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Factors Associated with Motivation to Change HIV Risk and Substance Use Behaviors among Homeless Youth

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Abstract

This study sought to identify and compare variables associated with motivation to change alcohol, drug use, and HIV risk behaviors among a sample of homeless youths. More frequent alcohol use, older age, and childhood sexual abuse was associated with greater motivation to change alcohol use; higher reported negative consequences of substance use was associated with higher motivation to reduce illicit drug use. Shorter periods of current homelessness predicted higher motivation to change HIV risk behaviors. Findings suggest these areas might be fruitful targets of intervention efforts to enhance motivation to reduce alcohol and illicit drug use and HIV risk behaviors.

Keywords

Motivation to change; alcohol vs. drug use; HIV risk; homelessness; adolescents

Homeless youth face a number of challenges, including high rates of substance use, and risky sexual behaviors (Anderson, Freese, Pennbridge, 1994; Ennet, Federman, Bailey, Ringwalt, & Hubbard, 1999; Goering, Tolomiczenko, Sheldon, Sheldon, Boydell, & Wasylenki, 2002). Upwards of 78% of homeless youth have been found to meet diagnostic criteria for a substance use disorder (Baer, Ginzler, & Peterson, 2003). Studies examining the prevalence of risky sexual behaviors have found that at least a quarter of homeless youth have traded sex for food, shelter, money, or drugs (Haley, Roy, Leclerc, Boudreau, & Boivin, 2004). In addition, almost half of a sample of homeless adolescents report not using a condom during sexual activity within the last 30 days (Halcón & Lifson, 2004). Research consistently links engagement in risky sexual behaviors with substance use (Deas-Nesmith, Brady, White, & Campbell, 1999; Solorio et al., 2008). Considering the high rates of substance use and HIV risk behaviors among homeless youth and their frequent co-occurrence, research efforts directed towards identifying factors associated with motivation to change substance use and HIV risk are imperative (Kipke et al., 1997). Despite the existence of studies consistently linking substance use and HIV risk behaviors in both normative samples of adolescents and homeless youth, research fails to jointly examine motivation to change these behaviors in this particularly vulnerable population.

The unique life experiences of homeless youths, such as frequent victimization and struggles to meet basic needs such as food, shelter, and clothing, likely influence their motivation to change substance use and HIV risk behaviors. For example, reducing substance use and HIV

risk behaviors may be less of a priority when the adolescent is faced with the constant threat of victimization, hunger, or no place to sleep. The present study adds to the literature by examining how factors associated with motivation to change alcohol and drug use, and HIV risk behaviors vary in a sample of homeless youths. This information can be used to identify pathways for increasing motivation to change substance and HIV risk behaviors in this population. That is, successful treatment engagement and retention strategies may differ based on one's motivation. Highly motivated adolescents may be amenable to action-oriented strategies such as identifying and engaging in specific steps to reduce substance use, but action-based strategies may alienate an unmotivated adolescent (Cady, Winters, Jordan, Solberg, & Stinchfield, 1996). The identification of factors associated with motivation to change may serve as markers to treatment providers as to an appropriate engagement strategy.

Motivation is defined as "...the personal considerations, commitments, reasons, and intentions that move individuals to perform certain behaviors" (DiClemente, Schlundt, & Gemmell, 2004). The transtheoretical model of behavior change presupposes that motivation occurs on a continuum, with 5 distinct stages (precontemplation, contemplation, preparation, action, and maintenance) (DiClemente et al., 2004). Individuals cycle back and forth through these stages before changes are maintained. Researchers have not offered an explanation as to why people differ in their motivation to change and what influences their level of motivation (Carpenter, Miele, & Hasin, 2002; DiClemente et al., 2004; Font-Mayolas, Planes, Gras, & Sullman, 2007). In addition, studies suggest motivation to change can be specific to a substance or behavior (DiClemente, 1999; DiClemente et al., 2004; Miller & Rollnick, 2002). For example, an adolescent's motivation to reduce or eliminate alcohol use may be influenced by factors different from their motivation to reduce use of other drugs or change HIV risk behaviors. Research has suggested that different motivations underlie one's decision to use alcohol or marijuana among polysubstance users (Simons, Correia, & Carey, 2000). For example, Ramo, Prochaska, and Myers (2010) found that adolescents in a substance abuse treatment program reported significantly lower levels of motivation to stop smoking cigarettes than motivation to change illicit drug use. In addition, research has found that adolescent substance users may be less motivated to change substance use than their adult counterparts (Cady et al., 1996; Jainchill, Bhattacharya, & Yagelka, 1995).

Higher levels of motivation to change substance use have been linked with higher rates of initiation in formal substance use treatment programs, longer stays in substance abuse treatment and significantly less substance use after treatment for both adolescents and adults (Campbell, Weisner, & Sterling, 2006; DeLeon, Melnick, Kressel, & Jainchill, 2004; Friedman, Granick, & Kreisher, 1994; Melnick, DeLeon, Hawke, Jainchill, & Kressel 1997). Similarly, motivation to practice safe sex is associated with practicing safer sex behaviors such as condom use (Mustanski, Donenberg, & Emerson, 2006). Specifically, youths who reported greater motivation to practice safer sex reported less engagement in high-risk sexual behaviors at baseline and at the 6-month follow-up (Mustanski et al., 2006). Thus, higher motivation is associated with reduced substance use and reduced engagement in risky sexual behaviors. The present study examined the factors that uniquely predict motivation to change alcohol and drug use, and HIV risk behaviors among homeless youth. Below, variables potentially associated with motivation to change these behaviors are reviewed.

Variables of Interest

Sociodemographics—Few studies have examined how motivation to change substance use or HIV risk behavior varies by sociodemographic factors such as race, gender, and sexual orientation (Barnett, Goldstein, Murphy, Colby, & Monti, 2006; Slesnick et al., 2009;

Vik, Culbertson, & Sellers, 2000). In addition, most of this research has focused on adults, with little attention given to youths, despite the fact that most alcohol, drug, and sexual experimentation begins in adolescence (Battjes, Gordon, O'Grady, Kinlock & Carswell, 2003; Cady et al., 1996).

Childhood sexual abuse—It is well established that childhood sexual abuse is associated with higher rates of substance abuse and dependence and is associated with engagement in behaviors that place one at greater risk for contracting HIV in both adolescence and adulthood (Hughes & Eliason, 2002; Kendler, Bulik, Silberg, Hettema, Myers, & Prescott, 2000; Senn, Carey, Vanable, Coury-Doniger, & Urban, 2006). Rates of sexual abuse are higher among homeless youth than among non-homeless youth (Whitbeck, Hoyt, & Bao, 2000), but no study has examined how a history of childhood sexual abuse influences motivation to change substance use and HIV risk behaviors among homeless youth.

Substance use and depression—Some research indicates that fewer depressive symptoms are associated with practicing safer sex among adults (Carey, Carey, Maisto, Schroder, Vanable, & Gordon, 2006; DiFranceisco, Ostrow, Adib, Chmiel, & Hoffman, 1999; Rotheram-Borus, Rosario, Reid & Koopman, 1995). Furthermore, studies indicate that depressive symptoms influence motivation to reduce substance use and HIV risk behaviors across the lifespan (Battjes et al., 2003; Carey et al., 2006). Battjes and colleagues (2003) found that higher depression, anxiety, and somatization predicted less motivation to change substance use in a sample of adolescent substance users; however others have not found this relationship (Breda & Heflinger, 2004). Conversely, Slesnick and colleagues (2009) found that higher levels of depressive symptoms were associated with greater motivation to change illicit drug use in a similarly high-risk sample of runaway youth. Given the lack of consistent findings, more research is needed in order to clarify this relationship.

Research findings are equivocal regarding the influence of the severity of drug or alcohol use on motivation to change substance use (Westerberg, 1998). Some researchers have found that more frequent alcohol or illicit drug use is associated with greater motivation to change substance use among adults (Finney & Moos, 1995; Shealy, Murphy, Borsari, & Correia, 2007; Varney, Rohsenow, Dey, Myers, Zwick, & Monti, 1995). However, Battjes and colleagues (2003) found no relationship between severity of substance use and motivation to change substance use in a sample of adolescents in an outpatient substance use treatment program.

Consequences—The consequences of substance use and risky sexual behavior may be associated with motivation to change. Researchers have found that more negative consequences predicted greater motivation to change substance use for both adolescents and adults (Breda & Heflinger, 2004; Shealy et al., 2007; Varney et al., 1995). Less is known about the impact of the consequences of sexual behavior on motivation to change HIV risk behaviors, but some research indicates the experience of negative consequences may be associated with continued engagement in high-risk behaviors among adolescents (Crosby, Salazar, & DiClemente, 2004). The present study will examine the influence of negative consequences on motivation to change alcohol use, drug use, and HIV risk behaviors.

Homelessness and system involvement—Length of time homeless is associated with youth's greater engagement in behaviors that place them at high risk for HIV (Ennett, Federman, Bailey, Ringwalt, & Hubbard, 1999; Marshall, Kerr, Shoveller, Patterson, Buxton, & Wood, 2009; Rew, Grady, Whittaker, & Bowman, 2008); but it is unknown how current length of time homeless influences motivation to change HIV risk behaviors or substance use, if at all. In addition, researchers have found that homeless youth who reported

greater difficulty meeting basic needs such as finding food or clothing, bathrooms, or places to wash reported higher levels of engagement in HIV risk behaviors (Ennett et al., 1999). While research shows that having difficulty meeting basic needs may reduce motivation to meet less immediate goals, no research has yet examined this relationship in detail.

Involvement in child welfare or juvenile justice systems may be associated with less motivation to change substance use and HIV risk. Research has shown that adolescents who have been involved in the foster care or juvenile justice system are more likely to be diagnosed with a substance dependence disorder (Aarons, Brown, Hough, Garland, & Wood, 2001; Pilowsky & Wu, 2006). System experience may also be associated with low motivation to reduce HIV risk; over half of a sample of adolescent males in a juvenile detention facility reported low motivation to use condoms (Crosby et al., 2004). Therefore, involvement in the foster care or juvenile justice system might be associated with lower motivation to change substance use and HIV risk behaviors.

Current Study

The current study examined factors associated with motivation to change substance use and HIV risk behavior among a high-risk sample of homeless youths. Consistent with the Transtheoretical Model, this study expands upon previous research by distinguishing between motivation to change alcohol use and motivation to change drug use, as previously recommended (DiClemente, 1999; DiClemente et al, 2004; Miller & Rollnick, 2002). In addition to separately examining alcohol and drug use, factors associated with motivation to change the HIV risk behaviors that frequently co-occur with high rates of substance use were also examined. This study intended to clarify the role that demographic variables play in motivation, as well as the influence of consequences of sexual behavior on motivation to change HIV risk.

It was expected that more depressive symptoms, more severe substance use and more negative consequences of substance use would be associated with higher motivation to change alcohol and illicit drug use. It was expected that longer length of current homelessness, more system involvement, and having been sexually abused would predict lower motivation to change alcohol, drug use, and HIV risk behaviors. Furthermore, it was anticipated that youths who had more difficulty finding food or a place to sleep or clean up would report less motivation to reduce substance use and HIV risk than those who can meet their basic needs.

Method

Participants

All participants were recruited from the only drop-in center for homeless youth in Columbus, Ohio. Participants were part of a larger, ongoing clinical trial examining substance use and sexual risk outcomes. Eligible participants (N=200) were between the ages of 14–20, lacked a fixed, adequate overnight residence (McKinney-Vento Act, 2002), and planned to remain in the Columbus area for at least 12 months. The Computerized Diagnostic Interview Schedule for Children (CDISC; Shaffer, 1992) was administered to participants to ensure they met DSM-IV (American Psychiatric Association, 2000) criteria for alcohol or drug abuse or dependence. The majority of youth at the drop-in center who did not participate in the research study either did not report substance use or did not intend to remain in the Columbus area for the next 12 months.

Procedure

Potentially eligible youth were approached and screened by a trained research assistant at local soup kitchens, libraries, parks, homeless shelters, and through referral by other participants. The research assistant screened youth to determine basic eligibility for the study. The interviewer proceeded to administer the CDISC (Shaffer, 1992) sections on drugs, alcohol, and psychosis at the drop-in center to determine formal eligibility. Those not passing inclusion criteria for the project during the diagnostic screening were provided with a care package of toiletries and food items. Those meeting the criteria for participation in the study continued with the assessment battery (requiring approximately 2 hours) and were compensated for their time by a \$25 gift card to a local retail store. All study procedures were approved by The Ohio State University Institutional Review Board.

Materials

All data for the current analysis were collected using interviewer and self-administered questionnaires. The measures utilized for the independent variables are described first, followed by the measures utilized for the outcome variables.

The demographics/homeless experiences questionnaire assessed age, gender, sexual orientation, race/ethnicity and childhood sexual abuse experiences. In addition to demographic variables, the extent to which participants were able to meet their basic needs in the past 12 months and the length of their current homeless experience were reported on the demographic/homeless experiences questionnaire. This questionnaire also includes six questions querying the adolescent's lifetime experience in group and foster homes and the juvenile justice system. Responses to these questions were summed to provide a measure of system involvement, with higher scores indicating more extensive system involvement.

Frequency of alcohol and drug use was assessed using the Form 90 interview (Miller, 1996). The Form 90 is a semi-structured interview that combines the timeline follow-back procedure (Sobell & Sobell, 1992) and grid averaging (Miller & Marlatt, 1984) to record the participant's daily use of different substances for the past 90 days. This measure yielded the percent days of alcohol use and the percent days of illicit drug use in the past 90 days. Illicit drug use included marijuana, sedatives, opiates, inhalants, hallucinogens, hypnotics, steroids, amphetamines, and cocaine. Test-retest correlations have ranged from .62 to .99 for the different drugs of abuse among runaways (Slesnick & Tonigan, 2004).

The 17-item drug and alcohol consequences subscale of the Problem Oriented Screening Instrument for Teenagers (POSIT, Rahdert, 1991) was used to assess negative consequences of the adolescent's drug and alcohol use. In the current study, Cronbach's alpha for this scale was .87.

Depressive symptoms were assessed using the Beck Depression Inventory II (BDI-II, Beck, Steer, & Brown, 1996). The BDI-II is the most frequently used self-report measure of depression symptoms. In this study, internal consistency was .95.

The Health Risk Questionnaire incorporates items from the Health Risk Survey (Kann, Nelson, Jones, & Kolbe, 1989) and the Homeless Youth Questionnaire (Johnson, Aschkenasy, Herbers, & Gillenwater, 1996) and has been used in previous research (Gangamma, Slesnick, Toviessi, & Serovich, 2008; Slesnick, Bartle-Haring, Glebova, & Glade, 2006). It includes questions assessing the consequences of sexual behavior, in particular, participants reported whether they have ever been diagnosed with a sexually transmitted disease, the number of times they have been pregnant or gotten someone else pregnant, and if their sexual behavior has ever caused problems at home. Responses to these

three questions were summed to produce a score assessing the number of consequences experienced as a result of risky sexual behaviors.

Motivation to change HIV risk—Motivation to change high-risk behaviors was assessed using the HIV Index of Readiness Scale (Morrison-Beedy, Carey, & Lewis, 2002). Examples of items include “I have thought about how to make safer sex fit into my life” and “I have planned new ways to practice safer sex”. The 9-item questionnaire includes a 5-point Likert-type scale ranging from “strongly disagree” to “strongly agree.” The items are summed, with higher scores indicating higher readiness to change risky sexual behaviors. In the present study, internal consistency for this scale was .85.

Motivation to change drug and alcohol use—Motivation to change substance use was assessed using the SOCRATES (Miller & Tonigan, 1996). The SOCRATES 8A and 8D forms were used to examine motivation to change drinking behaviors and motivation to change drug use behaviors, respectively. Examples of items include “If I don’t change my drinking soon, my problems are going to get worse” and “I have a drug problem”. Also, in the present study, the recognition and taking steps subscales were used as an indication of motivation for change. Effort was made to create a measure comparable to the HIV Index of Readiness Scale. Confirmatory factor analysis using structural equation modeling was conducted in order to determine that the recognition and taking steps items loaded onto a single scale. Two items that did not load significantly onto the motivation to change drug use scale were deleted; the same occurred for the motivation to change alcohol use subscale.

Overview of Data Analyses—Raw data were employed in the statistical analyses. First, means and standard deviations of the sample demographic characteristics, independent and dependent variables were reported. Second, separate linear regression analyses were conducted for each of the dependent variables: motivation to change alcohol use, motivation to change illicit drug use, and motivation to change HIV risk behaviors. In order to control for possible sociodemographic differences such as age, gender, race/ethnicity, and sexual orientation, these variables were entered in the first step. Variables related to homelessness and system involvement were entered in the second step to account for the unique experiences of homeless youths. The remaining variables were entered in the final step. This order of entry made it possible to examine the role of clinical and substance use variables above and beyond that of and sociodemographic and homeless experience variables.

Results

Characteristics of the sample are shown in Table 1. Of the 200 youths, 52.5% ($n = 105$) were female. Participants ranged in age from 14 to 20 years ($M = 18.83$, $SD = 1.3$). Of the 200 youths, 134 (67.0%) identified themselves as African-American or Black, while 39 (19.5%) identified themselves as White/Caucasian. Means and standard deviations of independent and dependent variables are shown in Table 1. There were no differences between males and females on motivation to change alcohol use [$F(1, 175) = 0.849$, $p > 0.05$] or motivation to change illicit drug use [$F(1, 188) = 2.89$, $p > 0.05$]. Female youth reported significantly higher motivation than male youth to change HIV risk behavior [$F(1, 188) = 6.58$, $p < 0.05$].

In the full model predicting motivation to change alcohol use, older age ($\beta = .23$, $p < 0.05$), having been sexually abused ($\beta = .33$, $p < 0.01$), and higher percent days of alcohol use ($\beta = .33$, $p < 0.001$) significantly predicted greater motivation to change alcohol use (Table 2). The full model with all variables explained 41.5% of the variance in motivation to change alcohol use, [$F(11, 82) = 5.3$, $p < 0.0001$]. In the full model predicting motivation to change drug use, more problem consequences of substance use significantly predicted higher

motivation to change drug use ($\beta = .23, p < 0.05$) (Table 2). The full model with all variables explained 18.3% of the variance in motivation to change drug use [$F(11, 99) = 2.0, p < 0.05$].

In the full model predicting motivation to change HIV risk behaviors, fewer current number of days homeless ($\beta = -.35, p < 0.01$) were significantly associated with higher motivation to change risky sexual behaviors (Table 2). The full model with all variables explained 18% of the variance in motivation to change, [$F(13, 68) = 1.07, p > 0.05$].

Discussion

The present study sought to identify significant factors associated with motivation to change drug, alcohol, and HIV risk behaviors. Analyses revealed that different variables were associated with each outcome variable. Furthermore, the variables accounted for a greater proportion of the variance in motivation to change alcohol use ($R^2 = 0.42$) than motivation to change illicit drug use ($R^2 = 0.18$) or HIV risk behaviors ($R^2 = 0.18$).

Motivation to change alcohol use

Age, childhood sexual abuse, and severity of alcohol use were associated with motivation to change alcohol use. The finding that severity of alcohol use was associated with greater motivation to change alcohol use is consistent with research among alcohol-dependent adults and college students (Barnett et al., 2006; Freyer et al., 2005). While no research has specifically examined the relationship between severity of alcohol use and motivation to change alcohol use among adolescents, this study's findings suggest that the relationship occurs in both adulthood and adolescence.

Those who had been sexually abused reported greater motivation to change alcohol use than those with no history of sexual abuse. Possibly, homeless sexually abused youths have different patterns of coping with stressful situations than non-sexually abused youths which is also reflected by their higher motivation to change alcohol use. Although prior research suggests that substance abusers with a history of sexual abuse show poorer substance abuse outcomes (Boles, Joshi, Grella & Wellisch, 2005), future research might indicate that sexually abused homeless youths show a different pattern of outcomes given their unique circumstances and survival strategies.

Consistent with some research, older age was associated with higher motivation to change alcohol use (Finney & Moos, 1995; Hughes & Eliason, 2002; Melnick et al, 1997). Researchers have suggested that older substance users are more motivated as a result of the increased likelihood of negative consequences that accompany a longer substance use history (Breda & Heflinger, 2004). In the present study, age was still significantly associated with motivation to change alcohol use, even when the negative consequences of substance use were considered. Thus, it appears the link between age and motivation to change is not entirely due to greater opportunity for negative consequences. Melnick and colleagues (1997) suggest the relationship between age and motivation to change substance use may actually reflect the phenomenon of being "tired of using" (p. 502). Specifically, with a longer use history, (and thus increasing age) individuals may become tired of their using lifestyle and naturally reduce their use without the assistance of treatment.

Motivation to change illicit drug use

Consistent with Varney and colleagues (1995) and Battjes and colleagues (2003), more negative consequences of drug use predicted higher motivation to change illicit drug use. Although a causal relationship cannot be determined, working with adolescents to clarify the negative consequences of their drug use might enhance their motivation to change drug use.

This finding also underscores the importance of separating motivation to change alcohol use and drug use. If there are different motivating influences to change alcohol use versus drug use, then different intervention strategies may be necessary to reduce alcohol versus illicit drug use.

Motivation to change HIV risk behaviors

The present study found that the longer the adolescent had currently been homeless, the less motivated he or she was to reduce their HIV risk. Although this is the first study to examine motivation to change HIV risk among homeless youths, this finding is similar to prior research showing that a longer length of time spent homeless is associated with more frequent engagement in HIV risk behaviors (Ennett et al., 1999; Gelberg, Gallagher, Andersen, & Koegel, 1997; Gallagher, Andersen, Koegel, & Gelberg, 1997). Future research might determine that as homelessness increases, so does hopelessness, and therefore higher levels of hopelessness might be associated with less concern or regard for engaging in health behaviors.

Variables unrelated to motivation to change

Depression, frequency of illicit drug use, difficulty meeting basic needs, and system experience were not significantly related to motivation to change in any of the models. The failure to find a significant relationship between frequency of illicit drug use and motivation to change is consistent with literature focusing specifically on adolescents. Battjes and colleagues (2003) suggest this finding may reflect an actual difference between adolescent and adult substance users. However, since previous research has rarely distinguished alcohol use from illicit drug use in their study of motivation to change (Battjes et al., 2003; Breda & Heflinger, 2007), it is possible this finding may reflect actual differences between motivation to change illicit drug use and motivation to change alcohol use among adolescents.

Although previous research found a significant relationship between depressive symptoms and motivation to change in a sample of housed or runaway youth (Battjes et al., 2003; Slesnick et al., 2009), that relationship was not found among this sample of homeless youth. While further research is needed to understand this finding, it is possible that depressive symptoms have little relationship to motivation among homeless youth because they have become accustomed to the experience of sadness and it no longer positively or negatively impacts their motivation to change.

Limitations

First, this sample was recruited from the only drop-in center for homeless youth in a large Midwestern city and might not represent homeless youths in other areas of the country in terms of racial/ethnic diversity, economic background, and patterns of alcohol and drug use. Second, as these youths were not treatment-seeking but were engaged into treatment through outreach efforts, they may have been less motivated than treatment-seeking youth to change alcohol use, drug use, and HIV risk behavior. Therefore, the relationship between motivation to change and alcohol and drug use and HIV risk behaviors might be different than for treatment-seeking populations. Third, this was a cross-sectional study, and conclusions regarding the temporal ordering of events cannot be determined.

Conclusions and Implications

This study found that different factors predicted motivation to change alcohol, drug use, and HIV risk behaviors. This is a logical extension of the Transtheoretical model, which presupposes that motivation to change will vary based on the behavior. If motivation is

behavior-specific, then it follows that different factors may be associated to motivation to change different behaviors. The variables examined in the present study accounted for a higher proportion of the variance in motivation to change alcohol use than motivation to change drug use and HIV risk behaviors. Thus, it appears that important variables associated with motivation to change alcohol use were identified. Other variables not considered in the analyses may better explain variation in motivation to change drug use and HIV risk behaviors. Future research should seek to identify predictors of motivation to change these risky behaviors with the ultimate goal of identifying potential targets of intervention.

In particular, this study's findings suggest that consequences of substance use, severity of alcohol use, and sexual abuse history might be fruitful targets of intervention efforts with the goal to enhance motivation to reduce alcohol and illicit drug use. That is, future research might show that establishing links between illicit drug use and negative consequences in the homeless substance user's life might promote motivation to change drug use. In addition, this study's finding that motivation to change HIV risk decreases with increasing length of time homeless highlights the importance of engaging youths into treatment early in their homeless trajectory and assisting the youth in obtaining long-term housing.

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Table 1

Descriptive statistics

	<i>N (%)</i>	<i>M(SD)</i>	<i>Range</i>
Gender			
Male	95 (47.5%)		
Female	105 (52.5%)		
Sexual orientation			
Straight	154 (77.0%)		
Gay, lesbian, bisexual, transgendered, unsure	46 (23.0%)		
Ethnic group			
White	39 (19.5%)		
Black/African-American	134 (67.0%)		
Other	27 (13.5%)		
History of sexual abuse	54 (27.0%)		
• Age		18.83(1.27)	14 – 20
• Current # of days without shelter		48.75 (126.86)	0 – 1095
• # of unmet needs		1.77(1.39)	0–4
• # of experiences with child welfare, foster care, or juvenile justice systems		2.05(1.80)	0–6
• BDI Depression		14.72(13.16)	0 – 63
• Consequences of substance use		4.51(4.02)	0–17
• Consequences of sexual behaviors		1.33 (1.56)	0 – 9
• Percent days of illicit drug use		64.79(33.53)	0–100
• Percent days of alcohol use		17.14 (21.30)	0–100
• Motivation to change alcohol use score		33.99(13.45)	13–65
• Motivation to change drug use score		38.10(11.71)	13–65
• Motivation to change HIV risk behavior score		29.11(7.67)	9–45

Table 2

Hierarchical regression analysis of motivation to change

	Alcohol use			Illicit drug use			HIV risk behaviors		
	β	t	ΔR^2	β	t	ΔR^2	β	t	ΔR^2
<u>Step 1</u>			.04			.04			.03
• Gender	.07	.71		.11	1.05		.10	.84	
• Age	.23	2.49*		.13	1.29		.12	.96	
• Sexual orientation	-.05	-.50		.01	.08		-.06	-.48	
• Ethnicity	.002	.03		.13	1.42		.08	.65	
<u>Step 2</u>			.04			.06			.10*
• Current # days without shelter [†]	.03	.36		.09	.98		-.36	-3.04**	
• Difficulty meeting needs	-.16	-1.76		.09	.91		.11	.92	
• System experience	-.10	-1.13		-.18	-1.80		-.04	-.31	
<u>Step 3</u>			.34***			.08			.04
• Depression	.16	1.55		.10	.99		-.07	-.48	
• Consequences of substance use	.15	1.55		.23	2.15*				
• Consequences of sex [†]							.14	1.10	
• Sexual abuse	-.33	3.55**		.01	.11		.11	.81	
• Frequency of alcohol use [†]	.33	3.78***					.04	.34	
• Frequency of illicit drug use				.05	.56		-.04	-.32	
<u>Final Model</u>									
F	5.28***			2.02*			1.09		
R square	.42			.18			.18		
Adjusted R square	.34			.09			.01		

*
 $p < .05$ **
 $p < .01$ ***
 $p < .001$ [†] indicates log transformation before analyses