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## COLLEGE STUDENTS AND SEXUAL RISK BEHAVIOR

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COLLEGE STUDENTS AND SEXUAL RISK BEHAVIOR

BY

DANIELLE R. OSTER

A THESIS SUBMITTED IN PARTIAL FULLFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF MASTER OF ARTS IN PSYCHOLOGY

UNIVERSITY OF RHODE ISLAND

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OF

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## ABSTRACT

Young adults, particularly college students, are at increased risk for contracting sexually transmitted infections (STIs). Although sexual risk behavior and its consequences are a major public health concern, current prevention literature is insufficient and relies on sexual risk measures that lack psychometric support. The present study, therefore, examined the psychometric properties of a sexual risk survey (SRS), using data from the first year of a longitudinal study following the outcomes of college students with and without ADHD (N=410). The present study hypothesized that rates of sexual risk behavior would be similar to that reported by a national sample of college students. Research suggests that being of the male sex (gender), using alcohol or substances within the context of sexual activity, and ADHD symptomatology, are associated with greater sexual risk behavior. Therefore it was hypothesized that males, those reporting alcohol or drug use prior to or during the time of sexual activity, and participants with ADHD symptomatology would report greater levels of sexual risk behavior. Multiple regression analyses revealed that alcohol or drug use prior to or during sex and ADHD-inattentive symptomatology were positively associated with sexual risk behavior. In contrast, sex (gender) and ADHD-hyperactive impulsive symptomatology were not associated with sexual risk behavior. In addition, a principal components analysis was conducted to assess the psychometric properties of the SRS, and revealed four components. Descriptive statistics revealed that 39% of participants had taken part in high-risk sexual behaviors (i.e., vaginal sex without a condom). Implications of the findings are discussed and suggestions for future studies are advanced.

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## **Chapter 1: Introduction**

### *Statement of the Problem*

The epidemiology of sexually transmitted infections (STIs) suggests a heightened risk for college students (Centers for Disease Control and Prevention [CDC], 2010). The college environment presents many opportunities for high-risk behaviors such as inconsistent contraception use, multiple sexual partners, and alcohol or drug use prior to or combined with sexual activity. Indeed, according to the CDC, young people 13-29 years accounted for 39% of all new Human Immunodeficiency Virus (HIV) infections (2009). Approximately 20 million new STIs occur per year, half among individuals aged 15 to 24 years (CDC, 2013; Weinstock, Berman, & Cates, 2004). These staggering prevalence rates underscore the importance of researching sexual risk behaviors in the more than 19.7 million college students in the United States (Turchik & Garske, 2009; United States Census Bureau, 2012). Although HIV and STIs are a major public health concern, current prevention literature is inadequate and relies on self-report sexual risk measures that are project-specific and lack psychometric validation (George, Zawaki, Simoni, Stephens, & Lindgren, 2005). One promising tool that may add to the sexual risk prevention literature is the Sexual Risk Survey (SRS, Turchik & Garske, 2009), designed to measure sexual risk among college students. Turchik and Garske (2009) conducted preliminary analyses on the psychometric properties of the SRS, however, important information is lacking concerning the reliability and dimensionality of the SRS (Turchik & Garske, 2009). Additionally, Turchik and Garske (2009) implemented suboptimal methods to identify the components within the SRS, which may have affected the results of the study. Specifically, Turchik and Garske (2009) used the scree plot and eigenvalues

greater than 1 approach, which has been criticized by Zwick and Velicer (1986), who noted that this method may lead to over-identification of components, which can affect subsequent analyses and hence distort results. Furthermore, O'Connor (2000) suggested that Horn's parallel analysis and Velicer's MAP procedure offers more reliable outcomes regarding component extraction. The authors themselves also stressed the need for future research to examine the psychometric properties of the SRS and stated that "...although, the current study presented preliminary evidence of the reliability and validity of the measure, future research is needed to further explore the factor structure and psychometric properties of the measure" (p. 10, Turchik & Garske, 2009).

In order to aid prevention efforts and curtail the prevalence of sexual risk behavior in college students, many studies have examined characteristics associated with sexual risk behavior in this population. For example, impulsivity (e.g., Krueger et al., 2002), ADHD symptomatology (e.g., Barkley, 1998), and substance use (e.g., Graves & Leigh, 1995) have been found to significantly correlate with greater sexual risk behavior. While differences between males and females have varied across studies, it is possible that these inconsistencies may be due in part to measurement variability and poor psychometric properties of the instruments used to measure sexual risk behaviors (e.g., Alexander & Fisher, 2003; Browning et al., 1999).

The development of a valid, reliable, and well-supported instrument to assess risky sexual behavior is sorely needed, and will help to facilitate quality research that ultimately leads to future prevention and intervention efforts. Therefore, the present study aimed to a) examine the reliability and dimensionality of the SRS, b) identify the self-reported prevalence of sexual risk behaviors among a diverse group of college students,

and c) examine group differences with regard to sex (gender), report of alcohol or drug use prior to or during the time of sexual activity, and severity of ADHD symptomatology. Specifically, it was hypothesized that a) the SRS would demonstrate satisfactory reliability and dimensionality, b) rates of sexual risk behavior (i.e., lack of condom use during vaginal sex) would be similar to those reported by a national sample of college students (31% or greater reporting no condom use at last sexual experience; American College Health Association, 2013), and c) males, those reporting alcohol or drug use prior to or during the time of sexual activity, and participants with ADHD symptomatology would report greater levels of sexual risk behavior.

#### *Critical Review of Literature*

This critical review explores the definition, prevalence, and correlates of sexual risk behavior. The review also provides an overview and critique of current measurement methods as well as the detrimental outcomes of sexual risk behavior.

*Definition.* A universally accepted definition of sexual risk behavior does not exist in the literature, and it has been defined differently across studies. These inconsistent definitions have led to the measurement of various population-specific behaviors, a major methodological issue when reviewing the literature. This methodological limitation also impedes efforts to translate research findings into effective prevention and educational programs (Kotchick, Schaffer, Forehand, & Miller, 2001). Over two decades ago, Kelly, St. Lawrence, and Brasfield (1991) defined sexual risk behavior as including multiple sexual partners, taking part in unprotected intercourse, particularly anal intercourse, and using alcohol or intoxicating substances to the point of impairment before or during sex. Kotchik and colleagues (2001) proposed a similar definition of sexual risk behavior -- it

included the inconsistent use of condoms, inconsistent use of other contraceptive methods, having multiple sexual partners, and using alcohol or drugs prior to or in conjunction with sexual intercourse. Most recently, Brodbeck, Bachmann, Croudace, and Brown (2013) defined sexual risk behavior as sexual intercourse without a condom with a casual partner and/or sexual intercourse with a new stable partner without condoms and no prior HIV testing. A commonality among the definitions is the emphasis on the level of risk, as opposed to the amount of sexual activity. Turchik and Garske's (2009) definition of sexual risk behavior, defined as any sexual behavior that places an individual at risk for unintended pregnancies and/or sexually transmitted infections, also focuses on the level of risk. Examples of risky behaviors may include inconsistent use of condoms or other contraceptive methods during anal, vaginal, and oral sex, having multiple sexual partners, and alcohol or drug use prior to or in combination with sexual activities.

Specific behaviors included in definitions of sexual risk behavior are selected based on the potential impact of the population of study. For example, taking part in anal intercourse without a condom is considered the most risky behavior for contracting HIV (Baldwin & Baldwin, 2000; Kelly & Kalichman, 2002) and taking part in sexual behavior that involves established high-risk groups may render individuals more susceptible to contracting an STI such as syphilis, chlamydia, and gonorrhea (Catania et al., 1989; CDC, 2013; Cohen, 1991; Guydish, Golden, & Hembry, 1991; Ireland, Mallow, & Lewis, 1995; Kelly et al., 1990; Nyamathi, 1992). Behaviors that may lead to detrimental outcomes are included within the SRS (Turchik & Garske, 2009), in addition to a broad range of sexual behaviors (e.g., socializing with intent of sexual behavior with an

unknown individual). Such behaviors are included on the SRS because first year college students may be sexually inexperienced, however research suggests they are likely to engage in risky sexual behavior (Turchik & Garske, 2009).

*Prevalence.* Sexual risk taking behavior is a significant problem among college students (Pluhar, Fongillo, Stycos, & Dempster-McClain, 2003) and Buhi, Marhefka, and Hoban (2010) reported that approximately half of college students are not using condoms during vaginal intercourse, and even fewer are using them during anal intercourse. In a national sample of college students who reported anal sex in the last 30 days, only 31.4% reported condom use at their last anal sex act (Buhi et al., 2010). Cooper (2002) found the average college student has two new sexual partners per year. A more recent study, however, found that approximately 15% of college students have three or more new sexual partners per year (American College Health Association, 2013). Casual sex, which refers to taking part in sexual relationships where the partners are not romantically involved, has increasingly become acceptable by college students and has been identified as “a normal behavior” (Grello, Welsh, & Harper, 2006; Paul & Hayes, 2002). College students who engage in casual sex have reported engaging in high-risk sexual behaviors, including inconsistent condom use, having multiple sexual partners, and using alcohol and drugs within the context of sexual activity (Adefuye, Abiona, Balogun, Lukobo Durrell, 2009; Baldwin & Baldwin, 2000; Cooper, 2002; DiClemente, Forrest, & Mickler, 1990; Flannery, Ellingson, Votaw, & Schaefer, 2003; Gullette & Lyons, 2006; Lewis, Malow, & Ireland, 1997; Lindley, Nicholson, Kerby, & Lu, 2003; MacDonald, 1990; Smith & Roberts, 2009; Strader & Beaman, 1991).

Taking part in risky sexual behaviors has led to an increase in HIV rates among young adults. In 2002, the CDC reported that the "epicenter of the HIV/AIDS epidemic is college students". More recently, the CDC (2012) reported a 31% increase in HIV infections among young adults 20-24 years of age. The initial stage of HIV risk prevention is to validly assess risk behaviors (Purcell, DeGroff, & Wolitski, 1998), therefore it is imperative that psychometrically sound sexual risk measures be developed, such as the SRS.

*Correlates.* Several sexual risk reduction studies have examined the correlates of sexual risk behavior. For example, Graves and Leigh (1995) found that substance use correlated with sexual activity among young adults in the United States. After adjusting for demographic factors, both sexual activity and multiple partners were positively associated with measures of substance use (Graves & Lehigh, 1995). Further, those who consumed alcohol more frequently and more heavily, as defined by drinking at least one time per week, consuming five or more drinks per occasion, and sometimes drinking to intoxication were less likely to use condoms (Graves & Lehigh, 1995). Other research has found that age at first coitus is a marker for risky sexual behavior in women (Greenberg, Magder, & Aral, 1992). Specifically, becoming sexually active between the ages of 10 and 14 years has been related to a greater frequency of STIs, more sexual partners in the past year, and more sexual intercourse with risky partners (i.e., bisexual, intravenous drug-using, or HIV-infected men) in a group of women in their twenties (mean age of 23.8) (Greenberg et al., 1992). Krueger and colleagues (2002) reported that impulsivity, also referred to as behavioral disinhibition, has been linked to greater sexual risk behavior. Donohew et al. (2000) found that among both sexes, impulsivity predicted



having 5 or more lifetime sexual partners, alcohol and marijuana use before sex, and never refusing unsafe sexual behavior. Impulsivity has also been linked to non-use of contraception and condoms, prior chlamydia infection, and earlier age of first coitus, (Kahn, Kaplowitz, Goodman, & Emans, 2002). Barkley (1998) found that a diagnosis of attention deficit hyperactivity disorder (ADHD), characterized by symptoms of inattention, hyperactivity, and impulsivity, correlated with greater risky sexual behaviors. In the Milwaukee Young Adult Outcome Study, Barkley (1998) found that adults with ADHD tended to have sexual intercourse at an earlier age, had more sexual partners, used less contraception, which may lead to teen pregnancy and STIs. When adolescents in the study turned 20, the ratio of births by the ADHD group to the control was 42:1 (Barkley, 1998). Flory, Molina, Pelham, Gnagy, and Smith (2006) found similar results among a group of young adults with ADHD who reported earlier initiation of sexual activity and intercourse, more sexual partners, more casual sex, and more partner pregnancies. Moreover, individuals meeting criteria for mania, an externalizing disorder (e.g., oppositional defiant, conduct, and attention deficit/hyperactivity disorders), or comorbid externalizing and internalizing disorders (e.g., major depressive, generalized anxiety, and posttraumatic stress disorders), were more likely to report greater sexual risk behavior than those who did not meet criteria for a psychiatric disorder (Brown, Hadley, Stewart, Lescano, Whitely, Donenberg, & DiClemente, 2010).

Research has also found a strong relationship between a reported history of physical abuse, sexual abuse, and rape and engaging in a continuation or an increase in the total number of HIV risk behaviors between adolescence and young adulthood (Cunningham, Stiffman, Dore, & Earls 1994). With regard to other, non-pathological

predictors of sexual risk, Oswalt and Wyatt (2013) surveyed a national sample of college students and found that individuals who identified as unsure, bisexual, or homosexual were more likely to take part in greater sexual risk behaviors (e.g., less likely to use contraceptive methods). Other researchers have found that sexual communication among partners has been related to fewer unsafe sex acts (Fisher & Fisher, 1992). In terms of academic variables, Luster and Small (1994) found that GPA significantly predicted sexual risk taking behavior (i.e., number of partners and condom use); findings suggested that those with higher GPAs reported lower sexual risk. Some researchers have speculated that greater knowledge about HIV/AIDS serves as a protective factor for engaging in risky sexual behavior (Lammers, van Wijnbergen, & Willebrands, 2013; Vian, Semrau, Hamer, Loan, & Sabin, 2012). Although college students have demonstrated moderate to high levels of HIV knowledge, findings also suggest that HIV/AIDS knowledge may not translate into preventative behaviors (Inugu, Mumford, Younis, & Langford, 2009). Despite the high prevalence of risky sexual behaviors among a sample of college participants, 86.8% did not perceive risk for contracting HIV; therefore, only 29.4% had ever been tested for HIV (Inugu et al., 2009)

Examining the correlates of sexual risk behavior is crucial to help develop programs aimed at reducing such behaviors and their health-threatening outcomes. Although a large body of literature exists concerning risky sexual behavior among college students, the validity of these findings is questionable as measurement of such behavior has varied tremendously and instruments typically lack psychometric information. As a result, inconsistencies exist across studies, particularly with regard to the prevalence and sex differences in sexual risk behavior (e.g., Alexander & Fisher,

2003; Browning et al., 1999). Consequently, it is imperative that the reliability and dimensionality of sexual risk behavior instruments be established.

*Measurement.* HIV prevention research first appeared in the literature over a century ago; however, research has continually disregarded the importance of measuring sexual risk behavior with a psychometrically valid tool (George et al., 2005). Past studies that have examined the reliability and validity of sexual risk measures have been either project-specific, focused on specific behaviors, or focused on specific at-risk groups; hence the generalizability of these measures is equivocal (Bancroft et al., 2003; Friedrich, Lysne, Sim, & Shamos, 2004). Recently, Turchik and Garske (2009) examined the psychometrics of the SRS at a Midwestern university in a group of 613 undergraduate students. Results indicated a stable, 23-item, five-factor scale (i.e., Sexual Risk Taking with Uncommitted Partners, Risky Sex Acts, Impulsive Sexual Behaviors, Intent to Engage in Risky Sexual Behaviors, and, Risky Anal Sex Acts) that demonstrated a moderate to highly correlated relationship and the authors suggested that the items could be summed to acquire a reliable, global, sexual risk-taking score (Turchik & Garske, 2009). It is important to note, however that the data were collected from college students at a single university in the Midwest, and therefore findings may not be generalizable. Furthermore, when employing the Principal Components Analysis (PCA), Turchik and Garske (2009) used a scree plot and the guideline of eigenvalues greater than 1 for component extraction, which may over- or underestimate the number of components (Zwick & Velicer, 1986). Additionally, Zwick & Velicer (1986) argued that the scree plot method is subjective, which may lead to inconsistencies in the number of components extracted. Although the practice of using the scree plot and the eigenvalues greater than 1

guideline is common (Zwick & Velicer, 1986), this oversight is noteworthy because the factor structure of a measure can affect any analyses that rely on the subscales of the measure. Given that the subscales are based on the number of factors extracted, this practice can lead to inaccuracies and misinterpretation of findings. O'Connor (2000) suggested that Horn's parallel analysis and Velicer's MAP procedure offer more rigorous and reliable outcomes regarding component extraction.

Examining the SRS and its dimensionality and reliability with rigorous psychometric analyses will provide greater information regarding its utility and ability to identify and understand sexual risk behaviors. The SRS may have clinical utility, as it is the first and only measure to be developed in its area (Turchik & Garske, 2009). Indeed, assessment, prevention, and intervention are necessary as students tend to believe they are at little to no risk for contracting HIV and other STIs, although prevalence rates have shown nearly half of the 20 million new STI infections each year occur among young people (CDC, 2013).

*Outcomes.* Taking part in sexual risk behaviors can lead to a variety of negative outcomes, affecting the quality of an individual's relationships, financial stability, and legal and health status (Turchik & Garske, 2009). Risky sexual behaviors may lead to unintended pregnancies and STIs, including: genital herpes, genital human papillomavirus (HPV), syphilis, gonorrhea, chlamydia, and HIV (CDC, 2013). Recent research has confirmed that HPV may be responsible for approximately 91% of cervical cancers (CDC, 2014a), and contracting an STI leads to greater risk for HIV infection and may lead to unexpected reproductive difficulties such as infertility (CDC, 2013). It is estimated that undiagnosed STIs cause 24,000 women to become infertile each year

(CDC, 2014b). STIs are detrimental to the United States health care system, costing approximately 16 billion in health care costs every year (CDC, 2013). In 2001, unintended pregnancies were greatest amongst women aged 18-24 (Finer & Henshaw, 2006). Further, 24.2% of students enrolled in a 4-year institution, representing a national sample, reported being pregnant or getting someone pregnant (CDC, 1995). Given current estimates that greater than half of college students are engaging in high-risk sexual behaviors (American College Health Association, 2013), and the psychological and health risks associated with these behaviors, it is crucial that psychometrically sound instruments be available to assess risky sexual behavior. Valid and reliable information concerning the prevalence and nature of sexual risk behaviors will assist in the development of prevention and intervention programs across college campuses.

#### *Purpose of the Present Study*

Given the potentially destructive and life-threatening outcomes of sexual risk behavior, it is critical that valid and reliable assessment measures be developed to assess sexual risk behavior. To date, however, this is the first study to rigorously examine the reliability and dimensionality of a sexual risk measure among a diverse sample of college students. Therefore, the primary purpose of the present study was to a) examine the reliability and dimensionality of the SRS using thorough analyses, b) identify the self-reported prevalence of sexual risk behaviors (i.e., lack of condom use during vaginal sex) among a diverse group of college students, and c) examine group differences including sex (gender), report of alcohol or drug use prior to or during the time of sexual activity, and severity of ADHD symptomatology. Specifically, it was hypothesized that:

1. The SRS would demonstrate satisfactory reliability and dimensionality as measured by Standardized Cronbach's alpha and an exploratory Principal Components Analysis (PCA).
2. Rates of sexual risk behavior (i.e., lack of condom use during vaginal sex) would be similar to those reported by a national sample of college students (31% or greater reporting no condom use at last sexual experience; American College Health Association, 2013) as measured by item 9 the on the SRS (Turchik & Garske, 2009).
3. Participants who reported being male, those using alcohol or drugs prior to or during the time of sexual activity as measured by item 18 on the SRS (Turchik & Garske, 2009), and participants reporting increased ADHD symptomology as measured by the Conners' Adult ADHD Rating Scale (Conners, Erhardt, & Sparrow, 1999), would report greater sexual risk behavior as measured by the four subscales and global risk scale on the SRS (Turchik & Garske, 2009).

## **Chapter II: Methods**

### *Study Procedure*

The present study is part of a larger, five-year longitudinal study (Trajectories Related to ADHD in College [TRAC]) designed to examine the academic and psychosocial outcomes of college students with and without ADHD. The Institutional Review Board approved the present study in addition to the TRAC study. Data were collected across three universities in the northeast and south regions of the United States. Graduate assistants, trained as clinical or school psychologists, conducted the assessments during each participant's first year of enrollment in college. During the first assessment, participants provided demographic information, completed the childhood and past 6-month versions of the Attention Deficit Hyperactivity Disorder- Rating Scale (ADHD-RS), the Conners' Adult ADHD Rating Scale- Self-Report: Long Version (CAARS) and the Semi-Structured Interview of Adult ADHD. A panel of experts reviewed results from the first assessment to determine participant eligibility and group membership (i.e., ADHD or comparison). Participants who were determined eligible, completed additional assessments, including computerized testing, additional psychological (e.g., depression and anxiety) rating scales, and a structured clinical interview. For the third stage of the study, participants met with a different graduate assistant who was blind to the student's group status, during which participants completed intelligence and educational achievement testing and also, provided information concerning their social (e.g., sexual risk behavior) and vocational (e.g., work experience) functioning. Additionally, students provided information on their use of

support services (e.g., campus support services, medication use, psychotherapy, counseling, etc.).

*Participants.* Participants (N = 410) were recruited through flyers posted on each of the three campuses, emails, classroom visits, and snowball sampling methods. To be eligible for participation, participants had to be 18-25 years of age and enrolled as college freshmen. Further, participants in the ADHD group had to clearly meet DSM-IV criteria for ADHD to be eligible for participation. Participants in the non-ADHD comparison group had to clearly meet criteria for *not* having ADHD. All participants underwent an eligibility screening for ADHD and those not meeting criteria for either of the two groups were excluded from the study.

The final sample consisted of 410 students, including 215 females and 195 males, of this sample 72.9% were Caucasian (n= 299), 12.4% were African American (n=51), 4.6% were Asian (n= 19), 3.7% (n= 15) were more than one race, and 6.3% (n= 26) self-identified as another race. Regarding ethnicity, 90.5% (n=371) were non-Hispanic/Latino. The students ranged in age from 18 to 22, although the majority of students 79.3% (n=325) were 18 years of age. All participants reported their marital status as single. Table 1 presents participants by sex, race, and ethnicity.

Table 1. *Participants by Sex, Race, and Ethnicity*

| <i>Category</i>     | <i>n</i> | <i>Percent</i> |
|---------------------|----------|----------------|
| <b>Sex</b>          |          |                |
| Male                | 195      | 47.6           |
| Female              | 215      | 52.4           |
| <b>Race</b>         |          |                |
| Caucasian           | 299      | 72.9           |
| African American    | 51       | 12.4           |
| Asian               | 19       | 4.6            |
| Bi – or Multiracial | 15       | 3.7            |
| Other               | 26       | 6.3            |



|                     |     |      |
|---------------------|-----|------|
| Ethnicity           |     |      |
| Non-Hispanic/Latino | 371 | 90.5 |
| Hispanic/Latino     | 39  | 9.5  |

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*Informed Consent.* Students enrolled in the study had read and understood the consent form before beginning the surveys. The consent form provided a basic description of the research project as well as any potential for harm, confidentiality, and benefits of participating. Participants were made aware that they could discontinue their involvement in the study at any time. Participants were also provided with the principal investigator’s contact information if they had any questions or concerns.

*Measures*

*Demographic Data.* Students completed a demographic form to indicate their gender, age, race, and ethnicity. Additionally, students were asked to self-report their family composition (i.e., number of siblings, parent’s marital status, parental educational level, and parental occupation).

*Sexual Risk Survey.* The SRS is a 23-item open-ended questionnaire developed by Turchik and Garske (2009), which assesses the prevalence of sexual risk behavior among a sample of college students. Although Turchik and Garske (2009) reported the following subscales, a) Sexual Risk Taking with Uncommitted Partners, b) Risky Sex Acts, c) Impulsive Sexual Behaviors, d) Intent to Engage in Risky Sexual Behaviors, and e) Risky Anal Sex Acts, with respective reliability coefficients 0.88, 0.80, 0.78, 0.89, and 0.61, the present study analyzed the dimensionality of the SRS more rigorously (see previous discussion on p. 9), and revealed a different set of underlying subscales (see table 6). The

dependent variables for the present study, therefore, include the newly revealed subscales and the global sexual risk scale.

*Conners' Adult ADHD Rating Scale- Self-Report: Long Version (CAARS)*. To assess current ADHD symptomatology, the Conners' Adult ADHD Rating Scale (CAARS) was administered. The CAARS is a 66-item standardized symptom rating scale utilized to assess ADHD in adults (Conners, Erhardt, & Sparrow, 1999). Items are rated on a 4-point Likert scale ranging from 0 (i.e., not at all/never) to 3 (i.e., very much/very frequently). This instrument consists of the following eight subscales with respective reliability coefficients for males and females: 1) inattention/memory problems (0.89, 0.89), 2) hyperactivity/restlessness (0.88, 0.89), 3) impulsivity/emotional ability (0.86, 0.87), 4) problems with self-concept (0.88, 0.87), 5) *DSM-IV* inattentive symptoms (0.81, 0.84), 6) *DSM-IV* hyperactive-impulsive symptoms (0.64, 0.75), 7) *DSM-IV* ADHD symptoms total (0.78, 0.86), and 8) ADHD index (0.82, 0.81). In addition, the CAARS has been reported to have sufficient factorial, discriminant, and construct validity (Conners et al., 1999). Results have demonstrated the scale's ability to identify ADHD symptomatology (Conners et al., 1999). The dependent variables for the present study include the *DSM-IV* inattentive symptoms (e.g., "I don't plan ahead", "I have trouble listening to what other people are saying") and *DSM-IV* hyperactive-impulsive symptoms ("I am always on the go, as if driven by a motor", "I am a risk-taker or daredevil") subscales.

### *Design*

The present research study 1) investigated the psychometric properties of the SRS, 2) examined prevalence rates of sexual risk behavior (i.e., lack of condom use)

based on descriptive findings, and 3) explored the relationship between sex (gender), alcohol or drug use prior to or during the time of sexual activity, ADHD symptomatology, and sexual risk behavior. SPSS 22.0 was used to conduct the data analyses.

To investigate the psychometric properties of the SRS, internal consistency and dimensionality were assessed with an item analysis and exploratory principal component analysis (PCA) with an orthogonal rotation. To explore the hypotheses that males, those reporting alcohol or drug use prior to or during the time of sexual activity, and participants with increased ADHD symptomatology would report greater levels of sexual risk behavior was tested via five multiple regression (MR) analyses where a) participant sex (gender), and b) alcohol or drug use prior to or during the time of sexual activity were entered as dichotomous independent variables, and c) ADHD-inattentive (ADHD-IA), and d) ADHD-hyperactive-impulsive (ADHD-HI) symptom severity were entered as continuous independent variables, and finally, d) sexual risk taking, as measured by the subscales and global scale of the SRS, was entered separately as a continuous dependent variable. Standardized and unstandardized beta weights ( $\beta$ ) were calculated to measure effect size.

### Chapter III: Results

Three different sets of analyses were conducted. The first analyses related to the psychometric exploration of the SRS, the second analysis was conducted to provide descriptive statistics of prevalence rates, and the final analyses related to the third hypothesis of the study. The analyses included: a) an analysis of the internal consistency and dimensionality of the SRS, b) prevalence analyses including descriptive data of students' reports of sexual intercourse without a condom, c) an analysis of the relationship between participant sex (gender), alcohol or drug use prior to or during the time of sexual activity, ADHD-IA and ADHD-HI symptom severity, and sexual risk taking as measured by the four subscales and global scale of the SRS.

#### *Psychometrics – Item Analysis & Dimensionality*

SPSS version 22 was used to conduct the item analyses and PCAs on the sample of students completing all questions on the SRS ( $n = 410$ ). For both sets of analyses, as outlined by O'Conner (2000), Horn's parallel analysis and Velicer's MAP procedures were conducted to identify the number of components within the SRS. Items that were complex (loading on more than one component with coefficients greater than .40), did not load onto any dimensions with coefficients greater than .40, and loaded on components that did not make conceptual sense in the initial PCA were removed. An item analysis involving the comparison of item and total-item correlations was conducted, and items with the total-item correlation less than .40 were removed (Nunnally, 1978). A final PCA with an orthogonal (varimax) rotation was conducted on the remaining items and yielded the final version of the questionnaire. Internal consistency was assessed with Standardized Cronbach's alpha.

*Table 2. Descriptive Statistics – Sexual Risk Survey (SRS).*

|        | N         | Minimum   | Maximum   | Mean      | Std.<br>Deviation | Skewness  | Std.<br>Error |
|--------|-----------|-----------|-----------|-----------|-------------------|-----------|---------------|
|        | Statistic | Statistic | Statistic | Statistic | Statistic         | Statistic | Statistic     |
| SRS_1  | 410       | .00       | 38.00     | 2.5293    | 4.05046           | 4.096     | .121          |
| SRS_2  | 410       | .00       | 60.00     | .8902     | 3.34491           | 13.933    | .121          |
| SRS_3  | 410       | .00       | 45.00     | 1.6000    | 4.00684           | 6.689     | .121          |
| SRS_4  | 410       | .00       | 100.00    | 1.9390    | 6.27400           | 10.259    | .121          |
| SRS_5  | 410       | .00       | 100.00    | 1.5927    | 7.47236           | 9.549     | .121          |
| SRS_6  | 410       | .00       | 70.00     | 1.5244    | 4.24444           | 11.180    | .121          |
| SRS_7  | 410       | .00       | 20.0      | .810      | 1.8390            | 5.044     | .121          |
| SRS_8  | 410       | .00       | 117.00    | 2.3439    | 6.54578           | 13.836    | .121          |
| SRS_9  | 410       | .00       | 190.00    | 7.5854    | 22.42856          | 4.834     | .121          |
| SRS_10 | 410       | .00       | 180.00    | 2.4195    | 12.39152          | 9.814     | .121          |
| SRS_11 | 410       | .00       | 150.00    | 7.2537    | 16.06189          | 4.720     | .121          |
| SRS_12 | 410       | .00       | 180.00    | 5.2659    | 14.99014          | 6.753     | .121          |
| SRS_13 | 410       | .00       | 25.00     | .3585     | 1.91142           | 9.241     | .121          |
| SRS_14 | 410       | .00       | 20.00     | .1244     | 1.14974           | 14.431    | .121          |
| SRS_15 | 410       | .00       | 15.00     | .1683     | 1.12255           | 9.534     | .121          |
| SRS_16 | 410       | .00       | 15.00     | 1.0366    | 2.07232           | 3.473     | .121          |
| SRS_17 | 410       | .00       | 98.00     | .8659     | 5.02843           | 17.786    | .121          |
| SRS_18 | 410       | .00       | 100.00    | 3.3780    | 9.53547           | 6.665     | .121          |
| SRS_19 | 410       | .00       | 30.00     | 1.0488    | 3.05092           | 6.900     | .121          |
| SRS_20 | 410       | .00       | 150.00    | 1.8512    | 9.40113           | 11.496    | .121          |
| SRS_21 | 410       | .00       | 70.00     | .9171     | 3.89946           | 14.221    | .121          |
| SRS_22 | 410       | .00       | 10.00     | .2902     | .90430            | 5.295     | .121          |
| SRS_23 | 410       | .00       | 40.00     | .5195     | 2.76829           | 11.049    | .121          |

Horn’s parallel analysis and Velicer’s MAP analysis identified four components within the SRS. Factor loadings from the initial PCA are presented in Table 3. Six items, namely 1, 3, 5, 7, 18, and 19, were removed because they were complex.

Table 3. *Initial PCA – Sexual Risk Survey*

| <i>Item</i>  | Component<br>1 | Component<br>2 | Component<br>3 | Component<br>4 |
|--|----------------|----------------|----------------|----------------|
| 1. How many partners have you engaged in sexual behavior with but not had sex with?  | .430           | .672           | -.068          | .016           |
| 2. How many times have you left a social event with someone you just met?  | <b>.908</b>    | .213           | .087           | -.040          |
| 3. How many times have you “hooked up” but not had sex with someone you didn’t know or didn’t know very well?  | .515           | .719           | .017           | -.034          |
| 4. How many times have you gone out to bars/parties/social events with the intent of “hooking up” and engaging in sexual behavior but not having sex with someone? | .012           | <b>.841</b>    | .021           | -.080          |
| 5. How many times have you gone out to bars/parties/social events with the intent of “hooking up” and having sex with someone?                                     | .478           | .595           | .103           | -.093          |
| 6. How many times have you had an unexpected and unanticipated sexual experience?  | <b>.874</b>    | .246           | .108           | .009           |
| 7. How many times have you had a sexual encounter you engaged in willingly but later regretted?  | .608           | .424           | .030           | .198           |
| 8. How many partners have you had sex with?  | <b>.925</b>    | .189           | .174           | .098           |
| 9. How many times have you had vaginal intercourse without a latex or polyurethane condom?   | -.053          | .001           | <b>.854</b>    | .034           |
| 10. How many times have you had vaginal intercourse without protection against pregnancy?  | -.078          | .033           | <b>.769</b>    | .140           |
| 11. How many times have you given or received fellatio (oral sex on a man) without a condom?   | .275           | .090           | <b>.572</b>    | .084           |

Table 3. *Initial PCA – Sexual Risk Survey (Continued)*

|  |             |             |             |             |
|--|-------------|-------------|-------------|-------------|
| 12. How many times have you given or received cunnilingus (oral sex on a woman) without a dental dam or “adequate protection” (please see definition of dental dam for what is considered adequate protection)?                          | .261        | -.003       | <b>.783</b> | .020        |
| 13. How many times have you had anal sex without a condom?   | .124        | .036        | .032        | <b>.834</b> |
| 14. How many times have you or your partner engaged in anal penetration by a hand (“fisting”) or other object without a latex glove or condom followed by unprotected anal sex?  | .006        | .009        | -.006       | <b>.724</b> |
| 15. How many times have you given or received analingus (oral stimulation of the anal region, “rimming”) without a dental dam or “adequate protection” (please see definition of dental dam for what is considered adequate protection)? | -.014       | .018        | .286        | <b>.748</b> |
| 16. How many people have you had sex with that you know but are not involved in any sort of relationship with (i.e., “friends with benefits”, “fuck buddies”)?   | .377        | <b>.572</b> | .030        | .339        |
| 17. How many times have you had sex with someone you don’t know well or just met?  | <b>.963</b> | .098        | .089        | .059        |
| 18. How many times have you or your partner used alcohol or drugs before or during sex?  | .546        | .233        | .534        | .005        |
| 19. How many times have you had sex with a new partner before discussing sexual history, IV drug use, disease status and other current sexual partners?  | .573        | .408        | .146        | .121        |
| 20. How many times (that you know of) have you had sex with someone who has had many sexual partners?  | .295        | .127        | <b>.507</b> | .055        |

Table 3. *Initial PCA – Sexual Risk Survey (Continued)*

|   |             |             |      |       |
|---|-------------|-------------|------|-------|
| 21. How many partners (that you know of) have you had sex with who had been sexually active before you were with them but had not been tested for STIs/HIV? | <b>.921</b> | .145        | .163 | .082  |
| 22. How many partners have you had sex with that you didn't trust?  | .072        | <b>.546</b> | .220 | .082  |
| 23. How many times (that you know of) have you had sex with someone who was also engaging in sex with others during the same time period?                   | <b>.692</b> | .184        | .379 | -.055 |

Table 4 contains the item and item-total correlations based on the global component of the SRS. The item-total correlation was analyzed, and items with an item-total correlation of less than 0.40 were removed (Nunnally, 1978). Additional guidelines for item removal based on item-total correlation coefficients suggest using 0.30 (Ferketich, 1991; Kline, 1993) as a cutoff; therefore, items 2, 4, and 22 were retained, as they are theoretically important, adding to the clinical utility of the SRS. Additionally, three items examining anal sex behaviors, the riskiest behavior for contracting STIs and HIV, were maintained due to their theoretical importance, despite an item-total correlation below 0.30. Importantly, these three items did not affect the Cronbach's alpha internal consistency coefficient.



Table 4. *Item and Item-Total Correlations – Sexual Risk Survey*

| <i>Item</i>  | Corrected Item-<br>Total Item<br>Correlation | Alpha if<br>Item<br>Deleted |
|--|--|-----------------------------|
| 2. How many times have you left a social event with someone you just met?  | .382   | .821                        |
| 4. How many times have you gone out to bars/parties/social events with the intent of “hooking up” and engaging in sexual behavior but not having sex with someone?   | .261   | .821                        |
| 6. How many times have you had an unexpected and unanticipated sexual experience?  | .494   | .827                        |
| 8. How many partners have you had sex with?  | .679   | .813                        |
| 9. How many times have you had vaginal intercourse without a latex or polyurethane condom?   | .447   | .847                        |
| 10. How many times have you had vaginal intercourse without protection against pregnancy?  | .410   | .823                        |
| 11. How many times have you given or received fellatio (oral sex on a man) without a condom?   | .544   | .817                        |
| 12. How many times have you given or received cunnilingus (oral sex on a woman) without a dental dam or “adequate protection” (please see definition of dental dam for what is considered adequate protection)?                          | .632   | .809                        |
| 13. How many times have you had anal sex without a condom?   | .185   | .829                        |
| 14. How many times have you or your partner engaged in anal penetration by a hand (“fisting”) or other object without a latex glove or condom followed by unprotected anal sex?  | .084   | .830                        |
| 15. How many times have you given or received anilingus (oral stimulation of the anal region, “rimming”) without a dental dam or “adequate protection” (please see definition of dental dam for what is considered adequate protection)? | .270   | .829                        |
| 16. How many people have you had sex with that you know but are not involved in any sort of relationship with (i.e., “friends with benefits”, “fuck buddies”)?   | .428   | .827                        |
| 17. How many times have you had sex with someone you don’t know well or just met?  | .607   | .818                        |
| 20. How many times (that you know of) have you had sex with someone who has had many sexual partners?  | .504   | .817                        |

Table 4. *Item and Total-Item Correlations – Sexual Risk Survey (Continued)*

|   |      |      |
|---|------|------|
| 21. How many partners (that you know of) have you had sex with who had been sexually active before you were with them but had not been tested for STIs/HIV? | .668 | .819 |
| 22. How many partners have you had sex with that you didn't trust?  | .320 | .829 |
| 23. How many times (that you know of) have you had sex with someone who was also engaging in sex with others during the same time period?                   | .672 | .822 |

A final PCA was run on the remaining 17 items and four factors were supported.

Table 5 presents the eigenvalues for each component; together, the four components accounted for 69.5% of the variance.

Table 5. *Eigenvalues – Sexual Risk Survey*

| Eigenvalues |       |               |              |
|-------------|-------|---------------|--------------|
| Component   | Total | % of Variance | Cumulative % |
| 1           | 5.329 | 31.348        | 38.714       |
| 2           | 2.832 | 16.657        | 61.102       |
| 3           | 1.977 | 11.631        | 59.637       |
| 4           | 1.672 | 9.837         | 69.473       |

The results of the PCA, shown in Table 6, revealed four components within the SRS involving risky sexual behaviors. The first component, Sexual Risk Behavior with an Uncommitted Partner, accounted for 31.4% of the variance and encompassed sexual risk taking behavior involving partners who the participant did not know very well. Six items loaded on the Sexual Risk Behavior with an Uncommitted Partner component, examples of items include, “*How many times have you left a social event with someone you just met*”, “*How many times have you had an unexpected and unanticipated sexual*

*experience*”, and “*How many times have you had sex with someone you don’t know well or just met*”. Although item 23, “*How many times (that you know of) have you had sex with someone who was also engaging in sex with others during the same time period*”, was complex, it was retained due to its theoretical importance among college students and the prevention of STIs. The second component, labeled Lack of Preventative Measures During Sex, encompassed sexual experiences without adequate preventative measures and protection against STIs and pregnancy. This component accounted for 16.7% of the variance, and included a total of five items, examples include, “*How many times have you had vaginal intercourse without a latex or polyurethane condom. Note: Include times when you have used a lambskin or membrane condom*”, “*How many times have you had vaginal intercourse without protection against pregnancy*”, and “*How many times (that you know of) have you had sex with someone who has had many sexual partners*”. The third component, Lack of Protection During Anal Experiences, accounted for 11.6% of the variance and addressed anal sexual experiences without adequate protection. A total of 3 items loaded on this component, including, “*How many times have you had anal sex without a condom*”, “*How many times have you or your partner engaged in anal penetration by a hand (“fisting”) or other object without a latex glove or condom followed by unprotected anal sex*”, and “*How many times have you given or received analingus (oral stimulation of the anal region, “rimming”) without a dental dam or “adequate protection” (please see definition of dental dam for what is considered adequate protection)*”. The fourth component, Casual, Unemotional Sexual Risk Taking Behavior, accounted for 9.8% of the variance and assessed sexual behaviors with casual partners, someone with whom the participant may not have a partnership with or may not

even trust. A total of 3 items loaded onto this component, including, “How many times have you gone out to bars/parties/social events with the intent of “hooking up” and engaging in sexual behavior but not having sex with someone”, “How many people have you had sex with that you know but are not involved in any sort of relationship with (i.e., “friends with benefits”, “fuck buddies”)", and “How many partners have you had sex with that you didn’t trust”. Although item 16 “How many people have you had sex with that you know but are not involved in any sort of relationship with (i.e., “friends with benefits”, “fuck buddies”)" was complex, it was retained due to the high degree in which college students report such risky behavior (Monto & Carey, 2014).

Table 6. *Final PCA – Sexual Risk Survey*

| <i>Item</i>  | Component 1:<br>Sexual Risk<br>Behavior with an<br>Uncommitted<br>Partner | Component<br>2: Lack of<br>Preventative<br>Measures<br>During Sex | Component<br>3: Lack of<br>Protection<br>During Anal<br>Experiences | Component 4:<br>Casual,<br>Unemotional<br>Sexual Risk<br>Taking<br>Behavior |
|--|---|---|---|---|
| 2. How many times have you left a social event with someone you just met?  | <b>.929</b>   | .066  | .01   | .10   |
| 4. How many times have you gone out to bars/parties/social events with the intent of “hooking up” and engaging in sexual behavior but not having sex with someone? | .114  | -.019   | -.036   | <b>.663</b>   |
| 6. How many times have you had an unexpected and unanticipated sexual experience?  | <b>.893</b>   | .083  | .014  | .190  |
| 8. How many partners have you had sex with?  | <b>.936</b>   | .130  | .103  | .192  |

Table 6. *Final PCA – Sexual Risk Survey (Continued)*

|   |       |             |             |       |
|---|-------|-------------|-------------|-------|
| 9. How many times have you had vaginal intercourse without a latex or polyurethane condom? Note: Include times when you have used a lambskin or membrane condom.  | -.041 | <b>.834</b> | .039        | .055  |
| 10. How many times have you had vaginal intercourse without protection against pregnancy?   | -.042 | <b>.820</b> | .123        | .014  |
| 11. How many times have you given or received fellatio (oral sex on a man) without a condom?  | .301  | <b>.543</b> | .105        | .133  |
| 12. How many times have you given or received cunnilingus (oral sex on a woman) without a dental dam or “adequate protection” (please see definition of dental dam for what is considered adequate protection)? | .298  | <b>.801</b> | .039        | -.088 |
| 13. How many times have you had anal sex without a condom?  | .111  | .022        | <b>.835</b> | .080  |
| 14. How many times have you or your partner engaged in anal penetration by a hand (“fisting”) or other object without a latex glove or condom followed by unprotected anal sex?                                 | .005  | -.004       | <b>.739</b> | -.016 |

Table 6. *Final PCA – Sexual Risk Survey (Continued)*

|  |             |             |             |             |
|--|-------------|-------------|-------------|-------------|
| 15. How many times have you given or received analingus (oral stimulation of the anal region, “rimming”) without a dental dam or “adequate protection” (please see definition of dental dam for what is considered adequate protection)? | -.006       | .290        | <b>.764</b> | .006        |
| 16. How many people have you had sex with that you know but are not involved in any sort of relationship with (i.e., “friends with benefits”, “fuck buddies”)?   | .407        | -.011       | .302        | <b>.647</b> |
| 17. How many times have you had sex with someone you don’t know well or just met?  | <b>.969</b> | .059        | .073        | .054        |
| 20. How many times (that you know of) have you had sex with someone who has had many sexual partners?  | .277        | <b>.448</b> | .036        | .280        |
| 21. How many partners (that you know of) have you had sex with who had been sexually active before you were with them but had not been tested for STIs/HIV?  | <b>.931</b> | .123        | .092        | .141        |
| 22. How many partners have you had sex with that you didn’t trust?   | .063        | .183        | -.022       | <b>.766</b> |
| 23. How many times (that you know of) have you had sex with someone who was also engaging in sex with others during the same time period?  | <b>.729</b> | .402        | -.061       | .084        |

Standardized Cronbach’s alpha was satisfactory for components 1, 2, and 3 based on Nunnally’s (1978) recommendation of at least 0.70 for the components: Sexual Risk Behavior with an Uncommitted Partner, which was made up of six items ( $\alpha = .96$ ), Lack of Preventative Measures During Sex, which was made up of five items ( $\alpha = .78$ ), Lack of Protection During Anal Experiences ( $\alpha = .70$ ), which was made up of three items, and Casual, Unemotional Sexual Risk Taking Behavior ( $\alpha = .58$ ), which was made up of three items. Although component 4 did not present a satisfactory Standardized Cronbach’s alpha, a global component for all 17 items proved to be satisfactory ( $\alpha = .86$ ), suggesting the justification for a global component of sexual risk behavior. The Pearson bivariate correlation between each of the four components, depicted in Table 7, however, was not equal to or higher than  $r = .70$ .

Table 7. *Intercomponent Bivariate Correlation – Sexual Risk Survey*

|                                  | Component 1 | Component 2 | Component 3 | Component 4 |
|----------------------------------|-------------|-------------|-------------|-------------|
| Component 1. Pearson Correlation | 1           | .325        | .132        | .322        |
| Component 2. Pearson Correlation | .325        | 1           | .203        | .125        |
| Component 3. Pearson Correlation | .132        | .203        | 1           | .103        |
| Component 4. Pearson Correlation | .322        | .125        | .103        | 1           |

*Prevalence*

One of the primary purposes of the present study was to examine prevalence estimates of sexual risk behavior on a college campus. This section provides the estimates of sexual risk behavior based on descriptive findings of the study, which are displayed in table 8. Approximately 84% of participants reported taking part in 1 or more of the sexual

risk behaviors examined on the SRS, with approximately 65% of participants reporting inconsistent condom use when oral, vaginal, and anal sex were collapsed. More specifically, approximately 58% of participants reported not using a condom when giving or receiving fellatio (i.e., oral sex on a man), and 50% reported not using protection when giving or receiving cunnilingus (i.e., oral sex on a woman). Hypothesis 2, that rates of sexual risk behavior (i.e., lack of condom use during vaginal sex) would be similar to that reported by a national sample of college students (31%; American College Health Association, 2013), was supported, with approximately 39% of participants reporting a lack of condom use during vaginal sex. Regarding anal sexual behaviors (i.e., anal sex, “fisting”, and anilingus), approximately 13% of participants reported taking part in such behaviors without adequate protection.

Table 8. *Prevalence of Sexual Risk Behavior as measured by scores on the SRS*

| <i>Component/Item</i>   | <i>Score of 0</i> |      | <i>Score of 1 or higher</i> |      |
|---|-------------------|------|-----------------------------|------|
|   | n                 | %    | n                           | %    |
| Sexual Risk Behaviors (SRS Total Score)   | 65                | 15.9 | 345                         | 84.1 |
| Did not use adequate protection across sexual behaviors (oral, vaginal, and anal sex collapsed) | 142               | 34.6 | 268                         | 65.4 |
| Did not use adequate protection during fellatio   | 174               | 42.4 | 236                         | 57.6 |
| Did not use adequate protection during cunnilingus  | 205               | 50   | 205                         | 50   |
| Did not use condom during vaginal sex   | 251               | 61.2 | 159                         | 38.8 |
| Did not use adequate protection during anal sexual behaviors                                    | 357               | 87.1 | 53                          | 12.9 |



### *Sex (Gender), Substance Use, & ADHD*

The hypothesis that students who report being male, report alcohol or drug use prior to or during the time of sexual activity, and those that report ADHD symptomatology would take part in greater sexual risk taking was tested via five multiple regression (MR) analyses where a) participant sex (gender), and b) alcohol or drug use prior to or during the time of sexual activity were entered as dichotomous independent variables, and c) ADHD-inattentive, and d) ADHD-hyperactive-impulsive symptom severity were entered as continuous independent variables, and finally, d) sexual risk taking as measured by the four subscales and total score of the SRS were entered separately as a continuous dependent variable, respectively. Standardized and unstandardized beta weights ( $\beta$ ) were calculated to measure effect size.

Assumptions of Multiple Regression include a) error independence, b) normal distribution of error, c) homoscedasticity of error, d) a linear relationship between independent and dependent variables, and e) inclusion of all relevant predictors (Myers, Well & Lorch, 2010). Specifically, the assumption of independence requires that the error be independent of other factors, such as time of observation. This assumption can be tested by plotting the residuals (i.e., the difference between obtained and predicted DV scores) against participant number, for example. The assumption of normality can be assessed by examining a normality plot of the residuals. The assumption of normality was violated in the present study (see Appendix B), potentially due to significant skewness in the distribution of the dependent variables (i.e., sexual risk behavior scales). The homoscedasticity of error assumption requires that the error variance is homogeneous across different levels of the independent variable (Myers et al., 2010). The

assumption of homoscedasticity was violated in the present study potentially due to the skewed distribution of the DV (see Appendix B for more detailed analysis of assumptions). Although the assumptions of normality and homoscedasticity were violated, no transformations were made because of the potentially low impact on Type I error and the importance of maintaining integrity of the relationships being studied (Myers et al., 2010). Additionally, this study examined sexual risk behavior in meaningful units (frequency of behavior) therefore; a transformation may be considered inappropriate.

A series of multiple regressions were conducted. The results of the first multiple regression, presented in table 9, revealed partial support for the third hypothesis ( $R^2=.399$ , adjusted  $R^2=.393$ ), wherein alcohol or drug use prior to or during the time of sex (IV) was positively associated with Sexual Risk Behavior with an Uncommitted Partner (DV):  $B=1.60$ ,  $\beta=.635$ ,  $p=.000$ ; however, sex (gender): (IV):  $B=-.138$ ,  $\beta=-.003$ ,  $p=.941$ ; ADHD-IA: (IV):  $B=.039$ ,  $\beta=.031$ ,  $p=.613$ , and ADHD-HI: (IV):  $B=-.111$ ,  $\beta=-.072$ ,  $p=.235$  were non-significant predictors.

*Table 9. Multiple Regression with Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Sexual Risk Behavior with an Uncommitted Partner (DV)*

| Predictor                            | B     | SE B  | $\beta$ | $p$  |
|--------------------------------------|-------|-------|---------|------|
| <i>Sex with Uncommitted Partners</i> |       |       |         |      |
| Constant                             | 5.045 | 3.465 |         | .146 |
| Sex (gender)                         | -.138 | 1.869 | -.003   | .941 |
| Alcohol or Drugs and Sex             | 1.605 | .099  | .635    | .000 |
| ADHD-IA                              | .039  | .076  | .031    | .613 |
| ADHD-HI                              | -.111 | .093  | -.072   | .235 |

The results of the second multiple regression, presented in table 10, revealed partial support for the third hypothesis ( $R^2=.360$ , adjusted  $R^2=.353$ ), wherein alcohol or drug use prior to or during the time of sex (IV):  $B=3.311$ ,  $\beta =.561$ ,  $p =.000$ , and ADHD-IA (IV):  $B=.432$ ,  $\beta =.144$ ,  $p =.022$ , were positively associated with Lack of Preventative Measures During Sex (DV). However, sex (gender) (IV):  $B=4.684$ ,  $\beta = .042$ ,  $p = .299$  and ADHD-HI (IV):  $B =-.046$ ,  $\beta = -.013$ ,  $p = .839$ , were non-significant.

*Table 10. Multiple Regression with Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Lack of Preventative Measures During Sex (DV)*

| Predictor                                       | B       | SE B  | $\beta$ | $p$  |
|---|---------|-------|---------|------|
| <i>Lack of Preventative Measures During Sex</i> |         |       |         |      |
| Constant  | -12.982 | 8.349 |         | .123 |
| Sex (gender)                                    | 4.684   | 4.502 | .042    | .299 |
| Alcohol or Drugs and Sex                        | 3.311   | .238  | .561    | .000 |
| ADHD-IA   | .423    | .183  | .144    | .022 |
| ADHD-HI   | -.046   | .224  | -.013   | .839 |

The results of the third multiple regression, presented in table 11, revealed partial support for the third hypothesis ( $R^2=.016$ , adjusted  $R^2=.006$ ), wherein alcohol or drug use prior to or during the time of sex (IV):  $B=.041$ ,  $\beta =.116$ ,  $p =.021$  was positively associated with Lack of Protection During Anal Experiences (DV). However, sex (gender) (IV):  $B=.054$ ,  $\beta = .008$ ,  $p = .873$ , ADHD-IA (IV):  $B=.005$ ,  $\beta = .027$ ,  $p = .731$ , and ADHD-HI (IV):  $B=.001$ ,  $\beta = .006$ ,  $p = .934$ , were non-significant.

Table 11. Multiple Regression with Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Lack of Protection During Anal Experiences (DV)

| Predictor   | B    | SE B | $\beta$ | <i>p</i> |
|---|------|------|---------|----------|
| <i>Lack of Protection During Anal Experiences</i> |      |      |         |          |
| Constant  | .126 | .619 |         | .839     |
| Sex (gender)                                      | .054 | .334 | .008    | .873     |
| Alcohol or Drugs and Sex                          | .041 | .018 | .116    | .021     |
| ADHD-IA   | .005 | .014 | .027    | .731     |
| ADHD-HI   | .001 | .017 | .006    | .934     |

The results of the fourth multiple regression, presented in table 12, revealed partial support for the third hypothesis ( $R^2=.103$ , adjusted  $R^2=.094$ ), wherein alcohol or drug use prior to or during the time of sex (IV):  $B=.246$ ,  $\beta=.310$ ,  $p=.000$  was positively associated with Casual, Unemotional Sexual Risk Taking Behavior (DV). However, sex (gender) (IV)  $B=.619$ ,  $\beta=.041$ ,  $p=.388$ , ADHD-IA (IV):  $B=.001$ ,  $\beta=.002$ ,  $p=.979$ , and ADHD-HI (IV):  $B=.011$ ,  $\beta=.023$ ,  $p=.760$ , were non-significant.

Table 12. Multiple Regression with Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Casual, Unemotional Sexual Risk Taking Behavior (DV)

| Predictor  | B     | SE B  | $\beta$ | <i>p</i> |
|--|-------|-------|---------|----------|
| <i>Casual, Unemotional Sexual Risk Taking Behavior</i> |       |       |         |          |
| Constant   | 1.527 | 1.328 |         | .251     |
| Sex (gender)   | .619  | .716  | .041    | .388     |
| Alcohol or Drugs and Sex                               | .246  | .038  | .310    | .000     |
| ADHD-IA  | .001  | .029  | .002    | .979     |
| ADHD-HI  | .011  | .036  | .023    | .760     |

The results of the fifth multiple regression, presented in table 13, revealed partial support for the third hypothesis ( $R^2=.526$ , adjusted  $R^2=.521$ ), wherein alcohol or drug use

prior to or during the time of sex (IV):  $B=5.203$ ,  $\beta = .700$ ,  $p = .000$ , and ADHD-IA (IV):  $B=.467$ ,  $\beta = .126$ ,  $p = .019$ , were positively associated with Sexual Risk Behavior, as measured by the global score of the SRS (DV). However, sex (gender) (IV):  $B=5.219$ ,  $\beta = .037$ ,  $p = .286$ , and ADHD-HI (IV):  $B=-.144$ ,  $\beta = -.032$ ,  $p = .554$ , were non-significant predictors.

*Table 13. Multiple regression with Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Sexual Risk Behavior (DV)*

| Predictor                   | B      | SE B  | $\beta$ | $p$  |
|-----------------------------|--------|-------|---------|------|
| <i>Sexual Risk Behavior</i> |        |       |         |      |
| Constant                    | -6.194 | 9.052 |         | .494 |
| Sex (gender)                | 5.219  | 4.881 | .037    | .286 |
| Alcohol or Drugs and Sex    | 5.203  | .258  | .700    | .000 |
| ADHD-IA                     | .467   | .199  | .126    | .019 |
| ADHD-HI                     | -.144  | .243  | -.032   | .554 |

## Chapter IV: Discussion

A substantial body of research indicates that college students are at risk for engaging in risky sexual behavior (Buhi et al., 2010; CDC, 2010), which is associated with an increase in STIs and HIV among young adults (CDC, 2010). Therefore, the development of a valid, reliable, and theoretically-grounded instrument to assess the prevalence of risky sexual behavior among college students is sorely needed to facilitate research that will inform prevention and intervention efforts. Additionally, to further aid future prevention and intervention efforts, risk and protective factors associated with sexual behavior must be identified. The present study addressed these concerns by examining, a) the psychometric properties of the SRS, b) the self-reported prevalence of sexual risk behavior among college students, and c) whether specific characteristics were associated with sexual risk behavior, including sex (gender), alcohol or drug use prior to or during the time of sexual activity, as well as symptoms of ADHD, including inattention and hyperactivity/impulsivity (i.e., ADHD-IA, and ADHD-HI).

### *Psychometric Findings of SRS*

Sexual risk behavior has been categorized and measured differently across studies, resulting in variable outcomes (George et al., 2005). This methodological limitation impedes efforts to employ research findings into effective prevention and educational programs. Substantial research, however, suggests that sexual risk behavior should be measured by the level of risk, as opposed to the amount of sexual activity (Brodbeck et al., 2013; Kotchik et al., 2001; Turchik & Garske, 2009). Examples of risky sexual behaviors may potentially include inconsistent use of condoms or other contraceptive methods during oral, vaginal, and anal sex, having multiple sexual partners,

and using alcohol or drugs prior to or in combination with sexual activities. Although risky sexual behavior is particularly rampant among college students, little research has focused on developing a psychometrically valid and reliable measure of sexual risk. Hence, the present study examined the psychometric properties of the SRS as well as the different sexual risk behaviors in which college students participate.

Results from the present study, namely the psychometric analyses, revealed that the global sexual risk scale and three of the four subscales, demonstrated satisfactory internal consistency as measured by Standardized Cronbach's alpha (Nunnally, 1978). Although the fourth component, Casual, Unemotional Sexual Risk Taking Behavior, did not demonstrate satisfactory internal consistency, the component was retained as it addresses conceptually important behaviors (e.g., casual sex) that are prevalent among college students (Monto & Carey, 2014). In addition, retaining this subscale did not affect the global internal consistency coefficient, as measured by Standardized Cronbach's alpha. Additionally, the analyses revealed acceptable loadings and inter-item correlations for each component. However, it is noteworthy that three items examining anal sex behaviors, the riskiest behaviors for contracting STIs and HIV, were maintained despite an unsatisfactory item-total correlation, as they did not affect the global internal consistency coefficient. Overall, the present study offers strong psychometric support for the SRS, despite the suboptimal internal consistency of one of its components. Future research is needed to continue strengthening the scale, both conceptually and psychometrically.

The initial version of the SRS encompassed five subscales and one global sexual risk scale (Turchik & Garske, 2009). In the present study, it was hypothesized that the

same components would be identified. Interestingly, this hypothesis was only partially supported as two of the previously reported five subscales were retained, including Sexual Risk Taking with an Uncommitted Partner and Risky Anal Sex Acts. The first component, labeled Sexual Risk Taking with an Uncommitted Partner, addressed sexual behaviors with partners in an uncommitted relationship. Examples of items that loaded on the Uncommitted Partners component included, “*How many times have you left a social event with someone you just met*”, “*How many times have you had an unexpected and unanticipated sexual experience*”, and “*How many times have you had sex with someone you don’t know well or just met*”. The Sexual Risk Taking with an Uncommitted Partner component includes items that resemble the types of behaviors college students have reported across the sexual risk literature (e.g., Brodbeck et al., 2013; Kotchik et al., 2001; Turchik & Garske, 2009). Although four specific item loadings did not remain consistent with those reported by Turchik and Garske (2009), the current psychometric analyses were rigorous and detailed in nature, and conducted in a geographically diverse sample of students.

The second component, labeled Lack of Preventative Measures During Sex, encompassed sexual experiences without adequate prevention and protection against STIs and pregnancy. Examples of items that loaded on the Lack of Preventative Measures During Sex component, included, “*How many times have you had vaginal intercourse without a latex or polyurethane condom. Note: Include times when you have used a lambskin or membrane condom*”, “*How many times have you had vaginal intercourse without protection against pregnancy*”, and “*How many times (that you know of) have you had sex with someone who has had many sexual partners*”. This component is of



particular conceptual importance as it addresses the frequency with which college students do not take preventative measures during sex, including the lack of condoms and other protective barriers, as well as other factors that may place them at greater risk for STIs and/or HIV.

The third component, labeled Lack of Protection During Anal Experiences, was retained, similar to findings reported by Turchik and Garske (2009). A total of 3 items loaded on this component, including, *“How many times have you had anal sex without a condom”*, *“How many times have you or your partner engaged in anal penetration by a hand (“fisting”) or other object without a latex glove or condom followed by unprotected anal sex”*, and *“How many times have you given or received anilingus (oral stimulation of the anal region, “rimming”) without a dental dam or “adequate protection” (please see definition of dental dam for what is considered adequate protection)”*. Importantly, this component addresses the riskiest sexual behaviors for contracting diseases. Prior to the spread of HIV infection, anal sex practices were frequently believed to be confined to homosexual men (Halperin, 1999), however, a recent national survey reported that anal sex is considerably more commonly practiced (i.e., 36-44% of participants reporting anal sex with opposite sex partner) among heterosexual partners under 44 years of age (Chandra, Mosher, Copen, & Sionean, 2011). In fact, Harvard University recently offered a workshop, *“What What in the Butt: Anal Sex 101”*, aimed at providing college students with safe practices when taking part in anal sexual behaviors (Sexual Health Education & Advocacy throughout Harvard College [SHEATH], 2014).

The fourth component, Casual, Unemotional Sexual Risk Taking Behavior, assesses sexual behaviors with casual partners, or with someone with whom the

participant may not trust. A total of 3 items loaded onto this component, including, “*How many times have you gone out to bars/parties/social events with the intent of “hooking up” and engaging in sexual behavior but not having sex with someone*”, “*How many people have you had sex with that you know but are not involved in any sort of relationship with (i.e., “friends with benefits”, “fuck buddies”)*”, and “*How many partners have you had sex with that you didn’t trust*”. This component addresses casual sexual behaviors, in which college students frequently engage (Monto & Carey, 2014).

Although the components measure different sexual risk behaviors, Standardized Cronbach’s alpha provided strong support for a global sexual risk scale. Additionally, the clinical utility of the SRS is promising as it encompasses a variety of sexual behaviors in which college students report engaging. Future research, however, should assess the generalizability of this measure among participants in diverse academic settings (i.e., community colleges), and universities with a more racially and ethnically diverse student body.

#### *Prevalence Rates of Sexual Risk Behavior in College*

Research concerning sexual practices among college students has been conducted for decades and has revealed critical findings regarding risky sexual behavior among this population (Adefuye, Abiona, Balogun, Lukobo Durrell, 2009; Baldwin & Baldwin, 2000; Cooper, 2002; CDC, 2002; DiClemente, Forrest, & Mickler, 1990; Flannery, Ellingson, Votaw, & Schaefer, 2003; Gullette & Lyons, 2006; Lewis, Malow, & Ireland, 1997; Lindley, Nicholson, Kerby, & Lu, 2003; MacDonald, 1990; Smith & Roberts, 2009; Strader & Beaman, 1991). Studies have, however, repeatedly disregarded the importance of employing psychometrically sound measurement tools (George et al.,

2005), resulting in variable prevalence rates of risky sexual behavior among college students. Nonetheless, several studies have substantiated that college students are at risk for STIs and HIV infection as less than half of this population uses condoms during vaginal intercourse, and even fewer use condoms during anal intercourse (Buhi et al., 2010). Additionally, casual sex (i.e., engaging in sexual behavior with an unromantically involved partner) appears to be common among college students (Grello et al., 2006; Monto & Carey, 2014; Paul & Hayes, 2002). For example, 37% college students consider having sex with a stranger or a partner they do not know well to be acceptable, and while few students reported their last casual sexual encounter to be “the beginning of a romance”, more than half of participants reported that it was “just a one-time thing” (Grello et al., 2006). Students who engage in casual sex behaviors have also reported other high-risk sexual behaviors including inconsistent condom use, multiple sexual partners, and alcohol and drugs within the context of sexual encounters (Adefuye, Abiona, Balogun, Lukobo Durrell, 2009; Baldwin & Baldwin, 2000; Cooper, 2002; Flannery, Ellingson, Votaw, & Schaefer, 2003; Gullette & Lyons, 2006; Lewis, Malow, & Ireland, 1997; Lindley, Nicholson, Kerby, & Lu, 2003; Smith & Roberts, 2009; Strader & Beaman, 1991). It follows that taking part in risky behaviors has contributed to an increase of STIs and HIV among young adults, with the CDC reporting a 31% increase in HIV infections among young adults (2012).

Consistent with previous findings, the present study found that college students are indeed engaging in risky sexual behaviors; approximately 65% of the participants reported not using a condom when oral, vaginal, and/or anal sex activities were examined together. With regard to oral sex, approximately 58% reported not using a condom during

fellatio (i.e., oral sex on a man), and 50% reported not using protection during cunnilingus (i.e., oral sex on a woman). Although oral sex practices are sometimes regarded as a “safer” sex act as they carry no risk for pregnancy and a lower risk for HIV transmission, the risk for STIs is nevertheless present i.e., an individual who does not use protection during oral sex places themselves at risk for other organisms from an infected partner, including herpes, syphilis, gonorrhea, and genital warts. Regarding vaginal sex, 39% of college students reported not using a condom, and these findings were remarkably similar to that of a national sample of college students (American College Health Association, 2013). Regarding anal sexual behaviors (i.e., anal sex, “fisting” prior to anal sex, and anilingus), approximately 13% of participants reported taking part in such behaviors without adequate protection. Students reporting a lack of condom use during vaginal and anal sex are placing themselves at great risk for contracting STIs or HIV. Additionally, with casual sex (Grello, et al., 2006; Paul & Hayes, 2002; Monto & Carey, 2014) and having multiple sexual partners being reported on college campuses (Kotchik et al., 2001), these risks are even more evident.

Given the detrimental consequences of sexual risk behavior, including STIs and HIV infection, and the growing prevalence rates among college students, it is essential for universities to provide sexual risk prevention and intervention programs for their students. Furthermore, as these behaviors may begin prior to college, future studies might want to focus their efforts on sexual risk prevention and intervention beginning with middle and high school students.

### *Characteristics of College Students Taking Part in Sexual Risk Behavior*

To explore whether any specific characteristics are related to taking part in sexual risk behavior, a series of multiple regressions were conducted based on a) sex (gender), b) report of alcohol or drug use prior to or during the time of sexual activity, and c) report of ADHD-IA, and ADHD-HI symptomatology. The present study found partial support for the third hypothesis, wherein college students who use alcohol or drugs prior to or during the time of sex were more likely to take part in sexual risk behavior with an uncommitted partner, report a lack of preventative measures during sex, report a lack of protection during anal sexual experiences, and also, report, casual, unemotional sexual risk taking behaviors. Overall, students who use alcohol or drugs prior to or during sex were more likely to take part in sexual risk behavior. Such findings are consistent with the current literature (Foster, Caravelis, & Kopak, 2014; King, Nguyen, Kosterman, Bailey, & Hawkins, 2012; O'Malley, Johnston, Terry-McElrath, & Schulenberg, 2012; Wells, Kelly, Golub, Grov, & Parsons, 2010; Wells, Kelly, Rendina, & Parsons, 2015). Clearly, these findings have important implications for prevention and intervention programs on college university campuses, not only with regard to sexual risk behavior, but also the use of alcohol and other substances. Based on the current results as well as findings from other studies, it can be reasonably inferred that if substance use decreases, rates of risky sexual behavior may also decline. Therefore, future risk reduction programs should target substance use within the context of sexual risk behavior.

With regard to ADHD symptomatology, participants who reported greater ADHD-IA symptoms, but not ADHD-HI symptoms, were more likely to report a lack of preventative measures during sex, and overall, were more likely to report greater sexual

risk-taking behaviors. These findings are consistent with previous research that has found students with ADHD are at greater risk for taking part in sexual risk behavior (Barkley, 2006; Barkley, Murphy, & Fischer, 2008). Conceptually, however one would expect symptoms of hyperactivity/impulsivity to be more strongly associated with risk behavior than inattention; in fact, research supports this relationship, for example with regard to ADHD-HI and substance use behaviors (Elkins, McGue, & Iacono, 2007). The results of the present study were therefore unexpected but intriguing. Two potential explanations for why ADHD-IA symptomatology is more strongly related to sexual risk than ADHD-HI symptoms can be offered. First, individuals with ADHD-IA tend to have deficits in executive functioning (EF), often defined as the higher-order cognitive abilities that give rise to strategic planning, cognitive flexibility, self-regulation, and goal-directed behavior (Weyandt, 2005). Executive functioning deficits have been associated with greater sexual risk behavior (Golub, Starks, Kowalczyk, Thompson, & Parsons, 2012); therefore, it is possible that the present study is capturing EF deficits within the ADHD-IA construct, which in turn relate to greater sexual risk. Second, it is possible that due to significant overlap, or shared variance, between ADHD-HI and ADHD-IA, each of these constructs partials out the effects of the other, resulting in non-significant effects of one or both constructs. Future studies should continue to examine the impact of ADHD-HI and ADHD-IA on risky sexual behaviors.

The findings of the present study emphasize the need for the development of effective prevention and intervention programs targeting risky sexual behaviors among college students, particularly those using alcohol or drugs within the context of sexual activity and those with elevated ADHD-IA symptomatology. Although sex (gender) and

ADHD-HI were not associated with sexual risk behavior in the present study, future research should continue to examine these variables. It is possible that sex (gender) does not individually predict sexual risk behavior; rather, it may moderate the relationship between ADHD-IA and sexual risk. Future studies are needed to address this possibility.

#### *Limitations and Future Directions*

Several limitations of the present study should be considered. First, the sample was one of convenience; therefore, participants may differ from the larger population of college students on a number of variables, including ADHD symptomatology and sexual risk behavior, which may limit the generalizability of the findings. Although the sample was geographically diverse, it was also relatively homogenous with regard to race and ethnicity, which also restricts the generalizability of the findings. Additionally, the present study used data from first-year students only and may underestimate the true prevalence of sexual risk behavior among college students.

In light of the present study, further investigation is needed to examine the theoretical and psychometric properties of the SRS, as it is the only sexual risk measure for college students with preliminary psychometric support. Future research should examine the usefulness of the items and subscales, potentially, among a more diverse sample of college students. To gain access to a diverse population, researchers may consider collaborating with a variety of on-campus professionals (e.g., advisors, health services coordinators, academic skills tutors). Additionally, it is important to assess students from ethnic minority backgrounds, as the present study included a large number of students who identified as Caucasian. Future work should also consider examining the differences in sexual risk behavior among these groups, as Black and Hispanic youth are

disproportionally affected by HIV infection (CDC, 2012b). Additionally, the present study did not examine participants' sexual preference, however, previous research has highlighted greater prevalence of HIV risk behaviors among sexual minorities (Saewyc, Skay, Richens, Reis, Poon, & Murphy, 2006). Therefore, future research should examine the relationship between sexual preference and risky sexual behaviors among a sexually diverse sample of college students.

Further investigation is also needed to examine the complex relationship between sexual risk behavior, alcohol or drug use before or during sex, and ADHD symptomatology. Researchers should identify additional risk factors associated with sexual risk behavior, including other psychopathology (e.g., depression, conduct disorder, co-morbid disorders). Additionally, the examination of protective factors associated with healthy sexual behaviors is important to study. For example, with regard to the relationship between ADHD-IA and risky sexual behavior, one may examine the role of psychostimulant medication. With such information, researchers should design, implement, and assess evidence-based prevention and intervention programs targeting college students at-risk for sexual risk behavior and its later consequences.

#### *Summary and Conclusion*

The present study provides support for the relationship between alcohol or drug use prior to or during sex, ADHD-IA symptom severity, and greater sexual risk behavior. Effective intervention and prevention programs are needed to increase awareness of sexual risk behavior among college students, especially high-risk populations such as those who report elevated ADHD symptomatology and those who use alcohol and illicit substances prior to or during sex. College administrators, educators, and support-service



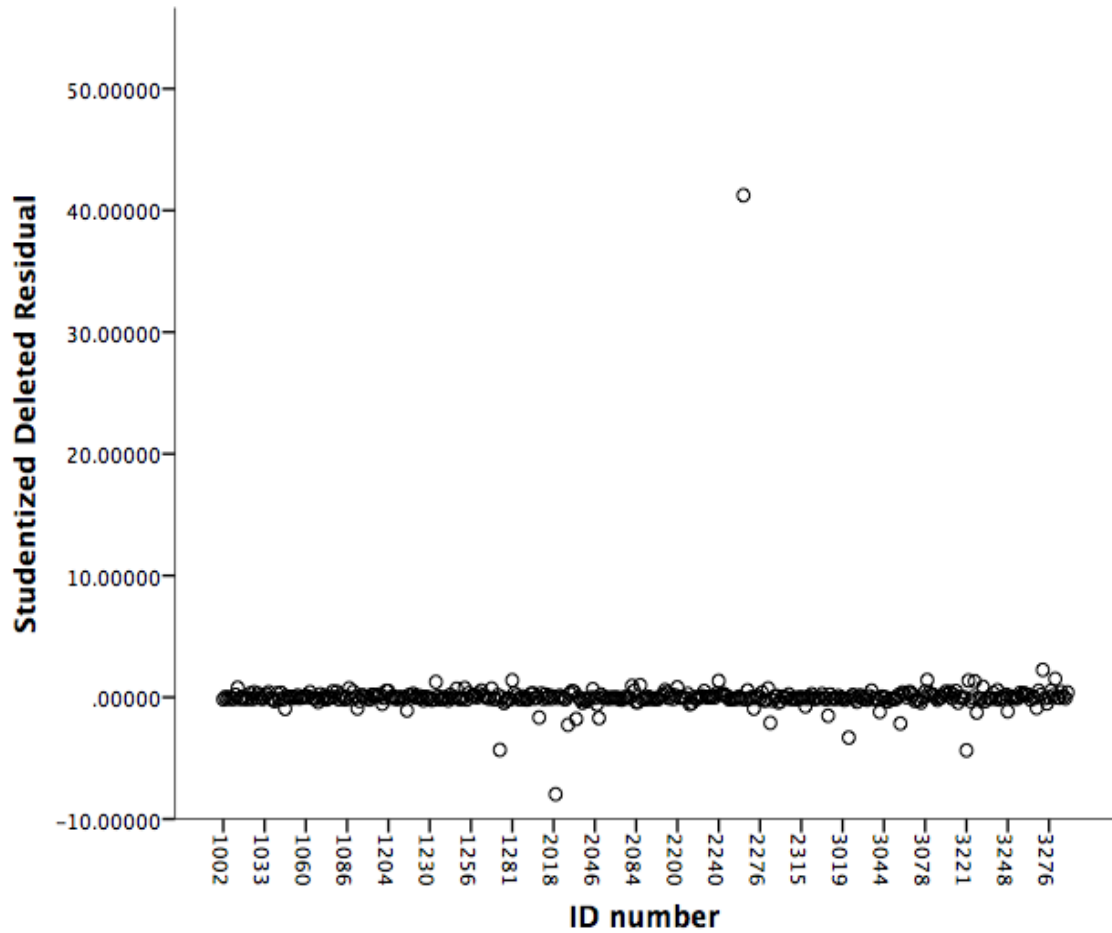
professionals (e.g., health professionals) should consider the present findings, in conjunction with previous research, to develop evidence-based sexual health promotion programs for college students, particularly those at-risk for taking part in greater sexual risk behaviors.

## Appendix A: Sexual Risk Survey (SRS)

1. How many partners have you engaged in sexual behavior with but not had sex with?
2. How many times have you left a social event with someone you just met?
3. How many times have you “hooked up” but not had sex with someone you didn’t know or didn’t know very well?
4. How many times have you gone out to bars/parties/social events with the intent of “hooking up” and engaging in sexual behavior but not having sex with someone?
5. How many times have you gone out to bars/parties/social events with the intent of “hooking up” and having sex with someone?
6. How many times have you had an unexpected and unanticipated sexual experience?
7. How many times have you had a sexual encounter you engaged in willingly but later regretted?
8. How many partners have you had sex with?
9. How many times have you had vaginal intercourse without a latex or polyurethane condom? Note: Include times when you have used a lambskin or membrane condom.
10. How many times have you had vaginal intercourse without protection against pregnancy?
11. How many times have you given or received fellatio (oral sex on a man) without a condom?
12. How many times have you given or received cunnilingus (oral sex on a woman) without a dental dam or “adequate protection”?
13. How many times have you had anal sex without a condom?
14. How many times have you or your partner engaged in anal penetration by a hand (“fisting”) or other object without a latex glove or condom followed by unprotected anal sex?
15. How many times have you given or received analingus (oral stimulation of the anal region, “rimming”) without a dental dam or “adequate protection”?
16. How many people have you had sex with that you know but are not involved in any sort of relationship with (i.e., “friends with benefits”, “fuck buddies”)?
17. How many times have you had sex with someone you don’t know well or just met?
18. How many times have you or your partner used alcohol or drugs before or during sex?
19. How many times have you had sex with a new partner before discussing sexual history, IV drug use, disease status and other current sexual partners?
20. How many times (that you know of) have you had sex with someone who has had many sexual partners?
21. How many partners (that you know of) have you had sex with who had been sexually active before you were with them but had not been tested for STIs/HIV?
22. How many partners have you had sex with that you didn’t trust?
23. How many times (that you know of) have you had sex with someone who was also engaging in sex with others during the same time period?

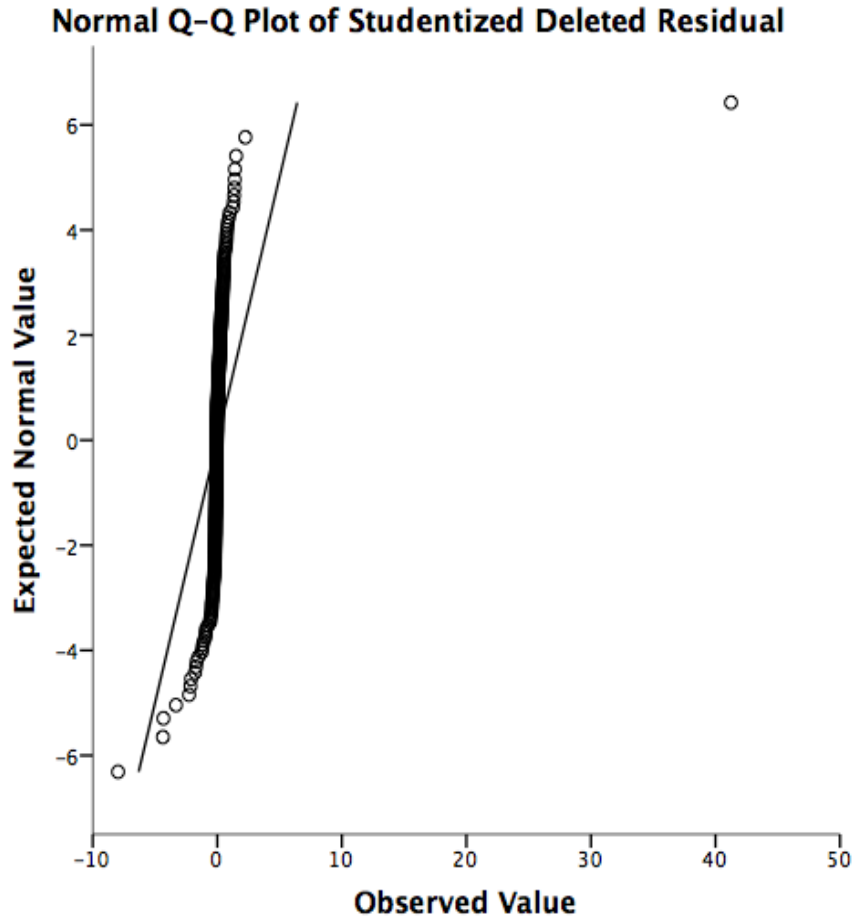
## Appendix B: Evaluation of Assumptions

Figure 1. Assumption of residual independence for multiple regression assessing the association between Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Sexual Risk Behavior with an Uncommitted Partner (DV)



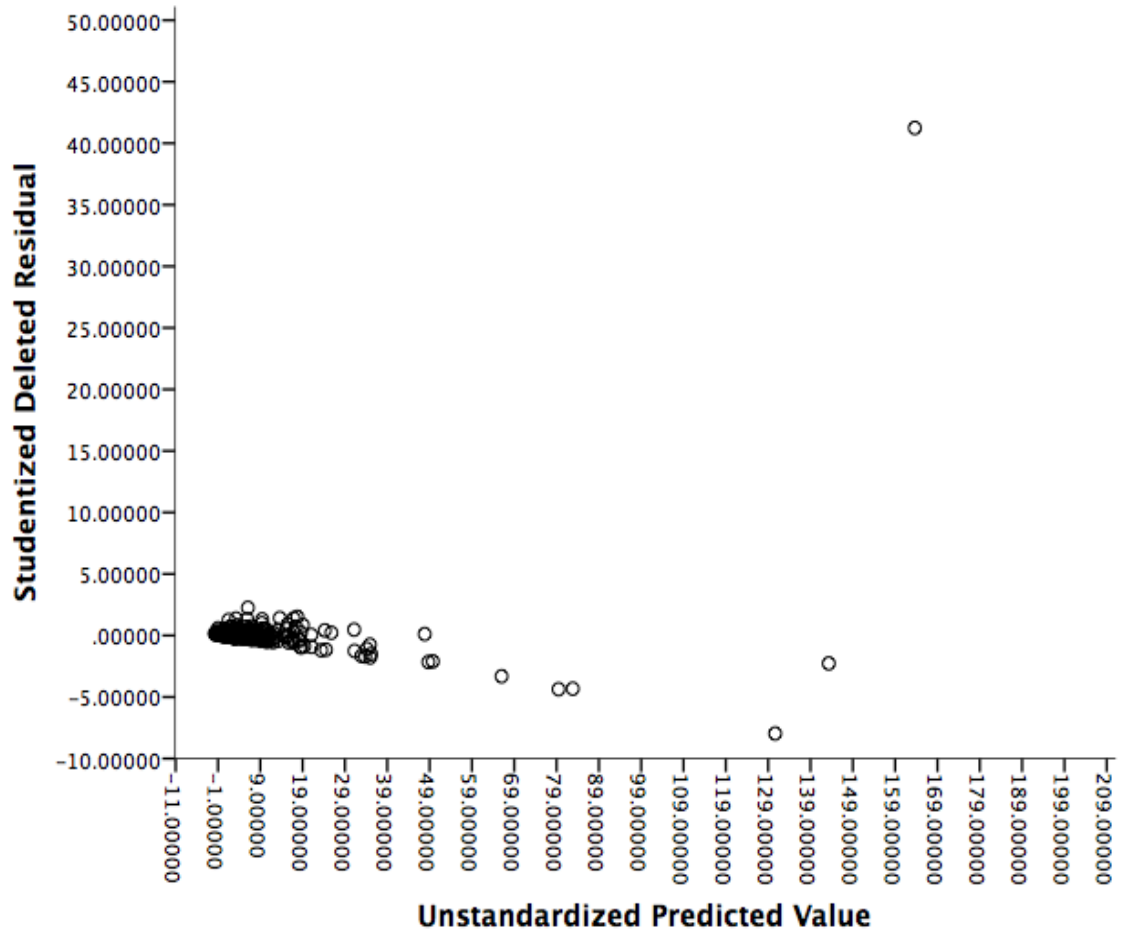
As depicted in Figure 1, the residual does not appear to be severely affected by participant number. Therefore, the time at which participants completed the questionnaire did not seem to impact the results.

Figure 2. Assumption of residual normality for multiple regression assessing the association between Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Sexual Risk Behavior with an Uncommitted Partner (DV)



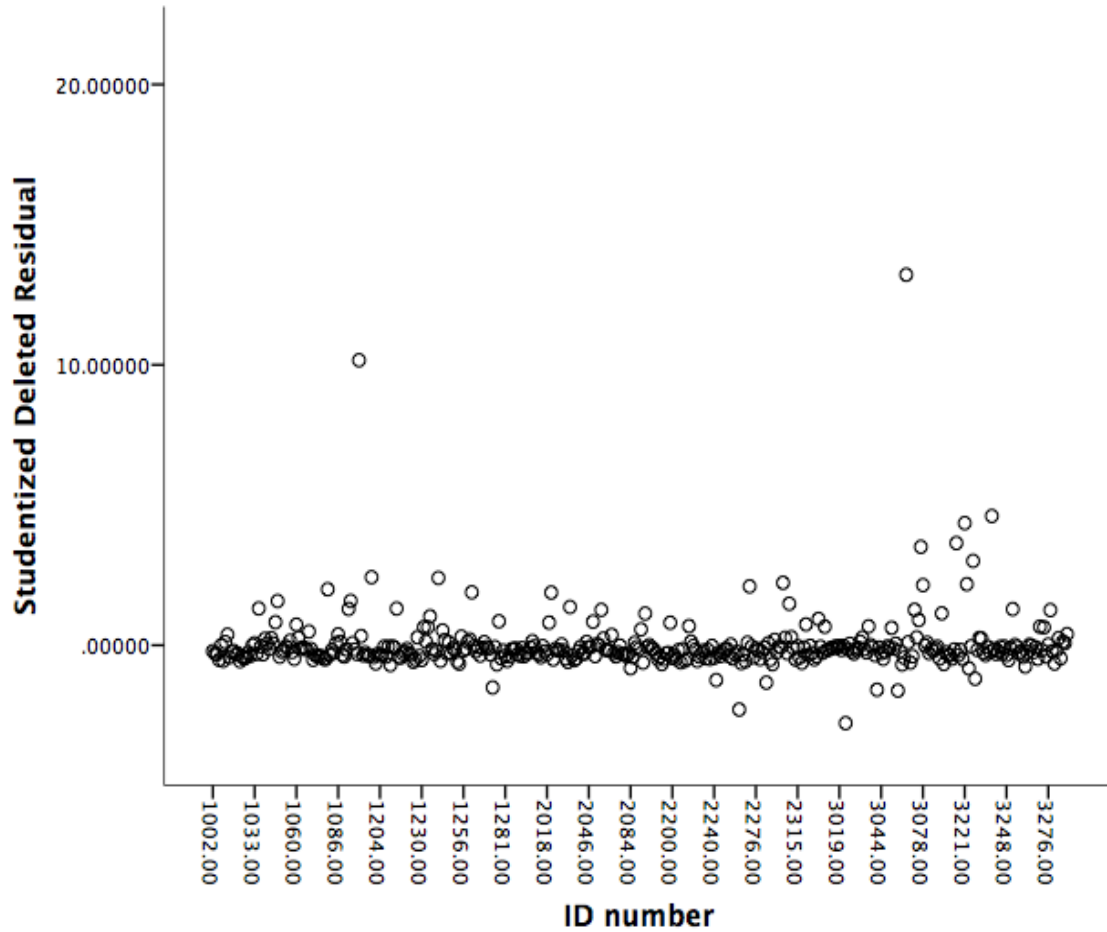
Significant deviations from the assumptions of normality can be identified in Figure 2.

Figure 3. Assumption of residual homoscedasticity for multiple regression assessing the association between Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Sexual Risk Behavior with an Uncommitted Partner (DV)



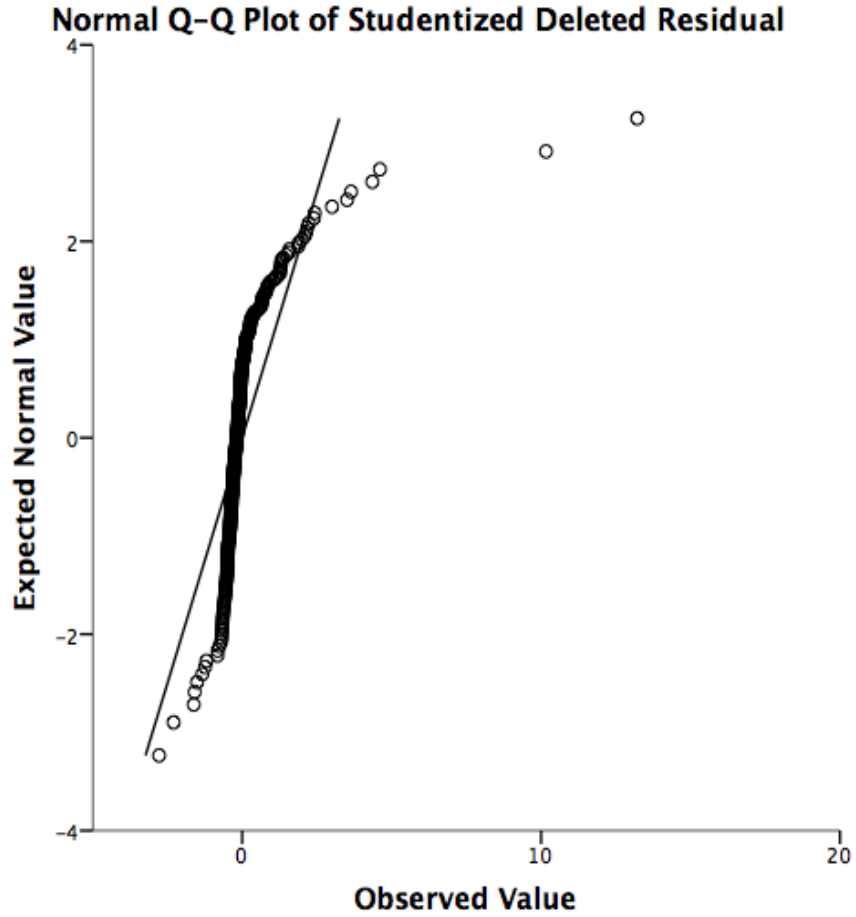
Significant violations of the assumption of residual homoscedasticity can be identified in Figure 3.

Figure 4. Assumption of residual independence for multiple regression assessing the association between Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Lack of Preventative Measures During Sex (DV)



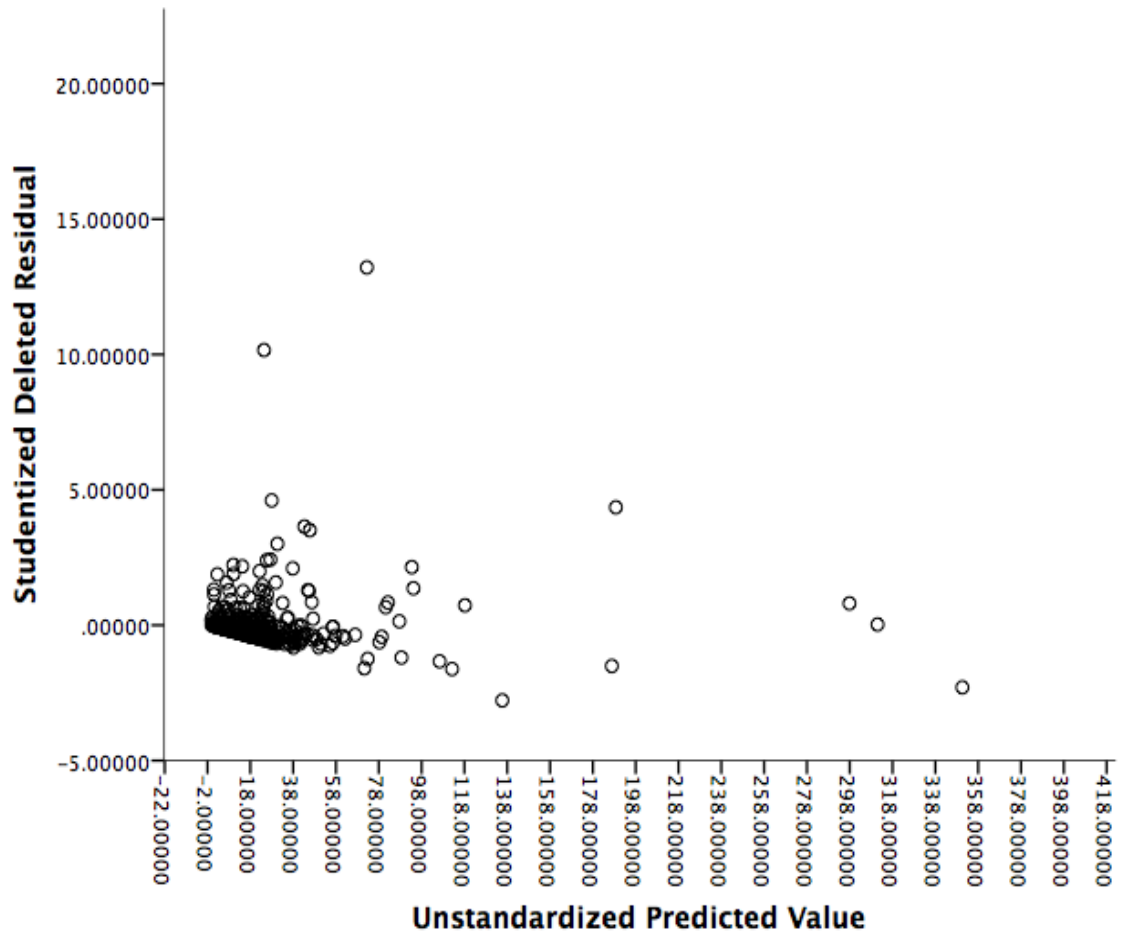
As depicted in Figure 4, the residual does not appear to be influenced by participant number, indicating that the time at which participants completed the questionnaire did not greatly impact the results.

Figure 5. Assumption of residual normality for multiple regression assessing the association between Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Lack of Preventative Measures During Sex (DV)



Significant deviations from the assumptions of normality can be identified in Figure 5.

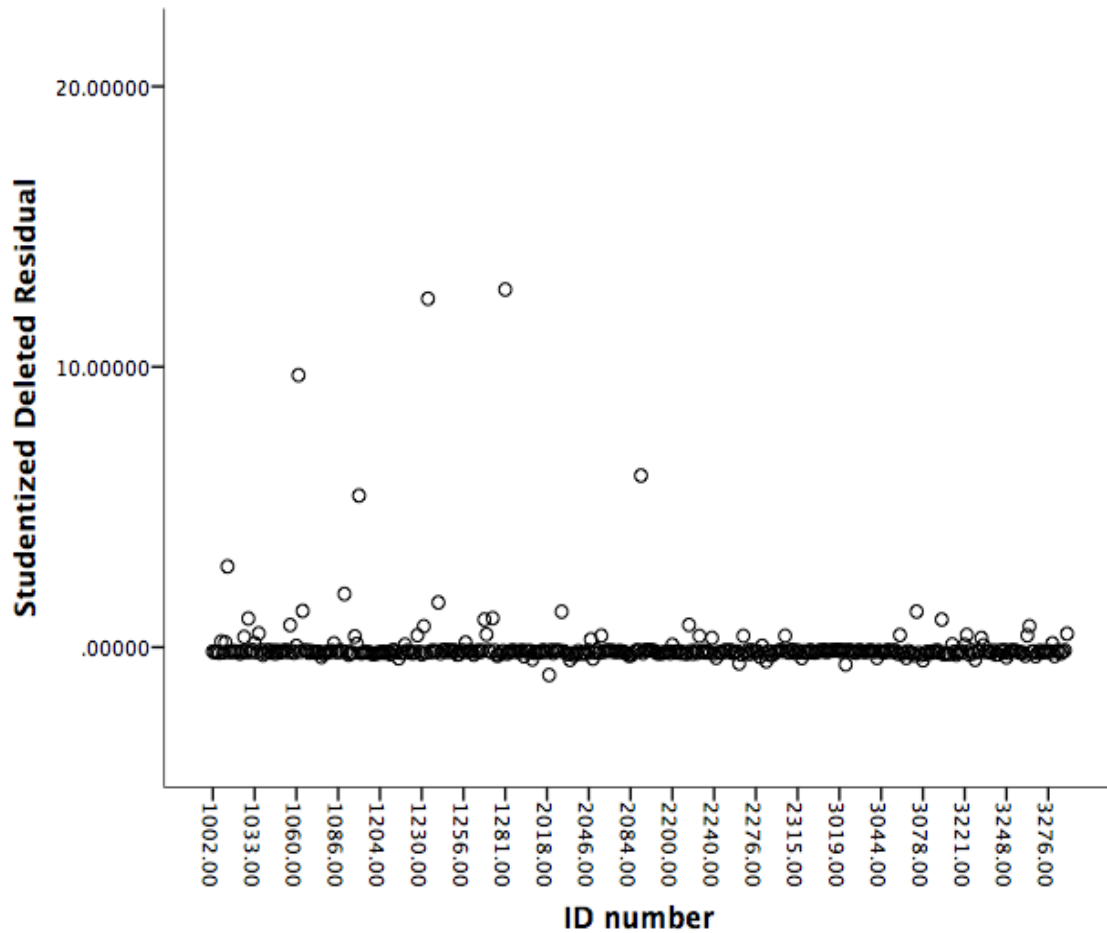
Figure 6. Assumption of residual homoscedasticity for multiple regression assessing the association between Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Lack of Preventative Measures During Sex (DV)



Significant violations of the assumption of residual homoscedasticity can be identified in Figure 6.

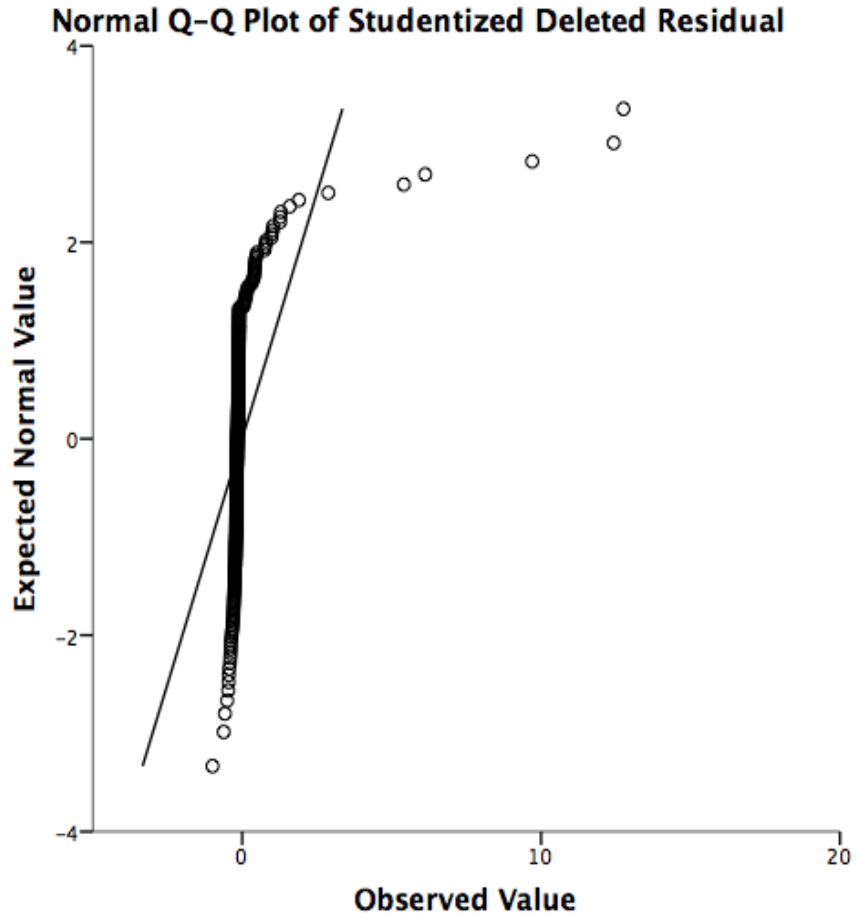


Figure 7. Assumption of residual independence for multiple regression assessing the association between Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Lack of Protection During Anal Experiences (DV)



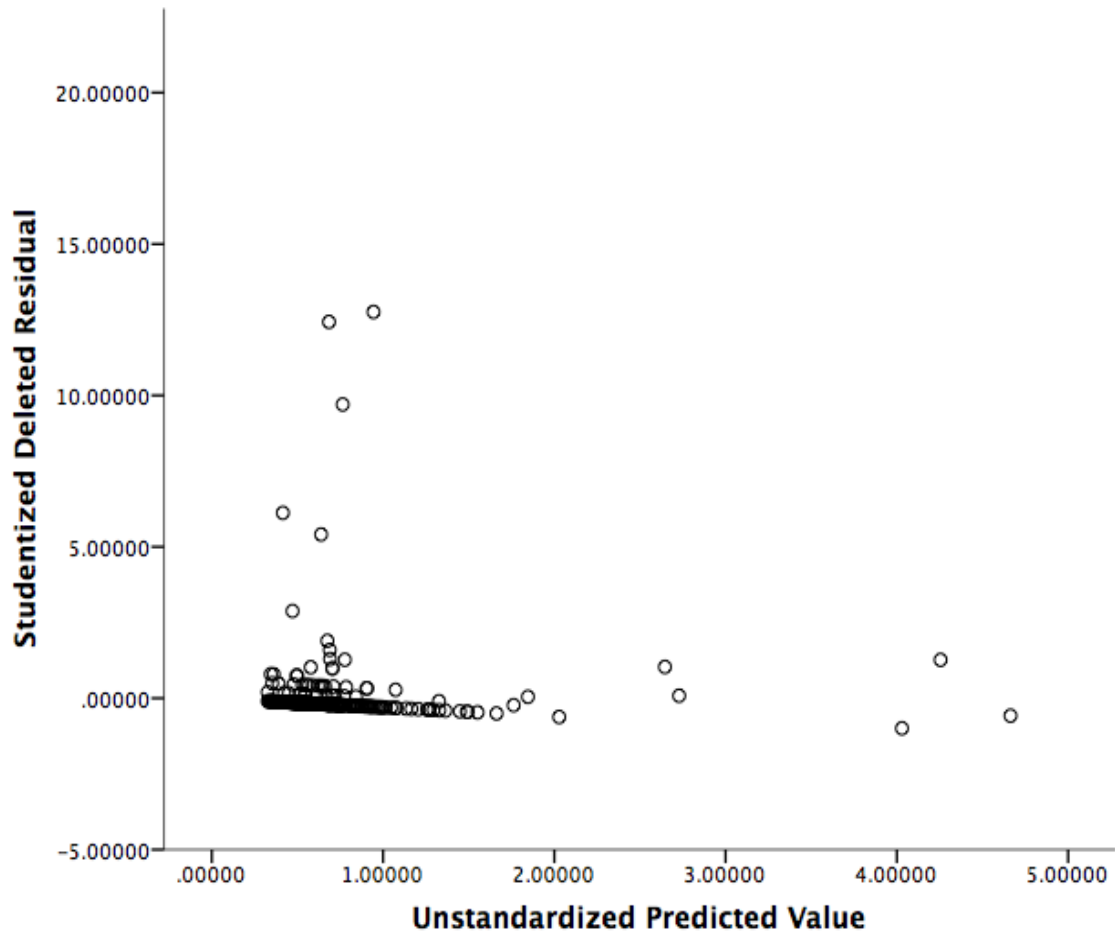
As depicted in Figure 7, the residual does not appear to be affected by participant number, indicating that the time at which participants completed the questionnaire did not greatly impact the results.

Figure 8. Assumption of residual normality for multiple regression assessing the association between Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Lack of Protection During Anal Experiences (DV)



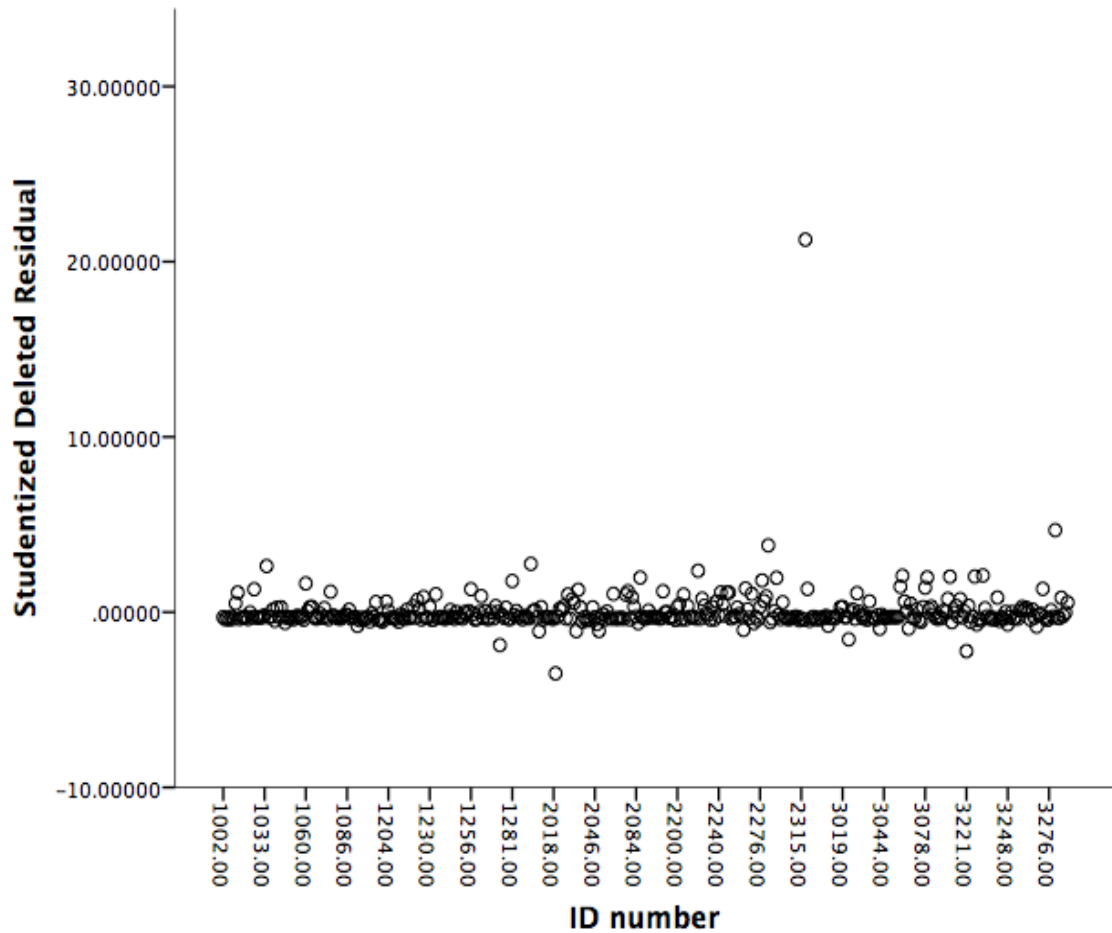
As depicted in Figure 8, there were significant violations of the assumption of residual normality.

Figure 9. Assumption of residual homoscedasticity for multiple regression assessing the association between Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Lack of Protection During Anal Experiences (DV)



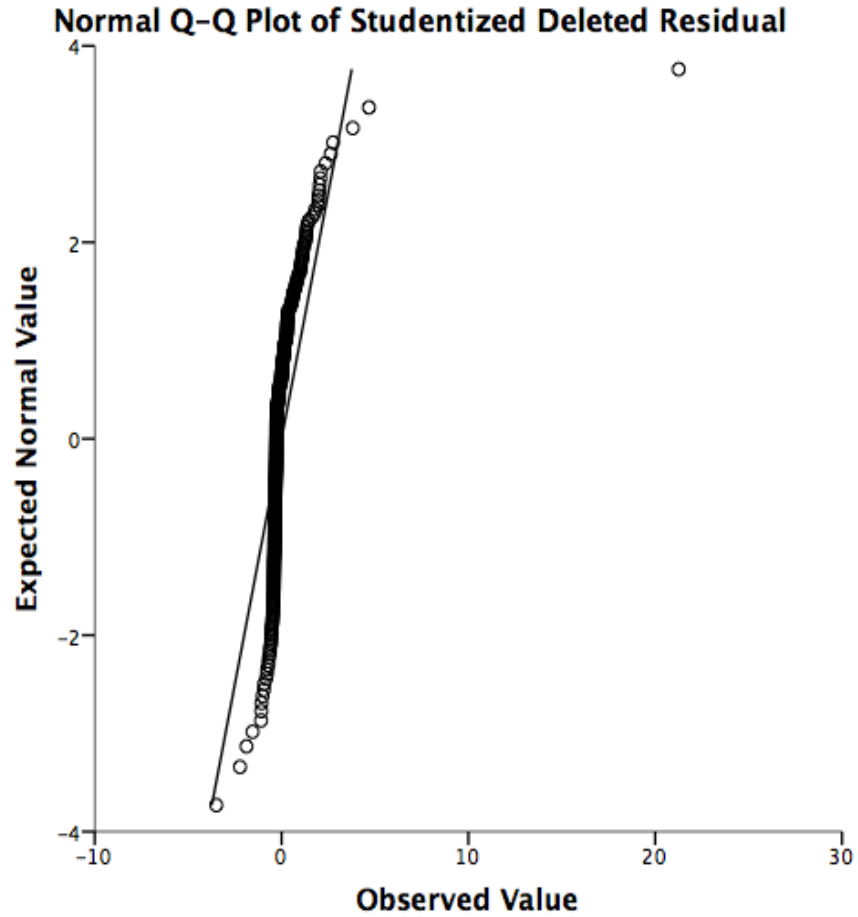
According to Figure 9, the distribution of the residual appears to follow a pattern, suggesting a violation of the assumption of residual homoscedasticity.

Figure 10. Assumption of residual independence for multiple regression assessing the association between Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Casual, Unemotional Sexual Risk Taking Behavior (DV)



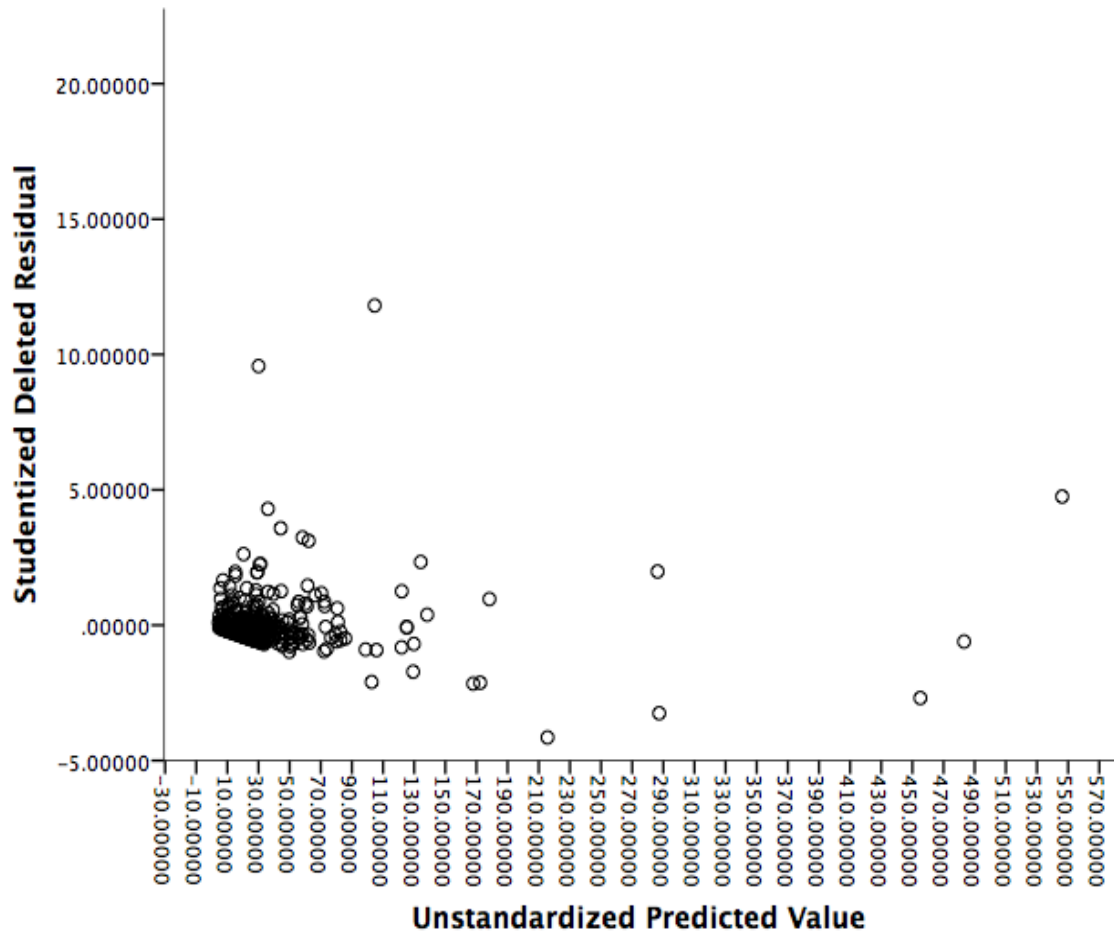
According to Figure 10, the residual does not appear influenced by participant number. Therefore, the results were not impacted by the time in which participants completed the questionnaire.

Figure 11. Assumption of residual normality for multiple regression assessing the association between Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Casual, Unemotional Sexual Risk Taking Behavior (DV)



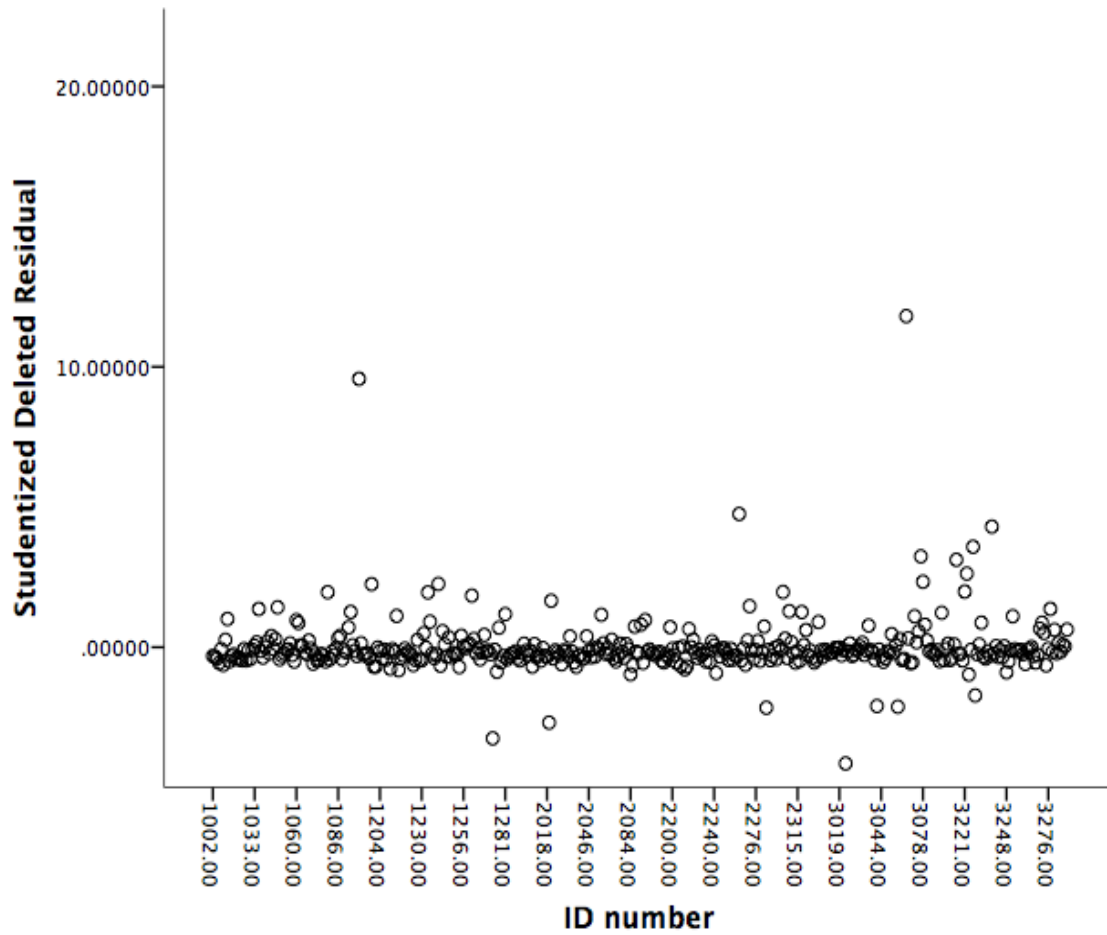
According to Figure 11, the distribution of the residual suggests some deviation from the assumption of normality.

Figure 12. Assumption of residual homoscedasticity for multiple regression assessing the association between Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Casual, Unemotional Sexual Risk Taking Behavior (DV)



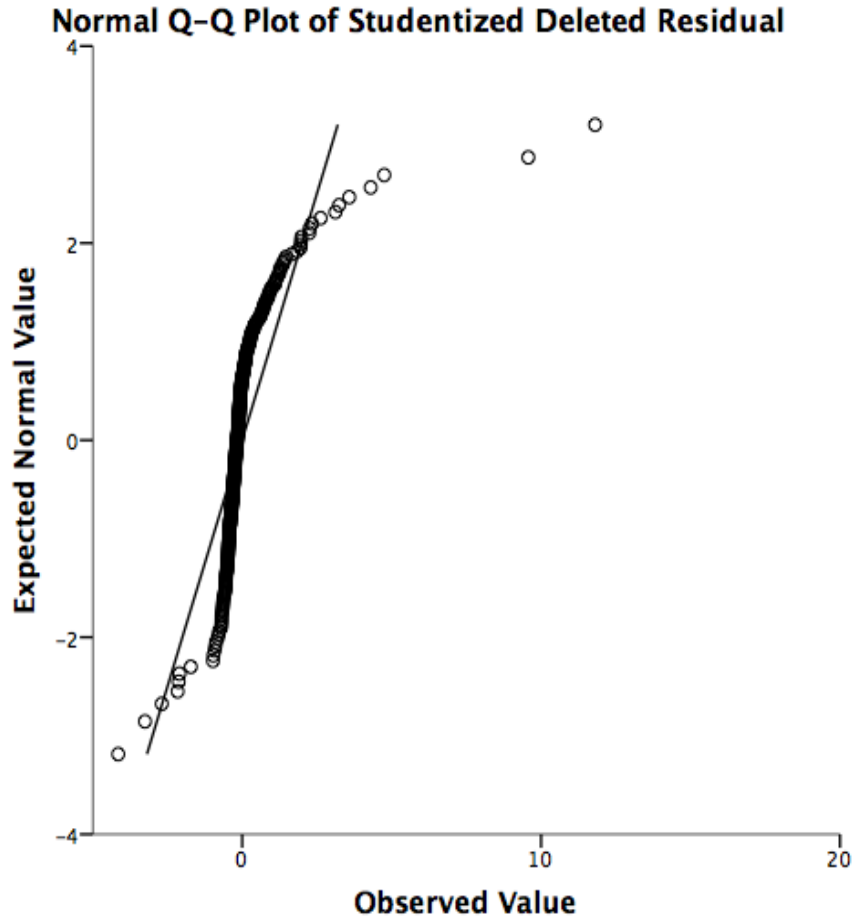
As depicted in Figure 12, the distribution of the residual suggests a violation of the assumption of residual homoscedasticity.

Figure 13. Assumption of residual independence for multiple regression assessing the association between Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Sexual Risk Behavior (DV)



According to Figure 13, the residual does not appear influenced by participant number; therefore, results were not impacted by the time in which participants completed the questionnaire.

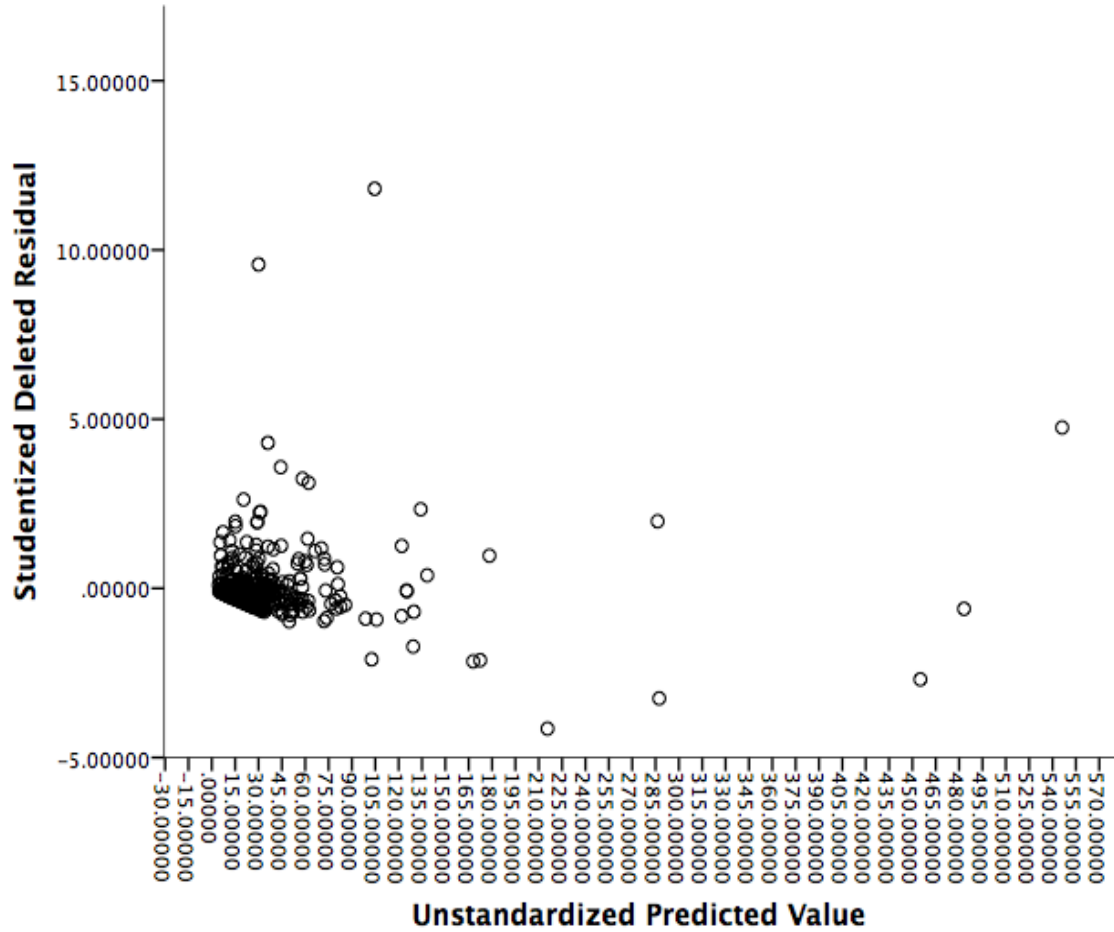
Figure 14. Assumption of residual normality for multiple regression assessing the association between Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Sexual Risk Behavior (DV)



As depicted in Figure 14, the distribution of the residual suggests some deviation from the assumption of normality.



Figure 15. Assumption of residual homoscedasticity for multiple regression assessing the association between Sex (gender), Alcohol or drug use prior to or during sex, ADHD-IA, ADHD-HI (IVs), and Sexual Risk Behavior (DV)



According to Figure 15, the distribution of the residual suggests a violation of the assumption of residual homoscedasticity.

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