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Sex Differences and HIV Risk Behaviors: The Interaction Between the Experience of Multiple Types of Abuse and Self-Restraint on HIV Risk Behaviors

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Abstract

Adolescents with abuse histories have been shown to be at increased risk to acquire Human Immunodeficiency Virus/Sexually Transmitted Infections (HIV/STI). Additionally, teens with lower levels of self-restraint or higher levels of distress, such as those with psychiatric concerns, have also demonstrated increased sexual risk behaviors. This study explored sex differences in sexual risk behaviors among a sample of adolescents in a therapeutic/alternative high school setting. Moderated regression analysis showed that a lower level of self-restraint was associated with sexual risk behaviors in boys but not in girls. Rather, the interaction of self-restraint and multiple types of abuse was associated with greater sex risk within girls in this sample. Results suggest that girls and boys with abuse histories and low levels of self-restraint may have different intervention needs related to sexual risk behaviors.

Keywords

HIV risk; sex differences; abuse; mental health

Research has consistently shown that adolescents with psychiatric concerns report more Sexually Transmitted Infections STIs and are at increased risk for engagement in sexual risk behaviors, such as inconsistent condom use, increased number of sexual partners, increased sexual activity, and drug use (Brown et al., 2010; Brown, Houck, Hadley, & Lescano, 2005).

Adolescents with poor psychological functioning may suffer from greater emotional distress, lower levels of self-esteem and self-restraint. This type of psychological functioning has been linked with an increase in depression, anxiety, and anger. Studies have shown that youth exhibiting these psychological symptoms are at greater risk for sexual risk behaviors including engaging in sex at a younger age, having multiple partners, having risky partners, and engaging in more unprotected sex (Boden & Horwood, 2006; Ethier et al., 2006).

In addition to emotional distress, measures of self-restraint have also been associated with risky sexual behavior. Wagner, Brown, and Benman (1995) examined the effect of self-restraint on sex risk behaviors in a sample of 123 fifth grade students. It was hypothesized that distress would negatively affect adolescents' ability to retain health information about the Human Immunodeficiency Virus (HIV) and increase risk-behavior, whereas restraint would positively affect both (Wagner, Brown, & Benman, 1995). The study's results indicated that youth with high distress and low self-restraint scored significantly higher on a high-risk behavior scale than those with low distress and high restraint (risk scale was not specific to HIV and included items such as "I keep myself safe at all times"). It was also found that those with low self-restraint had significantly worse safe behavior attitudes than those with high self-restraint.

According to Weinberger and Schwartz (1990), the construct of self-restraint includes impulse control, suppression of aggression, consideration towards others and responsibility (Weinberger & Schwartz, 1990). Studies have found that teens scoring higher on measures of impulsivity are less likely to use condoms consistently (Bornoalova, Gwadz, Kahler, Aklin, & Lejuez, 2008; Trobst, Herbst, Masters, & Costa, 2002). Impulsive behavior has also been linked to a greater number of partners, more high-risk encounters, and greater overall sexual risk-taking in a review of personality and sexual risk-taking (Hoyle, Fejfar, & Miller, 2000).

Abuse

In addition to the well-established link between psychiatric problems and STI/HIV risk in adolescent populations, the relationship between childhood abuse and sexual risk behaviors has received increasing attention. Childhood abuse has been associated with greater sexual risk behaviors, including earlier age of first sex act, increased number of partners, more unprotected sex, higher reports of STIs, greater likelihood of using drugs or alcohol at last sex and increased engagement in sex trading subsequent to abuse (Arata, Langhinrichsen-Rohling, Bowers, & O'Brien, 2007; Bornoalova et al., 2008; Senn, Carey, & Venable, 2008). Research related to specific types of abuse (e.g., sexual abuse) also supports a connection between abuse and sexual risk behaviors. Studies of sexually abused (Brown, Lourie, Zlotnick, & Cohen, 2000) and emotionally abused (Jones et al., 2010; Zurbriggen, Gobin, & Freyd, 2010) teens have found similar sexual risk behaviors (e.g., early sexual debut, higher rates of STIs, increased number of partners and lower levels of condom use).

The impact of specific types of childhood abuse is well documented. However, research suggests that victims of childhood abuse often experienced more than one type of abuse. In fact, studies have shown that reports of single types of maltreatment are rare, and sexual

abuse, physical abuse, and emotional abuse are often correlated (Arata et al., 2007; Bornovalova et al., 2008; Jones et al., 2010; Senn et al., 2008). For example, out of a sample of 1,452 adolescents participating in a study on maltreatment among urban youth, less than one-third reported only one type of maltreatment (Arata et al., 2007). Therefore, understanding the effects of childhood sexual abuse, physical abuse and emotional abuse is important in trying to better understand the relationship between abuse and sex risk.

Sex Differences in the Experience of Abuse

Studies have also begun to explore sex differences in the effect of childhood abuse on sexual risk in adolescence. Research has consistently shown that females tend to report more instances of childhood sexual and emotional abuse than males, whereas males report more cases of childhood physical abuse than females (Jones et al., 2010; Tubman, Oshri, Taylor, & Morris, 2011; Zurbriggen et al., 2010). In one adolescent study, externalizing symptoms, such as risky sexual behaviors and substance use, were associated with sexual abuse in females but with physical abuse in males; negative affect symptoms, such as depression, were also associated with sexual abuse in females but not in males (Arata et al., 2007). Additional studies have found sex differences in risky sexual behavior based on varying forms of abuse such as exposure to violence (Voisin, 2005) and history of sexual molestation and sexual abuse (Ahrens, Katon, McCarty, Richardson, & Courtney, 2012; Senn, Carey, Venable, Coury-Doniger, & Urban, 2007). Yet, findings concerning sex differences in sexual risk behaviors among abused youth are often mixed (Senn et al., 2008). Furthermore, few studies explore moderators of child abuse on sexual risk by sex, such as distress and self-restraint. Due to the discrepancy in the literature, further research on the effects of sex on the relationship between childhood abuse and sexual risk behavior is needed.

Abuse, Psychological Adjustment and Sexual Risk Behaviors

Previous literature has examined the effect of childhood abuse and psychological adjustment on STI/HIV risk behaviors independently, but few studies have explored the interaction of these two variables on sexual risk. Character traits such as risk-taking and sensation seeking have been shown to mediate the relationship between childhood abuse and STI/HIV risk related behavior (Bornovalova et al., 2008). However, there has been limited research exploring the mediating effects of childhood abuse and psychological adjustment, including distress and restraint, on STI/HIV risk behaviors in adolescent populations. Even though there is some evidence that the effects of abuse is different for girls and boys, little literature has explored the intersection of psychological factors, abuse and STI/HIV risk by sex. This study aims to explore this interaction with a sample of high-risk adolescents.

Therapeutic/Alternative School Adolescents

One population at particular risk for HIV/STI risk-related behavior is adolescents in an alternative school setting. Therapeutic/alternative schools provide a specialized education for students who cannot succeed in a traditional school environment. Adolescents placed in these settings have increased rates of behavioral concerns and psychiatric diagnosis that put them at risk for physical violence, drug use, trauma exposure and psychiatric disorders

(Grunbaum et al., 2000; Grunbaum, Lowry, & Kann, 2001; Houck, Nugent, Lescano, Peters, & Brown, 2010). Additionally, they have increased rates of childhood abuse. Whereas national averages estimate that 9.1% of children experience some form of maltreatment (Department of Health and Human Services, 2012), research on adolescents in therapeutic/alternative schools report childhood sexual abuse rates between 23% and 27% (Buzi et al., 2003; Houck et al., 2010). Furthermore, students in these schools engage in significantly higher rates of sexual intercourse, substance use during sexual intercourse, pregnancy, and low rates of condom use than their peers who are not in an alternative educational setting (Grunbaum et al., 2000; Grunbaum et al., 2001). These adolescents represent a unique and at-risk subset of teenagers in which the intersections of childhood abuse, psychological factors, such as restraint and distress, and STI/HIV risk can be studied.

This study explores sex differences in the mediating effect of multiple types of childhood abuse and psychological factors (self-restraint and distress) on STI/HIV risk in a sample of adolescent in a therapeutic/alternative school setting. It was hypothesized that an increased number of types of abuse mediated by psychological adjustment would affect girls' and boys' sexual risk behaviors in different ways. Based on the higher rates of sexual abuse reported by girls and previous literature related to sexual abuse, experience of psychological distress, and HIV/STI risk behavior, it was hypothesized that the intersection of abuse and distress in girls would have a greater association with HIV/STI risk. Conversely, it was hypothesized that the interaction between abuse and self-restraint would be significant for boys within this mental health sample.

Method

Participants

Data were collected as part of the baseline assessment of an HIV prevention program (Brown, et al., 2011). Participants were recruited from 16 therapeutic/alternative schools serving adolescents with identified mental health concerns. Schools participating in this study were located in urban and rural areas throughout the small New England state. Participants were placed in these alternative school settings due to poor performance in traditional academic environments and came from a various demographic backgrounds. Additionally, participants were identified as having mental health concerns, including a variety of internalizing and externalizing disorders, which required a specialized educational program. Participants included in this study represent a variety of youth who had difficulty succeeding in more traditional academic environments and, subsequently, may be at risk for additional health and mental health concerns.

All study procedures were approved by the hospital institutional review board. Informed consent was obtained from all participants 18 years and older or from minors' parents/guardians. Assent was obtained from youth under the age of 18. Participants in this study aged 12 to 19 years and attended one of the 16 therapeutic/alternative schools selected for this study. Each school was selected for the study based on its status as a therapeutic/alternative school that enrolled adolescents in the state and a willingness to participate in the trial for a consecutive two-year period. All students enrolled at the therapeutic/alternative schools were eligible to participate in the study with the following exclusions: youth with

developmental delays that might affect comprehension of intervention principles; students who were HIV positive by self-report, as teens were going to take part in an HIV prevention program; teens who had a history of sexual aggression; or teens who were pregnant at the time of consent/assent, as these factors might have effect sexual behavior during the study.

Schools identified adolescents who were eligible for study participation and requested permission from parent/guardian's to release contact information to study staff. With permission, parent/guardians were contacted to participate in the informed consent process. Adolescents were then provided with study details and asked to provide assent. They were compensated \$20 for their time spent completing research measures.

Of the 289 adolescents identified by staff as potential participants, 203 (70%) were reached and consented to participate in the study. Of those who agreed to participate, 184 completed the baseline assessment (16 no longer attended the school when baseline was gathered and 3 later refused participation). Assessment measures were completed on laptop computers using audio computer-assisted self-interviews (ACASI) to ensure privacy. Of these, 167 (91%) had completed measures relevant to the present analyses (8 due to incomplete Childhood Trauma Questionnaire; 7 due to incomplete Weinberger Adjustment Inventory (WAI); 3 due to incomplete measure of Sexual Risk).

Research assistants (RAs) were trained in the administration of the ACASI through experiential training with senior members of the research team. During these trainings, RAs were instructed in the use of the ACASI and practiced administration. Additionally, the ACASI contained "flags" that were triggered by participant responses to questions related to safety (e.g., suicidal thoughts, history of abuse). If a participant "flagged" on any of the safety items, RAs were provided with a script that was asked of participants to get further information. RAs would then call licensed clinical staff to consult about the situation. Clinical staff was available to go to school and assist RAs as needed and ensured that the safety of the participant was maintained. RAs were trained to use these scripts in practice sessions with the senior research staff and provided with feedback. Furthermore, new RAs would be supervised by more senior RAs in the field. Additionally, the research staff were trained to respond to any distress that might have resulted in answering the computer-based questions and encouraged to call the on-call clinician should they need any addition support in collecting the research measures.

The sample was 59% female ($n = 100$) with an average age of 15.3 ($SD = 1.3$). Reflecting the communities in which these schools were located (US Census Bureau, 2010), most participants identified as White 52%, $n = 88$; followed by Black/African American 16%, $n = 26$; American Indian/ Alaskan Native 3%, $n = 4$; Native Hawaiian/ Pacific Islander 3%, $n = 4$; Asian 1%, $n = 2$; Multiracial 13%, $n = 23$; and No Response 12%, $n = 20$. Twenty-eight percent identified as being of Hispanic/ Latino descent.

Measures

Childhood trauma questionnaire—This widely used 28-item retrospective self-report of trauma includes subscales for sexual abuse, emotional abuse, physical abuse, emotional neglect, and physical neglect (Bernstein & Fink, 1998). It includes items such as "When I

was a child... people in my family called me stupid, lazy, or ugly” and “...people in my family hit me so hard that it left bruises” (Bernstein & Fink, 1998). Prior research supports the use of this measure as a reliable and valid assessment of childhood traumatic experience. Internal consistency of the subscales is as follows: Sexual Abuse ($\alpha = .93$), Emotional Abuse ($\alpha = .87$), Physical Abuse ($\alpha = .92$), Emotional Neglect ($\alpha = .85$), and Physical Neglect ($\alpha = .79$). Items produce a range of scores, on each of the subscales that have been normed and categorized into No Abuse, Mild Abuse, Moderate Abuse and Severe Abuse, range 0–3 (Bernstein & Fink, 1998). For this study, scores on the sexual abuse, emotional abuse and the physical abuse scales were dichotomized into two categories (abuse and no-abuse). These scores were then summed to create the multiple types of abuse (MTA) variable, range 0–3. A score of 0 indicates that the adolescent reported no experience of abuse and a score of 3 indicates that the participant reported experiencing emotional, physical and sexual abuse.

Weinberger adjustment inventory—The WAI is a 29-item measure self-report measure of self-restraint and emotional distress for older children, adolescents and adults (Weinberger & Schwartz, 1990). The WAI includes the scales Distress and Self-Restraint, which are comprised of additional subscales. The distress scale contains the Anxiety, Depression, Low Self-Esteem, and Low Well-Being subscales and the Self-Restraint scale contains the Impulse Control, Suppression of Aggression, Responsibility and Consideration of Others subscales. Literature supports using either the larger scales (e.g., Distress/Self-Restraint) or the subscales for analysis (Farrell & Sullivan, 2000; Wagner et al., 1995). This study used the larger scales as continuous variables and removed the Consideration of Other Scale from the Self-Restraint variable, which has been suggested when this scale is used in samples of adolescents with problem behaviors (Farrell & Sullivan, 2000). The WAI has been used in studies that explore HIV/STI risk behaviors (Brown et al., 2010) in samples of at-risk adolescents. Internal consistency of these scales was acceptable in this study: Distress ($\alpha = .83$) and Self-Restraint ($\alpha = .71$).

Sexual behaviors—Respondents were asked to report on sexual behaviors including ever being sexually active (defined as having had vaginal or anal intercourse). Participants also responded to questions about sexual experiences with opposite sex and same sex partners. Oral sex was not included due to the limited number of respondents endorsing exclusively oral sex behaviors. Participants indicating penetrative sexual activity were subsequently asked if they had vaginal or anal sex during the 90 days preceding assessment. Those endorsing recent sexual activity also provided number of partners during the past 90 days, number of times having vaginal or anal sex with each partner during the past 90 days, and the number of protected and unprotected sex acts (e.g., condom use). Count of unprotected sex acts tends to be highly skewed at both ends of the distribution (Schroder, Carey, & Venable, 2003). To account for this distribution, and to include those participants who were not sexually active or had sex infrequently, a composite index of sexual risk (Sexual Risk Index) was created with participants reporting: (0) no lifetime history of sex, (1) prior experience with sex but no sex during past 90 days, (2) 100% condom use during sex over past 90 days, (3) inconsistent condom use during sex over past 90 days, and (4) no condom use during sex over past 90 days (Brown, et al, 2011).

Data Analysis

Descriptive and intercorrelations—Descriptive statistics were computed on all study variables. Additionally, *t*-test and chi-square analyses were computed. MTA was also computed prior to moderated regression analysis.

Moderated regression analysis—The analysis for the current study involved moderated multiple regression models to explore the factors association with sexual risk behavior (Aiken, West, Luhmann, Baraldi, & Coxe, 2012). In the two models, age and race/ethnicity were entered as control variables. In the first analysis, MTA, WAI score on Self-Restraint and the interaction of these two variables were entered as factors. For the second analysis, MTA, WAI score on Distress and the interaction of the two were entered. Both models were tested by sex. Each effect was tested while controlling for effects of equal or lower order.

Results

Descriptives

Table 1 presents descriptive statistics at baseline for the total sample and for males and females including a breakdown of abuse type reported and sexual risk behavior. Age was normally distributed through this sample and most participants ($n = 161$) were aged 13 to 17 years. There were no between-group differences in age, race, WAI scores or self-reported risky sexual behavior. Approximately 60% of the sample reported engaging in any past sexual behavior and 34% reported sexual behavior during the past 90 days. There were no differences between boys and girls in rates of lifetime sexual behavior; however, there was a trend for girls to report increased rates of sexual behavior during the past 90 days [χ^2 (166, $N = 167$) = 4.07, $p = .07$].

Additionally, the sample reported an average of 9.7 risky sexual behaviors (i.e., no condom use) during their lifetime, and no significant differences were found between sexes. Of those reporting sexual behavior during the past 90 days, approximately 1% endorsed sexual behavior with a same sex partner ($n = 20$). No differences in the report of abuse, self-restraint or distress were found between those youth reporting sexual behaviors with same sex partners and those who did not. Sixty-nine percent of the total sample reported experiencing any type of abuse. While there were significant sex differences between youth reporting no abuse [χ^2 (166, $N=167$) = 5.22, (166, $N = 167$, $p = .02$)] and experience of sexual abuse [χ^2 (166, $N = 167$) = 6.35, $p = .02$], no significant differences were found in amount of reported abuse between males and females on the MTA variable ($M = 1.19$, $SD = 1.05$).

Intercorrelations among study variables are presented in Table 2. MTA scores were significantly correlated with sex ($r = .19$, $p = .04$), WAI Distress ($r = .28$, $p < .01$), WAI Self-Restraint ($r = -.21$, $p < .01$) and Sexual Risk Score ($r = .28$, $p < .01$). Additionally, age was significantly correlated with sexual risk ($r = .27$, $p < .01$) and was entered in the regression analyses to control for the association between older age and increased sexual risk behavior. While race/ethnicity was not found to be associated with study variables, it

was included in the regression model as this variable has been shown to be associated with HIV risk in other studies.

Moderated Regression Analyses

To determine whether or not there were differential effects of MTA by self-restraint or emotional distress on sexual risk behavior, we conducted a hierarchic linear regression analysis with the whole sample and then tested the model for each sex. Main effects of WAI Scores and MTA scores were first entered followed by the respective interaction terms.

In the first model, in addition to main effects, we explored the interaction between WAI scores on Self-Restraint and MTA scores. Results are presented in Table 3. With the entire sample, main effects of age ($t = 1.78, p < .01$) and MTA ($t = 2.53, p = .01$) were found, but no significant interaction was seen between MTA and self-restraint. When split by sex, males continued to have significant main effects for age ($t = 4.47, p < .01$). Boys also had a significant main effect for self-restraint ($t = -3.13, p = .01$) indicating that lower levels of self-restraint were associated with higher levels of sexual risk behaviors. However, no effect was found for MTA or for the interaction between MTA and self-restraint. For girls, a main effect was found for MTA ($t = 2.29, p = .02$) indicating that those girls experiencing more types of abuse were more likely to engage in sexual risk behaviors. Additionally, the interaction between MTA and self-restraint was also significant ($t = -2.49, p = .01$) showing that girls with more types of abuse and lower levels of restraint are at increased risk for sexual risk behaviors. This interaction is shown in Table 4.

As WAI Distress scores were also significantly correlated with study variables, a second model was run. With the total sample, this model found significant main effects for age ($t = 1.49, p < .01$), and when the file was split by sex this main effect continued to be significant for boys ($t = 3.77, p < .01$) but not for girls. No other significant main or interaction effects were found in this model within the total sample or sex specific models.

Discussion

This is one of the first studies to explore the impact of MTA, moderated by self-restraint and distress, on sexual risk behaviors of adolescents. While studies have consistently shown that sexual abuse is linked with increased HIV/STI risk behaviors (Brown et al., 2010; Houck et al., 2010; Raj, Silverman, & Amaro, 2000), few have explored the effect of MTA (e.g., sexual, emotional and physical abuse) and the differential effects of this abuse based on sex. Thus, the findings of the current study contribute to the existing literature by suggesting that in samples of youth with identified mental health needs, an increase in MTA is associated with increased sexual risk behaviors. Furthermore, this study finds that within this population, important sex differences exist in the interaction between self-restraint and MTA related to sexual risk; this could direct future HIV/STI prevention interventions within this at-risk population.

Approximately 70% of the total sample of adolescents reported experiencing some history of lifetime abuse. While this rate is substantially higher than rates of abuse reported within general samples of adolescents (Department of Health and Human Services, 2012), this

finding among a sample of youth with identified mental health needs was not unexpected. Previous research has found strong associations between lifetime history of abuse and poor outcomes related to psychological functioning (Brown, Cohen, Johnson, & Smailes, 1999; Calam, Horne, Glasgow, & Cox, 1998); our study's findings corroborate this by further highlighting the high rates of abuse within this population. Findings related to MTA, 35% reported more than one type of abuse, support the notion that often children and adolescents are victims of more than one type of abuse (Arata et al., 2007; Bornovalova et al., 2008; Jones et al., 2010; Senn et al., 2008).

Within the whole sample, even when controlling for age (which was strongly correlated with sexual behavior), MTA was associated with increased sexual behavior. These findings are consistent with prior studies that show that those youth with reported history of childhood abuse are more likely to engage in sexual risk behaviors (James, Ellis, Schlomer, & Garber, 2012; Lescano, Brown, Puster, & Miller, 2004; Sales et al., 2011). It is noteworthy that much of the research between abuse and sexual risk focuses on lifetime experience of sexual abuse; thus, this study's findings related to MTA as an additional risk factor for sexual risk behavior for youth in this sample suggests that MTA may be an important factor to consider when conceptualizing the full impact of abuse on risk behaviors.

Sex differences were observed in this study with MTA and its interaction with self-restraint demonstrating differing effects on the sexual risk behaviors of girls and boys. Girls who reported lower levels of self-restraint and experience of higher levels of abuse appear to be at greater risk compared to those with high-restraint and less abuse of engaging in sexual risk behaviors, which place them at greater risk for STI/HIV acquisition. Conversely, boys with lower levels of self-restraint were also at risk for sexual risk behaviors, with a trend for more types of abuse to riskier sexual behaviors. However, the interaction between MTA and restraint was not significant for boys, which suggests that MTA may impact boys differently than girls, and that pathways to sexual risk behavior may differ by sex among abused youth.

Abuse history may impact girl's behaviors, thoughts and feelings in different ways than their male counterparts (Finkelhor, Hotelling, Lewis, & Smith, 1990; Tolin & Foa, 2008). For girls, abuse has been associated with a variety of negative outcomes including: externalizing behaviors (e.g., running away, promiscuous sexual behaviors; Goodkind, Ng, & Sarri, 2006; Zahn et al., 2010), increased psychological distress (e.g., level of anger, anxiety and depression), and low self-esteem (Finkelhor & Browne, 1985; Grayson, 1992; Rhodes, Ebert, & Meyers, 1993). For boys, significant substance use, aggressive criminal behaviors and sexual risk taking (Chandy, Blum, & Resnick, 1996; Garnefski & Arends, 1998) are associated with a history of abuse. Thus, relative to boys, there may be something distinct about girls' behavioral symptom expression of having an abuse history paired with lower levels of self-restraint that increases their risk for engagement in risky sexual behavior.

Girls may also have a different experience of abuse than boys which could impact their behavioral and psychiatric presentation. In contrast to boys, girls are more likely to be the victims of more severe acts of sexual abuse, chronically victimized and victimized at an earlier age (Ullman & Filipas, 2005). These factors are also associated with more poor psychiatric outcomes (Browne & Finkelhor, 1986), and may lead to lower levels of self-

restraint. Due to the nature of our study, data on the frequency and severity of abuse and age of onset were not available. However, these factors would be important to consider in future studies aimed at understanding the impact of MTA on sexual risk behaviors.

The finding of sex differences is of great interest as it suggests that girls and boys may have differing experiences of MTA, which, when influenced by their self-reported levels of self-restraint, may contribute to sexual risk behaviors. It is possible that experiencing multiple types of abuse affects boys and girls differently and when paired with low self-restraint, creates different risk factors for risky sexual behavior. This finding could impact the structure and focus of future STI/HIV prevention interventions for mental health populations. For example, even in highly abused populations of boys, interventions focused on increasing self-restraint and affect regulation, including elements of affect management from Cognitive Behavioral Therapy (CBT) and Dialectical Behavior Therapy (DBT), may be effective in reducing sexual risk behavior. This is consistent with findings for HIV prevention interventions for this population (Brown et al., 2010; Brown, et al., 2011). However, when developing STI/HIV prevention for girls with MTA, the experience of abuse and subsequent symptoms may need to be included in interventions in addition to developing skills related to self-restraint and affect regulation. While future research is needed in this area, it is possible that working from a trauma-informed approach may provide girls within this population additional support. This type of intervention would acknowledge and address the impact of trauma on multiple aspects of the self which impact risk behaviors including self-esteem, interpersonal relationships and communication skills. By approaching interventions differently for boys and girls with abuse histories or increased likelihood of abuse, different pathways to sexual risk behaviors may be better addressed via sex-specific interventions.

Previous literature has suggested that impulsive adolescents are at greater risk for engaging in risky behaviors including sexual risk (Deckman & DeWall, 2011; Pack, Crosby, & St. Lawrence, 2001); thus, it is interesting that self-restraint doesn't directly appear to heighten sexual risk within this mental health sample. This finding may largely be due to the limited variability in the report of self-restraint found within a sample of youth with identified mental health concerns. Adolescents with mental health concerns have higher levels of impulsivity and higher levels of sexual risk (Brown et al., 2010). As such, there may not have been the variability within this sample to detect differences.

Whereas the findings related to self-restraint and abuse were consistent with our expectations, the findings related to the model exploring the interaction of distress and multiple types of abuse were surprising. It had been hypothesized based on previous literature (Finkelhor, Hotaling, Lewis, & Smith, 1990; Goodkind, Ng, & Sarri, 2006; Tolin & Foa, 2008; Zahn et al., 2010) in this area that girls with higher levels of abuse and higher levels of distress would be at greater risk for engaging in HIV/STI risk behaviors. However, this was unsupported in this study. Rather, in this sample, adolescents' experience of distress appears to be unrelated to their sexual risk behavior regardless of sex. While unsupported in this study, this null finding could be due to a number of factors. First, the WAI distress scale is a cumulative scale that includes anxiety and depression. While shown to be a valid and reliable measure of distress in adolescents, it is possible that by combining these factors we

were not able to detect any impact of specific internalizing problems (e.g., depression) on sexual risk behaviors. Additionally, this mental health sample might not have the variability in distress needed to detect any between-group differences.

Limitations

This study has some limitations that should be considered. This is a sample of high-risk adolescents in a therapeutic/alternative school setting and results may not generalize to youth in traditional school settings. Additionally, these youth have high rates of self-reported abuse. While this makes them an ideal sample for exploring the impact of the constructs self-restraint and distress, which are often associated with mental health samples, abuse and sexual risk, it also may reduce the generalizability of these findings. Furthermore, teens were asked to self-report their traumatic experiences, sexual risk behaviors, levels of distress and self-restraint. Use of self-report data from a single source limits this study's findings, and future studies may wish to include collateral information. As this study's findings highlight sex differences in sexual risk behaviors related to MTA, future studies may also wish to explore the impact of MTA on sex roles in relationships related to condom use intentions and condom use self-efficacy for boys and girls. Future studies may also explore youth perceptions about the associations between self-restraint, MTA, and sexual risk behaviors. Furthermore, qualitative studies would add depth to the knowledge in this area.

Moreover, there are a few demographic limitations of this study. Data related to participants' socioeconomic status were not collected. While this decision was made due the inconsistency of adolescent report of this information (Ensminger et al., 2000), other studies suggest that HIV risk varies by SES (CDC, 2011; Kruger, Leigh, Wood, Diehr and Maxwell, 1990). Thus, future studies may focus on the impact of this factor. Additionally, while we did not find any associations between race/ethnicity, MTA and HIV risk behaviors, future studies may explore the impact of race/ethnicity of HIV risk within this population of at-risk youth. Finally, this study focused on adolescent report of sexual behavior with all sexual partners; however, it did not explore the associates between MTA, self-restraint and behavior moderated by factors such as sexual orientation. In part, this was due to not having enough power to conduct these analyses (only 1% of the sample reported sexual behavior with same sex partners). However, future studies may explore between group differences as it is possible that associations between MTA, self-restraint, and sexual risk behaviors differ. Despite these limits, this study suggests that MTA and self-restraint may be differentially associated by sex with HIV/STI risk behaviors. Sex-specific intervention targeting these specific pathways may yield greater reductions in HIV/STI risk behaviors in this highly at-risk group of adolescents.

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Table 1

Descriptive Statistics at Baseline

	Total (<i>n</i> =167) <i>M</i> (<i>SD</i>) or (%)	Male (<i>n</i> =67) <i>M</i> (<i>SD</i>) or (%)	Female (<i>n</i> =100) <i>M</i> (<i>SD</i>) or (%)	<i>t</i> or χ^2	<i>p</i>
Demographics					
Age	15.27 (1.27)	15.36 (1.32)	15.21 (1.23)	.74	.46
Race (Caucasian)	88 (59%)	40 (69%)	48 (54%)	3.30	.07
Abuse					
Any Emotional	89 (54%)	31 (47%)	58 (57%)	2.15	.14
Any Physical	59 (36%)	18 (27%)	41 (41%)	3.63	.06
Any Sexual	51 (32%)	14 (21%)	37 (40%)	6.35	.02*
Multiple Types Abuse					
None reported	52 (31%)	27 (41%)	25 (25%)	5.22	.02*
1 type reported	56 (34%)	22 (33%)	34 (34%)	.02	.87
2 types reported	31 (19%)	10 (15%)	21 (21%)	.98	.32
3 types reported	27 (16%)	7 (11%)	20 (20%)	2.70	.11
MTA Variable	1.19 (1.05)	.95 (.99)	1.36 (1.06)	6.10	.10
WAI Scores					
Distress	32.32 (9.80)	30.78 (10.01)	33.34 (9.57)	-1.66	.10
Self-Restraint	39.19 (7.80)	38.42 (7.64)	39.71 (7.90)	-1.05	.29
Sexual Risk Behavior					
Risky Sex at Baseline	1.14 (1.36)	.94 (1.22)	1.28 (1.43)	-1.58	.11

Note.

*
p .05.

Table 2

Intercorrelations Among Study Variables

Variable	1	2	3	4	5	6
1. Sex						
2. Age	-.06					
3. Race/Ethnicity	.15	.07				
4. WAI Distress	.13	.06	-.02			
5. WAI Self-Restraint	.08	.07	.12	-.31**		
6. MTA Score	.19*	-.02	.02	.28**	-.21**	
7. Sexual Risk Score	.12	.27**	-.06	.06	-.33**	.28**

Note.

*
p .05.**
p .01.

Table 3

Factors Associated with Sexual Risk Behavior by Self-Restraint (N = 133)

Group	β^a	S.E.	<i>t</i>	Sig.
<u>Total Sample Demographics</u>				
Sex	.13 (.37)	.21	1.78	.07
Age	.32 (.34)	.08	4.24	.00*
Race	-.04 (-.10)	.20	-.48	.63
Self-Restraint and Abuse				
WAI Self-Restraint	-.17 (-.02)	.02	-1.58	.12
Multiple Types Abuse	.20 (.25)	.10	2.53	.01*
Self-Restraint * MTA	-.20 (-.02)	.01	-1.82	.07
<u>Males' Demographics</u>				
Age	.48 (.44)	.10	4.47	.00*
Race	.04 (.11)	.27	.38	.70
Self-Restraint and Abuse				
WAI Self-Restraint	-.46 (-.08)	.24	-3.13	.01*
Multiple Types Abuse	.21 (.24)	.14	1.77	.08
Self-Restraint * MTA	.06 (-.01)	.02	.35	.73
<u>Females' Demographics</u>				
Age	.19 (.23)	.12	1.86	.06
Race	-.06 (-.16)	.29	-.55	.59
Self-Restraint and Abuse				
WAI Self-Restraint	-.06 (-.01)	.03	.36	.72
Multiple Types Abuse	.24 (.31)	.14	2.29	.02*
Self-Restraint * MTA	-.38 (-.04)	.02	-2.49	.01*

Note.

^a bolded β reflects unstandardized β coefficient*
p .05.