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Self-Report Anxiety and Depression Ratings Among Adolescents with an Autism Spectrum Disorder: A Comparison of Individuals with and without a History of Sexual Offending

Stephanie N Marshall

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SELF-REPORT ANXIETY AND DEPRESSION RATINGS AMONG ADOLESCENTS
WITH AN AUTISM SPECTRUM DISORDER: A COMPARISON OF INDIVIDUALS
WITH AND WITH OUT A HISTORY OF SEXUAL OFFENDING

A Dissertation

Submitted to the School of Education

Department of Counseling, Psychology, and Special Education

Duquesne University

In partial fulfillment of the requirements for
the degree of Doctor of Philosophy

By

Stephanie Nicole Marshall

December 2012

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Stephanie Nicole Marshall

2012

DUQUESNE UNIVERSITY

SCHOOL OF EDUCATION
Department of Counseling, Psychology, and Special Education

Dissertation

Submitted in partial fulfillment of the requirements
for the degree
Doctor of Philosophy (Ph.D.)

School Psychology Doctoral Program

Presented by:

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October 22, 2012

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WITH AN AUTISM SPECTRUM DISORDER: A COMPARISON OF INDIVIDUALS
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ABSTRACT

SELF-REPORT ANXIETY AND DEPRESSION RATINGS AMONG ADOLESCENTS WITH AN AUTISM SPECTRUM DISORDER: A COMPARISON OF INDIVIDUALS WITH AND WITH OUT A HISTORY OF SEXUAL OFFENDING

By

Stephanie Nicole Marshall

December 2012

Dissertation supervised by Tammy L. Hughes, Ph.D.

The following study seeks to determine if there are differences in anxiety and/or depression symptoms between adolescents with an autism spectrum disorder (ASD) who have been adjudicated for a sexual offense compared to adolescents with an ASD who are not adjudicated. The scores of 26 adolescent offenders diagnosed with an ASD were compared to the scores of 14 non-offending adolescents with an ASD on the following measures: The Behavioral Assessment System for Children- Second Edition (BASC-2) depression and anxiety subscales, and the Beck's Depression Inventory- Second Edition (BDI-II). An examination of whether broad band (BASC-2) vs. narrow band (BDI-II) measures of depression was also examined to determine which better predicts comorbid depression among adolescents with an ASD. Results of the present study reveal higher self-report ratings of internalizing disorders among the offending population.

Specifically, the offender group reported clinically significant rates of depression on the BASC-2 and BDI-II when compared to the non-offender group. Results do not indicate significant differences between the two groups on reported anxiety levels, and the average anxiety scores for both groups were found to be clustered around the mean. Findings also reveal that the narrow band measure of depression (BDI-II) evidence higher statistically significant rates in comparison to the broad band measure of depression (BASC-2) for the offender group. These findings have several implications for future research and treatment of adolescents with ASDs. In particular, future studies should examine how cognitive abilities, comorbid internalizing disorders, and the understanding of social rules/norms impact the development of social skills among adolescents with an ASD, so as to aid in the development of sexual education programming that can be used to prevent future offending behavior.

DEDICATION

This document is dedicated in loving memory of my late grandmother, Rita Wardzinski, whose pride in my pursuit of a doctorate degree led to the completion of this study. This document is also dedicated to my family and close friends who stood by my side through years of schooling and provided constant love and support as I followed my dreams.

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CHAPTER I

Introduction

Autism spectrum disorders (ASDs) are characterized by severe and pervasive impairment across communication skills, reciprocal social interaction skills, and include the presence of stereotyped behaviors and interests (American Psychiatric Association, 2000). Research literature indicates that autism is almost always a lifelong condition (Mailick Seltzer et al., 2003; Shea & Mesibov, 2005) that impacts an individual's functioning across the lifespan. Yet across the life span, individuals with autism become interested in the same major life experiences as their typically-developing peers including independent living, employment, and having a family (Shea & Mesibov, 2005).

While social skills deficits are comprehensively described in the extant literature, a focus on dating, intimacy, and sexuality among adolescents and adults with autism is scarcely represented (Ousley & Mesibov, 1991). There is some work to suggest that individuals with autism are interested in (Haracapos & Pedersen, 1992; Henault, 2006) and do engage in sexual behaviors (Haracapos & Pedersen, 1992; Van Bourgondien, Reichle, & Palmer, 1997). A recent report showed that between 26% and 67% of individuals with autism express sexual behaviors such as deep kissing, caressing, and genital contact (Henault, 2006).

Theoretical Basis for the Study

Limited information exists on current theories used to examine the development of sexual expression as it relates to ASDs and related comorbid internalizing disorders. For purposes of this study, it is important to consider an integration of multiple theories. Individuals with autism face deficits in social reciprocity, which are likely to impact

one's ability to master social skills and traverse the issues related to dating and romantic relationships. For adolescents with ASDs, appropriate expression of attraction and sexual urges toward another person presents a challenge (Ray, Marks, & Bray-Garretson, 2004), as individuals with ASD often have difficulty comprehending the physical and emotional changes their bodies are going through, as well as difficulty expressing the verbal and/or physical feelings they have for another person. This may result in the expression of socially and/or sexually inappropriate behaviors (Henault, 2006).

Individuals with ASD generally seek more social contact as they age, although it may be in the context of one's restricted interests. It is possible that one's preference to orient toward things rather than people, as postulated in the Enactive Mind (EM) model of autism, impacts an individual's willingness to engage in social interactions (Carter, Ornstein Davis, Klin, & Volkmar, 2005; Klin, Jones, Schultz, & Volkmar, 2005). Many children on the autism spectrum avoid actively observing others, which leaves them with only a handful of social interactions to reference when such interactions are required. As a result, social interactions are often inappropriate or one-sided for children with an ASD. Concerns arise when these interactions involve inappropriate expression of sexual desires or interests.

These one-sided interactions could explain why individuals with ASDs have difficulty attending to and empathizing with the emotional states of others, as per the Theory of Mind deficits (Baron-Cohen et al., 2005). Often, these individuals have a limited understanding of their own emotions, let alone possess the skills to process others' thoughts, feelings, and behaviors. They are often disinterested in others'; therefore, others' emotions do not matter to them. This becomes problematic when they

do not consider others' fearful reactions to their sexually inappropriate behaviors or advances (Connor, 2008).

Social impairments associated with autism can affect the way individuals understand social rules and values (Hall et al., 2007; Woodbury-Smith et al., 2005), which may lead them to be more susceptible to demonstrating sexually inappropriate behaviors (Realmuto & Ruble, 1999). In addition, youth with an ASD may lack an understanding of sexual development and appropriate social expression of their sexual interests, thereby leading to the display of deviant sexual behaviors (Griffiths, Quinsey, & Hingsburger, 1989; Price, 2003; Realmuto & Ruble, 1999).

Sexual interests and pursuits may be a difficult path for adolescents with an ASD to navigate, as they struggle with communicating their needs/desires to others, identifying and reflecting upon the thoughts and feelings of self/others, and displaying repetitive activities and/or thoughts centered on sexuality (Henault, 2003; Henault, 2006). Indeed, for a small number of individuals with autism, sexual interests and pursuits can result in illegal behavior (Hall, Godwin, Wright, & Abramson, 2007; Kelley, 2007; Miller, 2008). For example, there are case examples documenting the presence of individuals with autism's commission of sexually related crimes related to violation of social norms, display of aggressive behavior, and inappropriate social boundaries (Hall et al., 2007).

Significance of the Problem

There is currently a gap in the literature that would examine whether adolescents with a diagnosis of ASD and a history of sexual offending endorse self-report symptoms of anxiety and depression at different rates than adolescents with ASD without a history of sexual offending. There is additionally a gap in the literature that would examine

whether broad or narrow band self-report measures of anxiety and depression would be better predictors of a comorbid internalizing disorders among adolescents with an ASD adjudicated for a sexual offense.

Synthesis of Relevant Literature

There are few studies that examine ASD and comorbid anxiety and/or depression among populations of offenders and non-offenders. Some researchers have found that children and adolescents with high functioning autism (HFA) are at a greater risk for developing mood disorders than the general population (Kim, Szatmari, Bryson, Streiner, & Wilson, 2000). Individuals with Asperger's Syndrome (AS) have been found to display depression and anxiety symptoms (Henault, 2006).

Evidence suggests that depression may be the most common psychiatric disorder among individuals with an ASD (Ghaziuddin, Ghaziuddin, & Greden, 2002). Bleil Walters et al. (2010) examined the occurrence of depressive symptomology and the presence of abuse and/or neglect among adolescents with an ASD who had been adjudicated for a sexual offense in comparison to adolescents without an ASD similarly adjudicated for a sexual offense. Of importance to the current study, it was found that 43 participants completed the self-report measure of Beck's Depression Inventory, Second Edition (BDI-II). Results of the study found that participants with an ASD (n=27) reported moderate depressive symptoms in relation to their non-ASD adjudicated sexual offending peers (n=16) who reported minimal depressive symptoms. In addition, those adolescents with an ASD who reported severe levels of emotional abuse and/or neglect were more likely to report depressive symptoms.

Various forms of anxiety may also be present in adolescents with AS where limited social contact, few social experiences, and low self-esteem are reported in the literature (Lehman, 2010). The presence of co-occurring ASD and anxiety disorders can lead to decreased functioning across social, emotional, behavioral, and/or adaptive skill areas (Lehman, 2010). A person experiencing excessive anxiety is also likely to experience significant deficits in his/her ability to cope, which can lead to maladaptive behaviors such as sexually inappropriate behaviors (Romanczyk & Gillis, 2006).

Researchers estimate that 17 to 84 percent of individuals with an ASD are thought to have a comorbid anxiety diagnosis (Lehman, 2010). A handful of studies have examined the presence of anxiety symptoms among individuals with an ASD across parent- and child-reports (Gillott, Furniss, & Walter, 2001; Kuusikko et al., 2008; Russell & Sofronoff, 2005) and only one has examined similarities across parent-, child-, and teacher reports (Lehman, 2010). Results of these studies have found that children with an ASD are able to self-report their anxiety symptoms. There is some disagreement regarding whether older children with an ASD tend to report more symptoms of anxiety than younger children (Gillott et al., 2001; Kuusikko et al., 2008; Lehman, 2010; Russell & Sofronoff, 2005).

Problem Statement

The purpose of this study is to determine whether differences in anxiety and/or depression symptoms exist between individuals with autism who have been adjudicated for a sexual offense compared to individuals with autism who are not adjudicated. This study will examine whether group differences exist among self-report depression and anxiety ratings on (sub)scales of the Behavior Assessment System for Children- Second

Edition (BASC-2) and Beck's Depression Inventory-Second Edition (BDI-II). Based upon results of the study, additional analyses may be run to examine whether broad band (e.g., BASC-2) or narrow band (e.g., BDI-II, BAI) self-report measures of anxiety and/or depression are better predictors of these comorbid disorders among the significant group. Analyses will explore whether there are significant group differences between self-report symptomatology ratings between the two groups, as well as whether there are significant differences across ratings on broad vs. narrow band measures (if indicated). Results will contribute to the developing literature base on sexual offending and ASDs, as well as provide implications for the treatment of individuals with comorbid ASD and anxiety/depression, specifically as it relates to sexual education programming geared toward the prevention of future offending behavior.

Research Questions and Hypotheses

Research Question #1: Are there significant group differences across offenders vs. non-offenders on depression and anxiety (sub)scales of the BASC-2 and BDI-II?

Hypothesis #1: Significant group differences will exist among the two groups, with adolescent sexual offenders with an ASD reporting statistically significant rates of depression and anxiety in comparison to the non-offender ASD group, across the (sub)scales of the BASC-2 and BDI-II.

Research Question #2a: Are there significant group differences across offenders vs. non-offenders on the depression subscale of the BASC-2?

Hypothesis #2a: Adolescent sexual offenders with an ASD will report higher rates of depression than the non-offender ASD group, as measured by the BASC-2 Depression subscale.

Research Question #2b: Are there significant group differences across offenders vs. non-offenders on the anxiety subscale of the BASC-2?

Hypothesis #2b: Adolescent sexual offenders with an ASD will report higher rates of anxiety than the non-offender ASD group, as measured by the BASC-2 Anxiety subscale.

Research Question #2c: Are there significant group differences across offenders vs. non-offenders on the BDI-II?

Hypothesis #2c: Adolescent sexual offenders with an ASD will report higher rates of depression than the non-offender ASD group, as measured by the BDI-II.

If results from the aforementioned research questions indicate that one group shows significant results over the other, descriptive statistics may be run to examine if significant differences exist between broad band (BASC-2) vs. narrow band (BDI-II and BAI) measures of depression and anxiety for the significant group. It is hypothesized that significant differences will exist across reported scores on the broad vs. narrow band measures, with narrow band measures (BDI-II, BAI) of depression and anxiety evidencing statistically significant rates in comparison to a broad band measure (BASC-2) of these same internalizing disorders.

CHAPTER II

Literature Review

HISTORICAL BACKGROUND

Definition of Autism

Autism spectrum disorders (ASDs) fall under the diagnostic category of pervasive developmental disorders (PDDs) within the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) (American Psychiatric Association, 2000). Such disorders are characterized by severe and pervasive impairment across communication skills, reciprocal social interaction skills, and include the presence of stereotyped behaviors and interests (APA, 2000). An individual's specific impairments relative to these conditions are termed his/her mental age or developmental level. The autism spectrum includes a variety of disorders that fall along a continuum. These include autistic disorder, asperger's disorder, PDD-not otherwise specified (PDD-NOS), rett's disorder, and childhood disintegrative disorder (CDD). Each is defined by its own set of characteristics in the DSM-IV. For the purposes of this study, only autistic disorder, asperger's disorder, and PDD-NOS will be discussed.

The DSM-IV (APA, 2000) defines autistic disorder by the presence of impaired development in social interactions and communication, as well as a restricted range of interests and activities. Symptoms must be present in at least one of the following areas prior to three years of age: social interaction, communication, and repetitive/stereotyped interests and/or behaviors. Social interaction impairment must be determined by at least two of the following: impairment in the use of nonverbal behaviors; failure to foster developmentally appropriate peer relationships; lack of spontaneous seeking to share

enjoyment, interests, or achievements with others, and lack of social or emotional reciprocity. Communication impairment must be determined by at least one of the following: delay in, or lack of, the development of spoken language; impairment in the ability to initiate or sustain conversation with others; stereotyped and repetitive use of (idiosyncratic) language; and lack of varied, spontaneous make-believe or social imitative play. The presence of restricted repetitive and stereotyped patterns of behavior, interests, and activities, is determined by the presence of one of the following: preoccupation with one or more stereotyped/restricted patterns of interest; inflexible adherence to specific, nonfunctional routines or rituals; stereotyped/repetitive motor mannerisms; and persistent preoccupation with parts of objects (APA, 2000).

Similar features exist among individuals with asperger's disorder, except there are no clinically significant delays in language acquisition. The lack of social reciprocity among individuals with asperger's is typically shown through a one-sided and eccentric approach to others, rather than social indifference. Finally, PDD-NOS is used to diagnose individuals with a "severe and pervasive impairment in the development of reciprocal social interaction associated with impairment in either verbal or nonverbal communication skills or with the presence of stereotyped behavior, interests, or activities" (APA, 2000, p. 84). PDD-NOS includes "atypical autism," which does not meet criteria for reasons such as atypical symptomatology presentation and/or late age of onset.

While the median age of diagnosis for an ASD is between 4.5-5.5 years of age, many parents and caregivers report developmental concerns prior to age three. Researchers have shown that an autism diagnosis at two years of age can be reliable,

valid, and stable (Center for Disease Control, 2010). However, the trend at which children are earliest identified continues to be around three years of age.

Hypotheses on the Development of Autism Spectrum Disorders

Several hypotheses exist as to what actually causes individuals to develop an Autism Spectrum Disorder (ASD), and no one theory has proved more successful across multiple research literatures. In fact, each of the individual theories has contributed to the wealth of information on understanding autism that is available to researchers, practitioners, and families today. While autism is a neurological disorder, neurological risk factors alone are not believed to be responsible for the development of autism. Other risk factors include: birth-related complications, genetic abnormalities, immunological response differences, and the now debunked but still popular vaccination risks. Before risk factors can be described comprehensively, it is important to realize differences in the onset of autism, primarily through recognition of congenital vs. regressive ASD.

Congenital vs. Regressive ASD

Congenital onset ASD refers to the presentation of symptoms of autism (e.g., developmental delays and atypical behaviors) which appear shortly after birth. Children with congenital autism present as delayed in meeting developmentally appropriate milestones. They have been found more likely to be born to parents with affective disorders and psychological problems, suggesting a strong genetic link. Regressive onset ASD refers to symptoms of autism that emerge following a period of age-appropriate development. At a certain age, children with regressive autism begin to lose communication and socialization skills they had previously acquired and no longer progress at a typical rate (Goin-Kochel & Myers, 2005). It has been suggested that

individuals with regressive autism may have been predisposed to a neurological vulnerability which caused the disorder to develop under certain environmental conditions.

Neurological Risk Factors

The first two years of life are described as a “window of opportunity” for brain development. Early growth of neurons and glial cells within the brain allow for neurobehavioral capacities of sensory, basic memory, and perceptual functions, whereas later maturation allows for language and speech, social communication, working memory, and self-awareness. When brain growth during the first years of life is disrupted and/or accelerated in some way, it is likely to have long-lasting effects on the individual. For example, developmental abnormality of the cerebellum found among children with autism likely contributes to behavioral dysfunction in the areas of attention, memory, perception, emotion, language, and novelty exploration (Courchesne, 2004).

Nicolson and Szatmari (2003) have reported that autism is a disease process which acts through genetic factors to cause structural and functional changes in the brain, resulting in abnormal neurodevelopment. Head circumference (HC) has been found to be a good indicator of brain size in children with autism and typically developing children. Retrospective studies of brain growth in individuals with autism found HC to be slightly small to normal at birth, up until 1-2 months of age. A period of rapid brain overgrowth has been found to appear between 6-14 months of age, which is largely concluded by the second year of life. MRI studies have found individuals with autism to have elevated brain volume during early childhood. Between two to four years of age, children with autism have been found to have a 10% greater brain volume, as measured by HC, in

comparison to same-age typically developing peers. It has been hypothesized that the period of brain overgrowth is followed by a period of abnormally slowed or arrested growth, where brain volume in typically developing children “catches up” to that in children with autism. Due to the reduced and/or arrested growth rate of the brain, children with autism achieve their maximum brain size by three to five years of age, which is six to ten years earlier than normal. Also, maximum volume for cerebral gray matter is reached by two to four years of age among children with autism, four to six years earlier than normal (Courchesne, 2004).

Brain overgrowth in children with autism reflects regional differences of gray and white matter enlargement. A study of two to three year olds with autism found significant enlargements in the following brain areas: Cerebral white matter (by 18%), cerebral gray matter (by 12%), and cerebellar white matter (by 39%) (Courchesne, 2004, p. 107). Significant abnormalities have been found within the dorsolateral and medial frontal regions of the cerebrum. It is interesting to note within studies of elevated brain volume that the corpus callosum is reduced among individuals with autism (Nicolas & Szatmari, 2003). Also interesting to note is that brain enlargement was found to be greater in girls than boys with autism, and that girls showed substantial reduction in cerebellar gray matter in comparison to boys (Courchesne, 2004). By being aware of and recognizing differences in HC, and therefore brain development, professionals can become better prepared to suggest interventions and treatment that will assist individuals with ASD in overcoming challenges across areas of cognitive development.

The prevalence of seizures in children with autism suggests an organic basis for ASDs. A conservative estimate of epilepsy in autism is 25%, although this rate may be as

low as 6% in children with autism who do not have additional neurological disorders. Seizures have been found to be more frequent when Mental Retardation (MR) is associated with autism, as well as additional neurological signs (Canitano, 2007). Seizure disorders often linked with autism include infantile spasms and complex partial seizures, and they tend to have slight brain malformations as their basis (Nelson, 1991). Infantile spasms have been found to be an antecedent among several children later developing an ASD (Canitano, 2007).

In conclusion, neurological risk factors are speculated to play a major role in the development of some cases of ASDs. Abnormal brain growth during the first years of life is likely to have lasting effects on an individual's cognitive development, specifically in the areas of perception, emotion, language, attention, and memory. Autism is viewed by some as a disease process which causes structural and functional changes in the brain, which are further impacted by the common prevalence of seizures. However, neurological risk factors alone are not assumed to cause autism, and other factors must be considered.

Birth-related Risk Factors

Several factors have been found to show statistically significant differences among pre-, peri-, and neonatal incidences of individuals with autism, in comparison to their typically developing peers. Maternal uterine bleeding has been found to be the most consistent risk factor during pregnancy. Other risk factors include: length of pregnancy (e.g., premature birth), birth type (e.g., multiple births), C-section risk, fetal distress, induced delivery, gestational diabetes, toxemia, infection during pregnancy, hypoxia, and maternal age > 35 (Brimacombe, Ming, & Lamendola, 2007; Nelson, 1991). Among

certain cohorts of children with autism, researchers have also found birth order to be a risk factor, as first-born children often undergo more complications during the birthing process. A study of mothers of 164 children with autism, conducted by Brimacombe et al. (2007), found that 90% of mothers presented with at least one risk factor, whereas 51.5% of mothers presented with three or more of the pregnancy-related risk factors listed above. The existence of these birth-related risk factors is important to consider when reviewing an individual's medical history as a potential cause for one to develop an ASD.

Genetic Risk Factors

Autism spectrum disorders have been found to have a genetic basis, with current evidence indicating that multiple genetic factors could be associated with the development of an ASD. It is estimated that there is a 2-8% risk of siblings of children with autism developing autism themselves (Muhle, Trentacoste, & Rapin, 2004; Nicolson & Szatmari, 2003). This equates to a rate which is 50 to 100 times greater than that among the general population. Studies comparing monozygotic and dizygotic twins have found heritability estimates among monozygotic twins to be greater than 90% (Nicolson & Szatmari, 2003). Researchers have attempted to locate a particular set of genes that support evidence of an "autism gene," with some data indicating that ten or more genes interact to cause autism (Muhle et al., 2004). However, researchers have faced difficulty replicating positive findings across settings. One of the most promising findings has been identified on chromosome 15, where frequent chromosome duplications have been recognized among children with autism (Nicolson & Szatmari, 2003). Chromosome 15 also carries several important genes for epilepsy, suggesting that the rate of seizures

among the population of individuals with ASD may be tied to alterations on the chromosome (Canitano, 2007).

Immunological Risk Factors

Several immune system abnormalities exist in children with autism, which suggest immunological factors may be related to the initiation of neurological disorders. Certain characteristics of immune abnormalities have been observed among individuals with autism, including reduced immune functions and enhanced autoimmunity. Krause, He, Gershwin, and Shoenfeld (2002) define the occurrence of an autoimmune disease as when the immune system is triggered to recognize self-components and then proceeds to attack these self-components as if they were foreign invaders. A study on familial clustering of autoimmune diseases compared 61 families of children with autism to 46 controls, and found that the mean number of autoimmune disorders was greater in families who had a child with autism. In the experimental group, 46% of families had two or more family members with an autoimmune disease. As the number of family members increased, so did the child's risk for autism. In addition, the majority of autoimmune disorders were reported among first-degree relatives, especially mothers, of children in the experimental group (Comi, Zimmerman, Frye, Law, & Peeden, 1999). Another immunological risk factor that could be linked to the development of autism is the occurrence of autoantibodies against proteins within the nervous system; however, such a link has yet to be proven and remains a hypothesis at this time.

Vaccination Risk Factors

The risk of developing autism following vaccination has received a lot of attention over the past decade, specifically in regard to a link between the measles-

mumps-rubella (MMR) vaccine and autism. It was believed by many parents that the MMR vaccine, in particular the mercury inside of the vaccine, had caused their children to develop symptoms of autism. It is of critical importance to note that the data claiming to support the MMR vaccine-ASD link has been found to be falsified, making a claim for evidence irrelevant. However, many parents and professionals continue to question the causal link between vaccines and ASD (Goin-Kochel & Myers, 2005).

Epidemiology

The first epidemiological surveys of autism took place in England during the 1960s. Since that time, these surveys have been conducted across many countries; however, the inclusion of other pervasive developmental disorders (PDDs) which are dissimilar from the diagnostic criteria for autistic disorder (i.e. AS, PDD-NOS) have not been included in epidemiological studies until recently. In studying the epidemiology of ASDs, Fombonne (2005) conducted a literature search of major scientific databases (PSYCINFO, MEDLINE) and prior reviews. A total of 42 studies which met the search criteria were conducted in 14 countries. The majority of the studies were conducted in urban or mixed areas, across various population sizes (mean = 225,000) with an age range from birth to early adult life, among mostly non-minority populations. Data on children with autistic disorders were available in 36 of the 42 surveys.

Prevalence rates of autism within this population ranged from 0.7/10,000 to 72.6/10,000 persons. There was a statistically significant correlation between prevalence rate and year of publication for the study, suggesting an increase in prevalence rate of the disorder within the past 15-20 years. To account for this increased prevalence, only studies since 1987 were examined (28 surveys total) and a more modest prevalence rate

of 13/10,000 persons was determined. It was also discovered that the following medical conditions are most likely to co-occur with autism: Down syndrome, tuberous sclerosis (TS), and epilepsy (Fombonne, 2005).

TS is a neurocutaneous disorder characterized by abnormal tissue growth which results in benign tumors and/or nongrowing lesions in several organs (Smalley, 1998). One study found that one to four percent of individuals with an ASD also have a medical diagnosis of TS (CDC, 2010; Smalley, 1998). TS is also highly comorbid with intellectual disability and seizures, and occurs equally among males and females with an ASD and TS (Gutierrez, Smalley, & Tanguay, 1998; Smalley, 1998). Due to differing screening instruments used to diagnose other PDDs, these groups of disorders were not found to be comparable across studies. Prevalence estimates for PDD-NOS are 20.8/10,000 persons, whereas the prevalence for AS is 2.6/10,000. Therefore, the combined prevalence rate for autism, PDD-NOS, and AS is estimated at 36.4/10,000 (Fombonne, 2005). It is important to note that upward trends in the prevalence of PDDs over time do not necessarily imply an increase in the incidence of the disorder.

Statistics released by the Center for Disease Control and Prevention (CDC) in 2010 estimate that an average of 1/110 children in the United States have an ASD. By assuming that the prevalence rate has remained constant over the past 20 years, it can be estimated that roughly 730,000 individuals between 0 to 21 years of age have an ASD. Across North America, Europe, and Asia, studies have found the prevalence for individuals with an ASD to range from 0.6% to greater than 1%. ASDs are four to five times more likely to occur in boys than girls, and can be diagnosed across all racial, ethnic, and socioeconomic groups. Further data needs collected in order to determine if

these same facts hold true among less studied populations and regions of the world (CDC, 2010).

THEORETICAL BACKGROUND

No one theoretical explanation has been found to hold any more weight in explaining the development of ASDs than any other, although a handful of theories have been investigated. These theories tend to cluster into one of two groups, namely those concerning empathy and those concerning cognition. The mindblindness/empathizing and empathizing-systematizing theories can all be referenced under the umbrella of empathy, whereas the enactive mind theory focuses on how social cognition impacts an individual's responses to the social environment.

Mindblindness/Empathizing Theory

The mindblindness/empathizing theory, more commonly referred to as Theory of Mind deficits, holds that individuals with autism are deficient in the process of empathizing, relative to one's mental age (Baron-Cohen et al., 2005). The process of empathizing involves two aspects, attributing mental states to ones self and others and having an appropriate emotional reaction towards another's mental state. Generally speaking, empathizing allows one to make sense of other's behaviors, so as to predict how they feel and what they might do next. Empathizing develops from infancy onward and is usually attained by four years of age among the typically developing population (Baron-Cohen et al., 2005; Henault, 2006). However, individuals with AS without an intellectual disability will only develop Theory of Mind around age eight (Henault, 2006). For individuals with autism, deficits in empathy are evidenced in the following areas: joint attention, use of language describing mental state terms, understanding

complex emotions, and showing concern for another's pain. These deficits make it difficult for individuals with autism to attend to another person long enough to gauge his/her emotional state, thereby inhibiting the development of empathy towards another and affecting social relationships both in the short- and long-term (Baron-Cohen et al., 2005).

Empathizing-Systematizing Theory

Whereas the mindblindness/empathizing theory focuses on deficits in empathizing, the empathizing-systematizing theory proposes that another process, called systematizing, is occurring which is intact or superior to the process of empathizing. Baron-Cohen et al. (2005) describe systematizing as a desire to create systems to analyze, understand, and predict the behavior of environmental events. Systems can fall into six classes: technical, natural, social, abstract, organizable, and motoric. Each of these systems serves the purpose of analyzing input-operation-output relationships. Among children with autism, it is believed that their obsessions and preoccupations tend to cluster in a particular area of systems. The process of such developed systemizing in autism can be compared to superior development of certain executive functions. However, it is theorized that certain executive functioning skills, such as forward planning and set shifting, are negatively impacted by the obsessions and preoccupations among individuals with autism. In a sense, these individuals tend to get mentally stuck on their systems and are unable to forward plan or set shift around them. This subsequently leads to problems of social dysfunction (Carter, Ornstein Davis, Klin, & Volkmar, 2005).

Enactive Mind

The enactive mind (EM) model focuses on the role that motivational predispositions play in determining how an individual responds to his/her social environment, which subsequently changes itself as a result of those interactions (Klin et al., 2005). EM proposes that this outcome leads to social cognition emerging within a social-interactive context. There is believed to be a disruption of this process among individuals with autism, perhaps due to a diminished preference for social stimuli, resulting in a preference to orient toward things rather than people (Carter et al., 2005; Klin et al., 2005). In fact, results across studies have shown that individuals with autism treat human faces as ordinary objects, as opposed to a specific visual stimulus (Klin et al., 2005). Additionally, for typically developing infants, the human voice appears to be one of the most effective stimuli for sparking social interaction and engagement; however, this reaction is not observed in autism. Also seen in autism is the tendency to have difficulty orienting social skills learned within contrived environment to the naturalistic environment. The preceding characteristics point towards a developmental profile in which brain maturation and social salience systems in autism are affected early on, which leads to the tendency to seek physical entities and act upon them as opposed to people. If this is the case, the EM theory could lend explanations as to why social interactions are negatively impacted among persons with autism.

The limited information that exists on each of these theories lends support to an integration of all three theories when working with individuals with an ASD. It is possible that the preference to orient toward things rather than people, as supported by the EM model, impacts an individual's willingness to engage in social interactions with others. The unwillingness to interact with others could explain the difficulty that

individuals with an ASD have with attending to others long enough to gauge emotional states and empathize with them, as per the Mindblindness/Empathizing Theory. In addition, the emotional state of another person may not match up with the systems that an individual with an ASD has for making sense of his/her world, leading to an inability to interface with someone or something that he/she is uninterested in or does not understand. The process of systematizing through the Empathizing-Systematizing Theory can subsequently lead to further problems of social dysfunction and peer-group isolation for individuals with an ASD.

DIAGNOSTIC FEATURES OF AUTISM SPECTRUM DISORDERS

There are specific diagnostic features which are prevalent, in whole or in part, among most individuals diagnosed with an autism spectrum disorder. These features include differences in manifestation across the areas of communication, social development and dysfunction, as well as stereotypical/repetitive interests and behaviors. Each of the features is characterized by specific impairments an individual's development level. ASDs are also found to be comorbid with a number of other diagnoses. For the purposes of this study, comorbid intellectual disability, anxiety, and depression will be examined.

Communication Deficits

Parents of children with autism report that early concerns over their child's development surround delays or regression in speech, usually apparent by the second year of life. In comparison to their typically developing peers, individuals with autism tend to speak late in their development and develop speech at a slower rate. A unique characteristic of some children with autism is language regression, a process where

children begin to speak some words by 12 to 18 months, which are subsequently lost (Tager-Flusberg, Paul, & Lord, 2005). However, early intervention is critical for positive development among many children with ASDs, and numerous studies have shown the positive effects that it can have on language development (Tager-Flusberg et al., 2009).

Language is the earliest developmental deficit reported by parents of children with autism (Landa & Garrett-Mayer, 2006). The DSM-IV lists specific criteria needed to identify communication impairment in individuals with autism; however, aspects of social impairment are intimately related to deficits in communication. Communication includes multiple elements of functioning: linguistics, paralinguistics, and pragmatics. Linguistics encompasses rules of phonological, morphological, syntactic, and semantic systems. Paralinguistic communication includes elements of facial expression, intonation, proxemics (e.g. using space to maintain distance between the speaker and listener), and gestures (Landa, 2007). Children in the prelinguistic stage of development use nonverbal behaviors (e.g. paralinguistics) to convey their wants, needs, and social intentions. Pragmatics includes communicative intentions, discourse management (e.g. topic initiation), and presupposition of type/style of information presented in context of conversation.

The rate of nonverbal communication by two year olds with autism has been found to be “a significant predictor of communication and social functioning at age 7 years” (Landa, 2007, p. 17). Deficits in communication are recognized by the second and third years of life among children with autism, as evidenced by reduced diversity and frequency of communication (e.g. complex babbling, words, and gestures). Also, there is impairment in social communication among two and three year olds with autism, such as

initiating joint attention with another, in relation to the requesting of an object.

Specifically, a deficit in initiation of and response to joint attention is considered a core deficit in autism, in relation to other developmental disorders among two to five year olds. The inability of young children to engage in joint attention is often one of the early indicators of a potential ASD, and should be brought to professionals' attention in order to rule out another cause or developmental disorder.

Among infants at high genetic risk for autism, Landa and Garrett-Mayer (2006) noted a progressive slowing in the rate of language development (expressive and receptive) between 6-24 months of age. It is interesting to note, however, that these same children were found to have higher visually- than language-based skills by 14 months of age. Retrospective reports of regressive autism in children note a loss of language skills in 20-40% of cases (Landa, 2007). Thus, the slowed development of language and/or loss of words appear to be red flags that are unique to but not universal in autism. Additional red flags of autism include echolalia and difficulties with language comprehension and language use.

Echolalia, Language Comprehension and Language Use

Three symptoms of communication deficits in ASDs include the presentation of echolalia, difficulty with language comprehension, and difficulty with language use. Echolalia can be described as the repetition of words or phrases that someone else said, with similar voice intonation. It can be immediate or delayed (Tager-Flusberg et al., 2005). While it has historically been viewed as an undesirable and nonfunctional behavior, Prizant and Duchan (1931) noted six communicative functions that immediate echolalia can serve. These include turn taking, affirmative answers, requests, assertion,

rehearsal, and self-regulation. Little attention has been paid by researchers to the language comprehension skills of individuals with autism, yet the continued delay of comprehension is often used to differentiate high functioning autism from specific language disorders (Tager-Flusberg et al., 2005). A particular difficulty faced by individuals with ASD is the ability to integrate nonverbal cues with linguistic comprehension across day to day conversations and situations. In terms of language use, the language used by individuals with autism tends to lack social and conversational context. Usage is further hindered by difficulties with listening, talking to one's self, making irrelevant remarks, and joint referencing. In general, communication deficits in autism are likely to be affected by difficulties in processing information about social situations and interactions.

Social Development and Dysfunction

Social deviance and delay is believed by many to be the hallmark of autism, yet social difficulty among persons on the autism spectrum is perhaps the most poorly understood aspect of the disorder. Young children with autism tend to be extremely sensitive to their nonsocial environment, as opposed to the social environment sought out by their typically developing peers. As children with autism grow older, they may passively accept others' offers for social interactions but are unlikely to initiate these interactions if a nonsocial motivator is not present. Higher functioning individuals with autism may be interested in and seek out social interactions, but they are inhibited by their odd social styles and inability to understand others' frame of reference (Carter et al., 2005). Often present among individuals with autism are social skill deficits, which may vary dependent upon one's level of functioning.

Social Skill Deficits

Several early signs of social deficits exist among infants later diagnosed with autism. Examples of these deficits include: limited interest/pleasure in and responsiveness to others, no giving or showing to others, and not gesturing/asking for help. Many of the social deficits that are present in children with autism are interrelated to communicative deficits, therefore many of the signs and symptoms tend to overlap. For example, a child with autism who has minimal interest in asking another for help is also very unlikely to approach that person and strike up even a one-way conversation (Bryson et al., 2007). There exists a different set of social deficits among higher functioning individuals with autism, which include but are not limited to: difficulty establishing a joint frame of reference, failing to take social norms or another's feelings into account, and exclusive reliance on stereotyped conversational expressions (Carter et al., 2005).

Certain social skill deficits are often apparent among all individuals with autism, regardless of their level of functioning, and can include scarcities in eye contact, social speech, imitation, attachment, and peer relations (Carter et al., 2005). The failure to establish a pattern of eye contact and mutual gaze is a deviation specific to autism spectrum disorders. Studies conducted with preschool-age and older children with autism have found that the human face holds minimal interest to children with the disorder. Social speech is another area of difficulty for individuals on the autism spectrum. Specific deficits include a delay in the onset of social speech, atypical preverbal vocalizations, slower rates of preverbal communication, and a lack of preference for speech sounds over other kinds of sounds. Parents of children with autism report deficits

across a variety of imitation tasks, including such tasks apparent in reciprocal social play (e.g. peekaboo and patty cake). In terms of attachment, individuals with autism and average intelligence tend to securely attach to a caregiver; however, those with autism and MR are more at risk of developing insecure attachments, in relation to their typically developing peers. Many young children with ASD form attachments to objects that are odd in quality (e.g., cereal boxes or magazines).

Emotion Regulation

Emotion regulation can be described as the process through which an individual uses language and experience from social interactions to monitor his/her own physiological arousal and emotional state. Adequate emotion regulation by an individual allows for one to be organized and focused, to communicate and problem solve, to maintain a state of active engagement, and to sustain social interactions (Marans, Rubin, & Laurent, 2005). Whereas typically developing children begin to recognize emotional states of themselves and others around the second or third year of life, children with autism appear to have difficulty recognizing and labeling the emotions of others. At present, it is uncertain if this is due to problems recognizing facial affect or to an inability to utilize cognitive-affective skills to understand others' mental states (Carter et al., 2005). Regardless of the cause of emotion regulation problems among children with autism, it is important to recognize that such regulation may be crucial to the development of communicative and socioemotional skills, as well as relationships. Sufficient emotion regulation allows an individual to reflect on past events so as not to overreact in present situations, as well as to anticipate the emotional reactions of others (Marans et al., 2005). When emotion regulation is compromised among persons on the

autism spectrum, we are more likely to observe difficulties in maintaining social engagement, which impacts the development of relationships as children enter into adolescence and beyond.

Peer Relationships

Peer relations are difficult for children with autism, due to a limited interest in social interaction, minimal initiation of social contact, and a preference to be left alone to engage in self-stimulatory and unusual activities. In order to better understand the difficulties that children with an ASD face in making friends, it is important to first examine what typical peer-social development looks like among typically developing children. Several theories of social development exist and they can be placed into three broad categories: psychoanalytic theories, learning theories, and theories of social cognition (Siegler, DeLoache, & Eisenberg, 2006). Each of these theories has their own unique set of milestones and/or predictors that indicate whether an individual has successfully completed a particular stage of social development. The theoretical work of Sigmund Freud and Erik Erikson fall under the category of psychoanalytic theory. Albert Bandura's Social Learning/Cognitive Theory fits into the category of learning theories. Finally, theories of social cognition are believed to influence both typical and atypical development.

Both Freud and Erikson believed that all children pass through a series of developmental stages which, among other things, guide the development of relationships. Freud's Theory on Psychosexual Development is based upon the premise that even the youngest of children have a sexual nature which influences their behavior and relationships with others. Freud proposed that all children start in the oral stage and end

in the genital stage. Of particular interest for the purpose of this study is the genital stage, which begins in adolescence. This stage begins with sexual maturation, as the sexual energy that the individual has kept in check for years is now directed towards opposite-sex peers, with sexual intercourse as its major goal. Freud believed that if any of the fundamental needs/goals were not met during a particular stage of development, then children may become fixated on those needs and continuously try to satisfy them (Siegler et al., 2006).

Erikson's Theory of Psychosocial Development proposes a series of eight developmental stages that all individuals experience, from infancy through adulthood. Each stage is marked by a particular crisis, or developmental issue, that the individual must resolve. Of particular interest for the purpose of this study are the Industry vs. Inferiority and Identity vs. Role Confusion stages. The stage of Industry vs. Inferiority is believed to last from age six through puberty. During that time frame, children are expected to master cognitive and social skills relative to their culture, as well as learn how to cooperate with their peers. The stage of Identity vs. Role Confusion is believed to last from adolescence through early adulthood. Adolescents are expected to form an identity of who they are as they tackle the physical changes of puberty, the emergence of sexual urges, and the introduction of new social pressures regarding higher education and/or occupation decisions (Siegler et al., 2006).

Individuals with autism are likely to face challenges surrounding peer relationships. Deficits in social reciprocity, which is one of the qualitative impairments associated with an ASD diagnosis, are likely to impact a child's ability to master social skills and cooperate with peers during Erikson's stage of Industry vs. Inferiority. In

particular, a decreased interest in peer and social interactions will make mastery difficult, as children with an ASD are often reluctant to initiate and/or reciprocate even basic interactions with others. Difficulties with social interactions become increasingly important as all children enter adolescence, as issues with dating and romantic relationships come to the forefront. For adolescents with an ASD, the appropriate expression of attraction and sexual urges toward another become challenging, as they often have difficulty comprehending the physical and emotional changes their bodies are going through. Unlike their typically developing peers who can discuss puberty and dating with one another, adolescents with autism often struggle with appropriate verbal and/or physical expression of the feelings they have. This can impact one's ability to form an identity as an adult. In addition, the presence of stereotypical/repetitive behaviors associated with an ASD diagnosis often leads to fixation on, and inappropriate expression of, sexual urges.

Another theory of social development is Social Learning Theory, which emphasizes observation and imitation as the primary mechanism of development. Albert Bandura argued that "most human learning is inherently social in nature and is based on observation of the behavior of other people" (Siegler et al., 2006, p. 346). Through his theory, Bandura argued that children learn by observing others and subsequently imitating what they see. In order for learning to be successful, the process of observation must include several important aspects: attention to others, encoding of what's being observed, storing the information in memory, and retrieving it at a later date to imitate the behavior that was originally observed. Bandura also described the process of development to be a reciprocal determinism between children and their social

environment, through which an individual child has personal characteristics that lead him/her to seek out particular types of social interactions. In turn, the results of these social interactions impact future interactions the child will seek out (Siegler et al., 2006).

Children with an ASD are likely to experience their peer relationships impacted via the social learning theory, as they have a decreased desire to seek out and reciprocate interactions with others. Many children on the spectrum do not actively engage in the observation of others, which is detrimental because it leaves them with a small pool of observed social interactions to reference when social interaction is required. As a result, social interactions with typically developing peers are often inappropriate or one-sided in nature for children with an ASD. In addition, the reciprocal determinism believed to occur between typically developing children and their social environment is seemingly nonexistent among many children on the spectrum, due to their decreased interest in seeking out social interactions.

The third category of theories concerning social development, social cognition, focus on a child's ability to actively think about and process theirs and others' thoughts, feelings, and behaviors. An individual child's thinking about the social world is both related to and limited by the complexity of his/her thought processes. Siegler et al. (2006) describe three theories on social cognition, the first of which is relevant to the purpose of this study. Selman's Stage Theory of Role Taking, focuses on an individual's ability to take on the perspective of another person. Selman suggested that adopting another's perspective is necessary for understanding the other's thoughts/feelings/motives. Young children have limited ability to take on another's perspective, as they are very egocentric and therefore unaware that perspectives exist outside of their own. However, as children

age, they develop the cognitive flexibility to consider multiple perspectives at the same time.

Children with an ASD also struggle with perspective taking, whether they are young or old in age. Often, these individuals have a limited understanding of their own emotions, let alone possess the skills to process others' thoughts, feelings, and behaviors. They are often disinterested in others'; therefore, others' emotions do not matter to them. In working with students with an ASD to recognize theirs and others' perspectives, it is important to realize that these individuals often struggle with cognitive rigidity that may further impact their ability to consider another's perspective. Social skills training for this population should therefore consider offering alternative thought processes as well as provide basic identification, recognition, and application of emotions to one's self and others.

ADOLESCENTS WITH AUTISM

Research literature indicates that autism is almost always a lifelong condition, with some individuals showing marked improvement, some displaying deterioration in functioning, and still others continuing on a stable course of maturation (Mailick Seltzer et al., 2003; Shea & Mesibov, 2005). A 2002 study by the MIND Institute, focusing on 100 families of adolescents with autism, reported the following improvements: 88% in communication or language, 83% in socialization, and 75% in behavior, interests, or activities (Byrd, 2002). A 2003 study conducted by Mailick Seltzer et al. examined a total of 405 adolescents and adults with an ASD across communication, reciprocal social interaction, and restricted, repetitive behaviors and interests domains. Results from the communication domain showed adolescents to be less impaired than adults in nonverbal

communication and reciprocal conversation, whereas adults were less impaired in their verbal communication symptoms. The adolescent group was less impaired than adults in the reciprocal social interaction domain, while adults were less impaired in their presentation of restricted, repetitive behaviors and interests.

Rates of cognitive and behavioral deterioration vary between retrospective reports and studies. While individual intelligence is found to remain stable or improve slightly across the lifetime, many adolescents and adults with autism are reported to demonstrate significant behavior problems as they age (Shea & Mesibov, 2005). In terms of adaptive behavior, this skill area is often markedly lower than intelligence, especially among populations of autism with higher intelligence.

In regard to adolescents with autism and an intellectual disability (ID), the areas of self-help skills and sexuality are of specific concern during this stage of development. Adolescents with dual-diagnoses of autism and ID need specific instruction on how to address issues of hygiene, including menstruation, shaving, and wearing deodorant. Sexuality becomes an area of interest for most all adolescents, and communication on holding hands, hugging/kissing, and masturbation must be provided to this population to ensure a socially appropriate understanding of those actions. Little information exists on sexuality in adolescents with autism and average intelligence, although this topic has been examined among adults. Sexuality for this population of adults tends to involve the social aspects of sexuality, namely the desire to date and marry in order to “be like others”. In addition, the behaviors of adults with autism and average intelligence have the potential to be interpreted by others as sexual, when they are in fact friendly or helpful in nature (i.e., picking lint off another’s shirt or pants). Although intelligence is not

impaired for this population, they still may lack the knowledge and understanding of socially desirable & effective behaviors, as well as others' perspectives (Shea & Mesibov, 2005).

COMORBID DIAGNOSES

Autism spectrum disorders are often found to be comorbid with a number of other disorders and diagnoses, which can impact treatment and outcomes. Certain internalizing disorders are also common among individuals with an ASD, as many of the characteristics of these disorders are also displayed by persons on the autism spectrum. For the purposes of this paper, the comorbidity of anxiety and depression will be examined in relation to ASDs. One of the most common comorbid diagnoses is intellectual disability (formerly called mental retardation), although prevalence rates of the two disorders have decreased over time.

ASDs and Anxiety

Researchers estimate that 17 to 84 percent of individuals with an ASD are thought to have a comorbid anxiety diagnosis. The presence of a co-occurring ASD and anxiety disorder can lead to decreased functioning across social, emotional, behavioral, and/or adaptive skill areas (Lehman, 2010). Romanczyk and Gillis (2006) report that any person facing the experience of excessive anxiety is likely to experience significant deficits in his/her ability to cope, which can lead to maladaptive behaviors. While some researchers believe that anxiety disorders are comorbid and secondary to an ASD diagnosis, specifically among individuals with HFA, others propose that many of the core characteristics of ASDs encompass traits that mirror anxiety (Lehman, 2010). Whatever the cause, a 2009 study by White, Oswald, Ollendick, and Scahill found the following

anxiety disorders to be most common among individuals with an ASD: Generalized Anxiety Disorder, Separation Anxiety, Specific Phobias, Obsessive Compulsive Disorders, and Social Phobia.

It is important to consider the method in which comorbidity of ASDs and anxiety diagnoses are determined. Typical children as young as six years of age have been found to be reliable sources of information regarding their personal physical and mental health (Moreau & Weissman, 1993; Riley, 2004). However, theory supporting the development and maintenance of ASDs suggests that individuals with an ASD experience deficits with understanding/expressing their feelings, as well as in their expressive and receptive language. This, in turn, is believed to impact an individual with ASDs ability to self-report symptoms. Yet a 2005 study by Berthoz and Hill found that 32 adults with an ASD were able to accurately report their own emotions using three self-report measures: the Bermond and Vorst Alexithymia Questionnaire Form B (BVAQ-B), the 20-Question Toronto Alexithymia Questionnaire (TAS-20), and the Beck Depression Inventory (BDI). A handful of studies have examined the presence of anxiety symptoms among individuals with an ASD across parent- and child-reports (Gillott, Furniss, & Walter, 2001; Kuusikko et al., 2008; Russell & Sofronoff, 2005) and only one has examined similarities across parent-, child-, and teacher reports (Lehman, 2010). Results of these studies have found that children with an ASD self-report their anxiety symptoms as well as their typically developing peers, when considering correlations among parent ratings (Gillott, Furniss, & Walter, 2001; Kuusikko et al., 2008; Russell & Sofronoff, 2005). Lehman's (2010) study found that reports across parent, child, and teacher raters did not correlate, and that parent and teacher rates were significantly higher than those reported by children. Differing

results exist as to whether or not older children with an ASD tend to report more symptoms of anxiety than younger children (Gillott, Furniss, & Walter, 2001; Kuusikko et al., 2008; Lehman, 2010; Russell & Sofronoff, 2005). There is currently a gap in the literature that would examine whether broad or narrow band self-report measures of anxiety would be better predictors of a comorbid anxiety disorder among individuals with an ASD.

ASDs and Depression

Some researchers have found that children and adolescents with HFA are at a greater risk for developing mood disorders than the general population (Kim, Szatmari, Bryson, Streiner, & Wilson, 2000), and evidence suggests that depression may be the most common psychiatric disorder among individuals with an ASD (Ghaziuddin, Ghaziuddin, & Greden, 2002). Ammerman et al. (2002) examined the occurrence of psychological symptoms and maltreatment among a group of psychiatrically hospitalized children, 22 percent of whom were identified with an ASD. Results of the study indicated that all participants reported symptoms of mild depression, and that those patients with a severe history of maltreatment reported slightly more depressive symptoms.

Bleil Walters et al. (2010) examined the occurrence of depressive symptomology and presence and severity of abuse and/or neglect among adolescents with an ASD in comparison to adolescents without an ASD. All participants were adjudicated delinquent for a sexual offense and were enrolled in a Residential Sexual Offender Program. Of importance to the current study, it was found that 43 participants completed the Beck's Depression Inventory, Second Edition (BDI-II). Of those participants, 27 were previously diagnosed with an ASD and 16 did not meet criteria for an ASD diagnosis, thereby

serving as the control group. Results of the study found that participants with an ASD experienced significantly higher depressive symptomology than their non-ASD adjudicated sexual offending peers. In particular, the ASD group tended to report moderate depressive symptoms whereas the non-ASD group reported minimal depressive symptoms. In addition, those adolescents with an ASD who reported severe levels of emotional abuse and/or neglect were more likely to report depressive symptoms. There is currently a gap in the literature that would examine whether broad or narrow band self-report measures of depression would be better predictors of a comorbid depressive disorder among individuals with an ASD.

ASDs and Intellectual Disability

Intelligence scores across groups of people with autism is considered to be stable from childhood to adulthood. Any individual changes that do occur are found to lead to improvement (Shea & Mesibov, 2005). It is interesting to note that intelligence scores are associated with differentiating across levels of functioning among ASDs and can range from levels of mental retardation to the superior range of intelligence (Edelson, 2006). High functioning autism (HFA) is the diagnosis often given to individuals whose intelligence quotient (IQ) score falls within the above-average range (Baron-Cohen et al., 2005). Persons with asperger's syndrome (AS) meet the same diagnostic criteria for HFA, but without a history of cognitive and language delay. In contrast to HFA and AS, a diagnosis of autism is often found to be comorbid with Mental Retardation (MR), which can range from mild to profound.

Historical estimates of the prevalence of comorbid MR and autism ranged from 70-80%; however, when the population of individuals along the entire autism spectrum is

considered, this frequency is likely to be as low as 15% (Shea & Mesibov, 2005). APA (2000) notes that females with the disorder are more likely to exhibit severe to profound MR. A comorbid diagnosis of MR and autism often implies certain adaptive skill deficits, such as dressing, bathing, and feeding oneself, as well as cognitive skill deficits. For example, verbal skills tend to be weaker than nonverbal skills among individuals with autism. Persons with autism who have MR are likely to experience impaired social interactions as a result of their low intelligence. They tend to display social skills deficits, decreased interpersonal skills, poor social problem solving skills, and have difficulty understanding the thoughts, feelings, and perspectives of others (Griffiths & Fedoroff, 2009). In some cases, these social skill deficits may lead to the display of sexually inappropriate acts, as individuals with developmental (ASD) and intellectual disabilities may attempt to imitate what they perceive as normal sexual interests (Day, 1994). This tends to become a greater concern as individuals with comorbid ASD and intellectual disability diagnoses enter into adolescence.

SEXUALITY IN CHILDREN WITH INTELLECTUAL DISABILITIES

The topic of sexuality among persons with Intellectual Disabilities (IDs) has historically been a controversial one. Individuals with disabilities tend to learn about the sexual functioning of their bodies much later in life than their typical peers, if they're taught at all (Melberg Schweir & Hingsburger, 2000). However, in recent years, many have begun to realize that sexuality is as much a part of maturation for this population as it is for their typically developing peers. Lisa Kupper noted the importance of recognizing and addressing the sexual needs of persons with IDs, so as to educate them on appropriate sexual understanding and expression:

Sexuality is a lifelong process of learning about oneself and growing as a social and sexual being. Children and youth with disabilities have a right to and a need to be fully and accurately informed about what unique pleasures, joys, and pain this aspect to identity can bring. The special needs of individuals with disabilities must be taken into consideration when parents and professionals present information on attitudes, values, behaviors, and facts about social skills and sexuality (Caruso et al., 1997, p.291).

Historical Context of Sexuality among Persons with IDs

The historical context for understanding sexuality among persons with IDs began early in the 20th century, when these individuals were considered to be sexually dangerous to society. It was believed that reproduction among individuals with IDs would produce a second generation of persons with genetic deficits, subsequently draining society's resources. The lack of understanding about this population resulted in the practices of eugenics and institutionalization. The eugenics movement led to the large-scale identification, isolation, and segregation of persons with ID across Western society. Institutions enforced gender segregation, punishment of sexually active participants, and mass involuntary sterilization. It was not until the 1970s that the use of mass, forced sterilization was discontinued in the United States.

The history of sexuality among individuals with IDs is also grounded in myths surrounding sexual aggression and deviation among persons with developmental disabilities. Examples of these myths include the "eternal child" and "dangerousness" theories. The eternal child theory held mental age to be a predictor of all aspects of person's life, rather than functioning of cognitive abilities alone. Therefore, people with disabilities were seen as children & their sexuality was subsequently ignored. The dangerousness theory was based on Goddard's 1912 study, in which persons with ID were genetically linked to criminality, mental illness, and socially undesired offspring

(Griffiths & Fedoroff, 2009). As such, any social-sexual mistake that was made would likely lead to the conclusion that the “offender” was sexually deviant (Melberg Schwier & Hingsburger, 2000). A final factor that contributed to the historical misunderstanding of individuals with ID’s was the discomfort and confusion that would arise whenever the topic of sexuality and ID was raised. This discomfort and confusion led to the suppression and denial of sexual expression and behavior of persons with ID throughout much of modern history (Galea et al., 2004).

The topic of sexuality among persons with IDs remained controversial amongst some into the mid-1980s. Elgar (1985) recognized the challenges that adults with autism must overcome to develop and maintain relationships. In particular, Elgar believed that while social interactions could be taught and practiced, the feelings and emotions associated with sexual and romantic relationships could not. In particular, she held the premise that sexual relationships for individuals with autism were not relevant, noting that “sex is not for the majority of autistic people, and ‘sex education’ or the experimentation of others to develop individual sexuality would not be in their best interests” (Elgar, 1985, p. 216).

Sexually Inappropriate Behaviors

Certain syndromes related to persons with ID are associated with the display of sexually inappropriate behaviors. These syndromes include fetal alcohol syndrome, Tourette’s disorder, and Asperger’s disorder. The characteristic behavioral and/or processing challenges of these syndromes pose the risk that individuals with any of these syndromes may respond inappropriately to sexually arousing situations. Behavioral challenges can include impulse control, tics, & social skill deficits. It is important to note

that diagnoses of Tourette's and Asperger's don't necessarily imply ID, and persons diagnosed with either of these disorders can present themselves with normal or gifted levels of intelligence. This implies that these individuals should be able to recognize the actions and consequences of their sexually inappropriate behaviors, although other symptoms of these disorders often prevent this recognition from occurring, or the individual from caring (Griffiths & Fedoroff, 2009).

The development of sexually inappropriate behavior, among both disabled and nondisabled individuals can be affected by multiple factors. These include a lack of sexual education, limited peer group interactions, family restrictions on activities, limited social exposure, and lack of motor coordination (Griffiths & Fedoroff, 2009). The treatment of sexually inappropriate behaviors has historically been addressed through the criminal justice system and sex offender treatment programs. Many of the juvenile sex offender treatment programs to date have been modeled after adult treatment programs. These programs tend to focus on: assessment/treatment of deviant sexual arousal and interests, improved impulse control and judgment, enhanced social skills and victim empathy, and correcting distorted sexual cognitions used to rationalize sexual aggression. It is believed that juveniles who sexually offend will follow a life-course of sexual offending (Hunter et al., 2003). It is also important to recognize that individuals with ID's often live their daily lives with less than normal degrees of privacy; therefore, any unusual sexual behaviors they exhibit are more likely to be detected than among the typically developing population (Griffiths & Fedoroff, 2009).

Additional explanations for sexual behavior problems are reviewed by Ray, Marks, and Bray-Garretson (2004), and include: behavioral history, modeling and

imitation, partner selection, sexual history, and medical history. Individuals with an ASD are often socially rejected, and may perceive inappropriate sexual conduct and behaviors to be the only alternative to gaining acceptance among same-age peers. Modeling and imitation is a problem when an adolescent sees a sexual action conducted by an adult and tries to model that behavior with peers. One of the most frequently imitated behaviors is masturbation. Partner selection becomes an area of concern when adolescents try to make connections with peers based upon sexual information and behaviors. Oftentimes, individuals with AS struggle with differentiating between kindness and attraction, and an adolescent male may develop a romantic preoccupation for his female classmate who is polite to him. Sexual history is important to consider, as children with ASDs are more likely to be sexually abused than their typical peers, which can lead to further confusion of who to trust in social relationships. Finally, medical history must be considered for those individuals taking psychotropic medications to treat their ASD symptoms, as some of these medications can affect libido, sexual interest, and sexual arousal.

Sexuality in Autism

The topic of sexuality among adolescents and adults with autism is scarcely represented within the empirical literature (Ousley & Mesibov, 1991). The majority of the literature that does exist has been geared towards the sexuality of individuals with intellectual disabilities, as has been mentioned previously. However, there are many similarities that exist among these two populations. For example, both groups tend to experience peer rejection and both tend to have a limited capacity for understanding and processing information. In order to further examine these similarities, Ousley and Mesibov (1991) examined the sexual attitudes, experiences, and knowledge of 21 adults

with autism in comparison to a group of 20 individuals (without autism) with mild to moderate intellectual disabilities. Sexual knowledge and interest of the participants was assessed via a sexuality vocabulary checklist and a multiple-choice questionnaire. Results of the study showed that knowledge and interest levels were similar across the two groups, but group differences were found in sexual experience, with the group of persons with an intellectual disability endorsing more sexual experiences. In addition, males from both groups were found to have more interest in sexuality than females, and IQ was found to be positively correlated with knowledge scores.

Individuals with autism enter into the physical maturation phases of puberty at roughly the same time as the typically developing population. However, the core features of autism affect the cognitive and psychosocial developmental progress that coincides with physical development in typical adolescents (Realmuto & Ruble, 1999). Impairments in social and communication skills, as well as behaviors, can lead to errors in social judgment and the display of socially inappropriate behaviors (Henault, 2006). For example, social deficits can affect friendship/romantic relationship development, social judgment of private vs. public behaviors and settings, how/why to manage personal hygiene, and how to avoid sexual exploitation by others. Communication deficits among adolescents with autism include: the ability to talk about/label sexuality terms while having little to no understanding of their meaning, inclinations to repeat sexual terms regardless of social context (echolalia), and speaking in an odd tone of voice that doesn't match the sexual nature of topic being discussed. Finally, behavior issues that may affect sexuality and appropriate sexual development among individuals with autism are: self-stimulating activities (i.e. masturbation) which impact the amount of time spent on other

activities, as well as odd objects (shoes, shampoo bottles, body parts such as legs) that reportedly lead to sexual arousal, even without direct stimulation (Gabriels & Van Bourgondien, 2007; Henault, 2006; Van Bourgondien, Reichle, & Palmer, 1997).

Reports and interviews of caregivers of adolescents with autism have shown that high- and low-functioning individuals with autism are aware of and interested in sexuality. In addition, results from previous studies suggest that individuals with autism are interested in (Haracapos & Pedersen, 1992; Henault, 2006) and engaging in sexual behaviors (Haracapos & Pedersen, 1992; Van Bourgondien et al., 1997). Existing studies cited by Henault (2006) report between 26% and 67% of individuals with autism expressing sexual behaviors. However, professionals and caregivers tend to become uncomfortable discussing the unusual sexual stimulation and activity of individuals with autism. In some instances, this is based upon the fear that they may somehow influence their adolescents toward the expression of inappropriate sexual acts (Konstantareas & Lunsky, 1997). Gabriels and Van Bourgondien (2007) found that professionals and caregivers were less comfortable discussing an individual with autism's interest in other objects than with intercourse. In addition, they were less comfortable with the idea of sexual arousal by parts of a person than by the whole person; however, a core cognitive characteristic of individuals with autism is that they pay more attention to the parts of objects/people than the whole. Such responses from caregivers can lead adolescents with intellectual disabilities feeling as though their sexual interests are rejected by trusted adults, which can impact the processing of their emotions (Melberg Schwier & Hingsburger, 2000).

Sexuality may be a particularly difficult path for adolescents with AS to navigate, as they have the same interests and sexual needs as their typical peers, yet struggle with communicating those needs/desires to others (Henault, 2006). In addition, this population does not progress through the stages of social-emotional development at an even rate and they face great difficulty with identifying and reflecting upon the thoughts and feelings of self and others (Henault, 2003; Henault, 2006). Another characteristic of persons with AS is that they tend to display ritualized and repetitive activities and/or thoughts, which can be centered around sexuality once puberty approaches. For this population of adolescents, sexual behaviors are viewed as any other behavior- free from the conventions and rules of society (Henault, 2003). When this occurs, there tends to be a lack of concern over what others may think, which subsequently leads to the individual engaging in a pattern of sexual behaviors simply because it feels good (Ray et al., 2004). This behavior pattern can lead to further disruptions in social engagement, not to mention that adolescents with AS tend to feel shame and embarrassment surrounding their sexual problems, leading to further isolation and social alienation.

Despite existing information, few studies have examined the specific sexual profile and skills of individuals with AS. Henault (2006) notes that researchers have previously identified four factors which impact the sexuality of persons with AS: lack of sociosexual knowledge, sexual segregation, inconsistencies in policy, and intimacy. For the purposes of this study, it is important to consider this population's lack of sociosexual knowledge. While sociosexual knowledge for typically developing adolescents plateaus during puberty, adolescents with AS generally have had fewer opportunities for social interaction and gender identity by that stage of development. Subsequently, this leads

sexuality concepts being misunderstood and attempted expressions of sexual behavior being interpreted as inappropriate.

Sexually Offending and an ASD Diagnosis

Researchers have shown that individuals with autism will have up to seven times more contact with law enforcement over the course of one's lifetime (Hall et al., 2007; Kelley, 2007; Miller, 2008). Social impairments associated with autism can affect the way they understand social rules and values (Hall et al., 2007; Woodbury-Smith et al., 2005), which may lead individuals to be more susceptible to demonstrating sexually inappropriate behaviors (Realmuto & Ruble, 1999). Other researchers hypothesize that children/adolescents with an ASD may be at greater risk for sexual offending due to impairments in sexual knowledge and development, where suspected deficits may lead to the display of deviant sexual behaviors (Griffiths, Quinsey, & Hingsburger, 1989; Price, 2003; Realmuto & Ruble, 1999). The onset of adolescence can be further impeded by poor emotional regulation among the population of individuals with an ASD, as they may lack the ability to monitor and manage their sexual arousal. Failed attempts at imitating sexual behaviors, due to hyposensitivity related to tactile stimuli, can lead to sexual frustration that may be expressed as inappropriate and/or aggressive behaviors among the population of persons with AS (Henault, 2006). Finally, individuals with AS can become perpetrators of sexual assault if notions of consent are poorly understood, as their limited Theory of Mind may lead to neglect of another person's desires.

There are few adolescent cases of sexual offending cited in the literature because juvenile records are often sealed and the public does not have access to records unless that individual is tried in adult court. Only one known study exists that addresses the

prevalence of forensic issues in autism. This study by Hall et al. (2007) identified four areas where individuals with autism are more likely to be offenders: violating social norms, aggressive behavior, inappropriate social boundaries, and property damage. Examples of each of these areas include the following: violating social norms includes trespassing and stealing; aggressive behaviors resulting from disruptions to routine; inappropriate social boundaries may be due to social naivete (approaching or touching strangers, stalking, sexual harassment) or other sexual offenses; and property damage includes starting fires, throwing objects, etc.

Those areas identified within the Hall et al. (2007) study coincide with the types of offenses that have been found to be committed by offenders with Asperger's syndrome. Offenders with a diagnosis of AS comprise 1.5-4.8% of the criminal population detained in maximum-security psychiatric hospitals (London, 2009). While this represents only a fraction of persons with an ASD, it is important to note because evidence suggests that the offenses committed by individuals with AS are likely related to the core deficits of the disorder (i.e., impaired communication and social skills). In addition, hypothesized motivational factors for offending among this population include: a pursuit of restricted interests, a naïve desire for relationships, pressure from peers, a lack of social understanding, and failure to anticipate consequences (Connor, 2008; London, 2009). Another confounding variable that may lead to the prevalence of criminally offending persons with AS is that they tend to have poorer recognition of fear in others, which is believed to be linked to impaired perspective taking via Theory of Mind. However, this inability to recognize fear has been found to be related to the fact

that persons with AS are unable to make the connection that their actions caused fear/hurt in others (Connor, 2008).

Woodbury-Smith et al. (2005) examined whether cognitive impairments in empathy and Theory of Mind for individuals with an ASD were related to their vulnerability for offending. In their study, the authors examined three groups of participants: 21 adults who were offenders with an ASD, 23 adults with an ASD who were not offenders, and 23 people without an ASD. All participants were compared across the following four measures: the Wechsler Abbreviated Scale of Intelligence (WASI), the Adult Eyes Test Revised, the Behavioural Assessment of the Dysexecutive Syndrome (BADS), and the Facial Expressions of Emotion Stimuli and Tests (FEEST). These measures examined intelligence, theory of mind, executive function, and emotion recognition, respectively. Results from the study showed that the ASD offender group showed significantly more impairment in recognizing emotional expression of fear, in comparison to their non-offending peers. However, there were no differences between groups on measures of theory of mind, executive function, or recognition of the emotional expression of sadness.

There are, however, inconsistent findings surrounding the prevalence of offending behaviors among individuals with AS. Connor (2008) notes that the National Autistic Society (NAS) argues that the diagnosis of AS implies strict rigidity to the adherence of rules/routines, which is in stark contrast to the premise of law-breaking which constitutes an offender. In addition, NAS argues that since only a small proportion of individuals with AS commit crimes, there is little ground to support a link between autism and offending. The author notes that others argue for a need to keep individuals with AS safe

from harm, by teaching them ways to avoid actions which may be misinterpreted as having criminal intent (Connor, 2008).

Individuals with autism may display several behaviors that can be misinterpreted during arrests or in court settings. Kelley (2007) mentions that individuals with autism may be overwhelmed when being taken into police custody, as evidenced by panicking if their routines are broken, if preferred objects are taken from them, or if environmental stimuli (i.e. sirens, lights) are over-stimulating. As their stress levels increase, their ability to communicate often decreases. This can present as being unwilling to participate in a court hearing process (Hall et al., 2007; Shea & Mesibov, 2005). It is important to note that this behavior may look different amongst individuals with AS, as they are likely to possess adequate expressive language skills which may mask their stress or anxiety (Connor, 2008). These individuals also tend to display deficits in empathy. In regards to low empathy, they may appear to be coldhearted or unfeeling, which increases the likelihood that decision makers will not be lenient with the defendant. Finally, social deficits impact an individual's ability to get along with prison staff if sentenced to a period of incarceration. This inability to get along with prison staff may lead to more time in seclusion, thus making "good behavior privileges" difficult to earn, subsequently affecting opportunities for parole (Hall et al., 2007; Shea & Mesibov, 2005).

Offenders with ASD and Comorbid Anxiety/Depression

Although the research base is limited, there are a few studies that examine ASD and comorbid anxiety and/or depression among populations of offenders and non-offenders. Among the offending population, a diagnosis of ASD is typically made after an individual has already encountered the juvenile justice systems. Henault (2006) reports

that individuals with AS, specifically, who desire relationships, tend to suffer from their limited social skills. This can lead to associated depression and anxiety symptoms. Anxiety and shyness interact among adolescents with AS, resulting in hindered social contact, limited social experiences, and low self-esteem. The presence of co-occurring ASD and anxiety disorders can lead to decreased functioning across social, emotional, behavioral, and/or adaptive skill areas (Lehman, 2010). In addition, a person experiencing excessive anxiety is likely to experience significant deficits in his/her ability to cope, which can lead to maladaptive behaviors (Romanczyk and Gillis, 2006). A handful of studies have examined the presence of anxiety symptoms among individuals with an ASD across parent- and child-reports (Gillott, Furniss, & Walter, 2001; Kuusikko et al., 2008; Russell & Sofronoff, 2005) and only one has examined similarities across parent-, child-, and teacher reports (Lehman, 2010).

Current research suggests that depression may be the most common psychiatric disorder among individuals with an ASD (Ghaziuddin, Ghaziuddin, & Greden, 2002). A study conducted by Bleil Walters et al. (2010) examined the occurrence of depressive symptomology and presence/severity of abuse and/or neglect among adolescents with an ASD in comparison to adolescents without an ASD. All participants were adjudicated delinquent for a sexual offense. Results indicate that participants with an ASD experienced significantly higher depressive symptomology than their non-ASD adjudicated sexual offending peers. In particular, the ASD group tended to report moderate depressive symptoms whereas the non-ASD group reported minimal depressive symptoms.

Results from these studies indicate gaps within the existing literature base. First, research is limited as to whether significant group differences exist among offenders and non-offenders with an ASD and comorbid anxiety and/or depression. Next, the literature is currently lacking an examination of whether broad or narrow band self-report measures of anxiety would be better predictors of a comorbid anxiety disorder among offenders with an ASD. Finally, there is currently a gap in the literature that would examine whether broad or narrow band self-report measures of anxiety and depression would be better predictors of a comorbid anxiety and/or depressive disorders among offenders with an ASD. The current study will work to close gaps within the existent literature base and results will provide implications for treatment of individuals with the aforementioned comorbid diagnoses, specifically as they relate to sexual education programming geared toward the prevention of future offending behavior.

CHAPTER III

METHODOLOGY

The purpose of this study is to examine whether differences in anxiety and/or depression symptoms exist between individuals with autism who have been adjudicated for a sexual offense compared to individuals with autism who are not adjudicated. This study will examine whether group differences exist among self-reports measured by the Behavior Assessment System for Children- Second Edition (BASC-2), Beck's Depression Inventory-Second Edition (BDI-II), and Beck's Anxiety Inventory (BAI). This study will also examine whether broad band (e.g., BASC-2) or narrow band (e.g., BDI-II, BAI) measures are better predictors of comorbid internalizing disorders among adolescent sexual offenders with an ASD.

Chapter three of this dissertation focuses on the methodology utilized in this study. First, the New Castle Youth Development Center and Wesley Spectrum Services are discussed, as the data used in this study was collected from those sites and is housed in a database developed by a research group at Duquesne University. This chapter will then examine the participants for the present study. Next, the measures used in the study will be discussed, which include the following: the Behavior Assessment System for Children, Second Edition (BASC-2; Reynolds & Kamphaus, 2004), the Beck Depression Inventory, Second Edition (BDI-II; Beck, Steer, & Brown, 1996), and the Beck Anxiety Inventory (BAI; Beck & Steer, 1993). Finally, the research design will be reviewed, concluding with an examination of the particular statistical procedures that will be used to address the research questions.

The New Castle Youth Development Center

The New Castle Youth Development Center (YDC) is a residential treatment facility for adjudicated delinquent male youth in the state of Pennsylvania. The facility runs three specialized programs: an adolescent sexual offender program, a specialized residential program, and a secure treatment program. For the purposes of this study, only the adolescent sexual offender program will be examined. Adolescent males in the sexual offender program are adjudicated delinquents who have been ordered by Juvenile Court into such a program, following previous intervention placements prior to their current placement. Minimum recommended length of stay in the program is 18 months. Facility residents range in age from 14-20 years, as adjudicated Pennsylvania residents are no longer permitted to remain in an adolescent criminal justice facility once they reach 21 years of age.

Wesley Spectrum Services

Wesley Spectrum Services is a non-profit organization that services children, youth, and families throughout a metropolitan area in Southwestern Pennsylvania. Wesley Spectrum offers a diverse array of programs, in order to serve the needs of at-risk youth and their families dealing with Autism Spectrum Disorders, serious Emotional Disturbances, and/or behavioral health disorders. For the purposes of this study, only those adolescents with an Autism Spectrum Disorder, serviced through outpatient services at Wesley Spectrum Services, will be examined. Adolescents receiving outpatient services responded to an invitation to participate in the group, and consent and assent was received for each individual prior to the start of the group. Participants in the outpatient group range in age from 12-19 years.

Participants

The current study will examine pre-existing data from two groups of adolescents who meet DSM – IV TR (American Psychological Association, 2000) and ICD – 10 criteria for an ASD. Data used in this study was obtained from a pre-existing database that was developed and maintained by a research group at Duquesne University. The database includes descriptive information (participant birth date, age, gender, race); diagnosis; and scores on the BASC-2, BDI-II, and BAI. All data was de-identified prior to entry so as to protect participant’s identities.

One cohort of boys ($n = 28$) reside in the YDC state facility following adjudication for a sexual offense where they were ordered into a Juvenile Sexual Offenders Program by Juvenile Court. Participants are those residing in the sexual offenders unit who had been previously diagnosed with an Autism Spectrum Disorder (ASD) diagnosis and participated in completing the following assessment measures utilized in this study: BASC-2 and BDI-II. Data from those adolescents residing in the sexual offenders unit who did not meet symptom threshold for an ASD diagnosis has been excluded from the current study. It should be noted that 2 participants did not complete the necessary assessment measures and were therefore excluded from this study, bringing the total participants in the offender cohort to $n = 26$. Of the offender cohort, 23 completed the BASC-2, 26 completed the BDI-II, and none completed the BAI. The BAI was added as an assessment tool later on in this study and was not available during initial assessments conducted at the YDC.

The second cohort of adolescents ($n = 14$) are non-offenders, 10 of whom are male and 4 who are female. Participants are those non-offender adolescents who were previously diagnosed with an ASD and participated in an outpatient sexual education

curriculum that involved completion of all the assessment measures utilized in this study. Of the non-offender cohort, 10 completed the BASC-2, 12 completed the BDI-II, and 14 completed the BAI.

All participants ranged in age from 12 to 19 years (mean = 15.5 years). The gender makeup of the sample was 90% male and 10% female. The ethnic makeup of the sample includes 67.5% Caucasian, 17.5% African American, and 7.5% Hispanic. The ethnicity of 7.5% of the sample (i.e., 3 participants) was not reported and therefore could not be included in the ethnicity descriptive statistics.

Due to the fact that this study utilizes pre-existing data, an a priori power analysis was run in order to determine the ideal number of subjects necessary to achieve adequate power when conducting a MANOVA and follow-up t-tests. The power analysis was conducted using *G*Power 3.1.2*. Power that is greater than or equal to .80 is considered to be adequate, with a medium effect size of at least .50. According to the power results for the MANOVA with 2 groups and 4 variables, a sample size of 44 subjects was needed to achieve a moderate effect size of .50 with adequate power of .80 at $\alpha = .05$. A priori power analysis was additionally run for the simple t-tests utilized in this study. Results indicate that a sample size of 84 subjects was needed in order to achieve a moderate effect size of .50 with adequate power of .80 at $\alpha = .05$.

Measures

Autism Spectrum Disorder (ASD) Diagnosis

Participants in this study were diagnosed with an ASD prior to the onset of this study. Previous researchers used a combined definition for High Functioning Autism (HFA) and Asperger's Disorder (AD) as outlined by the *Diagnostic and Statistical*

Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR,) as well as the International Classification of Diseases, Tenth Edition (ICD-10), for diagnostic criteria. The current researcher did not determine whether an actual diagnosis of HFA or AD was warranted for each participant, but rather used diagnosis to verify that each subject met criteria for participation in the current study. In addition, the *Asperger's Syndrome Diagnostic Scale (ASDS)* was used to support the likely or very likely probability of such a disorder.

Asperger's Syndrome Diagnostic Scale (ASDS)

The Asperger Syndrome Diagnostic Scale (ASDS) is a 50-item scale completed by individuals (i.e., parents, teachers, clinicians) with direct, sustained contact with the individual being assessed. The ASDS provides raw and standard scores, where a standard score (i.e., Asperger's Syndrome Quotient (ASQ)) greater than or equal to 90 is a likely or very likely indicator of the probability of such a disorder (Myles, Bock, & Simpson, 2001). The instrument assesses five domains of clinical interest: Language, Social, Maladaptive, Cognitive, and Sensorimotor. The ASDS was standardized on 115 children ages 5-18, all of whom had been previously diagnosed with Asperger's Syndrome.

Reported internal consistency reliability estimates fall within the poor to good range ($\alpha = .83$ for the ASQ; $\alpha = .64$ to $.83$ for the subscales). The subscale scores are recommended for use in determining strengths/weaknesses of the individual, as their reliability coefficients are much lower than the ASQ. The reliability coefficients for each of the subscales are as follows: Cognitive ($\alpha = .64$); Sensorimotor ($\alpha = .67$); Language ($\alpha = .72$); Maladaptive ($\alpha = .80$); and Social ($\alpha = .83$). □ The standard error of measurement (SEM) for the ASQ evidences internal consistency reliability that is acceptable. In

addition, the ASQ exhibits strong and statistically significant interrater reliability at the $p < .01$ level ($\alpha = .93$). In terms of validity, the median item discrimination coefficients for each of the subscales on the ASDS were found to be acceptable and statistically significant ($p < .01$). Finally, results from a discriminant analysis demonstrated that the ASQ correctly assigned individuals their correct diagnostic group at an 85% accuracy rate, with statistical significance at the $p < .01$ level (Myles et al., 2001).

Behavior Assessment System for Children, Second Edition (BASC-2)

The Behavior Assessment System for Children, Second Edition (BASC-2) is a multidimensional system used to evaluate the behaviors and self-perceptions of children, as well as facilitate differential diagnosis for children and young adults ages 2-25. Each of the individual BASC-2 instruments provides reliable and psychometrically sound data. For the purposes of this study, the Self-Report of Personality (SRP) version of the BASC-2 will be examined. The BASC-2 SRP is a self-report measure that is available at three age levels: child (ages 8-11), adolescent (ages 12-21; utilized in this study), and young adults attending a postsecondary institution (ages 18-25). The BASC-2 SRP adolescent form consists of 176 items, presented as true/false and Likert-style questions, which provide information in the form of composite scores, primary scales, and content scales (Reynolds & Kamphaus, 2004). Specifically, the Depression and Anxiety primary scales of the BASC-2 SRP adolescent form were utilized in this study.

The Depression subscale consists of 12 items used to assess symptoms traditionally associated with depression, such as feelings of sadness, loneliness, hopelessness, and an inability to enjoy life's activities. Children and young adults who score high on the Depression subscale (T-scores of 60-69 = at-risk; T-scores of 70+ =

clinically significant) may appear as reserved and introverted, although they may appear agitated at times. The Anxiety subscale consists of 13 items used to assess generalized fears, nervousness, and irrational worries of an individual. Individuals who score high on the Anxiety subscale (T-scores of 60-69 = at-risk; T-scores of 70+ = clinically significant) may feel a sense of dread, experience obsessive/intrusive thoughts that impact one's decision making process, and tend to respond negatively to his/her environment (Reynolds & Kamphaus, 2004).

The BASC-2 SRP, Parent Rating Scales (PRS), and Teacher Rating Scales (TRS) forms were standardized on a general norm sample of more than 13,000 individuals aged 2-18 years in general education classrooms. In addition, clinical norm and validity studies, along with the general norm sample, comprise a standardization sample from over 257 cities across the 40 states. Reported internal consistency estimates for the Depression subscale are high and range from $\alpha = .86-.88$; internal consistency estimates for the Anxiety subscale are high ($\alpha = .86$). The Depression and Anxiety subscales are two of the most reliable scales of the BASC-2 (Reynolds & Kamphaus, 2004). In addition, the Depression subscale evidences one of the highest test-retest reliabilities of the SRP Adolescent measure, with a correlation of $r = .81$. The Anxiety subscale test-retest reliability is a bit lower ($r = .69$).

In terms of validity, correlations between the SRP and Achenbach System of Empirically Based Assessment (ASEBA) Youth Self-Report anxiety subscales were found to be $r = .83$; correlations between the SRP and ASEBA depression subscales were found to be around $r = .70$. The correlations between the SRP Anxiety subscale and the Revised Children's Manifest Anxiety Scale (RCMAS), as well as between the SRP

Depression subscale and the Children's Depression Inventory (CDI), were found to be $r = .49$ and $r = .69$, respectively (Reynolds & Kamphaus, 2004).

Beck Depression Inventory, Second Edition (BDI-II)

The Beck Depression Inventory, Second Edition (BDI-II) is a 21-item self-report measure used to evaluate the severity of depression in adolescents and adults age 13 and older. It was developed as an indicator of the presence and degree of depressive symptomatology consistent with the DSM-IV, following revisions to the amended Beck's Depression Inventory (BDI-IA). The BDI-II was standardized on a sample comprised of participants from one college-student group ($n = 120$) and four different psychiatric outpatient clinics ($n = 500$) (Beck et al., 1996).

Reported internal consistency reliability estimates fall within the excellent range ($\alpha = .93$ for college students; $\alpha = .92$ for outpatients). All 21 corrected item-total correlations were significant at the .05 level for the outpatient and college student samples, even after a Bonferroni adjustment had been made. Correlations for the outpatient sample ranged from .39 to .70, and correlations for the student sample ranged from .27 to .74. Test-retest reliability was examined via responses provided by 26 outpatients who were administered the BDI-II on two separate occasions 1 week apart. The test-retest correlation of .93 was found to be significant at the $p < .001$ level. The convergent validity correlation between the BDI-IA and BDI-II was .93 at the $p < .001$ level. The mean BDI-II score (21.88) was 2.96 points greater than the mean BDI-IA score (18.92). Correlation between the BDI-II and Beck Anxiety Inventory (BAI) scores was .60 ($p < .001$). This finding was expected given previous correlations between depression and anxiety in clinical evaluations (Beck et al., 1996).

Beck Anxiety Inventory (BAI)

The Beck Anxiety Inventory (BAI) is a 21-item self-report measure used to evaluate the severity of anxiety in adolescents and adults. It was developed in order to measure symptoms of anxiety which are minimally shared with symptoms of depression, such as those measured by the amended Beck's Depression Inventory (BDI-IA). The 1993 Edition of the BAI manual, the one used in this study, includes slight adjustments to the diagnostic ranges and descriptive labels of the BAI. Scores of 0-7 are considered minimal; scores of 8-15 are considered mild; scores of 16-25 are considered moderate; and scores of 26-63 are considered severe (Beck & Steer, 1993).

Items on the BAI were derived from three earlier self-report measures of anxiety: the *Anxiety Check List (ACL)*, *PDR Check List, PDR*, and *Situational Anxiety Check List (SAC)*. An initial sample of 810 outpatients diagnosed with mood and anxiety disorders was used to examine 86 symptoms of anxiety, resulting in a final pool of 37 symptoms. A second sample of 116 outpatients was used to reduce the number of symptoms measured to 21. The BAI was then standardized on a sample of 160 adult outpatients (Beck & Steer, 1993). Although the BAI was developed with adult outpatients, and its reliability and validity in the Manual only reference an adult population, it has been cited in peer-reviewed studies with adolescents ages 12 and older (Jolly, Arruffo, Wherry, & Livingston, 1993; Osman, Hoffman, Barrios, Kopper, Breitenstein, & Hahn, 2002).

According to the Examiner's Manual, the BAI has high internal consistency reliability ($\alpha = .92$). Corrected item-total correlations for the sample ranged from .30 to .71. Test-retest reliability was examined via responses provided by 83 outpatients who were administered the BAI on two separate occasions 1 week apart. The test-retest

correlation of .75 was found to be significant at the $p < .001$ level. In terms of validity, correlations between the BAI with the Hamilton Anxiety Rating Scale-Revised (HARS-R) and the Hamilton Psychiatric Rating Scale for Depression-Revised (HRSD-R) were found to be $r = .51$ and $r = .25$, respectively. Correlation of the BAI with the BDI was $r = .48$ (Beck & Steer, 1993).

Research Design

The present study is a secondary data analysis that examines whether significant group differences exist across offending and non-offending adolescents with an ASD on the following measures: BASC-2 SRP Depression subscale, BASC-2 SRP Anxiety subscale, and BDI-II. In addition, this study is a secondary data analysis of significant differences across scores on broad band (BASC-2 SRP) vs. narrow band (BDI-II and BAI) measures of depression and anxiety for the non-offender group. A number of possible validity threats exist for this type of research design: data was gathered prior to the current research study, therefore the information available may be incomplete, inaccurate, or limited to what already exists; the data may be irrelevant and may not match the needs of the current study; and it can be difficult to determine how the data was collected and if it was done so with integrity.

The independent variable within this study is the offending status of participants. Independent variables are already in existence and are not impacted by the design of the study. The adolescents in the current study are placed into one of two groups based upon whether or not they have committed a prior sexual offense, namely the offender or non-offender group. The dependent variable within this study is the self-report score of depression and/or anxiety on the (sub)scale of each measure. Dependent variables are

directly influenced by the independent variables within a study. In regards to the present study, an individual's experience of depression and/or anxiety symptoms is likely impacted by whether or not they have committed a sexual offense.

Procedure

Participants in this study were adolescents between the ages of 12 and 19 years of age, all of whom had been previously diagnosed with an ASD. Some of the participants ($n = 26$) participated in a Juvenile Sexual Offenders Program through the YDC state facility and completed the following assessment measures used in this study: BASC-2 and BDI-II. The BAI was added as an assessment tool later on in this study and was not available during initial assessments conducted at the YDC. The remainder of the participants ($n = 14$) participated in an outpatient sexual education curriculum that involved completion of all the assessment measures utilized in this study (i.e., BASC-2, BDI-II, and BAI). Exclusionary criterion was failure to meet symptom threshold for an ASD diagnosis, such as was the case for other adolescents involved in the Juvenile Sexual Offender Program through the YDC.

For the purpose of this study, the BASC-2 depression subscale score and the BDI-II Total score were used to measure and compare self-reported depression. Both measures are used to indicate the presence and degree of depressive symptomatology consistent with DSM-IV-TR criteria. In addition, the BASC-2 anxiety subscale score and the BAI Total score were used to measure self-reported anxiety. Both measures are used to indicate symptoms of anxiety which are minimally shared with symptoms of depression.

Data Analysis

Each of the research questions within this study will be analyzed via a specific data analysis. Research question one will examine whether significant group differences exist between offenders and non-offenders on depression and anxiety (sub)scales of the BASC-2 and the BDI-II. It is hypothesized that significant differences will exist, with adolescent sexual offenders with an ASD reporting statistically significant rates of depression and anxiety in comparison to the non-offender ASD group, across the aforementioned (sub)scales. A MANOVA will be the statistical procedure used to analyze research question one.

The MANOVA is an extension of the univariate analysis of variance, where multiple dependent variables are grouped together into a composite variable. The MANOVA examines whether the independent variable differs from the grouped dependent variable. In other words, the MANOVA examines whether the independent variable simultaneously explains a significant amount of the variance in the dependent variable. Several assumptions must be satisfied by the MANOVA. The first, independent random sampling, holds that the MANOVA assumes all observations are independent of one another and that the sample is completely random (i.e., no pattern for sample selection). The second assumption, level and measurement of the variables, assumes that the dependent variables are continuous or scale variables, whereas the independent variables are categorical.

The third assumption of MANOVA examines the linearity of the dependent variables, which can either be correlated to one another or independent of each other. If the dependent variables are independent of one another, then degrees of freedom will have to be lost, thus decreasing the power of the analysis. It is therefore preferred that the

dependent variables be at least moderately correlated to each other, so as to avoid decreased power. The fourth assumption that must be satisfied by a MANOVA is that multivariate normality is present within the data set. Finally, variance between the two groups must be equal, as per multivariate homogeneity of variance.

Research questions 2a through 2c will be answered via an examination of simple t-tests. Research question 2a will explore whether significant group differences are present between offenders and non-offenders on the depression subscale of the BASC-2. It is hypothesized that adolescent sexual offenders with an ASD will report higher rates of depression than the non-offender ASD group on the BASC-2.

Research question 2b will examine whether significant group differences exist between offenders and non-offenders on the anxiety subscale of the BASC-2. It is hypothesized that adolescent sexual offenders with an ASD will report higher rates of anxiety than the non-offender ASD group on the BASC-2. Research question 2c will explore whether significant group differences are present between offenders and non-offenders on the BDI-II. It is hypothesized that adolescent sexual offenders with an ASD will report higher rates of depression than the non-offender ASD group on the BDI-II.

A simple t-test was chosen to analyze these three research questions because this form of analysis is used to compare the means of two groups, in order to assess whether the means of the groups are statistically different from one another. Three assumptions must be satisfied by the t-test. First, the data must be sampled from normally distributed populations. Next, the two populations must have equal variance. Finally, each score must be independent of all other scores.

If the results from the aforementioned research questions indicate that one group shows significant results over the other, descriptive statistics may be run to examine if significant differences exist between broad band (BASC-2) vs. narrow band (BDI-II and BAI) measures of depression and anxiety for the significant group. It is hypothesized that significant differences will exist across reported scores on the broad vs. narrow band measures, with narrow band measures (BDI-II, BAI) of depression and anxiety evidencing statistically significant rates in comparison to a broad band measure (BASC-2) of these same internalizing disorders.

CHAPTER IV

RESULTS

Introduction

This chapter presents the findings of statistical analyses that were conducted to examine the current study's research questions: whether significant group differences exist between offenders and non-offenders on depression and anxiety (sub)scales of the BASC-2 and BDI-II, when examined as a whole; and whether significant group differences exist between offenders and non-offenders on depression and anxiety (sub)scales of the BASC-2 and BDI-II, when (sub)scales are examined independent of one another. Results from preliminary analyses are presented first, with an examination of statistical assumptions, followed by results of the primary analyses. Demographic data for the entire sample are summarized in Table 1, with demographic data for the offender and non-offender groups in Tables 2 and 3, respectively.

Table 1

Frequency Distribution: Entire Sample

	<i>N</i>	Percent
Ethnicity - Caucasian	27	67.5
Ethnicity - African American	7	17.5
Ethnicity - Hispanic	3	7.5
Ethnicity - Not Reported	3	7.5
Gender - Male	36	90
Gender - Female	4	10

Table 2

Frequency Distribution: Offender Group

	<i>N</i>	Percent
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Ethnicity - Caucasian	16	61.5
Ethnicity - African American	7	27
Ethnicity - Hispanic	3	11.5
Ethnicity - Not Reported	0	0
Gender - Male	26	100
Gender - Female	0	0

Table 3

Frequency Distribution: Non-Offender Group

	<i>N</i>	Percent
Ethnicity - Caucasian	11	79
Ethnicity - African American	0	0
Ethnicity - Hispanic	0	0
Ethnicity - Not Reported	3	21
Gender - Male	10	71
Gender - Female	4	29

The current study examines 26 adjudicated adolescents with an ASD diagnosis and 14 non-adjudicated adolescents with an ASD diagnosis. Participants ranged in age from 12 to 19 years (mean age = 15.5 years). The gender makeup of the sample was 90% male and 10% female. The ethnic makeup of the sample includes 67.5% Caucasian, 17.5% African American, and 7.5% Hispanic. The ethnicity of 7.5% of the sample (i.e., 3 participants) was not reported and therefore could not be included in the ethnicity descriptive statistics.

Descriptive Statistics

Descriptive statistics were obtained for each factor (i.e., (sub)scale) within the study and include the following: number of valid subjects, mean, and standard deviation.

Findings from the BASC-2 Depression and Anxiety subscales are presented below in Table 4. Table 5 contains matching information for the BDI-II.

Table 4

Descriptive Statistics: Behavior Assessment System for Children, Second Edition (BASC-2)

Offender Status	Scale	Mean	SD	Minimum	Maximum
Offender	DEP	59.74	13.12	42	85
	ANX	58.78	13.72	36	92
Non-Offender	DEP	49.33	7.89	41	61
	ANX	50.56	8.82	37	67

Note. Offender $N = 23$; Non-offender $N = 10$. DEP = Depression; ANX = Anxiety.

Table 4 presents the mean scores and standard deviations for the Depression and Anxiety subscales of the BASC-2 for the offender ($N = 23$) and non-offender ($N = 10$) participants. Mean scores below 60 are considered to be within the average range of symptomatology; mean scores from 60-69 are considered within the at-risk range; and mean scores of 70+ are considered clinically significant. Results reported in Table 2 reveal that the average scores on the Depression and Anxiety subscales for the offender and non-offender groups fell within the average range of the respective symptomatology. When considering the standard error around the mean, the Depression and Anxiety subscale means for the offender group could lie within the at-risk range of symptomatology.

Table 5

Descriptive Statistics: Beck Depression Inventory, Second Edition (BDI-II)

Offender Status	Mean	SD	Minimum	Maximum
Offender	19.91	12.57	2	47

Non-Offender	6.67	5.72	1	19
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Note. Offender $N = 26$; Non-offender $N = 12$.

Table 5 presents the mean scores and standard deviations for the offender ($N = 26$) and non-offender ($N = 12$) participants on the BDI-II. Mean scores of 29-63 on the BDI-II fall within the severe clinical depression range; scores of 20-28 fall within the moderate depression range; scores of 14-19 fall within the mild depression range; and scores of 0-13 fall within the minimal depression range. The mean score for the offender group indicates that offending participants are experiencing symptomatology consistent with mild clinical depression. The mean score for the non-offender group indicates that non-offending participants are experiencing symptomatology consistent with the minimal depression range. It should be noted that clinical depression is not equally distributed within the population; therefore, the results do not create a normal distribution but rather a positively skewed distribution.

Correlations

Correlations were run as a preliminary analysis to determine the relationship between offender and non-offender reports on the dependent variables: the BASC-2 Depression and Anxiety subscales and the BDI-II. The bivariate Pearson correlation coefficient was calculated for each pair of variables and organized into a correlation matrix, as presented in Table 6.

Table 6

Correlations

Variable	BASC-2 DEP	BASC-2 ANX	BDI-II
BASC-2 DEP	1		

BASC-2 ANX	.950**	1	
BDI-II	.431**	.423**	1

Note. BASC-2 DEP = BASC-2 Depression subscale; BASC-2 ANX = BASC-2 Anxiety subscale; BDI-II = Beck Depression Inventory, Second Edition. * $p < .05$; ** $p < .01$.

Significant correlations were found between the BASC-2 Depression and Anxiety subscales, between the BASC-2 Depression subscale and the BDI-II, and between the BASC-2 Anxiety subscale and the BDI-II. Results indicate high scores on the Depression and/or Anxiety subscales on the BASC-2 significantly predicted high scores on the other BASC-2 subscale and the BDI-II. Results suggest that depressive and anxious symptomatology are positively related to one another, as both are indicators of internalizing disorders.

MANOVA Results

Preliminary Analyses for MANOVA Assumptions

Prior to conducting the MANOVA, relevant assumptions were examined to determine if they had been satisfied. Data was found to be normally distributed for both groups on all dependent variables within the current study. Since the normality assumption was satisfied, data was then examined via Box's M to determine homogeneity of covariances. Homogeneity of covariances was examined in order to determine if the variance in each group was comparable and drawn from a similar population. Results in the current study are not significant ($p = .361$), therefore satisfying the assumption for differing group variances. Independence of observations was then examined via Wilks' lambda (λ) and the associated F value. Results reveal a significant multivariate main effect for the offender status (Wilks' $\lambda = .755$; $F(3, 28) = 3.0$; $p < .05$; partial eta squared = .245), which suggests little variance that is not explained by the IV. Results from the independence of observations analysis are displayed in Table 7.

Table 7

Independence of Observations

Effect		<i>F</i>	Hyp <i>df</i>	Error <i>df</i>	Sig.	Partial Eta Sq
Intercept	Pillai's Trace	224.832	3	28	.000**	.960
	Wilk's Lambda	224.832	3	28	.000**	.960
	Hotelling's Trace	224.832	3	28	.000**	.960
	Roy's Largest Root	224.832	3	28	.000**	.960
Offend Status	Pillai's Trace	3.034	3	28	.046*	.245
	Wilk's Lambda	3.034	3	28	.046*	.245
	Hotelling's Trace	3.034	3	28	.046*	.245
	Roy's Largest Root	3.034	3	28	.046*	.245

Note. a = 2-tailed. * $p < .05$; ** $p < .01$.

Research Question 1 Results

All assumptions for the MANOVA were satisfied and produced consistent results; therefore, it was appropriate to proceed with running the MANOVA. Given the significance of the overall test, univariate main effects were examined. Since the experiment-wise alpha protection provided by the omnibus F test does not extend to the univariate tests, confidence levels were divided by the number of dependent variables (in this case three); therefore, $p < .017$, as determined by $.05/3$. Given this new alpha value, significant univariate main effects for Offender Status for were only obtained for the BDI-II ($F(1, 30) = 9.115, p < .005$, partial eta squared = .233). Results are presented in Table 8. The Levene's statistic for the BDI-II is significant, meaning that the group variances were not equal. Post hoc tests could not be performed because there were fewer than 3 IVs. Results are presented in Table 9.

Table 8

Tests of Between-Subjects Effects

Source	Dependent Variable	df	F	Sig.	Partial Eta Squared
Corrected Model	BASC_ANX	1	2.757	.107	.084
	BASC_DEP	1	4.905	.035*	.141
	BECKS_DEP	1	9.115	.005**	.233
Intercept	BASC_ANX	1	486.969	.000**	.942
	BASC_DEP	1	538.863	.000**	.947
	BECKS_DEP	1	36.699	.000**	.550
Offender Status	BASC_ANX	1	2.757	.107	.084
	BASC_DEP	1	4.905	.035*	.141
	BECKS_DEP	1	9.115	.005**	.233

Note. a= 2-tailed. * $p < .05$; ** $p < .01$.

Table 9

Levene's Test of Equality of Error Variances

	F	df1	df2	Sig.
BASC_ANX	1.607	1	30	.215
BASC_DEP	5.877	1	30	.022*
BECKS_DEP	4.722	1	30	.038*

Note. a= 2-tailed. * $p < .05$; ** $p < .01$.

Independent Samples t-Test Results

Preliminary Analyses for t-Test Assumptions

A simple t-test was chosen to analyze research questions 2a through 2c, in order to compare the means of the two groups and assess whether they are statistically different from one another. Data was found to be normally distributed for offenders and non-offenders on all (sub)scales within the current study. Due to satisfying the normality assumption, data was then examined via Levene's Test to determine equality of variances. Results indicate that the two variances are significantly different from one another on the BASC-2 Depression subscale and the BDI-II, suggesting that equal variance is not

assumed. The two variances are not significantly different from one another on the BASC-2 Anxiety subscale, indicating the two variances are approximately equal on that subscale, therefore satisfying the assumption. These results led to the examination of the independence assumption. This assumption posits that when given two levels of the IV, as in the current study, one IV cannot belong to two groups at the same time and each score is therefore independent of one another. Results from the assumption indicate that scores on the BASC-2 Depression subscale and the BDI-II are independent of one another. In addition, scores on the BASC-2 Anxiety subscale are not independent of one another.

Research Question 2a Results

Research question 2a explored whether significant group differences existed between offenders and non-offenders on the Depression subscale of the BASC-2. Results revealed a statistically significant difference between the two group means ($t(31) = 2.39$, $p < .05$). The mean of the offender group ($M = 59.74$, $SD = 13.12$) was significantly higher than the mean of the non-offender group ($M = 49.10$, $SD = 7.48$). Results of the t -test are displayed in Table 10.

Table 10

Independent Samples t-Test BASC-2 Depression Subscale

	<i>F</i>	<i>t</i>	<i>df</i>	Sig. ^a	Mean Difference
BASC-2 Depression Subscale					
Equal Variances Assumed	7.723	2.388	31	.023*	10.639
Equal Variances Not Assumed		2.943	28.406	.006**	10.639

Note. ^a = 2-tailed. * $p < .05$; ** $p < .01$.

A post-hoc power test (two-tailed) was conducted using the G*Power 3.1.5 program. Results of the analysis revealed moderate power ($p = .72$, critical $t = 2.04$), which increases the likelihood of Type II error. Effect size (two-tailed) was also calculated, yielding a large effect size (Cohen's $d = 1.0$).

Research Question 2b Results

Research question 2b explored whether significant group differences existed between offenders and non-offenders on the Anxiety subscale of the BASC-2. Results showed no significant differences between the two groups on reported anxiety levels. In fact, the average anxiety scores for both groups were close to the mean ($T=50$; offender group $M = 58.78$, $SD = 13.72$; non-offender group $M = 50.20$, $SD = 8.39$). Results of the t -test are displayed in Table 11.

Table 11

Independent Samples t-Test BASC-2 Anxiety Subscale

	<i>F</i>	<i>t</i>	<i>df</i>	Sig. ^a	Mean Difference
BASC-2 Anxiety Subscale					
Equal Variances Assumed	2.115	1.826	31	.078	8.583
Equal Variances Not Assumed		2.200	27.105	.037	8.583

Note. ^a = 2-tailed. * $p < .05$; ** $p < .01$.

A post-hoc power test (two-tailed) was conducted using the G*Power 3.1.5 program. Results of the analysis revealed moderate power ($p = .49$, critical $t = 2.04$), which increases the likelihood of Type II error. Effect size (two-tailed) was calculated, yielding a medium effect size (Cohen's $d = .75$).

Research Question 2c Results

Research question 2c explored whether significant group differences existed between offenders and non-offenders on the BDI-II. Results revealed a statistically significant difference between the two group means ($t(36) = 3.75, p < .05$). The mean of the offender group ($M = 19.69, SD = 12.18$) was significantly higher than the mean of the non-offender group ($M = 5.92, SD = 5.18$). Results of the t -test are displayed in Table 12.

Table 12

Independent Samples t-Test BDI-II

	<i>F</i>	<i>t</i>	<i>df</i>	Sig. ^a	Mean Difference
BDI-II					
Equal Variances Assumed	7.297	3.745	36	.001**	13.776
Equal Variances Not Assumed		4.890	25.903	.000**	13.776

Note. a = 2-tailed. * $p < .05$; ** $p < .01$.

A post-hoc power test (two-tailed) was conducted using the G*Power 3.1.5 program. Results of the analysis revealed high power ($p = .98$, critical $t = 2.03$), which reduces the likelihood of Type II error. Effect size (two-tailed) was calculated, yielding a large effect size (Cohen's $d = .98$).

Follow-Up Descriptive Statistics

Due to the fact that results from research questions 2a and 2c indicate the offender group shows significant results over the non-offender group, descriptive statistics were run to examine whether significant differences exist between broad band (BASC-2) vs. narrow band (BDI-II) measures of depression for the offender group. Descriptive statistics were obtained on the BASC-2 Depression and BDI-II (sub)scales for the offender group, and include the following: number of valid subjects, mean, and standard deviation. Findings presented in Table 13.

Table 13

Descriptive Statistics: Behavior Assessment System for Children, Second Edition (BASC-2) Depression subscale and BDI-II

Offender Status	Scale	Mean	<i>SD</i>	Minimum	Maximum
Offender	BASC-2 DEP	59.74	13.12	42	85
	BDI-II	19.91	12.57	2	47

Note. Offender $N = 23$.

Table 13 presents the mean scores and standard deviations for the offender group on the Depression (sub)scales of the BASC-2 ($N = 23$) and the BDI-II ($N = 26$). For the BASC-2, results indicate that the average score on the Depression subscale falls within the upper extreme of the average range. For the BDI-II, results indicate that the average score falls within the range of mild depression. When considering the standard error around each mean, the mean of the Depression subscale of the BASC-2 may lie within the at-risk range of symptomatology. In addition, the mean of the BDI-II may lie within the range of moderate depression. As previously hypothesized, the narrow band measure (i.e., BDI-II) of depression evidenced higher statistical significant rates in comparison to the broad band measure (i.e., BASC-2) of depression.

CHAPTER V

DISCUSSION

Introduction

In order to determine whether differences in anxiety and/or depression symptoms exist between offending and non-offending adolescents with autism, data from both groups was compared across self-report ratings on the BASC-2 Depression and Anxiety subscales and the BDI-II. In addition, the usefulness of broad band (e.g., BASC-2) vs. narrow band (e.g., BDI-II) measures was examined to determine which tool better predicts comorbid internalizing depression among adolescent sexual offenders with an ASD. The paragraphs that follow present a brief review of the results, followed by their connection to the current literature.

Descriptive statistics and correlations were run prior to examination of the first research question. The population sample was made up of mostly Caucasian males, with a mean age of 15.5 years. Mean scores on the Depression and Anxiety subscales of the BASC-2, for both the offender and non-offender groups, fell within the average range of respective symptomatology. When considering the standard error around the mean, the means for the offender group could fall within the at-risk range of symptomatology. On the BDI-II, mean scores for the offender group indicated symptomatology consistent with mild clinical depression. The mean score for the non-offender group indicated symptomatology consistent with minimal depression. These preliminary results indicated higher self-report ratings of internalizing disorders (namely depression) among the offending population, which is consistent with previous research that suggests comorbid depression and/or anxiety are common among individuals with an ASD.

Correlations were run to determine the relationship between offender and non-offender reports on the BASC-2 Depression and Anxiety subscales and the BDI-II. Results indicated significant correlations between the BASC-2 Depression and Anxiety subscales, between the BASC-2 Depression subscale and the BDI-II, and between the BASC-2 Anxiety subscale and the BDI-II. Higher scores on the Depression and/or Anxiety subscales on the BASC-2 were associated with higher scores on the other BASC-2 subscale and the BDI-II, suggesting depressive and anxious symptomatology are positively related to one another. This finding was expected, given previous studies between depression and anxiety citing correlations within the moderate to high range. Symptoms of depression and anxiety have been found to overlap, as both are indicators of internalizing disorders, although the specific presentation of the two symptomatology tends to differ based upon the age of the individual as well as other confounding variables (i.e., additional comorbid diagnoses).

The first research question examined whether significant group differences existed between offenders and non-offenders on depression and anxiety (sub)scales of the BASC-2 and the BDI-II. Results indicated that significant main effects were not present for either subscale on the BASC-2, thereby suggesting that group differences between offenders and non-offenders are not present on the subscales. However, significant main effects were obtained for the BDI-II, thereby suggesting that offenders reported significantly higher scores than non-offenders.

While the BASC-2 manual supports the notion that the Depression and Anxiety subscales measure different factors, this does not appear to be true given results from the current study. It is important to consider the specific items that are included within each

respective subscale on the BASC-2, in order to determine the type of symptomatology being addressed (i.e., cognitive symptoms of depression versus somatic symptoms of depression). This may have accounted for differences and similarities amongst responses between the offender and non-offender groups, while also taking into consideration each participant's understanding of the individual items.

Research question 2a examined whether significant group differences were present between offenders and non-offenders on the depression subscale of the BASC-2. Results revealed a statistically significant difference between the two group means, with the offender group reporting statistically significantly rates of depression in comparison to the non-offender group. The t-test yielded moderate power and a large effect size. Higher depression rates among offenders compared to non-offenders is consistent with trends among neurotypical populations, as the status of being incarcerated leads to feelings of depression due to the notion that one has been “caught” and must face consequences for his/her actions.

Research question 2b explored whether significant group differences existed between offenders and non-offenders on the anxiety subscale of the BASC-2. Results did not indicate significant differences between the two groups on reported anxiety levels, thereby rejecting the null hypothesis. The average anxiety scores for both groups were found to be close to the mean ($T=50$). The t-test yielded moderate power and a medium effect size. Results from research question 2b could have been dependent upon the type of symptomatology being addressed by the specific items in the Anxiety subscale, as variations between cognitive and psychosomatic symptoms of anxiety may not have been understood by the current population of participants.

Research question 2c examined whether significant group differences were present between offenders and non-offenders on the BDI-II. Results revealed a statistically significant difference between the two group means, with the offender group reporting statistically significantly rates of depression in comparison to the non-offender group. The t-test yielded high power and a moderate effect size. Again, higher depression rates among offenders compared to non-offenders is consistent with trends among neurotypical populations.

Follow-up descriptive statistics were run for the offender group and examined whether significant differences existed between broad band (BASC-2) vs. narrow band (BDI-II) measures of depression. Results indicated that the mean score on the Depression subscale of the BASC-2 fell within the upper extreme of the average range, and the mean score on the BDI-II fell within the range of mild depression. However, the means could have increased to the at-risk range on the BASC-2 and the moderate depression range on the BDI-II when the standard error around each mean was considered. The narrow band measure of depression evidenced higher statistically significant rates in comparison to the broad band measure of depression. This result was expected given the fact that narrow band measures focus on a very specific set of symptomatology whereas broad band measures provide more of a “catch all” for the presence of a variety of behaviors (i.e., internalizing, externalizing, adaptive skills).

Conclusions

Reporting Trends of Offenders with ASDs

Research has shown that individuals with autism will have up to seven times more contact with law enforcement over the course of one’s lifetime (Hall et al., 2007; Kelley,

2007; Miller, 2008). This increased contact can be due to a number of factors, including but not limited to, social impairments (Hall et al., 2007; Woodbury-Smith et al., 2005), impairments in sexual knowledge and development (Griffiths, Quinsey, & Hingsburger, 1989; Price, 2003; Realmuto & Ruble, 1999), sexual frustration (Henault, 2006), and the tendency to neglect the thoughts/feelings of others (Connor, 2008).

A limited number of adolescent sexual offending cases are cited in the literature, due to juvenile records being sealed. Woodbury-Smith et al. (2005) discovered that adult offenders with an ASD showed significantly more impairment in recognizing emotional expressions of fear, in comparison to their non-offending peers. However, there were no differences between groups on measures of theory of mind, executive function, or recognition of the emotional expression of sadness. In the current study, group differences were found in the presence of comorbid internalizing disorders, namely depression, which suggests that other confounding variables could contribute to and/or result from incarceration among adolescents with an ASD. Among the neurotypical population, offenders tend to be more depressed than their non-offending peers due to the notion that being incarcerated results in feelings of being “caught”.

Reporting Trends of ASD and Comorbid Internalizing Disorders

Few studies have examined comorbid ASD and depression/anxiety diagnoses among populations of offenders and non-offenders. Henault (2006) reports that individuals with AS, in particular, suffer from limited social skills which can lead to associated depression and anxiety symptoms. Previous research suggests that depression may be the most common psychiatric disorder among individuals with an ASD (Ghaziuddin et al., 2002). Bleil Walters et al. (2010) found that study participants with an

ASD whom were adjudicated experienced significantly higher depressive symptomology than their non-ASD adjudicated sexual offending peers. In particular, the ASD group tended to report moderate depressive symptoms whereas the non-ASD group reported minimal depressive symptoms. Results from the current study suggest that offending individuals with an ASD report significantly higher rates of depression than their non-offending ASD peers, suggesting a correlation may exist between offending status and comorbid diagnoses.

Researchers estimate that 17 to 84 percent of individuals with an ASD are thought to have a comorbid anxiety diagnosis. A handful of studies have examined the presence of anxiety symptoms among individuals with an ASD (Gillott et al., 2001; Kuusikko et al., 2008; Lehman, 2010; Russell & Sofronoff, 2005; White et al., 2009). Results of the current study do not indicate comorbid ASDs and anxiety for either group, with both the offending and non-offending adolescents reporting anxiety symptoms within the average range.

Reporting Trends of Broad Band vs. Narrow Band Measures

Previous research has found that typically developing children as young as six years of age are reliable sources of information regarding their personal physical and mental health (Moreau & Weissman, 1993; Riley, 2004). In comparison to the population of individuals with an ASD, deficits with understanding/expressing feelings and expressive/receptive language synonymous with the disorder are believed to impact an individual's ability to self-report symptoms. However, Berthoz and Hill (2005) found that adults with an ASD were able to accurately report their own emotions using three self-report measures, one of which was the BDI.

A handful of studies have examined the presence of anxiety symptoms among individuals with an ASD, across parent, teacher, and child reports (Gillott et al., 2001; Kuusikko et al., 2008; Lehman, 2010; Russell & Sofronoff, 2005). Results of these studies have produced varying results, with some findings suggesting that children with an ASD self-report their anxiety symptoms as well as their typically developing peers (Gillott et al., 2001; Kuusikko et al., 2008; Russell & Sofronoff, 2005) and other findings suggesting that parent and teacher ratings were significantly higher than those reported by children (Lehman, 2010). Results across age levels suggest differing results as to whether older children with an ASD tend to report more symptoms of anxiety than younger children (Gillott et al., 2001; Kuusikko et al., 2008; Lehman, 2010; Russell & Sofronoff, 2005). Results from the current study suggest that self-report symptoms of depression among adolescents with an ASD are better captured by narrow band measures (BDI-II) than broad band measures (BASC-2) of the internalizing disorder. This finding was expected given the fact that narrow band measures are designed to measure specific symptomatology of a single disorder/diagnosis, whereas broad band measures are designed to assess a variety of symptoms and/or behaviors at a very basic level. Both types of measures are ideally used as parts of an assessment battery when determining a diagnosis, as thorough assessment should include a variety of assessment measures.

Limitations

Several limitations should be considered for the current study. First, the use of an existing data set led to the Beck's Anxiety Inventory (BAI) only being administered to the non-offender group. Due to the data being limited to what was in existence, analyses could not be run to determine whether significant differences exist between broad and narrow band measures of self-reported anxiety among groups of adolescents with an ASD. If this study is

replicated in the future, it is recommended that all measures be administered to both participating groups, in order to allow for detailed comparisons across the comorbid internalizing disorders being examined.

Second, the ASD diagnosis of participants in the current study was very broad, based upon diagnostic criteria from the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR)*, the *International Classification of Diseases, Tenth Edition (ICD-10)*, and the *Asperger's Syndrome Diagnostic Scale (ASDS)*. The use of an existing data set did not allow for discriminating between Autistic Disorder (AD), High Functioning Autism (HFA), Asperger's Syndrome (AS), or Pervasive Developmental Disorder, NOS (PDD-NOS). Future research may want to consider whether different diagnostic groups along the autism spectrum produce different results on self-report measures of depression and anxiety. It would be interesting to consider if results differ within and across groups (i.e., offending vs. non-offending; AD vs. HFA vs. AS vs. PDD).

Third, the existing data set did not allow the current researcher to determine if the self-report measures being used were at the appropriate cognitive ability and/or reading level of the participant. This may have accounted for some, but not all, of the missing data in the current study; however, this cannot be verified due to limitations of the existing data set (i.e., IQ scores were not reported for participants). Future replications of this study may want to consider IQ as an important covariate in determining whether certain self-report measures are more user-friendly, as well as whether self-report ratings from individuals with an Intellectual Disability can be considered valid.

Finally, the sample in the current study had specific limitations. Although sample size was small and had the potential to lower the overall power and increase the

likelihood of Type II error, power in the current study was not compromised due to moderate to large effect sizes within the current study. Additionally, the sample of offending adolescents with ASD came from a single residential treatment facility in Western Pennsylvania. Likewise, the sample of non-offending adolescents came from two outpatient groups operating through a single non-profit organization in southwestern Pennsylvania. Therefore, results of the current study cannot be generalized to all groups of adolescents with an ASD. In addition, the sample was largely homogeneous to a Caucasian male population. Although an ASD diagnosis is more prevalent among males than females, there may be significant variation between gender, race, and regional demographics if a larger sample size were to be studied. Future studies should examine a larger and more diverse sample size, in order to increase generalizability of the current findings.

Implications for Future Research

Limited research exists that studies self-report ratings of internalizing behaviors amongst adolescents with an ASD. To date, no other study has examined the self-report ratings of anxiety and depression between offending and non-offending adolescents with autism. In addition, no study has examined the use of broad vs. narrow band measures to evaluate these internalizing behaviors for the aforementioned groups. As a result, there is a continued need for additional research in these areas.

Based on the study limitations reported above, future research should focus on the use of a larger and more diagnostically and demographically diverse sample. This would allow for increased generalizability of findings, as well as a more detailed reporting of trends of specific internalizing disorders found to be comorbid with groups of adolescents

with autism spectrum disorders. In addition, a more comprehensive and complete testing battery between offending vs. non-offending groups would provide important information regarding whether broad or narrow band measures are more sensitive to anxiety and depression for these populations. Finally, the raters cognitive ability and reading levels may want to be considered as a compounding variable for accuracy of results.

Autism studies to date have provided limited information whether an individual's cognitive abilities, comorbid mental health diagnoses (i.e., depression and/or anxiety), and social awareness/understanding (related to the autism diagnosis) impact the ability to learn and apply information regarding social rules to daily life. It is possible that these variables, in isolation or combined, could explain some of the variation between individuals with autism who offend versus those who do not. Of particular interest to adolescents with autism is how their understanding of sexuality ties into physical maturation, comorbid mental health issues, and the development of relationships.

In an effort to prevent instances of sexual acting-out and sexual offending, the development and presentation of sexual education programs for adolescents along the autism spectrum should be considered. Traditional social skills and sexual education curriculums fall short among this population, because they are designed from a neurotypical standard (Ray et al., 2004) and do not consider the confusion surrounding sexuality and sexual expression that this population experiences (Koller, 2000). Alternative programming for adolescents with an ASD should focus on the integration of social skills, peer relationships (including dating), sexual development, empathy, and problem behaviors (Koller, 2000; Ray et al., 2004). Educators and/or researchers should take care to match the curriculum to the cognitive abilities and learning styles of the

individual participants, as different learning styles have been found between individuals along the autism spectrum (Gabriels & Van Bourgondien, 2007).

In line with the purpose of the current study, assessment should accompany social skills and sexual education programming decisions. On one hand, assessment tools can serve as a means to determine other comorbid diagnoses that the individual may suffer from, so as to allow for all areas of individual need to be treated. On the other hand, assessment tools can serve as a meaningful outcome measure of the learned knowledge of curriculum/skills. Further research into the field of autism should include measures that tap into cognitive abilities, comorbid diagnoses, and the understanding of social rules/norms, so as to aid in the development of social skill and sexual education programming that is best suited for individuals along the autism spectrum.

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