

- Szapocznik, J., Scopetta, M. A., Kurtines, W., & Aranalde, M. D. (1978). Theory and measurement of acculturation. *Revista Interamericana de Psicología*, 12, 113-130.
- Tedeschi, R. G., & Calhoun, L. G. (1995). *Trauma & transformation: Growing in the aftermath of suffering*. Thousand Oaks, CA: Sage Publications.
- Tedeschi, R. G., & Calhoun, L. G. (1996). The Posttraumatic Growth Inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress*, 9, 455-471.
- Tedeschi, R. G., & Calhoun, L. G. (2004). Posttraumatic growth: Conceptual foundations and empirical evidence. *Psychological Inquiry*, 15, 1-18.
- Tedeschi, R. G., Park, C. L., & Calhoun, L. G. (1998). *Posttraumatic growth: Positive changes in the aftermath of crisis*. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Underwood, L. G., & Teresi, J. A. (2002). The Daily Spiritual Experience Scale: Development, theoretical description, reliability, exploratory factor analysis, and preliminary construct validity using health-related data. *Annals of Behavioral Medicine*, 24, 22-33.
- Updegraff, J. A., & Marshall, G. N. (2005). Predictors of perceived growth following direct exposure to community violence. *Journal of Social and Clinical Psychology*, 24, 538-560.
- Urcuyo, K. R., Boyers, A. E., Carver, C. S., & Antoni, M. H. (2005). Finding benefit in breast cancer: Relations with personality, coping, and concurrent well-being. *Psychology and Health*, 20, 175-192.
- U.S. Census Bureau. (2000). *American FactFinder Glossary*. Retrieved June 18, 2008, from <http://factfinder.census.gov>
- Walker, C., Ainette, M. G., Willis, T. A., & Mendoza, D. (2007). Religiosity and substance abuse: Test of an indirect-effect model in early and middle adolescence. *Psychology of Addictive Behaviors*, 21, 84-95.
- Weinrib, A. Z., Rothrock, N. E., Johnsen, E. L., & Lutgendorf, S. K. (2006). The assessment and validity of stress-related growth in a community-based sample. *Journal of Consulting and Clinical Psychology*, 74, 851-858.
- Weiss, D. S., & Marmar, C. R. (1997). The Impact of Event Scale – Revised. In J. P. Wilson & T. M. Keane (Eds.), *Assessing psychological trauma and PTSD* (pp. 399-411). New York, NY: Guilford Press.
- Weiss, T. (2002). Posttraumatic growth in women with breast cancer and their husbands: An intersubjective validation study. *Journal of Social Oncology*, 20, 65-80.
- Weiss, T. (2004). Correlates of posttraumatic growth in married breast cancer survivors. *Journal of Social and Clinical Psychology*, 23, 733-746.
- Weiss, T., & Berger, R. (2005). Reliability and Validity of a Spanish version of the Posttraumatic Growth Inventory. *Research on Social Work Practice*, 16, 191-199.
- Wortman, C. B. (2004). Posttraumatic growth: Progress and problems. *Psychological Inquiry*, 15, 81-90.
- Yi, J. P., Smith, R. E., & Vitalino, P. P. (2005). Stress-resilience, illness, and coping: A person-focused investigation of young women athletes. *Journal of Behavioral Medicine*, 28, 257-265.

## Attention Deficit Hyperactivity Disorder and Risky Sexual Behavior in Adolescence

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### Abstract

According to the literature, many adolescents diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) have been shown to engage in risky sexual behavior (Flory, Molina, Pelman, Gnagy, Smith, 2006). However, it still remains unknown which particular social and environmental factors influence this positive correlation. Thus, this research examines the social and environmental risk factors that influence risky sexual behavior in adolescence. The results from this research has identified that adolescents reporting having sexual intercourse in their lifetime scored significantly higher on parent reports of externalizing problems, attention problems, rule breaking behavior, and aggressive behavior. Additionally, adolescents that scored high on externalizing symptoms were more likely to report a greater number of sexual partners, and adolescents scoring higher. There also seemed to be a significant gender difference, such that females scored significantly higher on parent reports of total ADHD problems. Considering the potential health problems associated with risky sexual behavior, it is important to identify the specific factors that increase this likelihood among diagnosed adolescents, and to formulate ways to address this issue and thereby reduce its occurrence.

### Introduction

Attention deficit hyperactivity disorder (ADHD) is one of the most common psychiatric disorders among children and adolescents (Flory et al., 2006). Symptoms of this disorder can impact academic performance, as well as social behavior. In particular, many adolescents with ADHD have been shown to engage in risky sexual behavior. This correlation has been well documented for the last several years; however, there has been very little research regarding the influential factors that contribute to it. Considering the potential health problems associated with risky sexual behavior, it is important to identify the specific factors that increase this likelihood among diagnosed adolescents, and to formulate ways to address this issue and thereby reduce its occurrence.

### Purpose of Study

The purpose of this study is to identify the specific environmental and social factors that cause ADHD diagnosed adolescents' involvement in risky sexual behavior

at a higher rate than typical adolescents without the disorder. The environmental and social factors to be examined in this study include ethnicity, family structure, socioeconomic status, neighborhood environment, and parents' level of education. With the continual rise in ADHD diagnoses and the likely possibility that ADHD is a developmental precursor of risky behavior, this study will be of much significance to the field of psychology.

### Theoretical Framework and Hypothesis

The theoretical framework that will be used to conduct this study is the cumulative risky model, which emphasizes observation of both environmental and social factors as a cumulative index. This approach allows one to understand that there may be a cluster of risk factors to which a child is exposed, rather than one specific factor alone that predicts the outcome of a particular behavior. Therefore the hypothesis of this research is that the symptoms characterized as ADHD, along with a variety of other factors, increase the likelihood of risky sexual behavior.

According to Wozniak (2003), ADHD adolescents typically experience continued academic difficulties, higher dropout rates, problems with authority, higher rates of risky behavior, and overall feelings of worthlessness. The symptoms of ADHD can cause an individual to be more impulsive in his or her thinking and decision making when regulating behavior. Therefore, having an impulsive personality can promote an individual to act without considering the situation and its consequences.

In addition, the lack of attention and critical thinking associated with ADHD can further increase participation in risky sexual behavior. The notion that individuals lack the social skills to formulate close peer relationships may explain why peer relationship problems are common among children and adolescents with ADHD (Flory et al., 2006). These adolescents may be more likely to associate with individuals who engage in risky behaviors of all types, such as reckless driving, substance abuse, and smoking. In regards to family factors, poor parenting and parents' lack of knowledge regarding effective sexual health practices may also be a social factor. Parent involvement and communication is important component in the reduction of risky behavior. Parent relationships are what influence the ways in which a child is effectively socialized into the environment. Therefore healthy parent interaction is necessary during development.

An additional influential factor of this correlation may be ethnicity. According to most research, minority children diagnosed with ADHD tend not to receive adequate treatment for the disorder (Bussing, Zima, Gary, Garvan, 2003). Because of this trend, many minority children may be more likely to engage in risky behavior. Without treatment, minority adolescents are left with their needs unmet during a time in their lives when sexual education and treatment for ADHD are imperative.

All of these specific environmental and social factors, along with the symptoms of ADHD, play an integral part in the positive correlation between ADHD and

risky sexual behavior. This study will attempt to identify these factors with careful observation and statistical analysis.

### Limitations

There were a number of limitations in this research. The first included the limited amount of time allotted to complete this study in its entirety. Few subjects were included in this study in order to generate precise results and conclusions due to this time constraint, limiting the amount of results provided. Additionally, there was a limited amount of information available for the literature review. Research on this topic is scarce. Although there is some research identifying the correlation between ADHD and risky sexual behavior, there is still little information regarding the factors that influence this phenomenon.

### Literature Review

#### *Attention Deficit Hyperactivity Disorder (ADHD)*

The "Summary Health Statistics for US Children", found that more than 4.7 million children between the ages of 3 and 17 have been diagnosed with ADHD as of 2007 (Bloom & Cohen, 2007). The core symptoms of this behavioral disorder have been clustered into three categories: hyperactivity, impulsivity, and inattention. Based on the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders IV* (4th edition), these symptoms must be present in several settings, occur for more than six months, and be present more severely than in a typical child or adolescent in the same age cohort (2000). As a result of these symptoms, diagnosed individuals are typically linked to academic, behavioral, and social problems (Flory et al., 2006). Many researchers have begun to link the prevalence of ADHD to risky sexual behavior in adolescence, as supported by observation and empirical findings (Flory et al., 2006). ADHD can be a developmental precursor of risky behaviors, which may also lead to criminal delinquency in adulthood. The following is a list of symptoms that characterize the fundamental characteristics of the ADHD diagnosis (APA, 2000):

#### Diagnostic Criteria for ADHD

##### INATTENTION

- Difficult time paying close attention
- Difficulty remaining attentive during tasks and activities
- Does not seem to listen
- Does not follow instructions and fail to complete tasks
- Disorganized
- Forgetful of important activities
- Loses important things needed for tasks and activities
- Inability to participate in tasks that require constant mental effort

**HYPERACTIVITY**

- Fidgets or squirms
- Inability to stay seated
- Runs, jumps, and climbs when it is not appropriate
- Excessive talking
- Is in constant motion

**IMPULSIVITY**

- Acts and speaks without thinking
- Difficult taking turns
- Interrupts or intrudes on others
- Inability to wait for things

The cause of ADHD is still unknown; however, there has been much research examining various theories. Many researchers have classified ADHD as a biological disorder originating in the brain due to low levels of activity in the regions where attention and activity levels are regulated (AAP, 2001). Other biological theories suggest that there may be problems with certain chemicals that send messages throughout the brain (AAP, 2001). Heredity has also been proposed as a cause of ADHD indicating that individuals are more likely to develop ADHD if a parent is diagnosed with the disorder as well (AAP, 2001). Other theories with empirical support blame environmental and medical factors, such as toxins and extremely severe injuries to the head (AAP, 2001). However, according to the American Academy of Pediatrics, “there has been no evidence that ADHD is caused by eating too much sugar, food additives, allergies, or immunizations” (AAP, 2001, p. 9).

Although there is no cure for ADHD, many treatments may be effective in controlling and diminishing symptoms, based on a child’s diagnosis and individual needs. Treatments consist of medical, behavioral, educational, and psychological interventions, with a combination of treatments used as a comprehensive approach to enhance the effectiveness of treatment. Specifically, common treatments may consist of parent training, behavioral interventions, educational programs, individual/family counseling, and sometimes medication. Most medications given are psychostimulants, which help to relieve ADHD symptoms. Studies illustrate that over 80% of children who are treated with psychostimulants improve greatly (AAP, 2001). Psychostimulants used to treat ADHD include methylphenidate, also known as Ritalin and Concerta, and amphetamine, most commonly known as Dexedrine, Dextrostat, and Adderall (AAP, 2001).

**Risky Sexual Behavior and Its Effects**

In general, risk taking is a something that most individuals take part in during adolescence. The main question is what influences some adolescents to participate in risky behaviors, while others never engage in them? Adolescence is the emergence of the sexual drive and the onset of exploring one’s ability to attract the opposite sex (Zwane, Mngadi, Nxumalo, 2004). According to empirical research, many

contributing factors play a part in the onset of risky sexual behavior in adolescence. With today’s increased rate of adolescents engaging in risky sexual behavior at younger ages than previous years, there is an increased risk of unintended pregnancies and sexually transmitted infections, such as HIV and AIDS (Zwane et al., 2004). In addition, many adolescents are engaging in sexual activity more frequently, which influences the future direction of these sexually infections (Zwane et al., 2004). This means that as more engage in risky sexual activity, the more prevalent sexually transmitted diseases will continue to be present in our society. For the most part, adolescents tend to be uninformed or misinformed regarding sexuality and sexual education, which may be the reason why they are reluctant to protect themselves (Zwane et al., 2004). Many adolescents also believe that they are not at risk for infections or other health dangers. Some are also unable to discuss their concerns about reproductive health with others, or may not have access to affordable health services (Zwane et al., 2004).

**Risky Sexual Behavior and Environmental Predictors**

Researchers have identified four factors that they consider “multi-factorial” in influencing risky sexual behavior in adolescents (Zwane et al., 2004). The first influence is social pressure. Many adolescents are encouraged by society to experiment with sex and to enhance their physical attractiveness. Other contributing factors include easy access to family cars and unsupervised time at home. Adolescents have more opportunity to get away with and engage in risky behaviors with the frequent absence of parents. This idea leads to the final factor that researchers Zwane, Mngadi, and Nxumalo found. The composition of the family structure has changed in recent years, which contributes to sexual experimentation among the adolescent population. Most research has focused on two key areas; the effect of family configuration and the effect of family involvement (Davis & Friel, 2001). Family structure typically measures whether an adolescent lives in a home with one or two parents present, whether the parents are married, and whether they are the biological parents of the adolescent (Davis & Friel, 2001). Results in the Davis and Friel study illustrate that adolescents from intact, two-parent homes are more likely to begin having intercourse later in life than adolescents who come from a one-parent home. However, it is believed that girls in single-parent families are likely to engage in risky sexual behavior earlier than single-parent boys do (Miller & Moore, 1990). Davis and Friel also discussed the context of family in their research. It seems that the mother-child relationship is important when predicting an adolescent’s onset of sexual activity (2004). A mother’s interaction, along with her attitude toward discussion of sex, can affect an adolescent’s understanding of sex. The more positive a mother’s attitude is toward discussion, the less likely the adolescent is to engage in early sexual activity. The family is a dynamic element in the life of an adolescent. It provides structure and guidance that helps socialize the child by providing values and norms. Therefore, the interference of the family unit can have adverse effects on adolescent behavior if he or she is not properly



socialized (Davis & Friel, 2004). However, it is important to recognize the cultural differences in families, which can also explain why some adolescents engage in risky sexual behavior and others do not. The family cultural norms inform an adolescent as to what behavior is acceptable and appropriate (Pick & Palos, 1995).

### **Risky Sexual Behaviors and Gender Roles**

Other research has observed risky sexual behavior in adolescents from the view of their traditional gender role attitudes. Social norms about gender and a woman's understanding of her power in a relationship can be very important in understanding and explaining risky sexual behavior (Amaro, 1995). There is a definite difference in the way each gender behaves sexually, which may be due to many explanations. The evolutionary theory proposes that men and women behave differently because they are enacting evolved mating strategies (Shearer, Hostermann, Gillen, & Lefkowitz, 2005). Another explanation denotes that men and women maintain different sexual scripts because they are socialized into society differently based on their gender (Shearer et al., 2005). This socialization impacts an individual's cognitive schema regarding sexual aspects about themselves (Shearer et al., 2005). As stated earlier, cultural values about gender roles can influence a man or woman to engage in particular sexual activities. This might include the general interactive behavior between a man and a woman in a relationship, who initiates sex in a relationship, and how sex is enacted (Shearer et al., 2005). However, it has been identified that adolescent boys who internalize social norms regarding their masculine sexual role were more likely to engage in risky sexual behavior (Shearer et al., 2005).

### **Risky Sexual Behaviors and Self-Regulation/Risk Proneness**

The concept of self-regulation and risk proneness has been identified in its relation to risky sexual behavior (Crockett, Raffaelli, & Shen, 2006). Self-regulation has been defined as the ability for one to regulate their behavior, attention, and activity according to internal and external demands (Crockett et al., 2006). Self-regulation contributes to a number of adaptive responses to life's challenges and can be linked to a child's competence. As illustrated by Wong (1999), egocentrism can increase the likelihood of risk-taking and experimentation. Children low in ego control typically report more substance use in adolescence, which is believed to increase risky sexual behavior (Crockett et al., 2006). The concept of self-regulation is believed to develop in childhood. During preschool years, parents begin mediating behavior, and a child develops symbolic representations, which lead to an emergence of internalized executive functions during the preschool years (Crockett et al., 2006). Stable individual differences in self-regulation tend to emerge in early childhood, as well (Crockett et al., 2006). According to Feldman and Weinberger, children who are able to develop strong regulatory skills are more likely to avoid risky behaviors in adolescence, including risky sexual behavior (1994).

Risky proneness, also known as risk tolerance, has been identified as an attraction to the excitement of risky situations and poor decision-making (Crockett

et al., 2006). Risk-prone individuals usually seek out dangerous or risky situations to fulfill their inner urges for excitement. Sensation-seeking adolescents have been linked to risky sexual behavior in a number of empirical studies. Individuals who seek excitement in risky activities will most likely engage in risky behavior because they will focus on the positive emotional outcomes that they believe will come from the experience, while ignoring the potential negative consequences that may result from participation in such activities (Crockett et al., 2006). The results of the study conducted by Crockett, Raffaelli, and Sheen revealed a number of relevant findings. They first identified that self-regulation during middle childhood influences adolescent risky behaviors, directly and indirectly through early adolescence substance abuse. This finding illustrated the indirect relationship between substance abuse and risky sexual behavior, because it shows that low self-regulation in children promoted sexual risk-taking in adolescence with the increase of early substance use (Crockett et al., 2006). The direct relationship of self-regulation and risky sexual behavior was also identified, with research suggesting that self-regulation demonstrated stable individual differences (Crockett et al., 2006). Another additional finding was the effect of negative peer pressure on an individual's proneness to engage in risky behaviors (Crockett et al., 2006). These researchers concluded that poor self-regulation in childhood and early adolescent risk proneness influence risky sexual behavior in part by increasing early substance use.

### **Risky Sexual Behavior and Aggression**

There are a number of studies that suggest the correlation between childhood externalizing behaviors and risky sexual behavior in adolescence. Externalizing factors include a variety of behaviors that have been clustered into four groups (Frick, Lahey, Loeber, Tannenbaum, Vanhorn, Christ, M.A.G., 1993): opposition, physical aggression, status violations, and property violations. Physical aggression appeared to be a major predictor of health risky behaviors, including risky sexual behavior (Timmermans, Lier, Koot, 2007). Therefore significant measures, such as preventive interventions aimed at physical aggression in childhood, should be considered in an effort to reduce risky sexual behavior and its consequences (Timmermans et al., 2007).

### **Risky Sexual Behavior and Other Alternative Influences**

Research has also identified other alternative influences that are not mentioned in a majority of the work regarding adolescence and risky sexual behavior. Many researchers and public health experts have recognized race, ethnicity, socioeconomic status, and family structure as key features in risky behaviors. However, according to Carpenter (2001), these factors only contribute to a small fraction of individual difference in adolescent risky behaviors. Based on the largest survey given to adolescents in the U.S., these contributing factors consist of an adolescent's school performance, how an adolescent spends their free time, friends' behavior, and relationships with one's family (Carpenter, 2001). Only a small percentage

demonstrates the influence of demographic and family structure as influential factors in risky sexual behavior in adolescence. Only 26 percent of seventh- and eighth-graders whose annual family income was less than \$20,000 reported having had sexual intercourse, compared to 8 percent of adolescents whose families earned at least \$41,000 each year (Carpenter, 2001).

Other researchers believe that risky teen behavior is simply a result of an immature brain that is unable to avoid risky behavior (Jayson, 2007). Laurence Steinberg, a psychologist from Temple University, expressed that adolescents are at a stage in their lives where there is an overload in their brains, which makes it difficult to control themselves (Jayson, 2007). Neurological researchers have found that the brain is not fully developed until after the age of 18; the portion of the brain that controls logic and reasoning developing before the region that controls impulse and emotions. The researcher's strategy to control this situation would be to create stricter laws and policies limit risk taking (Jayson, 2007). Such examples might include increasing the driving age or the price of cigarettes. "Education does not work alone in reducing risky behavior" (Jayson, 2007). Instead, this newspaper article suggests both education and stricter laws in combating this issue in society.

### **ADHD and Risky Sexual Behaviors**

Although adolescence has been related to risky behavior, an adolescent diagnosed with ADHD has illustrated an increase in the possibility that risk taking will occur. Due to the symptoms, children with ADHD typically have poor social skills that make it very difficult for them to socialize and establish meaningful relationships. ADHD also frequently occurs with disorders such as learning disabilities, anxiety disorders, and other behavioral disorders (Flory et al., 2006). Unfortunately, many of these problems continue into adolescence and adulthood, when concerns about the safety and health of ADHD individuals arise (Flory et al., 2006). According to Flory and colleagues (2006), ADHD and risk behavior seem to be related due to many complex interpersonal factors and core characteristics of the disorder (2006). Peer relationships, especially with peers whose attitudes favor involvement in unconventional activities, promote risky sexual behavior. In addition, with peer relationship problems being an issue with which many individuals with ADHD struggle, it is common that many will affiliate with and be vulnerable to peers outside the "mainstream social networks" (Flory et al., 2006). A second finding in research emphasizes the importance of family factors. As stated previously, the lack of parental monitoring and trust, high levels of family conflict, and poor quality of parent-teen communication regarding sexual health all contribute to the involvement of risky sexual behaviors (Flory et al., 2006).

These findings all illustrate the need for increased effective treatment and attention to risky sexual behavior by professionals who work with adolescents diagnosed with ADHD. Typically, an individual with ADHD is treated throughout childhood for their disorder. However, once they enter adolescence, many stop receiving treatment (Barkley, Fisher, Smallish, & Fletcher, 2003). However, even if

adolescents continue to seek treatment as adolescents, very little direction is available regarding psychosocial interventions for ADHD at these ages (Smith, Waschbusch, Willoughby, & Evans, 2000). Another treatment for decreasing risky sexual behavior is the prescription of stimulant medication. Although it has been highly documented as an effective treatment for those diagnosed with ADHD, it is very ineffective in promoting behaviors related to safe sex (Smith et al., 2000). Nonetheless, Flory and her colleagues assert that the ideal treatment to reduce risky sexual behavior in adolescents with ADHD would be to provide a number of different comprehensive approaches that encompass family involvement (2006). This type of prevention strategy can promote parent-child interaction and communication. Research has shown that sex education that contains family components has shown greater success in eliminating risky sexual behavior within populations where risk-taking is most common (Flory, 2006).

Although it is difficult to find a definite understanding regarding the dynamics of risky sexual behaviors, there are to be similar findings throughout the research. Many studies have identified how family structure, relationships, socioeconomic status, pubertal maturity, and various personalities and characteristics contribute to the timing and frequent occurrence of adolescent sexual activity and other risky behaviors (Wong, 1999). Thus, it can be understood that risky sexual behavior is something that many adolescents experience, but those with ADHD have an even greater incidence that can possibly lead to other deviant behaviors.

## **Research Methodology**

### ***Participants***

Participants of this study included a cohort of high school students that were 15-18 years of age. This sample targeted the University of Maryland community and inner-city adolescents in the metropolitan Washington, D.C. area. Subjects were recruited using local advertisements and various contacts, including local schools, after-school programs, and adolescent-outreach programs. Eligibility for this study required parent/guardian consent, due to their child's participation in the study as a minor, as well as the adolescent's assent. Additionally, both the parent/guardian and adolescent must be able to speak English and the child had to live with the participating parent/guardian participating in the study. This study also consisted of an exclusion criterion, which means that certain subjects were excluded to participate if they met a certain criterion set up by the experimenter. Therefore, the exclusion criterion of this study consisted of tenth-grade adolescents who were either younger or older than 15-18 years of age.

Adolescent participants completed surveys consisting of questions about their neighborhood environment, family structure, and the prevalence of health-risk behaviors. In addition, parents of the adolescents completed a number of surveys consisting of questions regarding the child's behavior and the family's demographics. This study took place at the Center of Addictions, Personality and Emotions Research (CAPER) lab on the University of Maryland campus and was carried out

in conjunction with another study, which looked at distress tolerance and adolescent substance use (ADT study).

### ***Procedures***

The ADT study, of which this study is a part, was approved by the University of Maryland Institutional Review Board. Prior to coming into the lab for assessment, parents were interviewed and screened in order to ensure that they met the requirements to participate in the study. If eligible to participate in the assessment, parents and adolescents were scheduled to come to the lab, where both parent and child signed consent to participate.

### ***Measures***

Measures of this study assessed the following domains: (a) demographics, (b) neighborhood environment, (c) risky sexual behavior, and (d) child behavior (ADHD). All measures of this study were completed by the adolescent with the exception of the parent/guardian version of the demographics form and the measures of ADHD symptoms, which have been hypothesized to impact the participation in adolescent risky sexual behavior. The parent/guardian completed his/her forms in a separate room from the adolescent and had no access to the child's responses.

#### ***Demographics***

In this study, the parent/guardian completed two forms that included personal information and information about the adolescent. These forms measured age, gender, education level, academic achievement, occupation, home occupants, and socioeconomic status. The socioeconomic status pinpointed the annual family income, father's education, and mother's education.

#### ***Neighborhood Environment***

The neighborhood environment was assessed using the Neighborhood Environment Scale (NES). Adolescents completed this survey, which measures neighborhood disorganization, including questions about violent crime and drug use and sales. This measure examined three factors: perceived violence, perceived safety, and perceived drug use and availability. Questions related to these factors in this survey will be used to create a subscale score that will indicate the underlying construct.

#### ***Risky Sexual Behavior***

Risky sexual behavior of adolescents will be assessed using the Youth Risk Behavior Survey (YRBS) completed by the adolescent. This survey focuses on risk behaviors that affect the health and safety of an adolescent, while identifying the prevalence of these health risk behaviors in a particular environment. The questions found in this survey consist of questions regarding drug and alcohol use, dietary habits, sexual behavior that leads to pregnancy or sexually transmitted diseases, and other activities that result in intentional or unintentional injury. However, for this

particular study, the section regarding sexual behavior was the only portion of the survey that was collected for analysis.

### ***Child Behavior***

This factor of the study was assessed using the Child Behavior Checklist (CBCL) developed by Thomas Achenbach. This measure identifies and assesses a child's competencies and behavioral/emotional problems. The CBCL for ages 6–18 were used for this study, which provides raw scores, T-scores, and percentiles for three competence scales including activities, social life, and school. This measure involves parents or individuals who know the child well to rate their child's behaviors and competencies. Parents rate their child for how true each item has been within the last 6 months using the scale: 0 = not true (as far as I know); 1 = somewhat or sometimes true; 2 = very true or often true. Many different behaviors and DSM-classified disorders are scaled in this measure based on the parents' ratings. In other words, the presence of a disorder can be partly identified using this measure. The behavior problems that can be identified using this measure include the following: Aggressive Behavior; Anxious/Depressed; Attention Problems; Rule-Breaking Behavior; Social Problems; Somatic Complaints; Thought Problems; Withdrawn/Depressed; and Internalizing/Externalizing Problems. The DSM-oriented scales include: Affective Problems; Anxiety Problems; Somatic Problems; Attention Deficit/Hyperactivity Problems; Oppositional Defiant Problems; and Conduct Problems. These scales are based on a normative population ( $N = 1,753$ ) of children between the ages of 6 and 18, where children were excluded from the normative sample if they were ever referred for mental health or special education services within the last year. Adolescents were rated on a scale range of normal, borderline clinical, and clinical.

## **Results and Discussion**

### ***Sample Characteristics***

The current sample consisted of 61 adolescents with a mean age of 16 ( $SD = .949$ ), where 49.2% ( $n = 30$ ) were male. Ethnicity of the sample included 42.6% ( $n = 26$ ) Caucasian, 42.6% ( $n = 26$ ) African American/Black, 4.9% ( $n = 3$ ) Hispanic/Latino, 3.3% ( $n = 2$ ) Native American/ American, and 11.5% ( $n = 7$ ) Asian/ Southeast Asian. The mean family income for this sample consisted of \$81,631 ( $SD = \$41,696$ ). Additionally, 32.8% ( $n = 20$ ) of families reported the biological father living outside of the home. According to the education level for biological mothers surveyed, 18.0% ( $n = 11$ ) had only a high school degree/GED, 4.9% ( $n = 3$ ) maintained a technology/trade school certification, 21.3% ( $n = 13$ ) had some college level education, 14.8% ( $n = 9$ ) maintained an associated degree, 26.2% ( $n = 16$ ) maintained a 4-year degree, and 14.8% ( $n = 9$ ) maintained an advanced degree. According to the education level for biological fathers surveyed, 1.6% ( $n = 1$ ) had some high school education, 13.1% ( $n = 8$ ) had only a high school degree/GED, 8.2% ( $n = 5$ ) a technology/trade school certification, 16.4% ( $n = 10$ ) had some college education, 4.9% ( $n = 3$ ) maintained an associates degree, 34.4% ( $n = 21$ ) maintained a 4-year degree, 16.4% ( $n = 10$ )

maintained an advanced degree, and 4.9% (n=3) maintained some other form of education not specified.

### ***Response to and Analysis of Research Questions***

#### *Relationship Between Sexual Behavior and ADHD Symptoms*

Adolescents who reported ever having sexual intercourse in their lifetime scored significantly higher on parent reports of externalizing problems [ $F(1, 53) = 7.62, p < .01$ ], attention problems [ $F(1, 53) = 5.34, p < .05$ ], rule breaking behavior [ $F(1, 53) = 13.3, p < .001$ ], and aggressive behavior [ $F(1, 53) = 7.33, p < .01$ ]. Of note, higher total ADHD problems were approaching significance [ $F(1, 53) = 3.74, p = .06$ ]. In addition, adolescents scoring higher on externalizing symptoms were more likely to report a greater number of sexual partners ( $r = .794, p < .001$ ), and adolescents scoring higher on rule breaking behavior reported a significantly younger age of first sexual intercourse ( $r = -.603, p < .01$ ). But, there were no significant relationships between condom use during sex or use of drugs and alcohol during sex intercourse, with ADHD symptoms.

#### *Relationship Between Neighborhood Environment and ADHD Symptoms*

There were no significant relationships between ADHD symptoms and neighborhood disadvantage.

#### *Demographic Variables and ADHD Symptoms*

There was a significant gender difference, such that females were significantly higher on parent reports of total ADHD problems [ $F(1, 53) = 4.29, p < .05$ ]. There were no gender differences in any other ADHD categorized symptom, however. Additionally, there was no relationship between ethnicity, whether the biological father lives with the family, parent education level, or income with any of the ADHD symptoms. Of note, however, a lower family income approached significance with higher levels of attention problems ( $r = -.286, p = .08$ ), aggressive behavior ( $r = -.295, p = .07$ ), and externalizing symptoms ( $r = -.308, p = .06$ ).

### **Discussion**

This research found that adolescents that reported having sexual intercourse in their lifetime scored significantly higher on parent reports of externalizing problems, attention problems, rule breaking behavior, and also an approaching significance of higher ADHD problems. These behaviors have been identified to impair social skills, critical thinking skills, and self-regulation skills. With that being said, adolescents with these problem behaviors are more likely to engage in activity that they believe will instantly gratify their feelings and emotions without critically thinking about the consequences or establishing meaningful relationships. This same thought can explain why adolescents that scored high on externalized symptoms were more likely to report a greater number of sexual partners, and adolescents that

scored high on rule breaking behavior reported a significantly younger age of first sexual intercourse.

One of the most interesting findings of this study is the significant gender difference where females scored significantly higher on parent reports of ADHD problems. According to most research, ADHD is more common in boys (Woodward, 2006). The finding from this study may be due to the fact that the behaviors associated with ADHD are considered more of a norm for male adolescents as compared to female adolescents. Girls displaying ADHD behaviors are more likely to be labeled as disorderly because stereotypically boys are believed to behave this way naturally. Additionally, based on the data, lower family income may be related to attention problems, aggressive behavior, and externalizing symptoms because of the stresses associated with being from a low income family in society. An individual may have to work harder to obtain resources or treatment for problematic behavior. As a result, these individuals display more of these externalizing behaviors than individuals from higher socioeconomic statuses. This research has also illustrated a few relationships that were insignificant. These findings maybe valid, but it would be good to see if these findings remain stable with more subjects added to the sample. Much research in previous years has identified correlations between ADHD symptoms and neighborhood disadvantage, along with other social factors such as the family structure and parent education level.

### **Recommendations for Future Research**

Future recommendations for this research include the additional recruitment of adolescent participants. With such a small sample, it was difficult to produce many findings in this research. Furthermore, it would be essential to recruit adolescents from a variety of environments besides schools or after school programs from the areas where standardized test scores are typically the highest. This might impact the number of adolescent participants we see actually engaging in risky behavior. Thus, it would be interesting to see how the results would vary if adolescents were recruited from inner city environments, such as Washington, DC or Baltimore city schools. Furthermore, future research should examine adolescents that have been diagnosed with ADHD, rather than observe adolescents with ADHD symptoms only.



## References

- Amaro, H. (1995). Love, sex, and power: considering women's realities in HIV prevention. *American Psychologist*, 50, 437-447. American Academy of Pediatrics.
- (2001). *Understanding ADHD: Information for Parents About Attention-Deficit/Hyperactivity Disorder* [Brochure]. Elk Grove Village, IL: American Academy of Pediatrics.
- American Psychiatric Association (4th ed.). (2000). *Diagnostic and Statistical Manual of Mental Disorders*. Washington, DC: American Psychiatric Association.
- Barkley, R.A., Fischer, M., Smallish, L., & Fletcher, K. (2003). Does the treatment of attention-deficit/hyperactivity disorder with stimulants contribute to drug use/abuse? *Pediatrics*, 111, 97-109.
- Bloom, B. & Cohen, R.A. Summary Health Statistics for U.S. Children: National Health Interview Survey, 2006. National Center for Health Statistics. Vital Health Stat 10 (234). 2007.
- Bryan, A., & Stallings, M.C. (2002). A case control study of adolescent risky sexual behavior and its relationship to personality dimensions, conduct disorder, and substance use. *Journal of Youth and Adolescence*, 31(5), 387-396.
- Carpenter, S. (2001). Teens' risky behavior is about more than race and family resources. *Monitor on Psychology*, 32(1).
- Crockett, L.J., Raffaelli, M., Shen, Y. (2006). Linking self-regulation and risk proneness to risky sexual behavior: pathways through peer pressure and early substance use. *Journal of Research on Adolescence*, 16(4), 503-525.
- Davis, E.C., & Friel, L.V. (2001). Adolescent sexuality: disentangling the effects of family structure and family context. *Journal of Marriage and Family*, 63, 669-681.
- Flory, K., Molina, B.S.G., Pelman, W.E., Gnagy, E., Smith, B. (2006). Childhood ADHD predicts risky sexual behavior in young adulthood. *Journal of Clinical Child and Adolescent Psychology*, 35(4), 571-577.
- Frick, P.J., Lahey, B.B., Loeber, R., Tannenbaum, L., Vanhorn, Y., Christ, M.A.G. (1993). Oppositional defiant disorder and conduct disorder: A meta-analytic review of factor-Analyses and cross-validation in a clinic sample. *Clinical Psychology Review*, 13, 319-340.
- Jayson, S. Expert: Risky Teen Behavior is All in the Brain. *USA Today*.
- Mash, E.J., & Wolfe, D.A. (2002). *Abnormal Child Psychology*. Belmont: Wadsworth.
- Miller, B.C., & Moore, K.A. (1990). Adolescent sexual behavior, pregnancy, and parenting: research through the 1980s. *Journal of Marriage and Family*, 52, 1025-1044.
- Pick, S., & Palos, P.A. (1995). Impact of the family on the sex life of adolescents. *Adolescence*, 30, 668-675.
- Shearer, C.L., Hosterman, S.J., Gillen, M.M., Lefkowitz, E.S. (2005). *Sex Roles*, 52, 311-322.

- Smith, B.H., Waschbusch, D.A., Willoughby, M.T., & Evans, S. (2000). The efficacy, safety, and practicality of treatments for adolescents with attention-deficit/hyperactivity disorder. *Clinical Child and Family Psychology Review*, 3, 243-267.
- Timmermans, M., Lier, P.A.C, Koot, H.M. (2008). Which forms of child/adolescent externalizing behaviors account for late adolescent risky sexual behavior and substance use. *Journal of Child Psychology and Psychiatry*, 49(4), 386-394.
- Viner, R. (2005). Co-occurrence of adolescent health risk behaviors and outcomes in adult life: findings from a national birth cohort. *Journal of Adolescent Health*, 36, 98-99.
- Wong, L. (1999). *Whaley and Wong's Nursing Care of Infants and Children*, 6. Mosby, New York.
- Woodard, R. (2006). The diagnosis and medical treatment of ADHD in children and adolescents in primary care: a practical guide. *Pediatric Nursing*, 32(4), 363-370.
- Zwane, I.T., Mngadi, P.T., Nxumalo, M.P. (2004). Adolescents' views on decision-making regarding risky sexual behaviour. *International Nursing Review*, 51, 15-22.