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Multi-Level Risk and Protective Factors for Substance Use among Zambian Street Youth

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Abstract

Background: High rates of substance use have been reported among youth in Zambia. This is particularly concerning given that substance use is one of the biggest risk factors placing young people at risk for HIV infection. *Objectives:* The purpose of the current study is to examine how multilevel risk and protective factors (i.e., community, family, peers, individual) influence alcohol and marijuana use. *Methods:* A total of 250 street youth in Lusaka, Zambia, were interviewed in the summer of 2014 about their alcohol and marijuana use and reasons for usage. Data were analyzed using descriptive and multivariate methods. *Results:* Youth reported high rates of alcohol use. At the multivariate level, peer- and individual-level variables (e.g., using alcohol or drugs for coping or for fun) explained the most variance, followed by family-level factors. Community-level variables explained the least variance in all models. *Conclusion/Importance:* A better understanding of multilevel risk and protective factors for young people’s alcohol and marijuana use could lead to the development of better intervention strategies to reduce this behavior among Zambian street youth.

Keywords: alcohol, marijuana, street youth, Zambia, HIV risk

Introduction

Alcohol and marijuana use (also referred to as substance use in this article) in sub-Saharan Africa is generally widespread among the youth population. For example, among 13- to 15-year-old African students, current drinking rates range from approximately 10%–60% (World Health Organization [WHO], 2014a). Similarly, anywhere from 2%–35% of sub-Saharan African youth aged 13–22 report lifetime marijuana use (United Nations Office on Drugs and Crime, 2012). Among sub-Saharan African youth ages 12–19, approximately 9% reported getting drunk in the past year (Kabiru, Beguy, Crichton, & Ezeh, 2010). Globally, 60% of street children report inordinate levels of lifetime substance use, including alcohol and marijuana (Embleton, Mwangi, Vreeman, Ayuka, & Braitstein, 2013). Research also reveals that men in sub-Saharan Africa are much more likely to engage in problem-drinking behaviors compared to women (Obot, 2006), and worldwide it is more common for women to abstain from drinking than men (WHO, 2014a).

Research finds that numerous deleterious outcomes are associated with alcohol and drug use (Anarfi, 1997; Meekers & Klein, 2002; Solorio et al., 2008). For example, illicit drugs, alcohol, and marijuana have been found to be associated with trading sex for food, shelter, and/or money among homeless youth in the U.S. (Chen, Tyler, Whitbeck, & Hoyt, 2004; Tyler, Gervais, & Davidson, 2013; Walls & Bell, 2011). In particular, there is a strong linkage between excessive alcohol consumption and elevated levels of HIV prevalence throughout sub-Saharan Africa (Woolf-King, Steinmaus, Reingold, & Hahn, 2013) and alcohol and drug use are one of the main avenues placing youth at risk for HIV infection. Global intervention programs specifically highlight the key role of reducing substance use as a means of minimizing the spread of HIV (WHO, 2014b). In order to examine various levels that may influence youths' substance use, the current study examines multilevel risk and protective factors for alcohol and marijuana use among Zambian street youth. Given the negative health outcomes associated with alcohol and marijuana use, understanding more about its risk and protective factors is vital for developing appropriate prevention and intervention strategies for this group of young people.

Lifetime alcohol use among 15- to 21-year-old Zambian youth was found to be approximately 50% (Magnani, Karim, Weiss, Bond, Lemba, 2002), marijuana use was 86%, and inhalant usage was 47% (Nkowane et al., 2004), which is similar to rates found among homeless and street youth in the United States (Bousman et al., 2005). Moreover, the use of alcohol is also associated with using other drugs (Peltzer, 2009). In addition to the high prevalence of alcohol, marijuana, and illicit drug use, research in various countries has found this behavior to be associated with risky sexual behaviors.

Among U.S. homeless youth, research has found that using substances is associated with risky sexual behaviors, such as failure to use condoms during sex and having multiple sexual partners (Bailey, Camlin, & Ennett, 1998; Solorio et al., 2008). In addition, marijuana use increases youths' chances of engaging in sex as found in a study of Zambian in-school adolescents (Siziya, Muula, Kazembe, & Rudatsikira, 2008). Finally, research also finds that youth often use drugs to enhance sexual experiences (Magnani et al., 2002; Nkowane et al., 2004; Peltzer, 2009), suggesting that substance use and risky sexual behaviors are inextricably linked (Siziya et al., 2008). This linkage is further evidenced by the fact that the median age of first alcohol use is 15, which coincides with the median age of first sexual

experience (Magnani et al., 2002). Results from the Global School-based Student Health Survey revealed that students who had 20 to 30 drinks in the past 30 days were almost 20 times more likely to ever have had sex (Page & Hall, 2009). Substance use is a serious health concern because those who drink alcohol and use drugs regularly are more apt to engage in risky sexual behaviors, making youth particularly vulnerable to HIV infection.

We examine four domains of risk and protective factors related to alcohol and marijuana use: community, family, peers, and individual. Community factors such as acceptance of alcohol and ease of obtaining the substance are important for understanding youth's risk for using them. For example, youth's family and friendship networks tend to foster substance use as young people typically report receiving their first substance from a friend or family member (WHO, 2003). Moreover, 90% of youth reported that obtaining alcohol in their community was "very easy" (Mbulo, Newman, & Shell, 2007; Nkowane et al., 2004). Poor economic conditions (e.g., lacking electricity and a telephone) are also a risk factor for substance use (Peltzer, 2009).

The study of resiliency (i.e., protective factors such as parental monitoring) among homeless and street youth is rare as resiliency is difficult to define for this population (Tyler, 2008; 2013). However, parental monitoring is one important agent that has been found to lower the risk for alcohol and drug use among youth in Zambia (Peltzer, 2009). In terms of family risk, parental substance use is often associated with youth's own drinking (Nkowane et al., 2004). Similarly, U.S. research reveals that parental substance use is an important predictor of adolescent alcohol use (Conger & Rueter, 1996; Kaplow et al., 2002; Windle, 1996).

Peer groups are also a risk factor for alcohol and drug use as peers not only introduce youth to delinquent activities (Haynie & Osgood, 2005) but then later may pressure or coerce them into using alcohol and drugs (Tyler & Johnson, 2006). Related, common reasons given by Zambian youth for their own alcohol and drug use include friends using alcohol or drugs (Nkowane et al., 2004). Finally, at the individual level, risk factors for youth's own alcohol and drug use include: acceptance, curiosity, fun, coping, and/or to enhance sexual experiences (Magnani et al., 2002; Nkowane et al., 2004; Peltzer, 2009).

Theoretical framework

This study uses an ecological framework (Bronfenbrenner, 1979), which emphasizes both risk and protective factors (Jessor, 1992) and integrates multiple levels of social elements to understand health outcomes, such as substance use. These multifaceted influences can impact young people both directly and indirectly as they shape environmental and social contexts in which youth are embedded, resulting in complex configurations of social outcomes (Salzinger, Feldman, Stockhammer, & Hood, 2002). For example, within the family domain, higher levels of parental monitoring are viewed as a protective element, whereas parental alcohol misuse would be labeled a risk. In the proposed study, we examine community, family, peer, and individual as possible risk or protective factors associated with youth's alcohol and marijuana use.

Hypotheses

Based on the above literature and the ecological framework, we hypothesized that (1) youth with poorer economic conditions and higher availability of alcohol and drugs in their community, (2) youth whose parents misuse alcohol, (3) youth who have a greater number of close friends who use alcohol and drugs and youth who attend parties more often with close friends, and (4) youth who report using alcohol or drugs for peer acceptance, for coping, for fun, out of curiosity, or to enhance sexual experiences would report drinking on more days and having a greater number of drinks in the past 30 days and ever using marijuana. In addition, we hypothesized that (5) youth who report higher levels of parental monitoring would drink less and on fewer days in the prior 30 days and report never using marijuana.

Methods

Study site and sample size

Data collection was conducted in June and July 2014 in Lusaka, Zambia. The study was conducted under the collaboration of the Tropical Diseases Research Center in Zambia (TDRC), the Zambia Alcohol and Drug Programme (ZADP), and the University of Nebraska, USA. The study sites, which cover the entire Lusaka area included five compounds (which refers to a collection of housing units owned or rented by families for habitation) including: (1) Ng'ombe, (2) Linda, (3) Kabanana, (4) Chawama, (5) Chibolya. Additional study sites included: (6) Down Town Shopping area; (7) Great North Road; and (8) the bridge area (by the Zambia Electricity Supply Company) which is a popular hang-out for street youth as it acts as a shelter, a place to meet up with other street youth, and a place to beg as its location is accessible to traffic flowing into town but a location where police seldom check. The total sample consisted of 250 street youth.

Procedure

The sampling selection strategy was designed to sample both male and female street youth between the ages of 14 and 24. *Street youth* refers to those who spend their days on the street engaging in economic activity such as begging. While many have a home to return to at the end of the day, others do not (Lemba, 2002). To ensure more representativeness, we sampled from local agencies who serve high-risk youth as well as sampling unmonitored youth who spend a lot of their time on the streets. According to service providers, the youth saw the interview as a chance to be recognized as a group. Moreover, they saw this project as a source of hope, inspiration as well as support for their current living situation. Interviewers noted that very few youth refused to participate (less than 5%). The Zambia Alcohol and Drug Programme (ZADP) has network connections with several agencies throughout the country that serve this population and helped facilitate access to youth both within their agencies and on the streets. This agency offers various services such as counseling, social reintegration and support programs, and emergency intervention.

Six Research Assistants (RAs), selected on the basis of their experience and membership to ZADP, conducted the interviews. Of these, two were students studying Social Work at

the National Institute of Public Administration, two were Psychosocial Counselors, one was a Psychologist, and one was a retired Registered Nurse. Interviewer training was done in Lusaka and covered screening, consent/assent, questionnaire administration, and confidentiality. The training also took into consideration Nyanja as the main local language used in Lusaka and the training materials and questionnaire were translated from English into Nyanja. This was to ensure that all the RAs interpreted the questionnaire in the same way and then later back into English. Each RA was assigned a set of ID numbers to avoid replication and mix-ups during the actual data collection process. Interviewers worked closely with the agency and its network to recruit study participants. Upon initial contact, interviewers screened youth for eligibility. All interviews were conducted in a private room provided by the ZADP and its networks. Study procedures were explained to youth who then signed a consent/assent form prior to participation. The interview took about 30 to 45 minutes to complete, and youth were provided with a snack and a small transport fee as incentives. This study was approved by the Tropical Diseases Research Center ethics review committee and by the Institutional Review Board at the institutions involved and final approval was granted from the Ministry of Health, Lusaka.

Measures

Independent variables

Community variables comprised three measures. *Neighborhood economic conditions* included six items which asked youth, for example, if their household had electricity, flush toilet, and telephone (0 = yes; 1 = no). An index was created such that a higher score indicated poorer economic conditions. This measure has been used in prior research with African youth (Thurman, Brown, Richter, Maharaj, & Magnani, 2006). *Ease of obtaining alcohol in one's community* and *ease of obtaining drugs in one's community* were assessed by asking youth, "In terms of obtaining any type of alcohol in your community" and "In terms of obtaining any type of drugs in your community" would you say it is . . . Responses for both questions ranged from 1 = very difficult to 4 = very easy. For the first question, the responses were highly skewed toward the positive end (i.e., very easy to obtain alcohol) so we recoded the response options such that 0 = very difficult or somewhat difficult to obtain alcohol and 1 = somewhat easy or very easy to obtain alcohol. The second question was not recoded as the response options for drug availability approximated a normal distribution. These measures have been used in prior research with African youth (Nkowane et al., 2004).

Family variables comprised two measures. *Parental monitoring* included six items which asked youth, for example, "In the course of a day, how often do your parent(s) know 'Where you are?' and 'Who you are with?'" (1 = never to 4 = always). A mean scale was created such that a higher score indicated greater parental monitoring. Alpha reliability for this scale was .88, which is consistent with other studies using similar measures with U.S. youth (Simons & Conger, 2007; alpha reliabilities .82 to .92). Studies of African youth have used similar measures for parental supervision (Peltzer, 2009; Siziya et al., 2008). *Parental alcohol misuse* included three items which asked youth, "Have you ever thought your parent(s) had a drinking problem?", "Did you ever argue or fight with your parent(s) when

he/she was drinking?" and "Did you ever encourage your parent(s) to quit drinking?" (0 = no; 1 = yes). An index was initially created but due to a negative skew (almost 75% of youth reported no parental misuse), this variable was dichotomized: 0 = parent(s) did not have an alcohol problem and 1 = parent(s) did have an alcohol problem (Hodgins, Maticka-Tyndale, El-Guebaly, & West, 1993).

Peer variables comprised three measures. *Peer alcohol use* included two items which asked youth "How many of your close friends drink alcohol" and "How many of your close friends get drunk?" (1 = none, 2 = a couple, 3 = quite a few, and 4 = all of them). A mean scale was created and the correlation between the two items was .86. *Peer drug use* was a single-item indicator which asked youth, "How many of your close friends use drugs?" (1 = none, 2 = a couple, 3 = quite a few, and 4 = all of them). *Partying with peers* was also a single-item indicator which asked youth "How often do you attend parties with close friends?" (1 = never to 4 = all the time). All three of these peer substance-related items have been used in prior research with Zambian youth (Magnani et al., 2002).

Individual level comprised five items. Participants were asked if they ever used alcohol or drugs: (1) "to be accepted by peers," (2) "to enhance sexual experiences," (3) "to cope with sadness/depression," (4) "out of curiosity," and (5) "for fun" (0 = no; 1 = yes). These items have been used in prior research with similar populations (Magnani et al., 2002; Nkowane et al., 2004).

Demographic variables

Gender was coded 0 = male and 1 = female. *Age* was the youth's age at the time of the interview, and *homeless* was a single-item question which asked youth if they have a home to which they can return (0 = yes; 1 = no). If the youth said no, they were coded as homeless.

Dependent variables

Number of drinking days was measured by asking youth, "In the past 30 days, on how many days did you have at least one drink containing alcohol" (0 = never to 5 = five or more days). The mean was 2.23 (Median = 2.0; s.d. = 2.17). The actual range was 0 to 5; skewness = .175. Seventy youth (28%) reported having at least one drink on five or more days.

Number of drinks per day was measured by asking youth, "In the past 30 days, on the days you drank alcohol, how many drinks did you usually drink per day? (0 = none to 7 = seven or more drinks). The mean was 2.60 (Median = 2.0; s.d. = 2.78). The actual range was 0 to 7; skewness = .522. Forty-seven youth (19%) reported having seven or more drinks on the days they consumed alcohol in the past month.

Marijuana use was a single-item measure which asked respondents, "During your lifetime, how many times have you used marijuana? (0 = never, 1 = a few times, 2 = at least 5 times, 3 = 10 or more time). Due to skewness, this variable was dichotomized into 0 = never used marijuana in lifetime and 1 = used marijuana at least one time. Given that only three females reported ever using marijuana, analyses were only performed for males.

Statistical analyses

Data for lifetime substance use was summarized using descriptive statistics (*N* and percentage). In addition, a series of three multivariate models were run to examine correlates

of number of drinking days, number of drinks per day, and lifetime marijuana use (males only). For each of these three models, the variables were added in five separate blocks (i.e., demographic, community, family, peer, individual) so we could see the impact of each set of variables on our dependent variable. Ordinary least squares regression (OLS) models were used to examine correlates of “number of drinking days in the past 30 days” and “number of drinks per day in the past 30 days.” Standardized beta coefficients (β) and standard errors (*SE*) are reported in Tables 1 and 2. These models controlled for gender, age, and living situation (i.e., homeless vs. not). A logistic regression model was used to assess correlates of “marijuana use ever” (males only). The adjusted odds ratio (AOR) and 95% confidence intervals (CI) are reported in Table 3. This model controlled for age and living situation and all analyses were performed using SPSS version 22. Results at $p < .05$ were considered statistically significant.

Table 1. OLS regression models for correlates of number of days youth drank alcohol in past 30 days

Variables	Model 1		Model 2		Model 3		Model 4		Model 5	
	β	<i>SE</i>	β	<i>SE</i>	β	<i>SE</i>	β	<i>SE</i>	β	<i>SE</i>
Demographics										
Female	-.325**	.297	.321**	.297	-.287**	.289	-.145**	.261	-.072	.242
Age	.166**	.048	.160*	.048	.093	.048	.065	.042	.049	.038
Homeless	.039	.382	.063	.390	.029	.376	.053	.328	.082	.307
Community Level										
Economic conditions			.097	.117	.033	.115	.055	.100	.037	.092
Availability of drugs			.056	.119	.035	.115	-.090	.103	-.082	.094
Availability of alcohol			.054	.673	.036	.657	.040	.566	.005	.517
Family Level										
Higher monitoring					-.290**	.152	-.142*	.138	-.100	.126
Parent alcohol misuse					.150*	.300	.099	.260	.069	.237
Peer Level										
Peer alcohol use							.275**	.131	.174**	.123
Peer drug use							.225**	.134	.124*	.132
Attend parties w/peers							.223**	.158	.156**	.148
Individual Level										
Peer acceptance									-.025	.269
Enhance sex									.088	.285
Coping									.231**	.254
Curiosity									.004	.242
For fun									.241**	.273
<i>Adjusted R</i> ²	.129		.133		.206		.413		.521	

Note: ** $p < .01$, * $p < .05$

Results

Sample characteristics

The total sample of 250 street youth included 179 males and 69 females (two youth did not respond to the gender question), 14 to 24 years of age (Median age = 20.0; IQR: 18–22). Approximately 13% of youth did not have a home to which they could return and 32% of young people were attending school full time. Sixty-three percent of all youth had used alcohol in the past 30 days (73% for males and 34% for females). During the past 30 days when youth were drinking, 19% reported having seven or more drinks per day (31% of males and 25% of females are binge drinkers). With the exception of marijuana, 21 youth (9.5% of those who responded) reported ever using any illicit drug. Marijuana was the most frequently used drug, reported by 35% of all youth (47% of males; 5% of females). Glue, the second most prevalent drug, was reported by 9 males (6%) and no females. The vast majority of youth reported using alcohol or drugs for fun (61%), coping (45%), peer acceptance (43%), curiosity (30%), and sexual enhancement (19%).

Multivariate results

Table 1 shows the correlates for number of days youth drank alcohol in the past 30 days. In Model 1, gender and age are significant indicating that males ($\beta = -.325$) and older youth ($\beta = .166$) were more likely to report drinking on more days compared to females and younger youth. In Model 2, none of the community-level variables were significant, and this model added minimal explained variance beyond the 12.9% reported in Model 1. In Model 3, the addition of the family-level variables revealed that parental alcohol misuse ($\beta = .150$) was positively associated with number of days youth drank. However, youth with higher levels of parental monitoring ($\beta = -.290$) had significantly fewer drinking days indicating its protective function. Model 4 shows a doubling of the explained variance with the addition of the peer-level variables. Specifically, having a greater number of close friends who use alcohol or get drunk ($\beta = .275$), who use drugs ($\beta = .225$), and attending parties with close friends more often ($\beta = .223$) were all significantly associated with youth drinking on more days in the past month. The addition of the individual-level variables in Model 5 revealed that youth who used alcohol or drugs for coping ($\beta = .231$) or fun ($\beta = .241$) drank alcohol on a greater number of days during the past month.

Table 2 shows correlates of number of drinks per day in the past 30 days. Model 1 results revealed that males ($\beta = -.189$) and older youth ($\beta = .220$) were more likely to drink a greater quantity of alcohol on the days they did drink compared to females and younger youth. None of the community-level variables were significant in Model 2 and this model explained no additional variance. Model 3 shows the protective role of higher parental monitoring ($\beta = -.158$). In contrast, youth who reported that a parent misuses alcohol consumed more alcohol themselves on the days they drank. In Model 4, youth with a greater number of close friends who use alcohol ($\beta = .212$), and drugs ($\beta = .242$), and youth who attend parties with close friends more often ($\beta = .229$) were significantly more likely to use greater quantities of alcohol on the days they drank. Using alcohol or drugs as a coping mechanism ($\beta = .218$) or for fun ($\beta = .282$) are both significant correlates of the number of drinks youth consume per day in the past 30 days.

Table 2. OLS regression models for correlates of number of drinks per day in past 30 days

Variables	Model 1		Model 2		Model 3		Model 4		Model 5	
	β	SE	β	SE	β	SE	β	SE	β	SE
Demographics										
Female	-.189**	.390	-.186**	.390	-.173**	.390	-.044	.367	.020	.349
Age	.220**	.063	.218**	.064	.185	.065	.160**	.059	.140*	.055
Homeless	.121	.501	.143	.512	.118	.509	.141*	.460	.051**	.444
Community Level										
Economic conditions			.042	.154	.006	.156	.022	.141	.000	.133
Availability of drugs			.016	.157	.000	.155	-.122*	.145	-.112*	.135
Availability of alcohol			.105	.884	.105	.888	.107	.796	.066	.746
Family Level										
Higher monitoring					-.158*	.205	-.023	.193	.022	.182
Parent alcohol misuse					.145*	.405	.094	.366	.067	.342
Peer Level										
Peer alcohol use							.212**	.184	.133*	.178
Peer drug use							.242**	.189	.126*	.191
Attend parties w/peers							.229**	.222	.159**	.214
Individual Level										
Peer acceptance									-.084	.389
Enhance sex									.074	.412
Coping									.218**	.367
Curiosity									-.074	.350
For fun									.282**	.394
<i>Adjusted R</i> ²	.093		.094		.120		.298		.394	

Note: ** $p < .01$, * $p < .05$

Table 3 shows correlates of lifetime marijuana use (males only) using logistic regression. In Model 2, availability of drugs within one's community was significant; that is, for each unit increase in drug availability in their community, the odds of males ever using marijuana increases by 39% (AOR = 1.39; CI = 1.04–1.87). In Model 3, the addition of the family-level variables revealed that for each unit increase in parental monitoring, the odds of males using marijuana decreases by 51% (AOR = .49; CI = .33–.75). In Model 4, peer drug use was significant: for each unit increase in peer drug use, the odds of males using marijuana increases by 80% (AOR = 2.80; CI = 1.81–4.32). Finally, Model 5 reveals that having ever used substances for fun increases the odds of males using marijuana by 25% (AOR = 3.25; CI = 1.05–10.05).

Table 3. Logistic regression models for correlates of lifetime marijuana use (Males only $N = 179$)

Variables	Model 1		Model 2		Model 3		Model 4		Model 5	
	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI
Demographics										
Age	1.02	.91–1.15	1.01	.90–1.14	.96	.85–1.10	1.02	.87–1.18	1.02	.87–1.19
Homeless	.49	.18–1.32	.64	.23–1.82	.49	.16–1.49	.34	.09–1.22	.27	.06–1.27
Community Level										
Economic conditions			1.23	.92–1.64	1.12	.82–1.52	1.09	.77–1.54	1.08	.76–1.53
Availability of drugs			1.39*	1.041–.87	1.32	.97–1.80	1.05	.73–1.51	1.11	.76–1.61
Availability of alcohol			1.21	.21–6.88	.98	.16–6.10	.61	.08–4.41	.46	.05–3.89
Family Level										
Higher monitoring					.49**	.33–.75	.65	.40–1.04	.71	.44–1.17
Parent alcohol misuse					2.19	.98–4.91	2.00	.81–4.96	2.31	.90–5.96
Peer Level										
Peer alcohol use							1.24	.75–2.06	1.14	.66–1.96
Peer drug use							2.80**	1.81–4.32	2.73**	1.67–4.44
Attend parties w/peers							1.13	.67–1.89	.98	.57–1.70
Individual Level										
Peer acceptance									.71	.27–1.91
Enhance sex									1.53	.59–4.02
Coping									1.49	.62–3.63
Curiosity									.77	.32–1.85
For fun									3.25*	1.05–10.05
Nagelkerke R^2	.018		.071		.171		.394		.436	

Note: AOR = adjusted odds ratio, CI = confidence interval, ** $p < .01$, * $p < .05$

Discussion

The purpose of this study was to examine the association between multilevel risk and protective factors (i.e., community, family, peers, individual) with alcohol and marijuana use among 250 street youth in Lusaka. This study is innovative, as very few studies have examined multiple levels of influence simultaneously and even rarer are those studies that have looked at multilevel risks among samples of street youth. This is particularly interesting as street youth often rely on their street networks for guidance and support, and these groups tend to have high participation rates in risky behaviors including alcohol and drug use (Haynie & Osgood, 2005; Tyler, 2008).

An examination of the various levels reveals that community-level variables (i.e., economic conditions and availability of alcohol and drugs) were generally less important in explaining number of days youth drink alcohol than family-, peer-, and individual-level variables. The protective function of higher parental monitoring is significant, even when examining the influence of peers. However, parental monitoring appears to lose its protective function when youth use alcohol more frequently for coping or fun. One possible explanation for this finding is that some youth may be drinking as a way to cope with a

specific family event or their current life situation and therefore, these individual-level reasons undermine the protective role of parental monitoring.

In addition, although drinking or using drugs for peer acceptance was not significant, the results in Table 1 clearly reveal that when most of their close friends drink or use drugs, study youth are likely to engage in similar behaviors. It is possible that some youth are pressured by their peers to drink alcohol, and these youth may succumb, especially if they wish to remain in the peer group (Tyler & Johnson, 2006). Of all of the levels examined, peer-level variables explained the most variance in the number of days youth drink alcohol.

In explaining the number of drinks per day among study youth, findings show that availability of drugs was negatively associated. One possible explanation for this finding is that because drugs are viewed as being more difficult to obtain, youth may choose alcohol instead as the vast majority of youth reported that it was very easy to obtain alcohol, which is consistent with prior research (Nkowane et al., 2004). The family-level variables were less important in these models, and the protective influence of parental monitoring did not hold up. Similar to the first set of models, peers continue to exert the strongest influence followed by individual-level reasons for drinking.

Marijuana use, examined only among males, reveals that having peers who use drugs, likely marijuana, and doing so for fun, offer the best explanation for youth's own marijuana use. Though parental monitoring initially was positively related with youth's marijuana use, the influence of peer drug use reduced its effect in the final model. In terms of youth's own marijuana use, it is possible that this behavior relies on more of a social context where there is an expectation of having fun. Similar to our other findings, peers continue to exert the strongest influence and regardless of direction of influence, the deviant behavior of one's peers is correlated with what youth report doing.

These results are generally consistent with an ecological framework (Bronfenbrenner, 1979), which integrates multiple levels of social elements to explain alcohol and marijuana use. Overall, some family- and individual-level variables contribute to explaining the use of alcohol and marijuana among Zambian street youth at some level, though their influence appears to be affected by peer behaviors. Though community-level variables did not reach statistical significance (with the exception of drug availability), it is possible that they are influential earlier in the youth's life. For example, economic conditions may not only affect youths' peer groups, but such conditions may also shape a youth's mental health and well-being. That is, living in poor economic conditions may lead youth to feel sad or depressed, which subsequently, may contribute to greater alcohol use. As such, community-level variables should be further explored when examining alcohol or marijuana use among street youth.

Some limitations should be noted. First, because the data are self-reported, we are unable to verify youth's substance use or that of their friends. Second, the cross-sectional data precludes inferences about causality. For example, instead of peers influencing study youths' behavior, it is possible that the substance use behaviors of study respondents influenced that of their peers. Third, because youth were not randomly selected, we do not know how representative our sample is of the general street youth population. Because many of the youth are not connected to their family and community, they may be more

reliant on their peers, which may elevate their alcohol and marijuana use. Fourth, because of the sensitive nature of some of the questions, it is possible that some youth may have succumbed to social desirability bias and reported lower substance use than their actual behavior. Fifth, the current study asked study youth only if they had a home to which they could return. In hindsight, it would have been beneficial to know length of time away from home, as a longer time period may have been a better predictor. Sixth, we had a small number of females in our sample, and their small cell sizes precluded us from examining their risk factors for marijuana use. Finally, only one protective factor was examined. Because research examining resiliency among this population is very limited (Tyler, 2013), future studies on this topic should query youth about the types of social services they use, who they can rely on for instrumental and social support and so on. Learning more about protective agents among this population will assist with the development of intervention programs to reduce alcohol and marijuana use.

In sum, this study adds to the limited research in this area by revealing that multiple levels of risk are important for understanding youths' alcohol and marijuana use. Future research should expand on protective mechanisms that will prove successful against using alcohol and marijuana. Given that substance use is a critical factor in increasing engagement in risky sexual behaviors (Magnani et al., 2002; Nkowane et al., 2004; Peltzer, 2009), which escalate HIV transmission and acquisition, a continued focus on this region and this particular age group is critical in order to determine protective mechanisms that will help youth abstain from substance use and/or risky sexual behavior.

Glossary

Ecological framework: Developed by Bronfenbrenner (1979), emphasizes risk and protective factors and integrates multiple levels of social elements to understand health outcomes.

Neighborhood economic conditions: Poorer neighborhoods or poorer economic conditions would include, for example, lack of electricity or telephone.

Resiliency: Protective factors that youth may have, such as parents who know where youth are and who they are with (i.e., parental monitoring).

Risk factors for substance use: Behaviors that increase a youth's susceptibility to using alcohol or drugs (e.g., parental substance misuse and peer substance use).

Risky sexual behaviors: Behaviors that increase one's risk for HIV, such as failure to use condoms during sex and having multiple sexual partners.

Street youth: Those who spend their days on the street engaging in economic activity such as begging.

Trading sex: Exchanging sex with an individual for something specific such as for food, shelter, or money.

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