School connectedness and Guatemalan youth substance use: Does Gender Matter?

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Abstract

This study examined if school connectedness was protective for youth and if the effects of school connectedness on alcohol and cigarette/tobacco use varied by gender among a cross-sectional sample of Guatemalan youth (N = 322, Mage = 12.16, 53% male). Using Ordinary Least Squares regression, a significant inverse association was found between school connectedness and past 30-day alcohol use frequency (b = -.11, p < .01), past 30-day alcohol use amount (b = -.12, p < .01), past 30-day cigarette/tobacco use frequency (b = -.06, p < .05), and past 30-day cigarette/tobacco use amount (b = -.05, p < .10). A significant school connectedness by gender interaction effect was also found for all alcohol and cigarette/tobacco use outcomes. Although school connectedness appeared to be protective for youth, females had greater substance use once gender was accounted for. Findings are discussed further in relation to gender, youth prevention efforts and health.

Keywords: substance use, protective factor, global health, school connectedness, gender, adolescents

INTRODUCTION

The Central American region, which contains a mix of both indigenous Maya and Ladino peoples, has faced significant drug use and violence problems over the past several decades (US Department of State, 2014; OSAC, 2015; Winton, 2005), particularly in Guatemala (Amnesty International, 2013; Bruneau, 2014; Foulger, Page, Hall, & Crookston, 2013; Rothenberg, 2012). Specific to youth, research suggests that the risks for substance use are higher for adolescent males living in urban areas (Foulger et al., 2013). Although risk for drug use among male youth is higher, little knowledge is available on how gender may increase or reduce risk factors for substance use among Guatemalan youth. School connectedness, which refers to the extent youth feel they are a part of their school (Waters, Cross, & Runions, 2009),

is one such factor that has been found to be protective for youth against substance use in other countries. Whether the effects of school connectedness vary by gender as received little attention. Understanding the relationship of gender and school connectedness can provide key insight into the development of evidence-based prevention/interventions that target youth substance use. As a result of this gap in the literature, the current study examines whether school connectedness is protective against alcohol and tobacco use among Guatemalan youth and whether this relationship varies by gender.

SUBSTANCE USE RISK AMONG GUATEMALAN YOUTH: RED ZONES

Alcohol and tobacco are the most commonly used substances by Guatemalan youth (Foulger et al., 2013; WHO, 2013). Several risk factors for substance use among youth have been identified and include easy access to drugs and alcohol, community disorganization, poverty, societal inequity, low education, and lack of community empowerment (da Silva et al., 2009; Foulger et al., 2013; Kliewer & Murrelle, 2007; McIlwaine & Moser, 2004; Rothenberg, 2012; Steinberg, Height, Mosher, & Bampton, 2006; Ten Velde, 2012; UNDP, 2013). Furthermore, youth that live in urban areas are at greater risk for substance use, particularly when they reside in areas known as "Red Zones".

Red Zones are areas that have high levels of extreme poverty, criminality, violence and substance use (Godoy-Paiz, 2012; International Crisis Group, 2011, 2014; Lemonade International, 2015; Om International, 2014; OSAC, 2015; Rothenberg, 2012; Safe Passage, 2015; Thomas, O-Neill, & Offit, 2011; Tidball & Krasny, 2013): in Guatemala City, the site of the current study, areas designated as Red Zones continue to experience high rates of violence and substance use (Thomas et al., 2011), making the city highly unsafe for youth (Kristensem, 2014). Thus, residing in an area such as this that experience widespread economic and social disparity may create an environment for youth significantly heightens the risk for substance use (Godoy-Paiz, 2008, 2012; McAdams, 2013; OSAC, 2015; Rothenberg, 2012). Despite living in this risky environment, the school setting is often seen as one of the most secure places for youth living in the Red Zones as well as a natural venue for prevention and intervention programming.

School Context as a Protective Factor

Given the environmental context, understanding how salient factors operate to protect or put youth at risk for substance use is critical (Steinberg & Taylor, 2010). It is thought that school connectedness in particular may be associated with lower adolescent substance use (Fergus & Zimmerman, 2005). Importantly, the school environment represents one of the most concentrated youth contexts, outside of the family, where social interaction occurs (Prado et al., 2010; Prado, Szapocznik, Maldonado-Molina, Schwartz, & Pantin, 2008) and provides not only social support and education but also aides in the socioemotional development of adolescent behavioral norms (Crosnoe, Erickson, & Dornbusch, 2002).

Positive experiences in school settings may help build resilience, foster positive and healthy development, and reduce the overall chances of youth engaging in risky substance use behavior (Blum, McNeely, & Rinchart, 2002; Rogers, 2013). Schools are key sites that foster important interpersonal relationships with peers and teachers throughout adolescence (Furlong et al., 2003; Roeser, Eccles, & Sameroff, 2000). Within an ecodevelopmental framework, positive experiences in the school context are thought to promote health, resiliency, and drug resistant behaviors in youth (Bacio et al., 2015), especially in unstable societies like Guatemala where many other systemic risk factors for substance use exist (da Silva et al., 2009; Dufur, Parcel, & Troutman, 2013; Pantin et al., 2003b).

Adolescent Ecodevelopment and School Connectedness

Ecodevelopental theory, a multidimensional framework rooted in an ecological systems perspective, posits that environmental, developmental, and social processes are all interrelated at varying levels of influence: the micro, meso, exo, and macro (Pantin et al., 2003b; Prado et al., 2010; Szapocznik & Coatsworth, 1999). In order to properly understand the etiology of youth substance use behavior, it is crucial to explore all levels in their effect on schools and the students within them. The meso level, which is the primary focus of this study, consists of youths' relationships and linkages to systems such as the school. Although the micro level is a highly influential system respective to substance use behavior in this age group, strong relationships with meso level systems such as the school can have a positive impact on educational achievement, development, and risk behavior prevention (Martinez, Huang, Estrada, Sutton, & Prado, 2016; Pantin et al., 2003b). Focusing on the meso level via the school provides youth access to a multitude of social-relational experiences crucial to the development of social skills, self-identity, and healthy behaviors that may buffer against substance use risk factors in their immediate surroundings (Pantin et al., 2003b).

The school environment has the potential to provide positive social and developmental opportunities for growth and learning (Bacio et al., 2015; Martinez et al., 2016). Being connected to school and having positive social experiences can aid in the cultivation of academic success, improved physical and mental health, and avoidance of risky behaviors (Prado et al., 2008). Prior research has found that how much a student feels he or she is connected to and valued at school, is associated with lower substance use and improved academic and behavioral outcomes (Bacio et al., 2015; Resnick, Bearman, & Blum, 1997; Stith, Gorman, & Choudhury, 2003; Maddox & Prinz, 2003; Thompson, Iachan, Overpeck, Ross, & Gross, 2006). This sense of value at school is commonly referred to as school connectedness, an umbrella term that refers to the degree to which students feel a part of their school community, how much they enjoy school, the presence of positive relationships between teachers, students, and peers as well as extracurricular involvement outside of the classroom (Goodenow, 1993; Thompson et al., 2006).

School Connectedness and Gender

Previous studies have found an association between school connectedness and lower youth substance use (Martinez et al., 2016; Resnick et al., 1997), positive mental health outcomes (Kidger et al., 2012; Waters et al., 2009), lower probability of violence and crime (Catalano, Haggert, Oesterle, Fleming, & Hawkins, 2004), and lower interpersonal conflict in and out of the school setting (Bond et al., 2007). Some research suggests however that these behavioral and academic outcomes vary depending on gender (Stith et al., 2003; Maddox & Prinz, 2003; Thompson et al. 2006). Some studies for example have found greater school connectedness among females (Bank, 1997; Crosnoe et al., 2002) and some, conversely, with males (Bonny et al., 2002; Thompson et al., 2006; Williams & McGee, 1991).

Although this research has been primarily conducted with U.S. samples, these findings suggest the possibility of gendered effects with respect to the school context. A potential explanation for finding gendered effects may be a result of the proscription of gender role norms and expectations by the larger societal culture. Specific to Central America, the differentiation of gender roles in Guatemalan society and subsequent behavioral and social expectations for male and female youth may have a substantive influence on youth perceptions towards appropriate educational attainment, occupational status, and long term goal formation (Stith et al., 2003). The educational trajectories for male and female youth in Guatemala may provide

indication for these proscribed gender role norms within the educational context. For example, although girls and boys experience comparable enrollment in primary school (1st -6th grade), a large percentage of female students tend to leave school far before their male peers (McAdams, 2013; Stith et al., 2003; UNESCO, 2012).

Such differences in educational attainment may be a result of the different societal values placed on education based on gender. Normative values and expectations specific to education, which derive from cultural and familial stereotypes, may have an influence on the attitudes that male and female youth have towards educational achievement (Stith et al., 2003). For example females may receive messages that their role is domestic: bearing and caring for children, maintaining a household, and engaging in other community level familial activities. Conversely, the messages that males receive are likely to concern business transactions, educational achievement, and leadership in the community. Males may be given a sense of power and dominance over females and taught to be conversant and opinionated while females may be socialized to stay quiet and, instead of speaking up, to defer to the men who hold the decision making power (Lindsey, 2011; Martinez, Marsiglia, Ayers, & Nuno-Gutierrez, B.L., 2015).

Given the different social, behavioral, and educational norms among girls and boys in the Guatemalan context, (Lindsey, 2011), exploring the protective effects of school connectedness on substance use and whether gender moderates this relationship is worthwhile.

Current Study
Despite the presence of risk factors in everyday life for Guatemalan youth, school connectedness may promote academic success as well as help young people in avoiding risky behavior such as substance use. Thus, the principal aim of this study is to determine if school connectedness was a protective factor for youth against alcohol and cigarette/tobacco use outcomes and if the effects of school connectedness vary depending on gender. It is hypothesized that higher school connectedness will be protective for both males and females against alcohol and cigarette/tobacco use. Second, considering the context of Guatemalan culture, it is hypothesized that the protective effects of school connectedness will be stronger for boys on alcohol and tobacco use outcomes compared to girls.

METHODS

Data
This cross sectional study utilized the pre-surveys of adolescents (Mage 12.16; 53% male) from Guatemala City, Guatemala (N = 322), participating in in Mantente REAL, which is the Spanish language version of keepin' it REAL. keepin' it REAL is a model substance use prevention program that teaches youth drug resistance strategies (Marsiglia & Hecht, 2005). This study was a collaboration between researchers from a non-profit organization based in Guatemala City and a southwestern university in the United States (U.S.). The focus of the Guatemala City non-profit organization is on implementing prevention programming, and with the help of the U.S. partner, they selected keepin' it REAL as the curricula to deliver to Guatemala City students. Twelve schools located in Guatemala's metropolitan area participated in this study and were chosen based on their location in the red zone areas in Guatemala City. The target population for this study was preadolescent youth, which is considered a high-risk group for substance use. The average class size ranged from 14 to 40 students.

Survey Administration
Human subjects protections for secondary data analysis was approved by institutional review boards from both collaborators in this study. As part of the non-profit organizations protocol, the parents of students in all participating schools were notified that their children would be taking part in the keepin' it REAL research study prior to data collection. Since each participating school approved the program as part of their regular curriculum no individual parent permission or separate youth assent were required. Before curriculum implementation occurred, a one-hour classroom based survey was administered to participating students and collected information on basic demographic, substance use, education, and family characteristics. Students were instructed to write down the first letter of their name (e.g. J for Juan), the day of the month they were born, the month they were born, and the first letter of their mother's first name (e.g. M for Maria) in order to create a unique identifier that allowed tracking and matching of students' pre and posttest surveys.

Measures
Past 30-day alcohol use frequency and past 30-day alcohol use amount were measured using two one item measures. The first item asked, "In the past 30 days, how many times did you drink an alcoholic beverage?", with responses ranging from (1) = 'none' to (5) = 'more than 30.' The second item asked, "In the past 30 days, how many alcoholic drinks did you drink?", with responses ranging from (1) = 'none' to (5) = 'more than 30.'

Past 30-day tobacco/cigarette use frequency and past 30-day cigarette/tobacco use amount were also measured using two one item measures. The first item asked 'In the past 30 days, how many times did you smoke tobacco or cigarettes?" Reponses ranged from (1) = 'none' to (5) = 'more than 30 times.' The second item assessed amount and asked, "In the past 30 days, how many cigarettes have you smoked?", with responses ranging from (1) = 'none' to (5) = 'more than 5 boxes.'

School connectedness was measured using a single item measure that asked, "Do you feel part of this school?" Reponses included: (1) = 'not at all'; (2) = 'a little bit'; (3) = 'a fair amount'; and (4) = 'a lot.'

A school connectedness by gender interaction was created in order to test the moderation hypothesis. Gender was coded as (0) male and (1) female. First, the school connectedness variable along with the other predictor variables, were centered in order to provide more interpretable regression coefficients and to reduce multicollinearity (Aiken & West, 1991). Second, the product of the centered school connectedness and gender variables was calculated, creating the interaction.

Several control variables were included in the analysis including student grades, age, financial strain, and quality of parent-child relationship. Average school grades were coded as (1) 'D's & F's' to (4) 'A's.' Financial strain was measured using two items that asked participants if there was enough money at home to buy food and pay house utilities (e.g., electricity, water). Responses ranged from (1) = 'never' (4) = 'always.' Quality of the parent child relationship assessed communication between parent and child and was measured using a previously validated 9-item scale ($\alpha = .88$).

Data Analytic Plan

IBM SPSS Statistics for Windows, Version 21, was used to test the hypothesized relationships (IBM, 2012). First, descriptive statistics were obtained in order to assess both the distribution and characteristics of the sample. Independent samples t-tests were then utilized to determine potential differences in substance use and education outcomes between male and female youth. Second, ordinary least squares regression (OLS) was used to test (a) the relationship between school connectedness and past 30-day alcohol and cigarette/tobacco use and (b) the interaction between school connectedness and gender on past 30-day alcohol and cigarette/tobacco use.

RESULTS

Descriptive statistics for this study are presented in Table I below. The mean age of the sample was 12.16 years (SD = .50) and was comprised of more males (53%) than females (47%). A majority of youth felt connected to their school (M = 3.17, SD = .86), with males reporting slightly higher school connectedness (M = 3.21, SD = .88) compared to females (M = 3.13, SD = .84). Student grades averaged around the C range (M = 2.90, SD = .86). Youth reported a high quality relationship with parents (M = 4.16, SD = .86). A majority of the sample reported their family as having enough money to buy food (M = 3.62, SD = .67) and pay for house utilities (M = 3.74, SD = .61). Overall youth reports of past 30-day alcohol use frequency (M = 1.15, SD = .48) and amount (M = 1.13, SD = .48) were low compared to older adolescent youth. Past 30-day tobacco/cigarette use frequency (M = 1.05, SD = .32) and amount (M = 1.06, SD = .37) were also low. Given the age of youth in the sample, these rates of use were expected. Nevertheless, this particular age period investigated in this study has been identified as a critical time to examine risk and protective factors associated with substance use as well as actual substance use (Pantin et al., 2003b; Prado et al., 2008).

| Table 1. Descriptive Statistics for Variables in the Analysis				
		Range		
Variables	M(SD)	Min	Max	N
Substance Use				
Past 30-day Alcohol Use (Freq)	1.15(.48)	1	5	295
Past 30-day Cigarette/tobacco use (Freq)	1.05(.32)	1	5	293
Past 30-day Alcohol use (Amnt)	1.13(.48)	1	5	299
Past 30-day Cigarette/tobacco use (Amnt)	1.06(.37)	1	5	297
School Context				
School connectedness	3.17(.86)	1	4	311
Grades	2.90(.86)	1	4	318
Controls				
Gender	.47(.50)	0	1	322
Age	12.16(.96)	10	17	317
Quality of parent child relationship	4.16(.86)	1	5	309
Financial strain: Buy food	3.62(.67)	1	4	321
Financial strain: Pay house utilities	3.74(.61)	1	4	320

Independent Samples T-Tests

Independent samples t-tests were conducted to determine if significant differences existed between males and females in alcohol and cigarette/tobacco use and educational outcomes. No significant differences were found between males and females in alcohol use frequency, t(293)= 1.794, p > .05; alcohol use amount, t(297)= 1.79 , p > .05; school connectedness,

$t(309)= .82$, $p > .05$; or in grades $t(316)= -.04$, $p > .05$. There were significant differences between males and females in tobacco use frequency, $t(291)= 2.04$, $p < .05$, and tobacco use amount, $t(295)= 2.18$, $p > .05$.
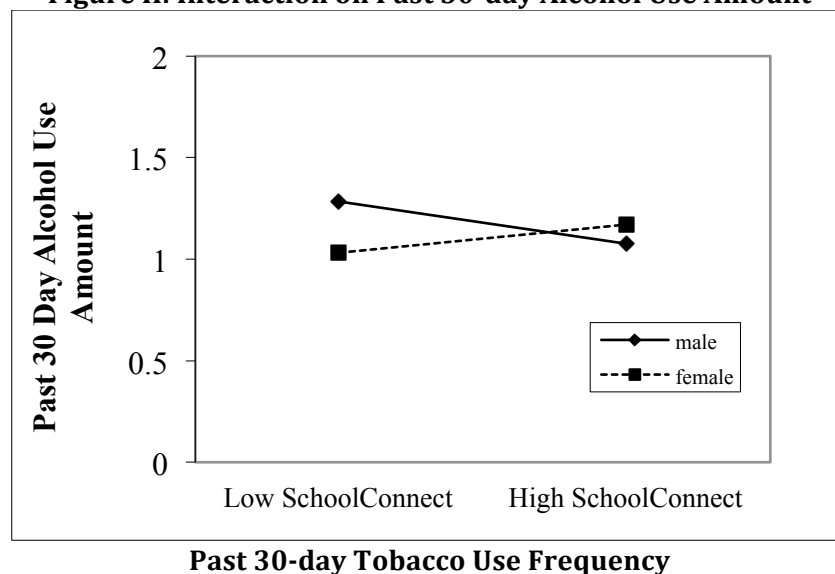
Past 30-day Alcohol Use Frequency

Results for the OLS regression models testing the relationship between school connectedness and past 30-day alcohol use frequency are reported in Table II. There was a significant and inverse association between school connectedness and past 30-day alcohol use frequency ($b = -.11$, $p < .01$). There was also a significant gender by school connectedness interaction effect on past 30-day alcohol use frequency ($b = .15$, $p < .01$; See Figure I below and Table II).

Figure I: Interaction on Past 30-day Alcohol Use Frequency
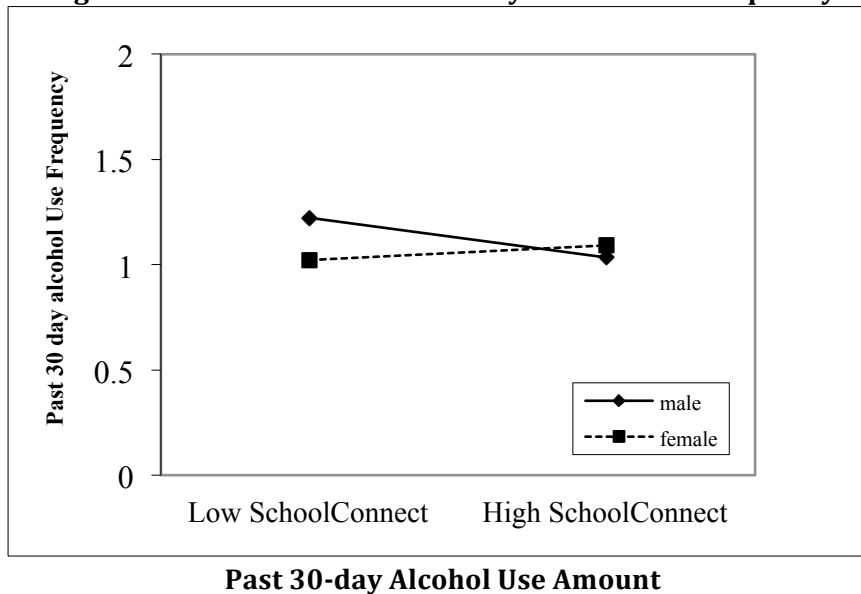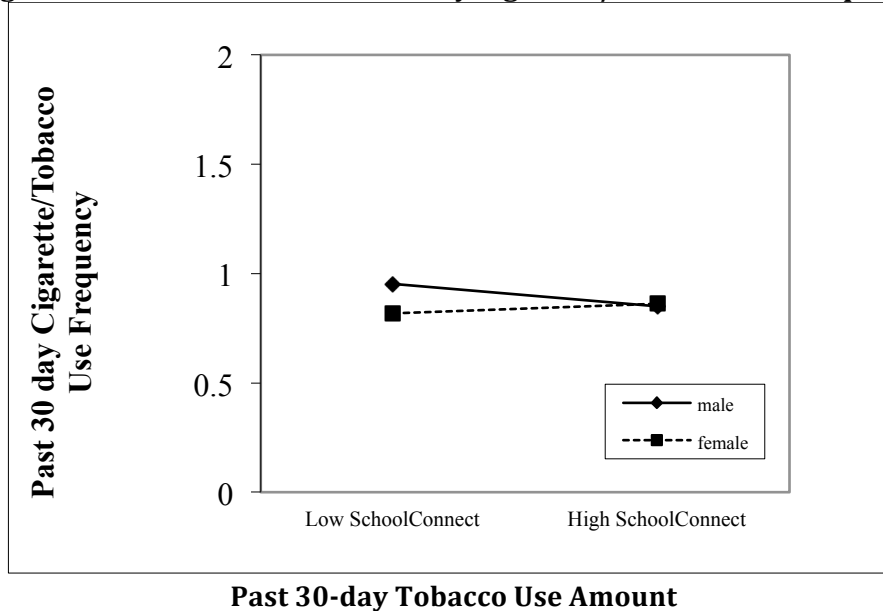

Past 30-day Alcohol Use Amount

There was a significant and inverse relationship between school connectedness and past 30-day alcohol use amount, ($\beta = -.12$, $p < .01$). As well, a significant gender by school connectedness interaction with past 30-day alcohol use amount was found, ($b = .20$, $p < .01$; See Figure II below and Table III).

Figure II: Interaction on Past 30-day Alcohol Use Amount

Past 30-day Tobacco Use Frequency

There was a significant association between school connectedness and past 30-day cigarette/tobacco use frequency (β = -.06, p < .05). Additionally, there was a significant gender by school connectedness interaction with past 30-day cigarette/tobacco use frequency (b = .09, p < .05; See Figure III below and Table II).

Figure III: Interaction on Past 30-day Cigarette/Tobacco Use Frequency

Past 30-day Tobacco Use Amount

Results for the OLS regression models estimating the relationship between school connectedness and past 30-day cigarette/tobacco use amount are reported in Table III. A significant and inverse relationship between school connectedness and past 30-day cigarette/tobacco use amount was found, (β = -.05, p < .10). Additionally, there was a significant gender by school connectedness interaction with past 30-day cigarette/tobacco use amount, (β = .08, p < .10; See Table III).

Table 2. OLS Regression Results for Past 30-day Alcohol Use Frequency and Past 30-day Cigarette/Tobacco Use Frequency

	Past 30-day Alcohol Use (N = 263)		Past 30-day Cigarette/ Tobacco Use (N = 263)	
	B	SE	B	SE
Gender (0=Males; 1= Females)	-.07	.05	-.06	.04
School Connectedness	-.11**	.04	-.06*	.03
Gender*School Connectedness	.15**	.06	.09*	.04
Grades	-.01	.03	-.02	.02
Age	.01	.03	.03	.02
Quality of parent child relationship	-.04	.03	-.03	.02
Financial strain: Buy food	-.03	.04	-.03	.03
Financial Strain: Pay house utilities	.02	.04	-.01	.03
R^2	.05		.07	

*p < .05   **p < .01   ***p < .001

Table 3. OLS Regression Results for Past 30-day Alcohol Use Amount and Past 30-day Cigarette/Tobacco Use Amount

	Past 30-day Alcohol Use (N = 268)		Past 30-day Cigarette/Tobacco Use (N = 266)	
	B	SE	B	SE
Gender (0=Males; 1= Females	-.08	.05	-.06	.04
School Connectedness	-.12**	.04	-.05†	.03
Gender*School Connectedness	.20**	.06	.08 †	.04
Grades	-.04	.03	-.03	.02
Age	.00	.03	.03	.02
Quality of parent child relationship	-.04	.03	-.03	.02
Financial strain: Buy food	.00	.04	-.03	.03
Financial Strain: Pay house utilities	.01	.04	-.00	.03
R^2	.07		.06	

$^\dagger p < .10$ $*p < .05$ $**p < .01$ $***p < .001$

DISCUSSION

Previous research suggests that school connectedness may be protective against substance use and lead to both academic achievement and positive development among youth (Kidger et al., 2012; Resnick et al., 1997; Thompson et al., 2006; Waters et al., 2009). Previous findings conflict, however, regarding the protective nature of school connectedness for boys and girls. This study fills a gap in the literature by examining whether the effects of school connectedness on substance use varied by gender. Results suggest that the effect of school connectedness on substance use was protective boys but risky for girls. In such, findings from the current study provide nuanced insight into the relationship between youths' school context, the moderating role of gender, and the subsequent effects on substance use.

School connectedness was protective for youth on both alcohol and cigarette/tobacco use outcomes. However, when degree of school connectedness was held constant across gender, males reported lower substance use than females. For female youth, school connectedness appeared to be a risk factor for substance use: as perceptions of school connectedness increased, females had higher substance use rates. These findings were unexpected and contrast with previous research that has found stronger protective effects for females than males (Catalano et al., 2004; Kidger et al., 2012; Resnick et al., 1997; Waters et al., 2009). A possible explanation for these findings may have to do with the Guatemalan cultural context, specifically the value on and opportunities for education among male and female youth.

For instance, differential expectations and normative values regarding education are transmitted to youth at an early age through cultural and familial stereotypes. Boys are encouraged to be successful educationally while girls are socialized to the domestic sector and are taught to defer to men (McAdams, 2013; Stith et al., 2003). As a result, it may not be surprising that school connectedness was only protective for male youth. Normative education and gender role expectations may make the school environment more difficult to navigate for girls who do succeed; they may experience pushback from educators as well as their male peers as they progress through school. Teachers may also be less likely to support girls and may even serve as a barrier in advancing through courses and grades. As well, girls who do continue their education beyond primary school may possibly face pressure from male peers

to engage in antisocial behavior, such as substance use, which may create an inherent risk associated with school connectedness.

The findings from this study may have direct implications for teachers, administrators, and school counselors in their approach to working with youth in the school environment. Creating an environment where youth are respected and valued in their learning processes while understanding the complex and divergent needs of males and females in a high risk area may increase the connection that adolescents have to their school in addition to their overall social support with their peers both in and out of the classroom (Kidger et al., 2012). Specifically, the ways that schools address and engage male and female Guatemalan adolescents may require a shift in the wider school culture. Such a shift may accompany increased efforts by teachers, staff, and families in order to ensure that youth feel safe, secure, and supported in their learning and development (Roeser et al., 2000).

To increase student support, schools may need to spend more time learning about their students and their specific matrix of risks and strengths in and out of the classroom. Once schools understand that males and females likely do not experience the school environment the same way, teachers may need to address risks, increase communication, and capitalize on strengths in a gender sensitive manner. This sort of approach will likely require increased communication between teachers and staff, administration and teachers, as well as between the school and the youth's parents. Additionally it is suggested that the students themselves should be involved in and empowered by this process; by incorporating parents and students together into the school culture, it is thought that a student's self-awareness, agency, and educational success will increase accordingly. Furthermore, as student agency and parent participation both increase, families may feel as though they are supported and protected via inclusion into the larger school community. This may lead to even more benefits that transcend the school into the home environment.

Aside from the focus on gender responsive school protocol, the findings from this study must be understood within the broader ecological context. Guatemala, and even more the Red Zones sampled here, are places that experience poverty, violence, and lack of access to basic resources (International Crisis Group, 2011, 2014; Lemonade International, 2015; Om International, 2014; Safe Passage, 2015; Thomas et al., 2011). That social context on top of the cultural knowledge that females complete less education, instead opting to have children, frames school in a manner akin to luxury. If schools are to enroll students and retain students while mitigating the risks for substance use and other negative behaviors, acknowledging cultural norms and barriers associated with a student's exposure to violence, trauma, and poverty is critical. In this manner, students may feel as though they are understood and valued.

The school setting has the opportunity to become a place of support and community by supporting students across several developmental domains. Strategies that actively engage male and female students through culturally and gender sensitive content and communication may increase male and female perceptions of school connectedness. As such, primarily targeting the micro yet also explicitly addressing the mezzo and macro systems is important given the broader ecological context. In this respect, working to understand and incorporate all parts of the ecodevelopmental framework into prevention and intervention programming may be the most developmentally sensitive and effective approach to working with marginalized school based youth at risk for substance use (Martinez et al., 2016; Pantin et al., 2003b; Prado et al., 2008; Szapocznik & Coatsworth, 1999).

Specific strategies that may be employed include training materials for teachers that focus on gender and specific to their needs within the local school region; working with school administrators to support shifts in school culture; and informing future prevention and intervention programming that addresses the development of healthy behaviors for at risk youth through academic, community, online, and social media channels. Detailed teacher training that highlights the experiences of adolescent youth may aid in the process of creating school environments (e.g., socially, educational materials, delivered curricula) that support and encourage the development of school connectedness in positive ways for both boys and girls. By supporting teachers in this specific learning and by reifying a school culture of inclusion and gender responsiveness, prevention programming may be more informed and robust specific to substance use (Kliewer & Murrelle, 2007). Since more longitudinal and in depth studies with regard to substance use and gender are needed, it may be beneficial for those studies to include teachers directly in their study designs and program implementation in order to understand the complex set of factors that protect or place youth at risk for substance use (Pantin et al., 2003b; Waters et al., 2009). Representing initial strategies in a niche sample, the findings and suggestions stated above offer a beginning by which to develop programming and future studies to target adolescent substance use in Guatemalan youth.

Limitations

While findings from this study add to the current body of literature and have important implications for substance use prevention/interventions for youth that are sensitive to both gender and school context, there are limitations that need consideration. The main limitations of this study include the cross-sectional design as well as the use of a single item to measure school connectedness. Cross-sectional studies do not allow researchers to make inferences about the temporal, cause and effect nature of the relationships explored and do not allow for the enhanced exploration of cultural meaning behind complex subjects. This is specifically salient with respect to the single item measure of school connectedness, which does not capture the complete nature of student perceptions of safety, support, belonging, and engagement at school (Mcneely et al., 2004). Also, the red zone location of the schools examined in this study may suggest high levels of neighborhood and personal violence than previously thought. As such, individual level factors in addition to school and neighborhood effects should be included in future studies seeking to build on this work in measuring school connectedness, gender, and substance use behavior in youth.

Conclusions

School connectedness appears to be an important protective factor for adolescent youth. This study found that the effect of school connectedness on substance use outcomes varied by gender, which may suggest the need for programming that accounts for gender as an important contextual factor. Through the use of ecodevelopmental theory, this study provides insight for future efforts aimed at programmatic development of substance use prevention/interventions that increase school connectedness and aid in enhancing the wellbeing of adolescent youth in high-risk areas.

References

Aiken, L.S. & West, S.G. (1991). Multiple regression: Testing and interpreting interactions. Thousand Oaks: SAGE.

Amnesty International. (2013). Time to end the inaction over killings of women in Guatemala. Retrieved from https://www.amnesty.org/en/latest/news/2013/01/time-end-inaction-over-killings-women-guatemala/

Anderman, L.M., & Freeman, T.M. (2004). Students sense of belonging in school. In P.R. Pintrich & M.L. Machr (Eds), Advances in motivation and achievement (Vol. 13, pp. 27-63). Oxford, England: Elsevier

Bacio, G.A., Estrada, Y., Huang, S., Martinez, M., Sardinas, K., Prado, G. (2015). Ecodevelopmental predictors of early initiation of alcohol, tobacco, and drug use among Hispanic adolescents. Journal of School Psychology, 53, 195-208.

Bank, B. (1997). Some paradoxes of gender equity in schooling. In B. Bank & P. Hall (Eds.), Gender Equity and Schooling (pp.3-30). New York: Garland

Bassi, M., Busso, M. & Muñoz, J. S. (2013). Is the glass half empty or half full? School enrollment, graduation, and dropout rates in Latin America. Washington, DC: Inter-American Development Bank.

Blum, R.W., McNeely, C.A., & Rinchart, P.M. (2002). Improving the odds: The untapped power of schools to improve the health of teens. Minneapolis, University of Minnesota, Center for Adolescent Health and Development

Bond L., Butler, H., Thomas, L., Carlin, J., Glover, S., Bowes, G. & Patton, G. (2007). Social and school connectedness in early secondary school as predictors of late teenage substance use, mental health, and academic outcomes. Journal of Adolescent Health, 40, 357.e9-357.e18

Bonny, A.E., BRitto, M.T., Klosterman, B.K. et al., (2002). School disconnectedness: identifying adolescents at risk. Pediatrics, 106, 1017-1021

Bruneau, T. (2014). Pandillas and security in central america. Latin American Research Review, 49(2), 152-172

Catalano, R.F., Haggert, K.P., Oesterle, S., Fleming, C.B., & Hawkins, J.D. (2004). The importance of bonding to school for healthy development: Findings from the social development research group. Journal of School Health, 74, 252-262.

Crosnoe, R., Erickson, K.G., Dornbusch, S.M. (2002). Protective functions of family relationships and school factors on the deviant behavior of adolescent boys and girls: Reducing the impact of risky friendships. Youth and Society, 33, 515-544

da Silva, J., Arena-Ventura, C.A., da Coasta Vargens, O.M., Douat-Loyola, C.M., Eslava-Albarracin, D.G., Diaz, J., Rodriguez-Funes, G.M....Oviedo-Rodriguez, R.J. (2009). Illicit drug use in seven Latin American countries: critical perspectives of families and familiars. Rev. Latino-Am. Enfermagem, 17

Dufur, M.J., Parcel, T.L., Troutman, K.P. (2013). Does social capital at home matter more than capital at school? Social capital effects on academic achievement. Research in Social Stratification and Mobility, 31, 1-21

Godoy-Paiz, P. (2008). Women in Guatemala's metropolitan area: Violence, law, and social justice. Studies in Social Justice, 2(1), 27-47

Godoy-Pais, P. (2012). Not just "another woman": Femicide and representation in Guatemala. The Journal of Latin American and Caribbean Anthropology, 17(1), 88-109

Goodenow, C. (1993). The psychological sense of school membership among adolescents: Scale development and educational correlates. Psychology in the Schools, 30, 79-90.

Fergus, S. & Zimmerman, M.A. (2005). Adolescent resilience: A framework for understanding healthy development in the face of risk. Annual Review of Public Health, 26, 399-419.

Foulger, L., Page, R.M., Hall, C.H., & Crookston, B.T. (2013). Health risk behaviors in urban and rural Guatemalan adolescents. International Journal of Adolescent Medicine and Health, DOI: 10.1515/ijamh-2013-0014

IBM Corporation (2012). IBM SPSS statistics for windows, version 21.0 Armonk, NY: IBM Corp.

International Crisis Group (2014). Corridor of violence: The Guatemala-Honduras Border. Retrieved from http://www.crisisgroup.org/en/regions/latin-america-caribbean/guatemala/052corridor-of-violence-the-guatemala-honduras-border.aspx

International Crisis Group (2011). Guatemala: Drug Trafficking and Violence. Retrieved from http://www.crisisgroup.org/en/regions/latin-america-caribbean/guatemala/139-guatemala-drug-trafficking-and-violence.aspx

Kidger, J., Araya, R., Donovan, J., & Gunnell, D. (2012). The effect of the school environment on the emotional health of adolescents: A systematic review. Pediatrics, 129(5), 925-949.

Klem, A.M. & Connell, J.P. (2004). Relationships matter: Linking teacher support to student engagement and achievement. Journal of School Health, 74, 262-273

Kliewer, W. & Murrelle, L. (2007). Risk and protective factors for adolescent substance use: findings from a study in selected Central American countries. Journal of Adolescent Health, 40, 448-455.

Kristensen, R. (2014). Securing the city. Neoliberalism, space, and insecurity in postwar Guatemala. Ethnos, 79, 156-161.

Lemonade International. (2015). Guatemala statistics. Retrieved from http://www.lemonadeinternational.org/

Lindsey, L.L. (2011). Gender roles: A sociological perspective. In L.L. Lindsey (5th Ed.). Boston: Prentice Hall.

Maddox, S.J. & Prinz, R.J. (2003). School bonding in children and adolescents: Conceptualization, assessment, and associated variables. Clinical Child and Family Psychology Review, 6, 31-49.

Martinez, M.J., Huang, S., Estrada, Y., Sutton, M., Prado, G. (2016). The relationship between acculturation, ecodevelopment, and substance use among Hispanic adolescents. Journal of Early Adolescence. DOI: 10.1080/10615806.2016.1157170

Martinez, M.J., Marsiglia, F.F., Ayers, S.L., & Nuno-Gutierrez, B. (2015). Substance use, religion, and Mexican adolescent intentions to use drugs. In Friedman, B.D. & Merrick, J. (Ed.), Public Health, Social Work, and Health inequalities. pp. 131-146.

McAdams, M. (2013). Tackling violence in Guatemala City through equal access to education and employment. Retrieved from: http://www.coha.org/tackling-violence-in-guatemala-city-through-equal-access-to-education-and-employment/

Mcllwaine, C. & Moser, C.O. (2004). Drugs, alcohol, and community tolerance: an urban ethnography from Columbia and Guatemala. Environment and Urbanization, 16, DOI: 10.1177/095624780401600222

McNeely, C. & Falci, C. (2004). School connectedness and the transition into and out of health risk behavior among adolescents: A comparison of social belonging and teacher support. Journal of School Health, 74(7), 284-292.

Om International. (2014). Entering the red zone. Retrieved from http://news.om.org/country-article/r40702

Overseas Security Advisory Council (2015). Guatemala 2015 Crime and Safety Report. Bureau of Diplomatic Security, U.S. Department of State. Retrieved from https://www.osac.gov/pages/ContentReportDetails.aspx?cid=17785

Prado, G., Huang, S., Maldonado-Molina, M., Bandiera, F., Schwartz, S.J., de la Vega, P., Hendricks Brown, C., Pantin, H. (2010). An empirical test of ecodevelopmental theory in predicting HIV risk behaviors among Hispanic youth. Health Education and Behavior, 37(1), 97-114.

Pantin, H., Schwartz, S.J., Sullivan, S., Coatsworth, J.D., & Szapocznik, J. (2003b). Preventing substance abuse in Hispanic immigrant adolescents: An ecodevleopmental, parent-centered approach. Hispanic Journal of Behavioral Sciences, 25(4), 469-500

Prado, G., Szapocznik, J., Maldonado-Molina, M.M., Schwartz, S.J., & Pantin, H. (2008). Drug use/abuse prevalence, etiology, prevention, and treatment in Hispanic adolescents: A cultural perspective. Journal of Drug Issues, 38, 5-36.

Resnik, M.D. Bearman, P.S., Blum, R.W., et al., (1997). Protecting adolescents from harm: Findings from the National Longitudinal Study on Adolescent Health. Journal of the American Medical Association, 278, 823-832

Rogers, A.T. (2013). Human behavior in the social environment. 3rd Edition Routledge: New York.

Rothenberg, D. (2012). Memory of Silence: The Guatemalan Truth Commission Report. New York, NY. Palgrave Macmillan.

Roeser, R.W., Eccles, J.S., & Sameroff, A.J. (2000). School as context of early adolescents academic and socioemotional development: A summary of research findings. The Elementary School Journal, 100, 443-472

Safe Passage. (2015). Guatemala. Retrieved from http://www.safepassage.org/blog/Guatemala Steinberg, M. & Taylor, M. (2010). Public memory and political power in Guatemala's postconflict landscape. Geographical Review, 93(4), 449-468

Szapocznik, J. & Coatsworth, J.D. (1999). An ecodevelopmental framework for organizing the influences on drug abuse: A developmental model of risk and protection. In M.D. Glantz, & C.R. Hartel (Eds.) Drug abuse: Origins and Interventions (pp.331-36). Washington, DC: American Psychological Association. doi:10.1037/10341-014

Steinberg, M.K., Height, C., Mosher, R., & Bampton, M. (2006). Mapping massacres: GIS and state terror in Guatemala. Geoforum, 37(1), 62-68.

Steinberg, M.K. & Taylor, M.J. (2003). Public memory and political power in Guatemala's postconflict landscape. Geographical Review, 93(4), 449-468.

Stith, A.Y., Gorman, K.S., & Choudhury, N. (2003). The effects of psychosocial risk and gender on school attainment in Guatemala. Applied Psychology: An International Review, 52, 614-629

Ten Velde, L. (2012). The northern triangle's drugs-violence nexus: The role of drugs trade in criminal violence and policy responses in Guatemala, El Salvador and Honduras. Drugs and Conflict Debate Papers, No. 19. Amsterdam: Transnational Institute. Retrieved from: http://www.tni.org/sites/www.tni.org/files/download/debate19.pdf

Thomas, K., O'Neill, K.L., & Offit, T. (2011). Securing the city: An introduction. In K.L. O'Neill & K. Thomas (Eds), Securing the city: Neoliberalism in Postwar Guatemala. Duke University Press.

Thompson, D.R., Iachan, R., Overpeck, M., Ross, J.G., & Gross, L.A. (2006). School connectedness in the health behavior in school aged children study: The role of student, school, and school neighborhood characteristics. Journal of School Health, 76(7), 379-386

Tidball, K. & Krasny, M. (2013). Resilience and transformation in the red zone. In Greening the Red Zone (pgs 25-43). Springer

[UNESCO] United Nations Educational, Scientific, and Cultural Organization (2012). Guatemala country profile. UNESCO Institute for Statistics. Retrieved from:http://www.uis.unesco.org/DataCentre/Pages/country-profile.aspx?code=3200&regioncode=40520&SPSLanguage=EN

[UNDP] United Nations Development Program (2007). Informe estadistico de la violencia en Guatemala. Retrieved from:
http://www.who.int/violence_injury_prevention/violence/national_activities/informe_estadistico_violencia_guatemala.pdf

United States Department of State. (2014). Country report: Guatemala. Retrieved fromhttp://www.state.gov/j/inl/rls/nrcrpt/2014/vol1/222894.htm

Waters, S.K., Cross, D.S., & Runions, K. (2009). Social and ecological structures supporting adolescent connectedness to school: A theoretical model. Journal of School Health, 79(1), 516-524.

Williams, S. & McGee, R. (1991). Adolescents self perceptions of their strengths. Journal of Youth and Adolescence, 20, 325-337.

Winton, A (2005). Youth, gangs and violence: Analyzing the social and spatial mobility of young people in Guatemala City. Children's Geographies 3 (2): 167–184

[WHO] World Health Organization (2013). Guatemala Substance Use Fact sheet. Retrieved from:http://www.who.int/substance_abuse/publications/global_alcohol_report/profiles/gtm.pdf?ua=1