_7								0.782				
COM_1								0.705				
COM_6								0.701				
COM_2								0.637				

Table 6 Continued

	Factor											
	1	2	3	4	5	6	7	8	9	10	11	12
COM_5							0.600	0.482				
COM_4							0.393					
ASSERTION_8								0.643				
ASSERTION_4								0.620				
ASSERTION_1								0.602				
ASSERTION_3								0.580				
ASSERTION_2								0.493				
ASSERTION_6								0.392				
RES_6									0.614			
EMP_4									0.586		0.323	
RES_11									0.577			
EMP_5									0.494			
EMP_3									0.422			
RES_7									0.402			
ASSERTION_9R										0.655		
COOP_8R										0.492		
EX_1										-0.483		
COM_10										0.481		
ASSERTION_10R										0.477		
SC_10							0.335			0.473		

Table 6 Continued

	Factor											
	1	2	3	4	5	6	7	8	9	10	11	12
EMP_1												0.501
RD_9					0.327							0.491

Appendix B: Adult Social Skills Rating Scale

(1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree)

Communication

- 1) I am polite when I ask for things
- 2) I take turns when I talk with others
- 3) I am able to remember what was said during conversations
- 4) I smile and try to make others feel comfortable when in conversation
- 5) I smile or wave at people when I see them
- 6) I watch others' facial expression
- 7) I understand others facial expressions.
- 8) I say "thank you" when someone helps me
- 9) I am able to express what I want through words or gestures
- 10) I say mean things to others (R)
- 11) I explain things in ways that others understand

Cooperation (Employment skills)

- 1) I pay attention when others present their ideas
- 2) I ignore people who annoy me
- 3) I do what my boss or manager asks me to do the first time I am asked.
- 4) I do my work without bothering others
- 5) I follow laws and rules.
- 6) I pay attention during group meetings
- 7) I work well with my coworkers
- 8) I purposely annoy others (R)
- 9) Even when I listen to others' opinions, I choose what I want to do (R)
- 10) I can understand complex directions

Assertion

- 1) I ask for information when I need it
- 2) I stand up for others when they are not treated well
- 3) I show others how I feel
- 4) I let people know when there's a problem
- 5) I say nice things about myself without bragging
- 6) I tell others when I'm not treated well
- 7) I ask for help when I need it
- 8) I speak up and share my opinion
- 9) I keep my thoughts to myself (R)
- 10) I am often asked to repeat myself to be heard (R)
- 11) I ask for help from my coworkers when needed.

Responsibility

- 1) I'm careful when I use things that aren't mine
- 2) I do my part in a group.
- 3) I am well-behaved.
- 4) I do the right thing without being told.
- 5) I complete work within the deadlines.
- 6) I keep my promises.
- 7) I tell people when I have made a mistake.
- 8) I am responsible.
- 9) I am on time for appointments.
- 10) I forget to do things I said I would do (R)
- 11) I am dependable.

Empathy

- 1) I forgive others when they say "sorry."
- 2) I feel bad when others are sad.
- 3) I try to make others feel better.
- 4) I help my friends when they are having a problem.
- 5) I try to think about how others feel.
- 6) I am nice to others when they are feeling bad.
- 7) I don't care how others feel (R)
- 8) I am patient with others.
- 9) I recognize when people want to be left alone.
- 10) I say things without considering how others might feel (R)

Engagement

- 1) I get along with others.
- 2) I make friends easily.
- 3) I ask others to do things with me.
- 4) I meet and greet new people on my own.
- 5) I play games with others.
- 6) I ask to join others when they are doing things I like.
- 7) I try to make new friends.
- 8) I try new things.
- 9) I prefer to be alone (R)
- 10) I find activities to go to.

Self-Control

- 1) I stay calm when I am teased.
- 2) I stay calm when people point out my mistakes.
- 3) I try to find a good way to end a disagreement.

- 4) I stay calm when dealing with problems.
- 5) I stay calm when others bother me.
- 6) I stay calm when I disagree with others.
- 7) I can recognize and identify my own emotions.
- 8) I get angry easily (R)
- 9) I cannot wait (R)
- 10) I can calm myself down.
- 11) I walk away from situations that could provoke me.

Relationships and Dating

- 1) I would like to be (or am) in a long-term relationship with someone.
- 2) I believe married or committed partners support each other.
- 3) I show physical affection to romantic partners.
- 4) I wish I were single or wish to remain single (R)
- 5) I am willing to compromise to make my relationships stronger.
- 6) I am willing to have uncomfortable conversations with a significant other to improve our relationship.
- 7) I have people in my life I trust.
- 8) I end friendships or relationships when the relationship is no longer positive.
- 9) I support the dreams and goals of people who are important to me.
- 10) Relationships with others are not beneficial to me (R)

Externalizing

- 1) I often do things without thinking.
- 2) I swear or use bad words.
- 3) I have temper tantrums.
- 4) I lie to others.
- 5) I find it hard to sit still.
- 6) I cheat when playing games.
- 7) I break things when I'm angry.
- 8) I question authority.
- 9) I fight with others.
- 10) I break the rules.
- 11) I hurt people when I am angry.
- 12) I do not let others join my group of friends.
- 13) I try to make others afraid of me.
- 14) I say things to hurt people's feelings.

Internalizing

- 1) I am afraid of a lot of things.

- 2) I often feel sick.
- 3) I get embarrassed easily.
- 4) I think bad things will happen to me.
- 5) I have difficulty falling asleep.
- 6) I feel lonely.
- 7) I think no one cares about me.
- 8) I often feel tired.
- 9) I feel nervous around my coworkers or people outside of my family.
- 10) I feel sad.
- 11) I can't stop thinking about things.
- 12) I like to keep to myself.
- 13) I miss out on activities because I feel nervous.
- 14) I often cancel plans because I don't feel well.

Validity Items

- 1) I have flown on a plane 7 times a year.
- 2) I walk 10 miles to work.

Appendix C: Brief MCSC

(1 – Not True/Never True, 2 = Rarely True, 3 = Sometimes True, 4 = Often True, 5 = Very True/Almost Always True)

- 1) I stay in the “background” in group social situations (e.g., keep to myself, may not be noticed).
- 2) I avoid talking to people when possible (e.g., look, move, or walk away).
- 3) I need to be told or prompted to talk or interact with people.

Social Inference

- 4) I have trouble judging who is trustworthy (e.g., who to share secrets or personal information with).
- 5) I do not pick up on the subtleties of social interaction.
- 6) I understand when people are being sarcastic.

Empathic Concern

- 7) I am concerned about people and their problems (e.g., talk to someone who is having a hard time).
- 8) I offer comfort to people (e.g., to someone who is upset, not feeling well, hurt etc.). For instance, I may try to hug the person or provide a comforting object as a way of trying to make the other person feel better.
- 9) I try to cheer people up (when they are down).

Social Knowledge

- 10) I know about the latest trends for my age (e.g., in clothes, music, tv shows/movies, music).
- 11) I understand what makes a true friend.
- 12) I dress appropriately for my age and social situation (e.g., dress up for formal events, wear more casual clothes on weekends, wear clothes that are generally considered acceptable by peers my age).

Verbal Conversation Skills

- 13) I talk “over” people in conversations (e.g., interrupt a lot, don’t wait for others to finish speaking).
- 14) I dominate conversations so that it can be hard for others to “get a word in”. For example, I might ramble on and on about a favourite topic of interest. I might also need reminders/prompting to let others speak.

- 15) I provide too much detail when talking about a topic (e.g., I might list a bunch of facts rather than expressing a main message or exchanging information).

Nonverbal Sending Skills

- 16) My facial expressions seem “flat” (e.g., my face may be like a “blank slate” or seem overly serious).
- 17) I sound the same (have the same tone and intonation in his/her voice) regardless of how I am feeling. In other words, it is hard to tell what I am feeling based on the way my voice sounds.
- 18) I speak with a flat, monotonous tone of voice.

Emotion Regulation

- 19) I get frustrated easily.
- 20) My emotional responses tend to be extreme (e.g., I might be extremely angry or frustrated in response to relatively small problems).
- 21) I have “meltdowns” (e.g., sudden outbursts, “blow ups” temper tantrums).

Appendix D: AQ

(1 = Definitely Agree, 2 = Slightly Agree, 3 = Slightly Disagree, 4 = Definitely Disagree)

- 1) I prefer to do things with other rather than on my own.
- 2) I prefer to do things the same way over and over again.
- 3) If I try to imagine something, I find it very easy to create a picture in my mind.
- 4) I frequently get so strongly absorbed in one thing that I lose sight of other things.
- 5) I often notice small sounds when others do not.
- 6) I usually notice car number plates or similar strings of information.
- 7) Other people frequently tell me that what I've said is impolite, even though I think it is polite.
- 8) When I'm reading a story, I can easily imagine what the characters might look like.
- 9) I am fascinated by dates.
- 10) In a social group, I can easily keep track of several different people's conversations.
- 11) I find social situations easy.
- 12) I tend to notice details that others do not.
- 13) I would rather go to a library than to a party.
- 14) I find making up stories easy.
- 15) I find myself drawn more strongly to people than to things.
- 16) I tend to have very strong interests, which I get upset about if I can't pursue.
- 17) I enjoy social chitchat.
- 18) When I talk, it isn't always easy for other to get a word in edgewise.
- 19) I am fascinated by numbers.
- 20) When I'm reading a story, I find it difficult to work out the characters' intentions.
- 21) I don't particularly enjoy reading fiction.
- 22) I find it hard to make new friends.
- 23) I notice patterns in things all the time.

- 24) I would rather go to the theater than a museum.
- 25) It does not upset me if my daily routine is disturbed.
- 26) I frequently find that I don't know how to keep a conversation going.
- 27) I find it easy to "read between the lines" when someone is talking to me.
- 28) I usually concentrate more on the whole picture, rather than on the small details.
- 29) I am not very good at remembering phone numbers.
- 30) I don't usually notice small changes in a situation or a person's appearance.
- 31) I know how to tell if someone listening to me is getting bored.
- 32) I find it easy to do more than one thing at once.
- 33) When I talk on the phone, I'm not sure when it's my turn to peak.
- 34) I enjoy doing things spontaneously.
- 35) I am often the last to understand the point of a joke.
- 36) I find it easy to work out what someone is thinking or feeling just by looking at their face.
- 37) If there is an interruption, I can switch back to what I was doing very quickly/
- 38) I am good at social chitchat.
- 39) People often tell me that I keep going on and on about the same things.
- 40) When I was young, I used to enjoy playing games involving pretending with other children.
- 41) I like to collect information about categories of things (e.g., types of cars, birds, trains, plants).
- 42) I find it difficult to imagine what it would be like to be someone else.
- 43) I carefully plan any activities I participate in.
- 44) I enjoy social occasions.
- 45) I find it difficult to work out people's intentions.
- 46) New situations make me anxious.
- 47) I enjoy meeting new people.
- 48) I am a good diplomat.
- 49) I am not very good at remembering people's date of birth.
- 50) I find it very easy to play games with children that involve pretending.

Appendix E: Demographics

- 1.) What is your gender?
 - a. Male
 - b. Female
 - c. Non-binary
 - d. Prefer not to say

- 2.) What is your age?
 - a. 18 – 22 years
 - b. 22 – 26 years
 - c. 26 – 30 years
 - d. 31 – 40 years
 - e. 41 – 50 years
 - f. 51 – 60 years
 - g. 61+

- 3.) What is your ethnicity?
 - a. White
 - b. LatinX
 - c. Black
 - d. Asian
 - e. Native American
 - f. Middle Eastern or North African
 - g. Native Hawaiian or Pacific Islander
 - h. Other
 - i. I prefer not to say

- 4.) Do you have a diagnosis of Autism?
 - a. No
 - b. Yes, I am self-diagnosed
 - c. Yes, I was diagnosed by a physician or psychologist
 - d. Yes, I was found eligible in school
 - e. I prefer not to say

- 5.) Do you have any other diagnosis?
 - a. No
 - b. Depression
 - c. Anxiety

- d. ADHD
- e. Learning Disability
- f. Other
- g. I prefer not to say

6.) Which do you prefer?

- a. Person-first language (she/her has autism)
- b. Identify-first language (she/her is autistic)
- c. No preference
- d. This is not relevant to me
- e. I prefer not to say

Appendix F: Informed Consent

Stephen F. Austin State University Informed Consent Document

PURPOSE:

The researchers are interested in collecting norming data from college students for the development of a scale that aims to be utilized in research and clinical practice.

DURATION:

The length of time you will be involved with this study is approximately 30 minutes.

QUALIFICATION(S) TO PARTICIPATE:

To participate in this study, you must be a fluent in English and attend Stephen F. Austin as a student.

PROCEDURES:

You will be asked to answer questions over communications, engagement, self-control, relationships and dating, and problem behaviors.

RISKS:

There are no known personal risks for participating in anonymous survey research or for participating in this study. We want you to be aware that if at any point during the study, you are uncomfortable answering a survey question, you are free to skip that question or withdraw your participation without penalty.

PRIVACY & CONFIDENTIALITY:

There are no questions that can identify you personally. All responses will be completely anonymous and kept on password-protected software located on the principal investigator's computer.

BENEFITS:

Students recruited from participating psychology classes will receive 1 credit or extra-credit for participation in the survey.

VOLUNTARY NATURE OF THE STUDY:

Your participation in this study is voluntary. In addition, you may choose to not respond to individual items in the survey. Your decision whether or not to participate will not affect your current or future relation with SFA or any of its representatives. If you decide to participate in this study, you are free to withdraw from the study at any time without affecting those relationships.

CONTACT INFORMATION FOR QUESTIONS RELATED TO THE STUDY:

If you have any questions or concerns about being in this study you should contact Dr. Jaime Flowers at jaime.flowers@sfasu.edu or 936-468-1618.

TO REPORT A CONCERN:

If you would like to report a concern about the study or the informed consent process, you may contact SFAs Institutional Review Board, Office of Research and Sponsored Programs Administration by phone 936.468.1153, by email at irb@sfasu.edu.

STATEMENT OF CONSENT:

By clicking the button below you acknowledge that your participation in this study is voluntary, you are 18 years of age, and that you are aware that you may choose to terminate your participation in the study at any time and for any reason.

- I consent, begin the study
- I do not consent, I do not wish to participate

VITA

Jessica Cuitareo entered Stephen F. Austin State University in 2015. She received the degree of Bachelor of Arts in Psychology in May 2019. In August 2019, she entered the Graduate School of Stephen F Austin State University doctoral program of School Psychology. Jessica will receive her Doctor of Philosophy in School Psychology in May 2023.

Permanent address: 2100 N. Raguet St.
Nacogdoches, TX 75962

Style manual designation: APA 7th Edition

This dissertation was typed by Jessica Cuitareo.