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Risk and Protective Factors for Substance Use Among Youth Experiencing Homelessness

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Abstract

Background: Though research finds that youth experiencing homelessness (YEH) have high rates of substance use, which can lead to numerous long-term negative health effects, less is known about both risk and protective factors for substance use. Moreover, even less is known about whether these factors differ for lesbian, gay and bisexual (LGB) youth compared to non-LGB youth. In the current study, we compared risk and protective factors for binge drinking, marijuana use, and illicit drug use (i.e. substance use) among heterosexual and sexual minority YEH.

Methods: The sample included 322 young people experiencing homelessness in the Midwestern United States and who were between 16 and 26 years of age. Almost one-half of our sample were female (N = 146; 45%) and 68 youth (21%) identified as LGB.

Results: Youth who experienced more child physical abuse, ran away from home more frequently, and those who had a parent(s) with drug problems were more likely to have reported binge drinking in the past 30 days. Additionally, having parents with drug problems was associated with the use of marijuana and illicit drugs. Conversely, having higher parental monitoring while growing up reduced the likelihood of using marijuana and illicit drugs. Tests for interactions revealed that while self-efficacy had no relationship with the probability of binge drinking for heterosexual youth, as self-efficacy increased, the probability of binge drinking declined drastically for sexual minority youth suggesting this protective mechanism operates differently for these two groups of youth. Additionally, tests of interactions showed that the probability of binge drinking among heterosexual and sexual minority youth also varied by child sexual abuse and street sexual victimization.

Conclusion: Study results have implications for service providers who serve YEH.

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Keywords

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National U.S. estimates find that 700,000 youth (ages 13–17) and 3.5 million young adults (ages 18–24) experience some form of homelessness each year (Morton, Dworsky, & Samuels, 2017). Of the many significant problems these young people face, perhaps the most detrimental to their long-term health and survival is risky substance use. Research in the U.S. find that lifetime alcohol and drug prevalence among youth experiencing homelessness (YEH) in general is high: 89% report lifetime alcohol use, 77% marijuana use, and 48% report lifetime methamphetamine use (Bousman et al., 2005; Hadland et al., 2011) with others studies on this same population finding rates of 69% and higher, 58%, and 34%, respectively (Rice, Milburn, & Monro, 2011; Tyler & Schmitz, 2018b). Past 30-day usage rates for alcohol and marijuana are 68% and 66%, respectively (Wenzel, Tucker, Golinelli, Green, & Zhou, 2010). Moreover, drug and alcohol use are 2 to 3 times more prevalent among YEH compared to housed youth (Gomez, Thompson, & Barczyk, 2010). Though these rates are high, a review of the general population literature reveals that LGB youth have higher rates of substance use compared to non-LGB youth (Coker, Austin, & Schuster, 2010).

In terms of their family background, many YEH have experienced child sexual and/or physical abuse prior to running away or leaving home (Bender, Brown, Thompson, Ferguson, & Langenderfer, 2015) and also report having parents with drug use problems (Tyler & Melander, 2015). Early exposure to trauma may continue to impact these youth after they leave home (Tyler, Schmitz, & Ray, 2018b) as victims of child sexual abuse often experience heightened loneliness, anxiety, and depression (Turner, Finkelhor, & Ormrod, 2010), making them vulnerable to sexual and/or physical re-victimization on the street (Auerswald & Eyre, 2002). Moreover, youth who experience more street physical victimization also report higher rates of substance use (Tyler & Schmitz, 2018b). Additionally, as many as one fifth of YEH have traded sex for money, food, drugs, or shelter (Tyler & Beal, 2010; Tyler, Gervais, & Davidson, 2013; Walls & Bell, 2011), and trading sex has been linked to alcohol and marijuana use (Tyler, Gervais, & Davidson, 2013). To cope with negative feelings and the realities of street life (e.g. lack of support, having to find food and shelter), some youth may turn to alcohol and drugs to manage their stress (Kidd & Carroll, 2007; Tyler & Melander, 2015) or utilize substances when they lack access to mental health supports (Narendorf, Cross, Santa Maria, Swank, & Bordnick, 2017). This highlights a significant public health concern, as alcohol and drug use can lead to adverse mental health consequences (Kidd & Carroll, 2007), substance abuse (Thompson, Bender, Ferguson, & Kim, 2015), and long-term homelessness (Auerswald & Eyre, 2002).

Conversely, some youth may have protective qualities (e.g. high self-efficacy) that help them cope effectively with the trauma of street life. To date, however, there is a paucity of research on the role of protective factors among homeless youth and more specifically among lesbian, gay, and bisexual (LGB) youth compared with heterosexual youth. To

address this literature gap, the current paper compares risk and protective factors for binge drinking, marijuana use, and illicit drug use among heterosexual and LGB YEH.

Primary Risk Factors

Numerous YEH are exposed to early or *primary risk factors* prior to leaving home including child abuse and/or parental substance misuse (Bender et al., 2015; Tyler & Melander, 2015). Over 50% of YEH have experienced child physical abuse prior to running away or leaving home (Bender et al., 2015; Rattelade, Farrell, Aubry, & Klodawsky, 2014) whereas the rate for sexual abuse is between 34% and 47% (Bender et al., 2015; Tyler & Melander, 2015) with prevalence rates highest among LGB youth (Rew, Whittaker, Taylor-Seehafer, & Smith, 2005; Tyler, 2008; Whitbeck, Chen, Hoyt, Tyler, & Johnson, 2004). It is possible that LGB youth experience higher rates of abuse and violence because of their sexual orientation. This may be especially true if their parent or caretaker disapproves of their child's sexuality. Related, research finds that LGB youth are more likely to be kicked out of their home because of their sexual orientation (Cochran, Stewart, Ginzler, & Cauce, 2002). Experiencing more child sexual and physical abuse are both positively correlated with higher substance use (Tyler & Melander, 2015). Moreover, many YEH report that one or both parents had substance use problems while they were growing up (Ginzler Cochran, Domenech-Rodriguez, Cauce, & Whitbeck, 2003), another primary risk factor for youth's own substance use. Related, Tyler and Johnson (2006) found that almost 23% of YEH reported that a family member was the first person to offer and/or encourage the use of alcohol, marijuana, or other drugs and thus responsible for their initiation into substance use. Other studies have shown a positive link between parental drug use and youths' own alcohol, marijuana, and illicit drug use (Tyler & Melander, 2015). Moreover, it has been reported that parental substance misuse may put youth themselves at increased risk for future substance use (Stein, Leslie, & Nyamathi, 2002). There is a paucity of research, however, that has examined how many of these risk factors may differ for LGB and heterosexual YEH.

Primary Protective Factors

Despite these risk factors, there is overwhelming evidence that parental monitoring (i.e. supervision and communication between parents and children), is a strong *primary protective factor* for general population youth that has been found to reduce the risk for internalizing and externalizing problems, respectively (Hamza & Willoughby, 2011; Sharma, Mustanski, Dick, Bolland, & Kertes, 2019). Among YEH, there has been some research on protective factors such as social support (Barman-Adhikari, Bowen, Bender, Brown, & Rice, 2016), support from natural mentors (defined as non-parental adults) (Dang, Conger, Breslau, & Miller, 2014), types of support needs (la Haye et al., 2012), and resiliency and coping (Thompson et al., 2016). Sources and types of social support that youth utilize, however, have been found to vary by gender and sexuality (Barman-Adhikari et al., 2016). Social connectedness such as natural mentoring relationships among YEH is linked to decreased sexual risk behaviors (Dang et al., 2014). Though there is very limited research on protective factors versus risk factors among YEH, even less is known about how protective factors such as parental monitoring may differ among LGB vs. non-LGB youth. Kort-Butler et al., however, have demonstrated the protective influence of high parental monitoring

against risk behaviors among young adults experiencing homelessness (Kort-Butler, Tyler & Melander, 2011).

Secondary Risk Factors

YEH also face numerous proximal or *secondary risk factors* including depressive symptoms, running away more frequently, street victimization, and trading sex. Research has found that running away or being kicked out of one's home (Cochran, Stewart, Ginzler, & Cauce, 2002) street victimization (Tyler & Schmitz, 2018a; Tyler & Beal, 2010), and trading sex (Walls & Bell, 2011) vary among LGB YEH compared to their heterosexual counterparts. Moreover, research finds that depression is associated with elevated substance use (Hadland et al., 2011). In addition, leaving home at an earlier age and spending more time on the street has been shown to be associated with greater substance use (Tyler et al., 2013). Finally, being physically victimized on the street has been linked to greater substance use (Tyler & Schmitz, 2018b), while being sexually victimized on the street is associated with greater marijuana use (Tyler et al., 2013). Though between 9–20% of YEH in general have traded sex (Tyler & Beal, 2010; Walls & Bell, 2011), some studies have found that LGB YEH are more likely to trade sex compared to heterosexual YEH (Tyler, 2008; Walls & Bell, 2011). One reason for this may be because LGB youth often have fewer supports available (Gattis, 2013) and thus may turn to trading sex due to lack of available options. Additionally, LGB youth may believe certain service providers are prejudiced against them, which may lead some LGB youth to avoid services altogether and resort to trading sex for items they deem necessary for survival (Tyler & Schmitz, 2018). Having traded sex has been found to be positively correlated with greater substance use (Tyler et al., 2013).

Secondary Protective Factors

Secondary protective factors, defined as reducing the likelihood of dysfunction and disorder in the presence of stressful life events (Tyler et al., 2018b), have been examined infrequently with this population and even less is known about how these protective factors function for LGB YEH compared to their heterosexual counterparts. The lack of research is further complicated by the fact that some research finds that positive attributes typically protective among general population youth (e.g. self-efficacy) do not operate in the same way among YEH (Barman-Adhikari, Bowen, Bender, Brown, & Rice, 2016). Protective factors, however, are essential to developing youths' ability to overcome trauma and obtain stable housing (Thompson, McManus, Lantry, Windsor, & Flynn, 2006). Therefore, there is a critical need for further study of the role of protective factors in the lives of YEH and specifically LGB youth.

Theoretical Framework and Hypotheses

We use a *life stress framework* (Lin & Ensel, 1989; Pearlin, 1989), incorporating both primary and secondary risk and protective factors that operate at different levels of influence (i.e. individual, family, and the environment). These elements are fundamental to understanding the relationship between primary (e.g. child sexual abuse) and secondary (e.g. street physical victimization) risk factors with substance use (i.e., binge drinking, marijuana

use, and illicit drug use). Additionally, the life stress framework assumes that individuals exposed to one serious stressor will be exposed to additional stressors, which can then cluster together (Pearlin, 1989). Because LGB YEH are exposed to multiple stressors more often than heterosexual YEH such as being victimized more often, trading sex more often, using drugs more frequently, and reporting higher levels of depressive symptoms compared to heterosexual youth (Cochran, Stewart, Ginzler, & Cauce, 2002; Tyler, 2008; Walls & Bell, 2011), LGB youth are likely to have poorer outcomes. Moreover, at the individual level, occupying marginalized social statuses, such as being LGB is likely an additional source of stress for young people due to their socially stigmatized position within society (Kelleher, 2009). Individuals who identify as LGB may experience chronic exposure to stigma in multiple social contexts that subordinates their sexual minority status, which in turn shapes their elevated stress levels (Mink, Lindley, & Weinsten, 2014). Highlighting the detrimental role of experiencing homelessness on LGB youth's health, LGB youth are expected to engage in more substance use compared to their non-LGB peers (Coker et al., 2010). Protective elements, however, including greater parental monitoring and higher self-efficacy may buffer the effect of risks or life stress on substance use for all youth regardless of sexual orientation though this has not been previously been examined comparing LGB and heterosexual YEH.

Based on the prior literature, we hypothesize the following: *Hypothesis #1*: at the bivariate level, LGB youth will have experienced more primary risk factors (i.e. greater child sexual and physical abuse) than heterosexual youth; *Hypothesis #2*: LGB youth will have experienced more secondary risk factors (i.e. depressive symptoms, street victimization and trading sex) than heterosexual youth. At the multivariate level, *Hypothesis #3*: youth who experienced more primary risk factors (i.e., parental drinking and drug use problems, child sexual and physical abuse) will report a greater probability of substance use (i.e. binge drinking, marijuana and illicit drug use) compared to those with fewer primary risk factors; *Hypothesis #4*: youth who experienced greater parental monitoring will have a lower probability of substance use than those with lower parental monitoring; *Hypothesis #5*: youth who experienced more secondary risk factors (i.e. depressive symptoms, running away/leaving home more often, street victimization and trading sex), will report a greater probability of substance use than those with fewer secondary risk factors; and *Hypothesis #6*: youth with higher self-efficacy will have a lower probability of substance use than those with lower self-efficacy. Hypothesis #7: The paths from primary and secondary risk and protective factors to the three outcomes of binge drinking, illicit drug use, and marijuana use are expected to vary by sexual orientation.

Materials and Methods

To have a large enough sample to conduct meaningful analyses of comparisons of LGB and heterosexual youth, we combined two data sets. A data set of 172 YEH, ages 19 to 26, interviewed April 2004 through June 2005 was combined with a data set of 150 YEH, ages 16 to 22, interviewed July 2014 through October 2015. Both samples were gathered in the same two Midwestern cities. To participate in either study youth had to be within the age range and homeless or a runaway on the night prior to screening. *Homeless* includes those who lack *permanent* housing such as spending the previous night in a shelter, public place,

on the street, staying with friends or in a transitional facility, or other places not intended as a domicile (National Center for Homeless Education, 2017). *Runaway* refers to youth under age 18 who have spent the previous night away from home without parental permission (Ennett, Bailey, & Federman, 1999).

Experienced and trained interviewers conducted the interviews. Participants were recruited on the street and through local agencies. Interviewers approached youth at these different venues, varying the times of the day, on both weekdays and weekends. This sampling protocol was conducted repeatedly over the course of the study. Interviewers obtained informed consent from respondents and told them their responses were confidential and participation was voluntary. Most interviews were conducted in shelter conference rooms. Referrals for shelter, counseling services, and food services were offered to the youth at the time of the interview. Interview procedures were the same for both studies though compensation differed. Respondents in study 1 received $25 cash for participating whereas those in study 2 received a $20 gift card. Although field reporters did not formally tally screening rates, they reported that very few youth (i.e. less than 5%) refused to participate. The Institutional Review Board at the University of Nebraska-Lincoln approved both studies.

Measures

Independent Variables—*Study* was a dichotomous variable that controlled for each of the two studies and was coded 0 = Study 1 (N = 172) and 1 = Study 2 (N = 150). Both studies had identical questions for each of the following measures.

Gender was coded 0 = male and 1 = female.

Sexual orientation was measured by asking youth to describe their sexual orientation; coded 0 = lesbian, gay, or bisexual; 1 = straight or heterosexual (Whitbeck et al., 2004).

Primary risk and protective factors.: *Parent drinking problem* included 3 items (adapted from the CAST-6: Hodgins, Maticka-Tyndale, El-Guebaly, & West, 1993) such as if they ever thought their parent/caretaker had a drinking problem (0 = no; 1 = yes). A count was done but due to skewness, the final variable was dichotomized (0 = no; 1 = at least one drinking problem).

Parent drug problem included 3 items (adapted from the CAST-6: Hodgins et al., 1993), such as if they ever encouraged their parent/caretaker to quit using drugs (0 = no; 1 = yes). A count was done but due to skewness, the final variable was dichotomized (0 = no; 1 = at least one drug problem).

Parental monitoring included 9 items (Simons & Conger, 2007), which asked, thinking back to when you were about 13 years old (in middle school), how often, for example, “did your parent/caretaker know where you were after school” (0 = never to 4 = always). A mean scale was created; a higher score indicated more parental monitoring (α = .88).

Child physical abuse included 16 items from the Conflict Tactics Scale (Straus, Hamby, Finkelhor, Moore, & Runyan, 1998) such as how frequently their caretaker “shook them” or

"kicked them hard" (0 = never to 6 = more than 20 times). A mean scale was created; a higher score indicated more physical abuse (α = .91).

Child sexual abuse included seven items (Whitbeck & Simons, 1990) such as how often any adult or someone at least five years older than them asked them "to do something sexual" (0 = never to 6 = more than 20 times). Due to skewness, the seven items were dichotomized and then a count variable was created; a higher score indicated more sexual abuse (α = .89). These same items have been used in previous studies with YEH (Whitbeck & Simons, 1990; α = .93; Tyler & Melander, 2015; α = .88).

Secondary risk and protective factors.: *Number of times run* was a single item that asked youth for the total number of times that they had ever run away or left home (Whitbeck & Simons, 1990).

Depressive symptoms were measured using the short form of the Center for Epidemiological Studies Depression scale (CES-D-10) (Radloff, 1977) such as "you were bothered by things that don't usually bother you" and "you were happy" during the past week (0 = never to 3 = 5–7 days). Certain items were reverse coded then a mean scale was created; higher scores indicated more depressive symptomology (α = .79). Similar items have been used in previous studies with homeless youth (Bao, Whitbeck, & Hoyt, 2000; α = .89).

Self-efficacy was measured using the General Self-Efficacy Scale (Jerusalem & Schwarzer, 1992) which includes items such as "you can always manage to solve difficult problems if you try hard enough" and "if someone opposes you, you can find the means and ways to get what you want" (1 = not true to 4 = completely true). A mean scale was created; higher scores indicated higher self-efficacy (α = .83).

Physical street victimization was measured with six items such as "how often were you beaten up" since leaving home (0 = never to 3 = many times). A mean scale was created; higher scores indicated more street physical victimization (α = .81). These items have been used in previous studies of homeless youth (Tyler, Olson, & Ray, 2018a; α = .85).

Sexual street victimization included four items such as how often were you "touched sexually when you didn't want to be" since leaving home (0 = never to 3 = many times) (α = .86). Due to skewness, the individual items were dichotomized and then a count variable was created; a higher score indicated more sexual victimization (Tyler & Beal, 2010; α = .83).

Trading sex included four items, such as how often youth had ever traded sex in return for food (0 = never to 3 = many times). Due to skewness, the final scale was dichotomized where 0 = never traded sex for any item and 1 = traded sex for any item at least one time (Tyler et al., 2013; Walls & Bell, 2011).

Dependent Variables

Binge drinking was a single item that asked respondents "on how many days did you have five or more drinks (asked of males) four or more drinks (asked of females) at one time" in

the past 30 days? Due to skewness, this variable was dichotomized (0 = did not binge drink in the past 30 days; 1 = did binge drink at least once in the past 30 days).

Marijuana use was a single item which asked respondents about their frequency of lifetime marijuana use (0 = never, 1 = a few times, 2 = monthly, 3 = weekly, 4 = daily).

Illicit drug use asked respondents about frequency of lifetime drug use for 8 substance types such as methamphetamine, cocaine, and inhalants (0 = never, 1 = a few times, 2 = monthly, 3 = weekly, 4 = daily). Due to skewness, this variable was dichotomized (0 = have never used any of these illicit drugs; 1 = have used at least one of these illicit drugs one or more times). These items have been used in previous studies with this population (Hadland et al., 2011).

Data Analytic Strategy

Chi square tests assessed bivariate associations between sexual orientation and dichotomous variables, whereas student's *t*-tests assessed bivariate associations between sexual orientation and continuous variables. Logistic regression was used to calculate odds ratios (OR), 95% confidence intervals (CI), and *P*-values for the outcomes, binge drinking and illicit drug use, while an ordinal logistic regression was used to calculate OR, 95% CI, and *P*-values for the marijuana use model. Because the variable "marijuana use" has an ordered outcome (i.e. never, a few times, monthly, weekly, and daily), an ordinal logistic regression model is the appropriate model to use (Long, Long, & Freese, 2006). For the multivariate models, data were entered in three separate blocks (i.e. demographic variables, primary variables, and secondary variables) in order to see the individual effects of each set of variables. We also tested for interactions by sexual orientation for all study variables to examine whether the pathways to binge drinking, illicit drug use, and marijuana use differed for LGB and non-LGB youth. Because the two samples differed on a number of variables, we also control for this in the multivariate analyses. All multivariate models control for study[1] and gender. The superscript in Tables 2–5 indicate significant differences by study. Stata version 15 was used for all analyses.

RESULTS

Sample Characteristics

The combined sample included 322 respondents ages 16 to 26 years (M = 20.5 years). Approximately one-half of our sample were female (N = 146; 45%) and 68 youth (21%) identified as LGB. In terms of race, 62% were White, 17% Black or African American, 6.5% Hispanic or Latino, 3% American Indian or Alaskan Native, less than 1% Asian, 8% biracial and 3.5% identified as multiracial. Most youth reported running away or leaving home one time (41.9%) while almost 34% reported running away or leaving home four or more times. 35% of youth reported binge drinking at least once in the past month, 31% reported using at least one illicit drug one or more times, and 37% reported weekly or daily marijuana use.

[1]Though not the focus of our paper, all models control for study type and we report all significant differences (see Tables 2–5).

Bivariate Results

Table 1 shows descriptive statistics by sexual orientation. For both heterosexual and LGB youth, 46.1% and 48.5%, respectively, came from Study 2. Additionally, while only 41% of the heterosexual sample was female, the corresponding number of females in the LGB sample was 65% (χ^2=12.78, p<.01). In terms of *primary risk and protective factors*, across all youth, between 31–39% had parents who had a drinking or drug problem and none of these relationships were statistically different. Though rates of parental monitoring and child physical abuse did not differ between LGB and non-LGB youth, results show that LGB youth experienced significantly higher rates of child sexual abuse (t=5.54, p<.01).

Regarding *secondary risk and protective factors*, LGB youth experienced more depressive symptoms (t=2.27, p<.05), more sexual victimization on the street (t=6.26, p<.01), and were more likely to have ever traded sex (χ^2=13.58, p<.01) compared to heterosexual youth. Additionally, LGB youth experienced slightly lower rates of self-efficacy (t=−1.87, p<.10) and slightly higher rates of street physical victimization (t=1.84, p<.10) compared to heterosexual youth based on a one tailed test criterion. Finally, there were no significant differences between LGB and non-LGB youth for binge drinking, illicit drug use, or marijuana use.

Multivariate Results

Binge Drinking Model

Table 2 shows logistic regression results for past 30-day binge drinking. Model 1 showed that females (OR=.36, p<.01) were less likely to binge drink compared to males. Model 2 revealed that greater parental monitoring was associated with slightly lower odds of binge drinking (OR=.79, p<.10) while experiencing more child physical abuse was associated with increased odds of binge drinking (OR=1.42, p<.01). Being female (OR=.39, p<.01) remained a significant correlate in this model. Model 3 showed that youth who had run away or left home more frequently had increased odds of binge drinking in the prior month (OR=1.32, p<.05). Youth whose parents used drugs were slightly more likely to binge drink (OR=1.79, p<.10) based on a one tailed test criterion while experiencing more child physical abuse was associated with increased odds of binge drinking (OR=1.31, p<.05). Being female (OR=.30, p<.01) remained a significant correlate in Model 3.

Illicit Drug Use Model

Table 3 shows logistic regression results for illicit drug use. Model 1 revealed that both females (OR=.24, p<.01) and heterosexual youth (OR=.53, p<.05) were less likely to use illicit drugs. Model 2 showed that those with greater parental monitoring (OR=.56, p<.01) had lower odds of using illicit drugs. Additionally, youth whose parents had drug problems (OR=2.14, p<.05) had higher odds of ever using illicit drugs as did those who experienced more child physical abuse (OR=1.26, p<.10) based on a one tailed test criterion. The difference by sexual orientation was no longer significant in this model. Model 3 revealed that youth who were physically victimized more often on the street (OR=1.53, p<.10) and those who had ever traded sex (OR=2.15, p<.10) had marginally higher odds of using illicit drugs. Similar to Model 2, those with greater parental monitoring (OR=.58, p<.01) had

lower odds of using illicit drugs as did females (OR=.25, p<.01). Finally, youth whose parents had drug problems (OR=2.04, p<.05) had higher odds of ever using illicit drugs.

Marijuana Use Model

Ordinal logistic regression models for marijuana use are shown in Table 4. Model 1 revealed that females used marijuana less frequently than males (OR=.61, p<.05). Model 2 revealed that youth with greater parental monitoring (OR=.67, p<.01) used marijuana less frequently as did females (OR=.68, p<.10) based on a one tailed test criterion. Youth whose parents had drug problems reported higher frequency of marijuana use (OR=1.86, p<.05). In Model 3, those with greater parental monitoring (OR=.72, p<.01) used marijuana less frequently. Also, youth who reported parents with drug problems (OR=2.01, p<.01) used marijuana more frequently. None of the other variables were significant.

Interaction Effects

Interactions were performed by sexual orientation for all study variables for each of the three dependent variables: binge drinking, illicit drug use, and marijuana use (only significant results shown). Figure 1 shows the significant interaction between sexual orientation and child sexual abuse. For lower levels of child sexual abuse LGB and heterosexual youth had similar probabilities of binge drinking, but among youth with higher rates of child sexual abuse LGB youth had much higher probabilities of binge drinking, compared to heterosexual youth.

Figure 2 shows the interaction between sexual orientation and street sexual victimization. Among those with lower rates of street sexual victimization, LGB and heterosexual youth had similar probabilities of binge drinking, but among higher rates of street sexual victimization LGB youth had much higher probabilities of binge drinking compared to heterosexual youth.

Finally, the graph in Figure 3 shows the interaction between sexual orientation and self-efficacy. While self-efficacy had virtually no relationship with the probability of binge drinking for heterosexual youth, as self-efficacy increased, the probability of binge drinking declined drastically for LGB youth (see Table 5 for significant interaction models for binge drinking). There were no significant interactions for sexual orientation in the illicit drug use or marijuana use models.

Discussion

In this study, we compared risk and protective factors for binge drinking, marijuana use, and illicit drug use among heterosexual and LGB YEH. Overall, we find differences in trading sex, child sexual abuse, street sexual and physical victimization, depressive symptoms, and self-efficacy at the bivariate level. Moreover, we find *primary risk factors* including child physical abuse is associated with youths' recent binge drinking while parental drug problems are linked to youths' marijuana and illicit drug use. In terms of *primary protective factors*, higher parental monitoring serves as a protective factor against marijuana and illicit drug use. For *secondary risk factors*, experiencing more street physical victimization and having ever traded sex are linked to illicit drug use, while running away or leaving home more

frequently is associated with past 30-day binge drinking. Interaction effects reveal that some pathways to binge drinking vary by sexual orientation.

We find partial support for hypothesis #1: LGB youth experience more child sexual abuse compared to heterosexual youth, which is consistent with prior studies (Rew et al., 2005; Tyler, 2008; Whitbeck et al., 2004). It is possible that LGB youth experience higher rates of child abuse because of their sexual orientation. This may be especially true if their parent or caretaker disapproves of their child's sexuality. Consistent with hypothesis #2, LGB youth are more likely to trade sex and experience more street physical and sexual victimization compared to heterosexual youth. One possible explanation is that those who have previously been exploited as children are more vulnerable to re-victimization (Tyler et al., 2013) due to heightened loneliness, anxiety, and depression (Turner et al., 2010). Thus, given that LGB youth experience higher rates of child sexual abuse (Rew et al., 2005; Whitbeck et al., 2004), they are at greater risk for being re-victimized. This explanation may also extend to trading sex; if potential perpetrators know these youth are vulnerable because they lack basic necessities (Fogel, Martin, Nelson, Thomas, & Portia, 2017), they may take advantage of such youth by offering them a place to stay, for example, in return for sexual favors, knowing that the youth lack this basic necessity and may be more willing to acquiesce because of their dire circumstances. Related, research finds that LGB youth often have fewer supports available (Gattis, 2013); subsequently, they may turn to trading sex due to lack of available options. Another explanation for the difference in rates of trading sex may be that LGB youth may believe certain service providers are prejudiced against them, which may lead some of these youth to avoid services altogether and resort to trading sex for items they deem necessary for survival (Tyler & Schmitz, 2018).

Our multivariate results provide partial support for hypothesis #3: youth who experience more child physical abuse and parental drug use problems are more likely to report substance use. Because many YEH come from families where one or both parents have substance use problems (Ginzler et al., 2003) it is possible youth learn that using drugs is acceptable and therefore are more likely to use drugs themselves (Stein et al., 2002). This explanation is also supported by some research which has found that almost one quarter of YEH reported a family member was the first person to offer and/or encourage the use of alcohol, marijuana, or other drugs and thus responsible for their initiation into substance use (Tyler & Johnson, 2006). Regarding abuse, it is possible that those who have experienced more physical abuse as a child may use drinking and/or drugs as a method to cope with the trauma (Kidd & Carroll, 2007).

In terms of protective functions, we find support for hypothesis #4: youth with higher parental monitoring report less substance use, which is consistent with some prior research (Kort-Butler et al., 2011). One possible explanation for this finding is that it is likely that parents who provide supervision and opportunities for frequent communication with their children (i.e. high parental monitoring) reduce the risk of youths' participation in externalizing behaviors (Sharma et al., 2019). Thus, being able to openly communicate with a parent may increase youths' ability to cope in a positive manner. Moreover, it is possible that this frequent communication extends to emotional support, which is also protective

against risk behaviors (Barman-Adhikari et al., 2016). Overall, parental monitoring is a protective influence against substance use for YEH.

Partially consistent with hypothesis #5, running away/leaving home, street physical victimization, and/or trading sex are positively associated with substance use. One possible explanation is that youth who leave home more often tend to spend more time on the street, which has been found to be associated with greater substance use (Tyler et al., 2013). Additionally, youth who spend more time on the street have an increased probability of encountering risky individuals, which increases youths' chances for victimization. Subsequently, being victimized (i.e., through trading sex or physical assault) may increase youths' substance use (Tyler & Schmitz, 2018b) to deal with these traumatizing events (Kidd & Carroll, 2007).

We do not find support for hypothesis #6 that youth with higher self-efficacy will have a lower probability of substance use. One possible explanation is that self-efficacy does not operate the same way for this population as it does for general population youth, which is consistent with some prior research (Barman-Adhikari et al., 2016). Resiliency for YEH may involve navigating street life, where adaptation includes daily survival, avoiding harm, and perhaps trading sex for a place to sleep. As such, being resilient among this group may have some positive outcomes (i.e. remaining safe temporarily) but these effects may be short-lived. Thus, resiliency may have different outcomes for homeless youth compared to what we would expect with general population youth.

Finally, in terms of our interaction tests (hypothesis #7), we find that as self-efficacy increases, the probability of binge drinking declines dramatically for LGB youth whereas self-efficacy has virtually no relationship with the probability of binge drinking for heterosexual youth. One possible explanation for the protective function of self-efficacy is that because LGB youth must manage numerous challenges and conflicts, they become more adept at reframing their identity-related challenges in resilience-building ways (Schmitz & Tyler, 2018). As such they can draw on these processes of resilience and are perhaps better able to cope positively compared to heterosexual youth when it comes to drinking alcohol.

However, although self-efficacy is protective against binge drinking among LGB youth, those who experience more child sexual abuse and more street sexual victimization have a higher probability of binge drinking than heterosexual youth. One possible explanation is that the repeated experience of sexual abuse and sexual assault is too much for anyone to cope with but because LGB youth are more likely to have both these experiences, their probability of binge drinking is higher. Related, it is possible that LGB youth are using alcohol to cope with this repeated victimization whereas heterosexual youth may have other resources available. For example, some research has found that LGB youth report having more trouble finding shelter compared to heterosexual youth (Tyler & Schmitz, 2018a). As such, LGB youth may be less likely to use shelter services, which decreases their likelihood of obtaining other services that might benefit them (Ha, Narendorf, Santa Maria, & Bezette-Flores, 2015) and receiving the support they need. Finally, it is also possible that some LGB YEH are avoiding using services because they fear that they might experience prejudice and

discrimination from service providers (Burwick, Oddo, Durso, Friend, & Gates, 2014; Hunter, 2008); therefore, their needs may be more likely to go unmet.

Overall, our results are generally consistent with a life stress framework. Both primary (e.g., child abuse) and secondary risk factors (e.g., street victimization), which cover multiple levels of influence, are necessary for explaining youths' substance use. Primary risk factors may be exacerbated over time, and this increases youths' risk for re-victimization and substance use. We also find that stressors tend to cluster (Pearlin, 1989), particularly for LGB YEH, such that they experience greater child sexual abuse and street sexual victimization compared to heterosexual youth. Though YEH experience numerous risk factors and stressors, this isn't the whole story. In fact, parental monitoring is protective for all youth against substance use whereas self-efficacy serves a protective role against binge drinking specifically among LGB youth.

Limitations

Data are self-reported and some measures are retrospective, which may have resulted in recall bias. Relatedly, given the sensitive nature of the topics, some youth may have been unwilling to disclose such experiences. Also, because this is a convenience sample, findings cannot be generalized to all YEH. Relatedly, this study focused on youth in the U.S. so findings may not be generalizable beyond U.S. borders. Additionally, because we combined two different data sets, it is possible there are some unmeasured things that may influence the sample due to the passage of time. Moreover, we did not measure certain identities and therefore, may be generalizing across a dynamic group. Finally, because our findings are cross-sectional, we do not know the timing of events. Thus, though we hypothesized that youth victimized on the street have a greater probability of substance use, the reverse could also be true.

Conclusion

These findings show that many YEH have undergone multiple forms of trauma both at home as well as on the street. Though many youth run from home to escape abusive situations, many face similar precarious circumstances on the street where the likelihood for re-victimization is high. Moreover, these risks are especially prevalent for specific subgroups of YEH including LGB youth (i.e. significantly higher rates of child sexual abuse and street sexual victimization found for LGB youth), which in turn, are linked with a greater likelihood of binge drinking. Specifically, the risk for binge drinking is higher among sexually abused LGB youth compared to their non-LGB counterparts. This same pattern holds for street sexual victimization. Additionally, while self-efficacy, a protective factor, has virtually no relationship with the probability of binge drinking for non-LGB youth, as self-efficacy increased, the probability of binge drinking declined drastically for LGB youth.

Overall, our paper has numerous strengths and further contributes to our understanding of risk and protective factors for substance use among LGB and heterosexual youth. Specifically, our work shows that both primary and secondary risk factors are important for understanding the probability of substance use among YEH. This suggests that programs for these youth will need to be multifaceted in order to cover the numerous, often negative, and

cumulative experiences that these young people have endured. Additionally, our results show that parental monitoring is a protective factor against substance use for all youth regardless of sexual orientation. This has implications for service providers because youth who continue to have positive role models in their lives may be better positioned to use healthy coping mechanisms to deal with life stressors as opposed to unhealthy coping styles such as substance use. Providing these young people with supportive and positive role models can increase their social support and subsequently lower their risk for poor mental health outcomes (Tyler, Schmitz, & Ray, 2018), which may lead to a reduction in substance use and other street risk behaviors. Though all YEH could likely benefit from having positive role models to further increase resilience and positive coping, LGB youth may require additional resources as they have experienced higher rates of child sexual abuse and street sexual victimization than their non-LGB counterparts. Additionally, we find that higher self-efficacy serves as a protective influence against binge drinking for LGB youth but not heterosexual youth. It may benefit service providers to know the strong, protective influence of self-efficacy, especially for LGB youth, and provide specific skills and training that would further increase LGB youths' resilience by enabling them to solve or manage difficult problems. Additionally, because LGB youth may also be managing additional stressors related to sexual identity, they may require distinctive supports that are specifically targeted to their needs in navigating stigma.

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Highlights

- We examine risk and protective factors for substance use.
- Physical abuse, running away, and parent drug misuse are linked with binge drinking.
- Parent drug misuse and monitoring are linked with marijuana and illicit drug use.
- Self-efficacy serves a protective function for LGB youth against binge drinking.
- Interactions reveal that pathways to binge drinking vary by sexual orientation.

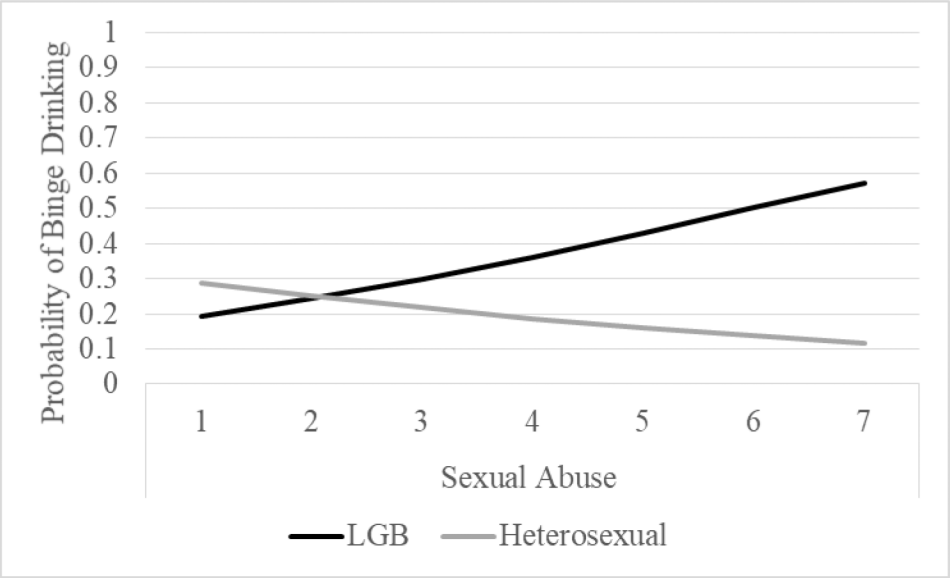

Figure 1.
Interaction between Sexual Orientation and Sexual Abuse for Binge Drinking

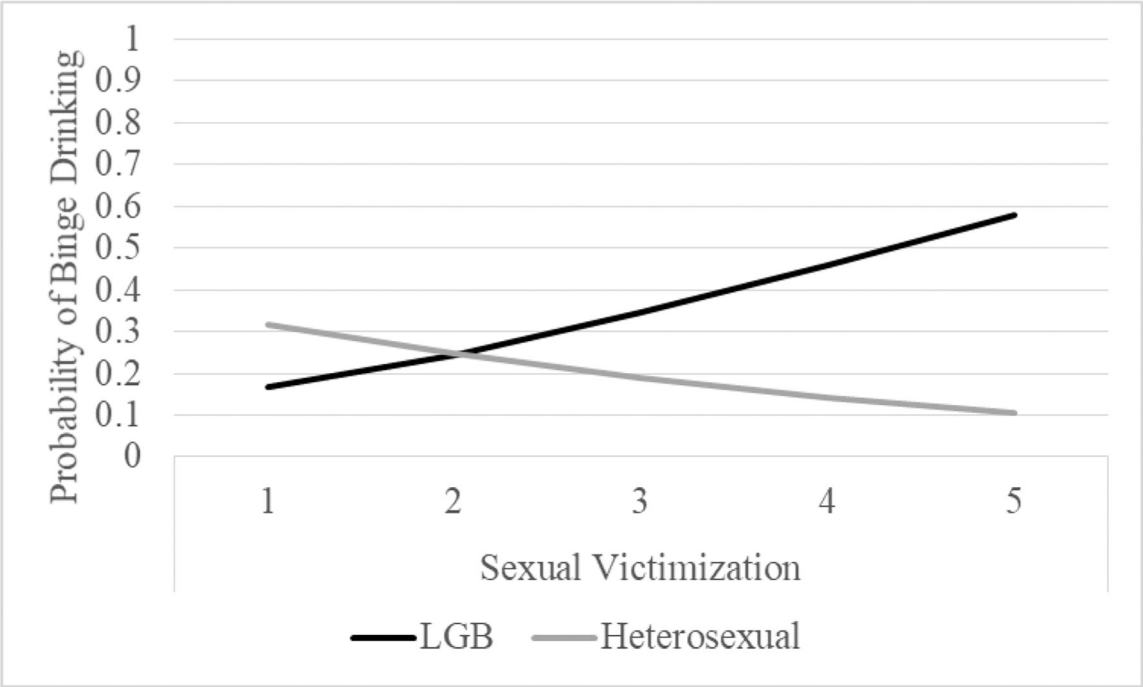

Figure 2.
Interaction between Sexual Orientation and Sexual Victimization for Binge Drinking

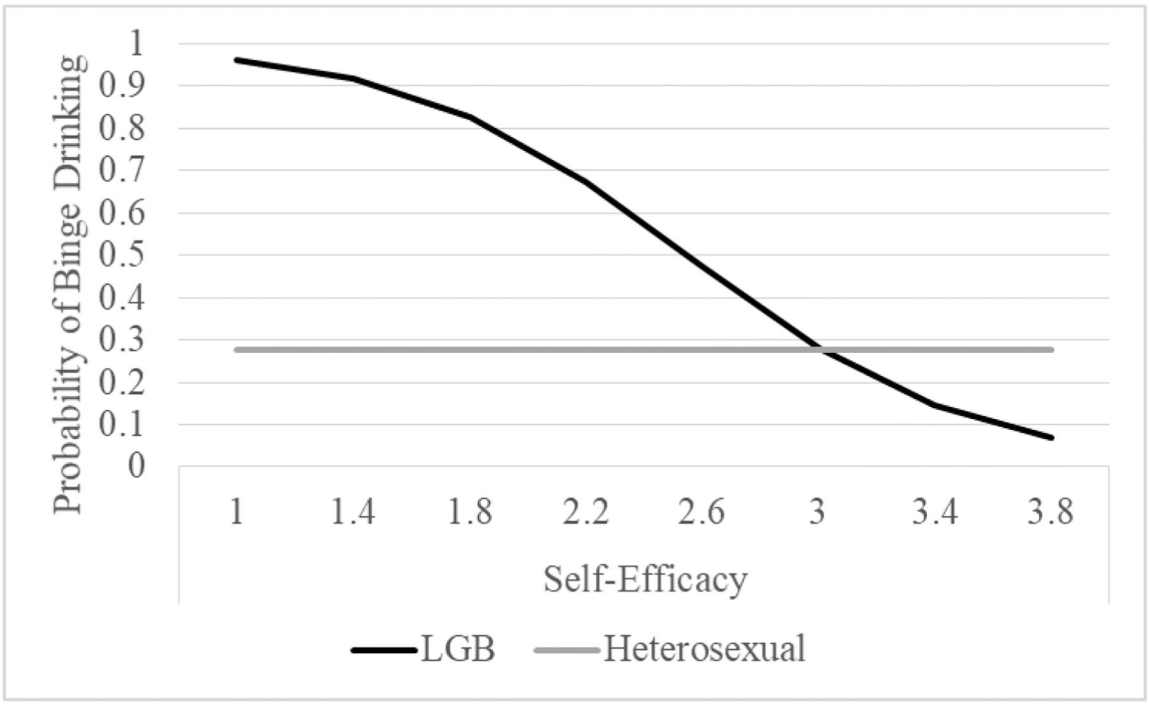

Figure 3.
Interaction between Sexual Orientation and Self-Efficacy for Binge Drinking

Table 1

Descriptive statistics by sexual orientation.

	Heterosexual		LGB		Test of Significance	
Correlate	**% (N)**	**Mean (SD)**	**% (N)**	**Mean (SD)**	**χ^2**	**t**
Study 2	46.1 (117)		48.5 (33)		0.13	
Female	40.6 (103)		65.2 (43)		12.78***	
Primary Risk and Protective Factors						
Parent drinking problems	38.6 (97)		32.4 (22)		0.91	
Parent drug use problems	31.2 (78)		36.8 (25)		0.76	
Parental monitoring		2.33 (0.99)		2.24 (1.10)		−0.70
Child physical abuse		1.72 (1.26)		1.98 (1.32)		1.47
Child sexual abuse		1.25 (1.97)		2.87 (2.68)		5.54**
Secondary Risk and Protective Factors						
Number of times run		2.32 (1.32)		2.57 (1.36)		1.31
Depressive symptoms		1.25 (0.64)		1.45 (0.61)		2.27*
Self-efficacy		3.05 (0.50)		2.91 (0.53)		−1.87+
Physical street victimization		0.90 (0.73)		1.09 (0.76)		1.84+
Sexual street victimization		0.64 (1.19)		1.76 (1.70)		6.26**
Trading sex	11.6 (29)		29.9 (20)		13.58**	
Dependent Variables						
Binge drinking	35.5 (89)		33.8 (23)		0.06	
Marijuana use		1.70 (1.65)		1.73 (1.65)		0.11
Illicit drug use	29.9 (76)		35.3 (24)		0.72	

Note:

** $p < .01$;

* $p < .05$;

+ $p < .10$.

LGB is lesbian, gay, bisexual.

Table 2

Logistic regression models for correlates of past 30-day binge drinking.

	Model 1[a]		Model 2[a]		Model 3[a]	
	OR	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Female	0.36**	0.21–0.60	0.39**	0.23–0.68	0.30**	0.15–0.60
Heterosexual	0.78	0.42–1.44	0.87	0.44–1.70	0.84	0.38–1.84
Parent drinking problems			0.83	0.47–1.46	0.88	0.47–1.64
Parent drug use problems			1.40	0.77–2.54	1.79 +	0.91–3.53
Parental monitoring			0.79 +	0.61–1.03	0.90	0.67–1.20
Child physical abuse			1.42**	1.12–1.80	1.31*	1.00–1.72
Child sexual abuse			0.98	0.86–1.11	0.96	0.83–1.10
Number of times run					1.32*	1.05–1.66
Depressive symptoms					1.12	0.69–1.82
Self-efficacy					0.68	0.37–1.24
Street physical victimization					1.11	0.73–1.69
Street sexual victimization					0.99	0.76–1.31
Trading sex ever					1.32	0.57–3.05
LRχ^2	30.99**		48.99**		59.05**	
d.f.	3		8		14	
McFadden's Pseudo R^2	0.08		0.12		0.17	

Note: OR=odds ratio; CI=confidence interval.

[a] Indicates lower risk for those in Study 2.

** $p \leq 0.01$.

* $p \leq 0.05$.

+ $p < .10$.

Table 3

Logistic regression models for correlates of illicit drug use.

	Model 1		Model 2[a]		Model 3[a]	
	OR	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Female	0.24**	0.13–0.41	0.21**	0.11–0.39	0.25**	0.12–0.52
Heterosexual	0.53*	0.28–1.00	0.57	0.28–1.15	0.55	0.25–1.23
Parent drinking problems			0.77	0.42–1.42	0.81	0.42–1.54
Parent drug use problems			2.14*	1.14–4.04	2.04*	1.02–4.10
Parental monitoring			0.56**	0.42–0.75	0.58**	0.43–0.80
Child physical abuse			1.26+	0.98–1.62	1.14	0.86–1.50
Child sexual abuse			1.04	0.91–1.19	1.02	0.88–1.17
Number of times run					1.08	0.86–1.37
Depressive symptoms					1.07	0.65–1.78
Self-efficacy					0.79	0.43–1.46
Street physical victimization					1.53+	0.98–2.36
Street sexual victimization					0.84	0.63–1.12
Trading sex ever					2.15+	0.92–5.06
LRχ^2	33.16**		73.75**		71.42**	
d.f.	3		8		14	
McFadden's Pseudo R^2	0.08		0.19		0.20	

Note: OR=odds ratio; CI=confidence interval.

[a] Indicates lower risk for those in Study 2.

** $p \leq 0.01$.

* $p \leq 0.05$.

+ $p < .10$.

Table 4

Ordinal logistic regression models for correlates of Marijuana use.

	Model 1		Model 2		Model 3	
	OR	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Female	0.61*	0.40–0.92	0.68+	0.44–1.05	0.65	0.39–1.09
Heterosexual	0.82	0.49–1.36	0.84	0.49–1.44	0.80	0.43–1.49
Parent drinking problems			0.95	0.60–1.51	0.85	0.52–1.40
Parent drug use problems			1.86*	1.14–3.04	2.01*	1.17–3.45
Parental monitoring			0.67***	0.54–0.84	0.72**	0.57–0.91
Child physical abuse			1.11	0.91–1.35	1.08	0.86–1.35
Child sexual abuse			1.01	0.91–1.12	0.99	0.89–1.10
Number of times run					1.12	0.93–1.33
Depressive symptoms					1.02	0.69–1.51
Self-efficacy					0.87	0.55–1.39
Street physical victimization					1.07	0.76–1.52
Street sexual victimization					1.00	0.80–1.23
Trading sex ever					1.17	0.60–2.31
Cut 1	−0.92	−1.49-−0.35	− 1.53	− 2.41-− 0.65	− 1.62	− 3.52–0.28
Cut 2	−0.04	−0.60–0.52	− 0.58	− 1.45–0.29	− 0.66	− 2.44–1.23
Cut 3	0.23	− 0.33–0.79	− 0.29	− 1.16–0.58	− 0.37	− 2.26–1.52
Cut 4	0.73	0.16–1.29	0.23	− 0.63–1.10	0.22	− 1.66–2.11
LRχ^2	5.85		36.88***		34.71**	
d.f.	3		8		14	
McFadden's Pseudo R^2	0.01		0.04		0.04	

Note: OR=odds ratio; CI=confidence interval.

** p≤0.01;

* p≤0.05;

+ p < .10.

Table 5

Significant interaction models for binge drinking.

	Model 1[a]		Model 2[a]		Model 3[a]	
	OR	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Female	0.28***	0.13–0.57	0.26***	13–0.55	0.26	0.13–0.55
Heterosexual	2.72	0.84–8.80	2.29	0.77–6.76	0.00**	0.00–0.18
Parent drinking problems	0.80	0.42–1.52	0.77	0.41–1.47	0.80	0.42–1.52
Parent drug use problems	2.01*	1.00–4.03	1.83 +	0.91–3.65	1.84 +	0.92–3.66
Parental monitoring	0.89	0.66–1.20	0.93	0.69–1.26	0.90	0.67–1.22
Child physical abuse	1.35*	1.02–1.79	1.43*	1.08–1.90	1.29 +	0.97–1.70
Child sexual abuse	1.33*	1.03–1.73	0.92	0.80–1.07	0.95	0.82–1.10
Number of times run	1.33*	1.05–1.69	1.34*	1.06–1.69	1.34*	1.06–1.69
Depressive symptoms	1.21	0.74–1.98	1.17	0.71–1.93	1.13	0.69–1.85
Self-efficacy	0.71	0.39–1.31	0.74	0.40–1.37	0.12**	0.03–0.52
Street physical victimization	1.04	0.68–1.60	1.07	0.70–1.63	1.08	0.71–1.66
Street sexual victimization	0.93	0.70–1.24	1.62*	1.06–2.48	0.94	0.70–1.25
Trading sex ever	1.31	0.55–3.13	1.38	0.58–3.29	1.51	0.63–3.61
Heterosexual × Child sexual abuse	0.62**	0.45–0.85				
Heterosexual × Street sexual victimization			0.44**	0.25–0.75		
Heterosexual × Self-efficacy					8.11**	1.71–38.50
LRχ^2	68.47***		68.78***		66.76***	
d.f.	15		15		15	
McFadden's Pseudo R^2	0.19		0.19		0.19	

Note: OR=odds ratio; CI=confidence interval.

[a]Indicates lower risk for those in Study 2.

** p≤0.01.

* p≤0.05.

+ p < .10.