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Pathways linking family stress to youth delinquency and substance use: Exploring the mediating roles of self-efficacy and future orientation

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Abstract

African American adolescents in poorer neighborhoods experience significant sanctions related to drug use and delinquency. Parental stress (i.e. substance use, mental distress, and incarceration) is associated with youth drug use and delinquency. We examined whether high self-esteem and positive future orientation mediated parental stress and youth substance use and delinquency. Demographic, family stress, future orientation, self-esteem, and drug use data were collected from 578 youths. Major findings indicated that self-esteem mediated the relationship between family stress and both drug use and delinquency. Future mediated the relationship between family stress and delinquency. Resiliency factors may promote positive development for low-income youth.

Keywords

adolescence; binge drinking; community; health psychology; mediator; youth

Introduction

To date, an abundance of research has provided evidence that stressful circumstances in a family (e.g. incarceration, substance use, and mental health problems) are associated with youth behavior problems (Brakefield et al., 2012; Conger et al., 2002; Elkington et al., 2011; Hammack et al., 2004; Nebbitt et al., 2014). This association is also theoretically supported through the Family Adjustment and Adaptation Response Model, which postulates that family demands (i.e. potential stressors placed upon one or more family members) can diminish family capabilities such as perceived physical and psychological resources and coping strategies (Patterson, 1988, 2002).

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More specifically, when adults or caregivers must cope with significant life stressors (e.g. incarceration, substance use, and mental health problems), the capabilities of the family to respond to the needs of its youth members may be reduced (Voisin et al., 2016). Indeed, previous work has shown a direct relationship between parental stress and youth problems (Brakefield et al., 2012; Nebbitt et al., 2014; Ruiz and Kopak, 2014). However, these studies have either focused on single stressors, such as caregivers' substance use or sexual risk, or in one instance dual stressors, such as maternal substance use and incarceration (Brakefield et al., 2012; Nebbitt et al., 2014; Ruiz and Kopak, 2014). Research has indicated that the co-occurrence of parental stressors is more greatly intertwined than has been measured in the extant literature. Specifically, potential stressors including mental health problems, a history of detention, and adult substance use—which have been shown to deleteriously impact levels of familial stress—have a high likelihood of co-occurrence (Mukku et al., 2012). Furthermore, a recent study analyzing parental stress via a combination of caregiver substance use, mental health problems, and adult incarceration showed that higher parental stress was associated with greater rates of youth delinquency and substance use among African American youth (Voisin et al., 2016). While this is an important finding, more research is needed to better illuminate the pathways that mediate direct relationship between parental distress and youth delinquency and substance use, which is the primary aim of this study.

Substance use and delinquency among African American youth

Illuminating malleable pathways that may link parental stress to youth delinquency and substance use among low-income African American youth represents an important research priority. African Americans are highly vulnerable to experiencing societal and legal sanctions related to drug use and delinquency relative to their White peers (Chen and Jacobson, 2012; Huizinga et al., 2007). For example, while African American youth consume less alcohol than peers of other races and do not initiate alcohol consumption until after different-race peers (Substance Abuse and Mental Health Services Administration, 2014), they experience greater professional and legal consequences of alcohol use when compared with those of other races (Wallace and Muroff, 2002; Zimmerman and Schmeelk-Cone, 2003). Similarly, a 9-year longitudinal study examining past year use of marijuana demonstrated similar use between African American and White youth and young adults over time (American Civil Liberties Union, 2013). Nevertheless, African Americans have a significantly higher likelihood of being arrested for marijuana possession, with African Americans over 3.5 times more likely to be arrested for possession of marijuana than Whites in 2010 (American Civil Liberties Union, 2013).

The racial disparity within the justice system is not limited to substance use. The disparity in equal treatment by race begins with differences in action taken against African Americans (e.g. racial profiling and stop-and-frisk) for offenses that Whites are equally likely to commit (Alexander, 2012; Kamalu et al., 2010). According to the Office of Juvenile Justice and Delinquency Prevention, African American youth are overrepresented at every stage of the criminal justice system (Sickmund et al., 2017), with a relative rate of juvenile African American arrests of 2.5 for each White juvenile arrest, indicating a distinct lack of parity (Office of Juvenile Justice and Delinquency Prevention, 2017). There is evidence that

systemic inequalities give rise to a higher incarceration rate for African American youth (Western, 2006).

Potential mediators of parental stress and youth substance use and delinquency

High future orientation and self-esteem are malleable factors that have been generally shown to have a direct relationship to lower rates of youth substance use and delinquency (Chen et al., 2016; Marotta and Voisin, 2017; Robbins and Bryan, 2004). Future orientation is a multi-component process (i.e. motivation, planning, and evaluation) through which individuals orient themselves to anticipated future events and objectives (Nurmi, 1991). An increase in future orientation is correlated with benefits including the extent to which people report planning ahead and considering future consequences of their actions (Steinberg et al., 2009). While the ability to engage in future orientation increases substantially during adolescence overall (Stoddard et al., 2011), youths' home environments interact with their ability to engage in future orientation to produce differing psychosocial outcomes. Indeed, youth who are raised in homes with high-risk environments and are unable to maintain salubrious orientations to the future (e.g. hope and positive expectations) have a higher likelihood of suffering from psychosocial problems than youth who are able to maintain healthy future orientations while growing up in high-risk homes (McCabe and Barnett, 2000; Wyman et al., 1993).

Higher levels of future orientation have been shown to be protective against externalizing behaviors and engaging in violence for African American youth who have, themselves, been exposed to violence (Cedeno et al., 2010; Stoddard et al., 2011). Research on youth with judicial system contact revealed that higher levels of future orientation are associated with a lower likelihood of substance use problems, including sex while under the influence of alcohol and engaging in hard drug use (e.g. cocaine; Robbins and Bryan, 2004). However, few studies have examined whether future orientation might mediate the relationship between parental stress, youth delinquency, and substance use, especially among African American youth.

Self-esteem is conceptualized as a positive or negative sense of self-worth (Rosenberg, 1965). Self-esteem can be measured as global (i.e. general) or domain-specific (e.g. appearance, athletic, academic) constructs. A meta-analysis investigating racial differences in different constructs of self-esteem elucidated that African American adolescents had higher self-esteem both globally and academically than White peers, with a larger effect size for global self-esteem than the domain-specific measurement, pointing to the relative utility of global measures of self-esteem in contrast to those that are domain-specific (Gray-Little and Hafdahl, 2000). Although findings are sometimes mixed, studies have generally shown that self-esteem is protective against drug use and delinquency, although few of these studies have focused specifically on African American low-income youth (Baumeister et al., 2003; Kim et al., in press; Trzesniewski et al., 2006). One such study among 639 low-income African American youth documented that higher self-esteem was associated with lower odds of reporting use of codeine, cocaine/crack, and ecstasy (Kim et al., in press). Additional findings showed that participants who reported lower self-esteem were 1.18 times more likely to be involved in delinquent behaviors (Kim et al., in press).

Of note, low self-esteem has been shown to be predictive of higher rates of delinquency (Baumeister et al., 2003). For example, in a longitudinal study of New Zealand youth, self-esteem was assessed between ages 11 and 15 and criminal convictions were examined at age 26. Findings indicated that high adolescent self-esteem predicted fewer convictions, and adolescents with higher self-esteem had an almost 1.5 times decreased likelihood of reception of a conviction for a violent crime than those with lower self-esteem during adolescence (Trzesniewski et al., 2006).

Study contributions and aims

This study contributes to the extant literature in several ways. First, it uses an expanded conceptualization of parental stress (i.e. substance use, poor mental health, and adult incarceration) to examine potential malleable pathways that might mediate parental stress and targeted youth behavior problems. Second, the study focuses on African American youth living in low-income communities who are often under-researched in the extant literature, despite the fact that they are some of the most highly disadvantaged segments of the US society. Third, it adopts a resiliency approach by focusing on protective factors such as future orientation and self-efficacy that may ameliorate the negative effects of parental stress on youth. This is an important distinction given that the vast majority of research on African American youth has assumed a deficit approach (Burchinal et al., 2011; Chen et al., 2005; Chen and Jacobson, 2012; Ford and Moore, 2013; Huizinga et al., 2007; Washington et al., 2017). Fourth, few studies have examined future orientation and self-efficacy across the same sample. Increased knowledge of factors potentially contributing to or conversely acting as buffers to both delinquency and substance use may decrease the incidence of these behavioral health problems, as well as the undue burden associated with such behavioral health problems for African Americans. Specifically, this study sought to test the following hypotheses:

1. Increased parental stress will be associated with higher rates of youth substance use and delinquency.
2. Increased future orientation will buffer the effects of parental stress on youth substance use and delinquency.
3. Increased self-esteem will buffer the effects of parental stress on youth substance use and delinquency.

The prevalence of youth substance use and delinquency examined in this study vary by gender and age (Centers for Disease Control and Prevention, 2013; Gorman-Smith et al., 2004; Wilson et al., 2012) as well as socioeconomic status (SES; Centers for Disease Control and Prevention, 2013). In addition, sexual minority youth, partly due to stigma, often report higher rates of drug use and delinquent behaviors relative to their heterosexual peers (Burton et al., 2014; Marshal et al., 2008). As such, we control for age, gender, SES, and sexual orientation in all analyses.

Methods

Participants

Participants for this study were drawn from the Resilience Project. This study was aimed at illuminating the factors that protected African American youth from behavioral health risks that were exposed to community violence (Voisin et al., 2016). Youth were recruited from Chicago's Southside low-income communities, which comprised predominantly African American residents. The average annual median incomes ranged from US\$24,049 to US\$35,946, with Chicago's average being US\$43,628. The percentage of single-female-headed households in these area ranged from 28.9 to 32.3 percent, with Chicago's average being 13.9 percent (City-Data, n.d.). Communities were predominantly racially and socioeconomically homogeneous. Youth were recruited from three high schools, one youth church group, two community youth programs, and four public venues frequented by youth such as parks, fast food outlets, and movie theaters. The number of persons approached at each site and the persons who enrolled were as follows: schools (606/579), community centers (42/38), churches (49/44), and public venues (56/39). The overall response rate was 87 percent based on the 753 participants who were initially invited to participate in the study.

Procedure

Youth were recruited from three high schools, one youth church group, two community youth programs, and four public venues. An overall response rate of 87 percent was achieved in these areas ranging from 28.9 to 32.3 percent, with the city average being 13.9 percent (City-Data, 2015). To recruit adolescent participants, flyers with information regarding the study were posted at schools, community programs, and churches where the school principals as well as leaders of church groups and youth programs had given permission to recruit participants for the study. Each participant was required to have both active parental consent and youth assent to participate in the study. Trained research assistants introduced the study to all potential participants, recruited from aforementioned locations with a detailed letter describing the study along with parental consent forms. Youth who returned consent forms signed by a parent or guardian and provided assent were enrolled in the study. Youth recruited in public venues were only asked to participate if a parent was present to provide consent and youth provided informed assent. Participants were eligible for the study if they were self-identified as African American and were between the ages of 13 and 24 years. Youth under 18 years of age provided informed assent and had a legal caregiver who also provided informed consent. Youth participants who were 18 years of age and older provided informed consent.

Participants recruited from schools, community programs, and churches were administered a questionnaire at those respective locations. Individuals who were recruited in public venues (e.g. parks and fast food venues) were given questionnaires in quiet spaces at or near those venues. In such instances, questionnaires were only administered to youth if a parent was present to provide consent and the questionnaire could be immediately administered. The questionnaire took approximately 45 minutes to complete, after which, the youth participant

was given a US\$10 cash compensation. The University Institutional Review Board approved the study.

Measures

Demographics.—Information was collected on several demographic variables such as age, gender (male/female), sexual orientation (How do you identify yourself? Heterosexual, gay, bisexual, pansexual, same gender loving, or other), and SES (Are you currently receiving reduced lunch and/or Supplemental Nutrition Assistance Program (SNAP) benefits (Link Card)? no/yes).

Family stress.—Family stress was assessed by summing the following three items: the number of adults in the household who have been incarcerated (e.g. spent time in jail or prison), who experienced mental health problems (e.g. depression, anxiety, schizophrenia, and posttraumatic stress disorder), and who use controlled substances (e.g. cocaine, marijuana, and alcohol). The response options for each of the items were based on a 4-point Likert-type scale (0=“none,” 1 = “one,” 2=“two,” 3 = “three,” and 4=“more than 4”). A composite score was calculated, with higher scores indicating higher levels of family stress.

Self-esteem.—Self-esteem was assessed using the Rosenberg Self-esteem Scale (1965), which contains 10 items that inquired about the degree that a person feels valuable, satisfied, positive, proud, respectable, and acceptable. Sample items include, “I feel that I am a person of worth, at least in an equal plane with others,” “I feel that I have a number of good qualities,” and “I take a positive attitude toward myself.” Responses were recorded using a 5-point scale anchored by “strongly disagree” and “strongly agree.” The reliability coefficient using Cronbach’s alpha was .84.

Future orientation.—Future orientation was assessed using a modified version of a scale (Whitaker et al., 2000) with items derived from Coopersmith’s (1967) Self-Esteem Scale. Items from the modified scale have been adapted and used in prior research (Robbins and Byran, 2004, $\alpha=.73$). In this study, 10 items were used, which inquired about perceptions of perceived control (e.g. I have little control over the things that happen to me), positive future outlook (e.g. What happens to my future mostly depends on me), and hopelessness (e.g. Sometimes I feel there is nothing to look forward to in the future) within the last 6 months on a 3-point scale (0=not true, 1 = somewhat or sometimes true, and 2=very true or often true). Some items were reverse coded so that higher scores indicate greater positive future orientation. Cronbach’s alpha for this sample was .75.

Substance use.—Krokodil (codeine), marijuana, and ecstasy use history was assessed. Participants were asked whether in the past they had ever taken these drugs (“yes”/“no”).

Delinquency.—Delinquent behaviors were assessed using a revised version of an instrument assessing delinquency in a prior study (Chen et al., 2016). These 10 items evaluated the frequency of illegal, norm-violating, and aggressive behaviors in the last 12 months (e.g. “used a knife or gun or some other thing, such as a bat, pipe, razor, taser, or mace, to get something from a person”). Responses were rated on a 6-point scale (0 times,

1–2 times, 3–5 times, 6–8 times, 9–11 times, and 12 or more times). A composite delinquent behaviors score was calculated by summing the responses for all 10 items. Cronbach's alpha was .90.

Analyses

Univariate analyses were conducted to describe the overall sample. Next, bivariate analyses were computed to examine the relationships among all study variables. Finally, structural path analyses with Mplus 7.0 (Muthen and Muthen, 2012) was used to test the hypothesized path model including mediating variables after controlling for *age*, *gender*, *sexual orientation*, and *family socioeconomic status* (see Figure 1). For all model testing, we used full information maximum likelihood procedures (FIML) to deal with missing data. FIML has been evaluated as being the most efficient and least-biased method even when data are not missing at random or completely at random (Little and Rubin, 2014).

Tests of indirect effects based on Mplus estimation assessed the strength of mediated relationships. Bootstrap analysis was used to test the significance of the indirect effects. This calculation was repeated with 1000 samples to yield a parameter estimate of both total and specific indirect effects (Muthén and Muthén, 2012).

Multiple indices were used to assess model fit, including chi-square tests, root mean squared error of approximation (RMSEA), standardized root square mean residual (SRMR), comparative fit index (CFI), and Tucker-Lewis index (TLI). Although the chi-square test has been used as one of many other indices of model fit, it is important to note that the chi-square values are highly sensitive to sample size and other biases (Bentler, 1990). Therefore, a significant chi-square is not a reason by itself to modify a model if other fit indices can provide a good fit (Kline, 1998). Thus, this study relied on a standard cutoff recommendation for RMSEA, SRMR, CFI, and TLI (see Hu and Bentler, 1999). For RMSEA and the SRMR, values less than .05 indicated a good fit. For TLI and CFI, values greater than or equal to .90 indicated an acceptable model fit.

Results

Descriptive statistics

Socio-demographic characteristics of the study participants are presented in Table 1. Among the 638 adolescents, 45.6 percent were male and 54.4 percent were female, and the mean age was almost 16 years old (standard deviation (SD) = 1.41, range = 12–22). With regard to sexual orientation, the majority of participants (81.6%) self-identified as heterosexual. Slightly over three-fourths (75.7%) of the overall sample qualified for free or reduced school lunch, indicating that the majority of participants resided in low-income families. The mean for the family stress was 0.76 (SD = 0.43, range = 0–8), for self-esteem it was 30.6 (SD = 7.21, range = 1–40), for future orientation it was 14.3 (SD = 3.61, range = 2–20), for delinquent behaviors it was 2.3 (SD = 4.74, range = 0–37), and for substance use it was 2.2 (SD = 3.9, range = 0–22).

Correlation analyses among the study variables are displayed in Table 2, which indicated that most of them were significantly related to one another, as anticipated. The tolerance and

variance inflation factor (VIF) for each independent variable in the model was also calculated. All variables indicated a value of less than 10, implying little concern over multicollinearity.

Path analysis

Structural equation modeling was estimated with delinquent behaviors and substance use as the key outcome variables, controlling for age, gender, sexual orientation, and SES proxy. The model achieved adequate fit with the data: $\chi^2(8) = 18.284$, $p = .019$, CFI = .974, TLI = .916, RMSEA = .048 (90% confidence interval (CI) = .018, .077), and SRMR=.029.

Figure 1 presents the unstandardized path estimates for the final model. After adjusting for the covariates, family stress was negatively associated with self-esteem ($B = -.615$, 95% CI = $-1.01, -.160$). Family stress was also directly related to drug use ($B = .417$, 95% CI = $.155, .679$) and delinquent behaviors ($B = .305$, 95% CI = $.026, .588$). Family stress was not directly related to future orientation in this study. However, because self-esteem was positively related to future orientation ($B = .241$, 95% CI = $.189, .287$), family stress indirectly related to future orientation through self-esteem. Self-esteem was negatively related to drug use ($B = -.109$, 95% CI = $-.178, -.046$) and delinquent behaviors ($B = -.091$, 95% CI = $-.158, -.027$). Future orientation was significantly related only to delinquent behaviors ($B = -.255$, 95% CI = $-.409, -.106$), but not to drug use. Regarding covariates, male, older, and lesbian, gay, bisexual, and transgender (LGBT) youth are more likely to be involved with drug use and delinquent behaviors.

The indirect paths between family stress and drug use and delinquent behaviors were also estimated. Table 3 presents direct, indirect, and total effects for drug use and delinquent behaviors. Among all of the indirect paths that were estimated, only one significant indirect path between family stress and drug use was indicated: family stress \rightarrow self-esteem \rightarrow drug use (indirect $B = .067$, 95% CI = $.015, .140$). Regarding delinquent behaviors, two significant indirect paths between family stress and delinquent behaviors were indicated: the first is family stress \rightarrow self-esteem \rightarrow delinquent behaviors (indirect $B = .056$, 95% CI = $.008, .121$), and the second is family stress \rightarrow self-esteem \rightarrow future orientation \rightarrow delinquent behaviors (indirect $B = .038$, 95% CI = $.008, .078$). In turn, self-esteem had a significant mediation effect on the relationship both between family stress and drug use, and family stress and youth delinquent behaviors. Self-esteem mediated 13.6 percent of the total effect of family stress on drug use, and 13.8 percent of the total effect of family stress on delinquency. Future orientation had a significant mediation effect on the relationship between family stress and youth delinquent behaviors. The proportion of the total effects of family stress on delinquency mediated by self-esteem and future orientation was 9.4 percent.

Discussion

Findings from this study are congruent with prior literature establishing direct relationships between greater parental stress and increase of youth behavioral problems including violence, delinquency, and substance abuse (Voisin et al., 2016). Greater parental stress was associated with increased substance use and delinquent behaviors. External stressors may inhibit parents from providing supervision to youth that promotes engagement in pro-social

activities rather than delinquency and substance use. Self-esteem was significantly associated with lower delinquency and substance abuse after adjusting for several potential confounders. Youth with greater self-esteem may have the confidence to overcome pressures to conform to peer group norms and choose health-promoting behaviors rather than engaging in substance abuse and delinquency. Psychological suffering imposed by experiences of low self-esteem could correlate to drug use and delinquency as a means of coping with extreme constraints and hardship.

Data from this study support the hypotheses that parental stress would be associated with lower self-esteem. Life stressors constrain the capacity of family members to meet the needs presented by young people (Brakefield et al., 2012; Conger et al., 2002; Elkington et al., 2011). External stressors may prevent parents from engaging in activities with youth that build self-esteem. Youth may interpret parenting stress as messages of inadequacy or take fault for constraints in the social environment, resulting in lower self-esteem. Greater self-esteem predicted higher future orientation, suggesting that youth with confidence in their abilities view the future with more optimism and place more value on future rewards than youth with lower self-esteem. Future orientation predicted significantly less delinquent behaviors which are consistent with prior literature (Marotta and Voisin, 2017).

Several indirect pathways were identified that shed insight into future research and interventions with youth. Self-esteem correlated with diminished negative effects of parental stress on substance use and the effects of parental stress on delinquency. Finally, self-esteem and future orientation mediated the effects of family stress on delinquent behaviors. Self-esteem may correlate with enhanced future orientation, which thereby protects against delinquent behaviors. Findings support future research examining the effects of interventions to boost self-esteem as protective against substance use for youth, whose families experience structural and environmental constraints. A number of evidence-based interventions are effective for addressing low self-esteem in teens including assertive communication, cognitive behavior therapy, positive belief record, safety behaviors, and coping skills (Brown and Dittmar, 2005; Fennell, 1997; Franck et al., 2008; Haney and Durlak, 1998; Rohde et al., 2004; Taylor and Montgomery, 2007). Findings from this study suggest that intervening on self-efficacy may play a substantial role in mitigating the negative effects of parental stress on substance use.

Prior to discussing the implications of these findings, several limitations warrant mentioning. First, the data are cross-sectional, thus precluding statistical inference of causation from the dataset. Without temporal ordering of variables, it is not possible to rule out whether future orientation provides a boost in confidence resulting in an increase in self-esteem, which might then protect against delinquency or vice versa. Relationships in this study may be bidirectional or may have different causal ordering. Therefore, future multi-wave longitudinal research is necessary to determine if self-esteem shapes future orientation, which in turn might influence delinquency. Finally, the sample is predominantly African American, preventing generalization to other racial and ethnic minority groups, and there might be sample selection bias based on the unique characteristics of persons who decide to participate or not in the study.

These findings significantly expand upon prior literature, suggesting the relationship between parental stress and youth delinquency was mediated by future orientation through self-esteem. There are a number of promising interventions that target future orientation as a developmental asset of youth that could protect against poor health outcomes. For instance, the “Future Selves” intervention uses cognitive behavioral and other treatment strategies to help persons weigh the immediate rewards of engaging in delinquency and substance use against the potential long-term risks of engaging in such behaviors (Gelder et al., 2015). Youth create desirable images of themselves in the future and identify important characteristics and values of their future selves (Hoyle and Sherrill, 2006). The intervention emphasizes the long-term rewards of engaging in health-promoting and pro-social behaviors and activities. Gelder et al. (2015) conducted a Future Selves study using the Internet and visual graphics and found that youth who formed closer bonds to images of their future selves were less likely to engage in delinquency. Extracurricular activities including educational, athletic, and mentorship programs also show considerable promise in improving future orientation (Stevenson and Clegg, 2011).

This study expands prior research by identifying that self-esteem as on the indirect pathway with future orientation as a mediator between family stress and delinquency. Self-esteem was associated with greater future orientation, and future orientation was associated with less delinquency, suggesting that these two constructs may amplify their protective effects on delinquency. Youth with high self-esteem and future orientation may possess a greater number of protective cognitive resources against delinquency than youth that are lower on either construct. Future research is needed that integrates interventions for self-esteem and future orientation into single treatment packages to reduce delinquency. Specifically, empirical research is needed to identify if interventions that increase self-esteem and future orientation are more effective than interventions that only target future orientation.

In addition to implications for interventions, findings from this study warrant the inclusion of self-esteem and future orientation assessments for youth attending programs in low-resourced communities, where substance use and delinquency might be of particular concern.

Therefore, information about youth behaviors from teachers, primary caregivers, and practitioners from the juvenile justice system could improve treatment planning of interventions to reduce substance use and delinquency among this population.

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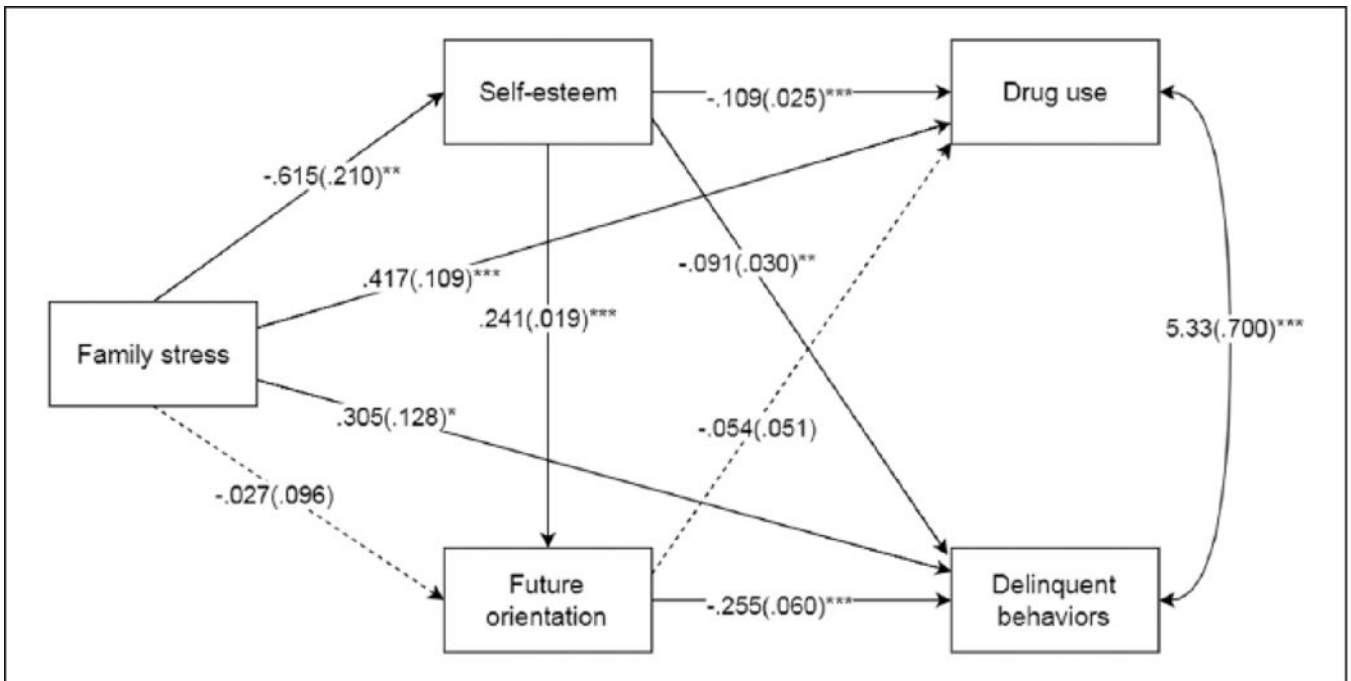


Figure 1. Parameter estimates for the path model.

Controlling for age, gender, sexual orientation, and SES on dependent variables; unstandardized coefficients are presented and standard error is in the parentheses; non-significant paths are denoted by dashed lines. $*p < .05$; $**p < .01$; $***p < .001$.

Table 1.

Descriptive statistics of the overall sample (N = 638).

Variable	N (%) / M (SD)
Age (range 12–22)	15.84 (1.41)
Gender	
Boy	290 (45.6)
Girl	346 (54.4)
Sexual orientation	
Heterosexual	475 (81.6)
Others (homosexual, bisexual, transgender, etc.)	107 (18.4)
Socioeconomic status	
Yes	475 (75.7)
No	153 (24.3)
Family stress (range, 0–8)	0.76 (0.43)
Self-esteem (range, 1–40)	30.57 (7.21)
Future orientation (range, 2–20)	14.27 (3.61)
Delinquent behaviors (range, 0–37)	2.27 (4.74)
Substance use (range, 0–22)	2.22 (3.90)

SD: standard deviation.

Table 2.

Bivariate correlations of the main study variables ($N = 638$).

	1	2	3	4	5
1. Family stress	1.00				
2. Self-esteem	-.131**	1.00			
3. Future orientation	-.075	.483***	1.00		
4. Delinquent behaviors	.225***	-.262***	-.186***	1.00	
5. Substance use	.184***	-.298***	-.290***	.473***	1.00

* $p < .05$

**

$p < .01$

$p < .001$

Table 3. Decomposition of total effect of drug use and delinquent behaviors into direct and indirect effects.

Paths	Direct effect		Indirect effect		Total effect	
	B	(Bootstrapped 95% CI)	B	(Bootstrapped 95% CI)	B	(Bootstrapped 95% CI)
FS → DU	.417	*** (.155, .637)			.494	*** (.251, .738)
FS → SE → DU			.067	* (.015, .140)		
FS → FO → DU			.001	(-.013, .019)		
FS → SE → FO → DU			.008	(-.007, .027)		
FS → DB	.305	* (.026, .588)			.405	*** (.102, .710)
FS → SE → DB			.056	* (.008, .121)		
FS → FO → DB			.007	(-.043, .059)		
FS → SE → FO → DB			.038	* (.008, .078)		

FS: family stress; DU: drug use; SE: self-esteem; FO: future orientation; DB: delinquent behaviors.

* $p < .05$;

** $p < .01$;

*** $p < .001$.