



HHS Public Access

Author manuscript

J Child Fam Stud. Author manuscript; available in PMC 2020 February 01.

Published in final edited form as:

J Child Fam Stud. 2019 February ; 28(2): 447–456. doi:10.1007/s10826-018-1268-0.

Family and Peer Influences on Substance Attitudes and Use among Juvenile Justice-Involved Youth

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Abstract

Juvenile justice-involved youth experience high rates of substance use, which is concerning given associated negative consequences, including health and functional deficits. Family and peer factors are associated with a high risk of substance use among justice-involved youth. It is hypothesized that this risk process operates through pro-drug attitudes. However, limited research has been conducted on the mechanisms through which family and peer factors increase risk for substance use among juvenile justice involved youth. The current study examined both the direct and indirect effects of family and peer substance use on youth's substance use (alcohol and illicit drug use). We also examined whether this relationship differs by race. 226 detained youth (81.9% male; 74.3% Black) were recruited from an urban county in the Midwest and completed a clinical interview and substance use assessment battery. A direct effect of family/peer risk on illicit drug use was found for all youth, though the effect was stronger among White youth. Results also supported the indirect effect pathway from family/peer risk to both illicit drug use and alcohol use through pro-drug attitudes. This pathway did not vary by race. These findings suggest that interventions should focus on targeting both family/peer risk and pro-drug attitudes to reduce substance use. Given the racial difference in the direct effect of family/peer risk on illicit drug use, there may be other factors that influence risk more strongly for White youth, which warrants further investigation.

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Author Contributions: TCBZ: designed and executed the study, assisted in the data analytic plan, and wrote the paper. RLC: collaborated with the design and writing of the paper. DEB: assisted with data collection, analyzed the data and writing of the paper. AH: assisted with data collection, collaborated in the design and writing of the paper. MA: designed the original data collection, collaborated in the writing and editing of the final manuscript.

Conflict of interest: All authors declare that they have no conflicts of interest.

Compliance of Ethical Standards

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Indiana University—Purdue University, Indianapolis provided IRB approval for this study.

Informed consent: Assent for clinical assessments was obtained from all individual participants included in the study. Participants were wards of the local justice system at the time of the assessment and that justice system provided consent for the clinical assessment from which data was drawn for the current study.

Keywords

family; peer; substance use; attitudes; juvenile justice

Substance use is a prevalent concern among adolescent populations. By the 8th grade over a quarter of youth in the United States have tried alcohol, with 15 percent of youth reporting marijuana use, 13 percent reporting cigarette use, and 10 percent reporting illicit drug use other than marijuana (Johnston, O'Malley, Bachman, Schulenberg, & Miech, 2016). These rates tend to double by 10th grade and triple by 12th grade with lifetime rates of use at 64 percent for alcohol, 44 percent for marijuana, 31 percent for cigarette use, and 21 percent for illicit drug use other than marijuana among high school seniors (Johnston et al., 2016). The use of substances during this developmental period is concerning due to the wide range of health and functional deficits associated with use (Hawkins, Catalano, & Miller, 1992; Aarons et al., 1999; Moss, Chen, & Yi, 2014). A subset of youth who are at particularly high risk for using substances are youth involved within the juvenile justice system (e.g., Chassin, 2008). It has been estimated that approximately one-quarter of youth (age 12 to 17) who had been in jail or a detention center report using alcohol, tobacco, or any other substance within the past year (Office of Applied Studies, 2003). This prevalence rate is nearly three times greater than that of their same-age peers who had never been in a jail or detention center, among which 8% reported using any substance within the last year (Office of Applied Studies, 2003). Substance use among juvenile offenders poses similar risk for negative health consequences that have been observed among general population youth (Chassin, 2008; Rowe, Wang, Greenbaum, & Liddle, 2008); however, unique to this subgroup of youth is the increased risk for reoffending and continued contact with the justice system (Chassin, 2008; Wiesner, Kim, & Capaldi, 2005). For example, van der Put, Creemers, and Hoeve (2014) found that substance use predicted risk for recidivism above and beyond other well-established risk and protective factors, such as school, free time, relationships, family, and aggression. Thus, understanding factors that may precipitate substance use among this at-risk group of youth is critical.

Social environments have been shown to play an important role in the development of substance use among youth within the general population (e.g., Allen, Donohue, Griffin, Ryan, & Turner, 2003; Bahr, Hoffmann, & Yang, 2005; Nelson, 2016; Deutsch, Crockett, Wolff, & Russell, 2012). For example, adolescents who affiliate with substance using friends/peers are more likely to engage in substance use risk behaviors (e.g., Dishion & Skaggs, 2000; Prinstein, Boergers, & Spirito, 2001). As for familial influences, several factors predict substance use and substance use disorders (SUDs) including having a family substance abuse history, poor family support and communication, limited discipline and monitoring, and high parent-child conflict (Feldstein Ewing, Filbey, Loughran, Chassin, & Piquero, 2015; Wills & Yaeger, 2003). Similar effects of parents and peer factors have been studied in relation to risk for substance use among justice-involved youth (e.g., Ewing et al., 2015; Mauricio et al., 2009) and delinquency (e.g., Chung & Steinberg, 2006; Mulder, Brand, Bullens, & Van Marle, 2011). Consistent with this evidence, family and peer factors have also been identified as an important components of substance use interventions for justice-involved youth (Greenwood, 2008). Yet, what has received less attention within this

body of literature are the mechanisms through which family or peer factors operate to increase risk for substance use. Based on the social learning theory (Akers, 1977; Bandura, 1986), it is presumed that the influence of family and peers on substance use risk operates indirectly through learned attitudes regarding substance use (Cooper, May, Soderstrom, & Jarjoura, 2009; Petraitis, Flay, & Miller, 1995; Reed & Rountree, 1997), however only a small body of literature has been conducted explicitly testing the full pathway.

Among samples with general population youth, positive parenting practices (i.e., parental monitoring, communication regarding substance use, and parental warmth) has been found to reduce willingness and intentions to use substances indirectly through endorsement of less favorable risk images or prototypes of substance use (Cleveland, Gibbons, Gerrard, Pomery, & Brody, 2005). Although providing some support for the proposed indirect pathway, this study was limited in that substance beliefs or expectancies were not explicitly examined. More closely related to the social learning theory, Blanton, Gibbons, Gerrard, Conger, and Smith (1997) found that parental drinking and smoking was related to adolescent use indirectly through youth's favorable evaluations of individuals who drink or smoke, respectively. A similar pathway was observed by Miller, Siegel, Hohman, and Crano (2013), finding that the positive relationship between parental and youth marijuana use operated indirectly through youth's positive attitudes regarding their personal use and lower negative expectancies regarding outcomes from their use. In regards to peer influences, the relationship between peer smoking and current adolescent cigarette use has been shown to operate through negative affect control expectancies (Hine, McKenzie-Richer, Lewko, Tilleczek, & Perreault, 2002). Lastly based on more general substance use, Krohn, Lizotte, Thornberry, Smith, and McDowall, (1996) observed an indirect relationship between peer drug use and later drug use through increases in positive drug attitudes.

Thus, although the body of literature is not large, there is evidence that substance-related cognitions do mediate the relationship between both parental and peer factors on substance use. However, most of the literature is focused on specific substances and was not conducted among juvenile-involved youth. Although there is no reason to believe a similar effect would not be found among juvenile-involved youth, finding support for the indirect effect of substance attitudes on the relationship between family/peer risk and substance outcomes among justice-involved youth is important as it will expand the generalizability of the findings for this risk pathway. These findings can also inform interventions by identifying important mechanisms through which targeted behaviors are influencing risk, which can in turn provide proxy assessment points to assess the effectiveness of interventions (Kazdin & Kendall, 1998; Kazdin, 2007). Moreover, given that services and drug treatment programs are often fragmented within the justice system, reducing the ability to adopt evidence-based practices to fidelity (Henderson et al., 2007), findings can help identify specific behaviors that can be incorporated within existing modalities of care.

We will also examine whether the effects of family/peer risk on attitudes and subsequent substance use varies by race, as national data have documented higher rates of substance use among White youth within the justice system compared to Black youth (Chassin, 2008; McClelland, Teplin, & Abram, 2004; Office of Applied Studies, 2003; Vaughn, Wallace, Davis, Fernandes, & Howard, 2008; Vincent, Grisso, Terry, & Banks, 2008; Welty et al.,

2016). Additionally, although based on studies among general population youth, there is evidence to suggest that the risk process between family/peer use on substance use outcomes through pro-drug attitudes may differ across racial groups. Specifically, family and peer factors associated with substance use have been shown to be stronger among White youth in comparison to racial/ethnic minority youth (Conn & Marks, 2014; Fagan, Van Horn, Hawkins, & Jaki, 2013; Mason, Mennis, Linker, Bares, & Zaharakis, 2014). Moreover, studies have shown that White adolescents are also more likely to report positive attitudes toward substance use than Black youth (Watt, 2005; Wallace & Muroff, 2002). The current study aims to build upon this literature among general populations youth to examine the mediating role of pro-drug attitudes on the relationship between parent/peer factors and substance use among juvenile justice youth. We hypothesize that parent/peer risk (i.e., family and peer substance use) will have a direct effect on youth substance use (i.e., alcohol and illicit drug use) and this risk process will operate indirectly through youth's positive attitudes about substance use (i.e. pro-drug attitudes). Moreover, based on evidence of race differences in the effect of family/peer factors on substance use and levels of pro-drug attitudes, we hypothesize that the mediation pathway will be stronger for White youth than Black youth.

Method

Participants

The present sample included 226 juvenile justice-involved youth derived from a total of 305 youth referred for psychological assessment by the juvenile court. All youth provided assent for the psychological assessments. Out of the 305 youth referred, 45 were not assessed for substance use and thus, were excluded from the current study. An additional 35 youth were excluded for not identifying their race as White or Black (Hispanic/Latino: $n = 9$; multiracial: $n = 12$; no answer: $n = 14$). The majority of participants in the current sample were male ($N = 185$; 81.9%) and self-identified as Black ($N=168$; 74.3%). The age of participants ranged from 12–18 ($M=15.53$, $SD=1.27$).

Procedure

Following involvement with the juvenile justice system (e.g., arrested, probation violation) in a large Mid-Western city, youth were referred to the university's medical school to complete a court ordered psychological assessment. Following referral, a licensed clinical psychologist or supervised doctoral student reported to the Juvenile Detention Center or the youth's current placement (home or residential facility) to complete the court ordered psychological assessment. As youth were wards of the local justice system at this time, the justice system provided consent for the youth's psychological assessment and youth provided assent. Afterwards, clinicians conducted a structured clinical interview and administered an assessment battery, which included the measures described below and other measures unrelated to the present study. The clinician composed an integrated assessment report for each of the youth, which was subsequently submitted to the juvenile court. Following IRB approval, two trained research assistants coded and de-identified these archival assessment reports for each youth. Twenty percent of the data were re-coded by a third coder; there were no discrepancies between coders.

Measures

Demographics—Each participant self-reported their age, gender, and race, which was confirmed by court documents. Only youth who self-identified as either White or Black were included in the current study due to low frequencies of other races.

Externalizing symptomology—The Youth Self-Report (YSR; Achenbach & Rescorla, 2001) is a questionnaire for youth ages 11–18 on which they rate themselves on various behavioral and emotional problems and competencies. The externalizing broad-band scale was used to assess symptoms related to *externalizing* problems. The *externalizing problems* broadband scale is composed of 3 subscales: rule breaking (e.g. lacks guilt, runs away, truant), attention problems (e.g. can't concentrate, impulsive, poor schoolwork), and aggression (e.g. argues a lot, destroys own things, teases a lot). Response options for each item range from 0 (not true) to 2 (very often or often true), and a total scale score is computed. Scale scores are converted to t-scores with scores of 60 at the 85th percentile and scores of 65 at the 95th percentile. T-scores < 65 on YSR scales are considered to fall in the “normal” range, and increases in t-scores over 65 correspond with increases in symptom severity. The factor structure of the YSR has been replicated in over 24 countries (Ivanova et al., 2007) and the reliability and validity of these scales are well documented (e.g. Achenbach & Rescorla, 2001; Gomez, Vance, & Gomez, 2014). Further, the YSR has been validated for use in samples of juvenile justice involved youth (Vreugdenhil, van den Brink, Ferdinand, Wouters, & Doreleijers, 2006). The externalizing scale has shown convergent validity with related scales (Thurber & Hollingsworth, 1992; Krischer, Sevecke, Lehmkuhl, & Pukrop 2007) and is related to DSM diagnoses of disruptive behavior disorders in juvenile justice-involved youth (Vreugdenhil et al., 2006).

Drug and alcohol use—Drug and alcohol use were assessed using the Adolescent Substance Use Subtle Screening Inventory (SASSI-A2; Miller, Renn, & Lazowski, 2001), a questionnaire used to help determine if further assessment and/or treatment are needed for a SUD in youth. The SASSI-A2 Face Valid Alcohol (FVA) subscale includes 12 alcohol use frequency-related items used to evaluate problematic levels of past year alcohol use and related problems (e.g. “Tried to kill yourself while drunk”, “Drank alcohol during the day”). The SASSI-A2 Face Valid Other Drugs (FVOD) subscale includes 16 “other drug use” frequency-related items used to evaluate problematic levels of past year illicit drug use and related problems (e.g. “Taken drugs to improve your thinking and feeling”, “Taken drugs so you could enjoy sex more”). Response options for the FVA and FVOD scales range from 0 (never) to 3 (repeatedly). For the present study, raw scores on the SASSI-A2 scales were converted to t-scores with scores of 50, 60, and 70 representing the 50th, 85th, and 98th percentiles of scores among youth of the same gender, respectively. On the FVA, T-scores > 63 (males) and > 65 (females) are indicative of high probability of an SUD; on the FVOD, T-scores > 58 (males) and > 60 (females) are indicative of high probability of an SUD (Miller & Lazowski, 2001). The SASSI-A2 FVA and FVOD scales have demonstrated acceptable to excellent reliability ($\alpha=0.61$ and 0.95 , respectively; Perera-Diltz & Perry, 2011) and test-retest reliability (r 's 0.71 - and 0.92 , respectively; Miller & Lazowski, 2001; Stein et al., 2005).

Family/friends risk for substance use—Family/friends risk for substance use was measured using the SASSI-A2 FRISK scale. The SASSI-A2 FRISK scale is a 6-item measure that assesses the extent to which the youth is part of a family or social system that promotes substance use and related problems (e.g., “Many of my friends drink or get high regularly,” “I’m friends with some people who sell drugs,” “One of my parents was/is a heavy true drinker or drug user”). Response options items of the FRISK scale are “true” or “false”, with raw scores ranging from 0–9. T-scores of > 61 (males) and > 60 (females) correspond to the percentiles noted above, which are indicative of high risk for an SUD (Miller & Lazowski, 2001). The FRISK scale has shown excellent two-week test-retest reliability ($r=.90$), acceptable internal consistency (Cronbach’s $\alpha=0.67$) and has demonstrated a 99% correct classification rate for DSM SUD diagnosis (Miller & Lazowski, 2001).

Pro-drug use attitudes—Drug use attitudes were assessed through the SASSI-A2 Attitudes scale (Miller et al., 2001), a 10-item measure used to assess youth’s beliefs and attitudes towards drug use (e.g., “Adults shouldn’t hassle kids so much about drugs,” “People who use drugs have more fun,” “Drugs help people to be creative”). Response options for each item are “true” or “false”, with raw scores ranging from 0–10. The Attitudes scale has been shown to have good reliability ($\alpha = 0.76$; Miller et al., 2001; Perera-Diltz & Perry, 2011) and test-retest reliability ($\alpha = 0.92$) and has been validated for use in discriminating between youth with and without a SUD (Lewis & Mobley, 2010).

Data Analysis

All analyses were performed using SPSS 24.0. Only participants who provided complete data were included in the current study, thus no imputation of missing data was required. The PROCESS macro (Model 4: simple mediation, specified by Hayes, 2013) was used to examine the mediating role of drug attitudes on the relationship between family/peer risk and the substance use outcomes. The PROCESS macro estimates the total and direct effect of the independent variable on the dependent variable, the direct effect of the independent variable on the mediator, and the effect of the mediator of the dependent variable. To examine the second set of hypotheses of racial differences in on the risk pathway, a moderated mediation analysis was performed using the PROCESS macro Model 59 (moderated mediation, specified by Hayes, 2013). This model in the PROCESS macro estimates the conditional indirect effect of the independent variable on the dependent variable through the mediator and conditional direct effect of the independent variable on the dependent variable at each value of the moderator.

Two separate analyses were run for each model, one for alcohol use and another for other drug use as the outcome variable of interest. All analyses included age, gender, and externalizing behaviors as covariates. The PROCESS macro used bootstrapping to generate bias-corrected confidence intervals for the indirect effect and various indices of effect size for the indirect effect (Hayes, 2013). For all mediation analyses in the current study, we used 5,000 bootstrap samples.

Results

Preliminary Analysis

Means and standard deviations for the measures of interest are shown in Table 1. Initial bivariate and point-biserial correlations between all study variables are shown in Table 2. Regarding the variables of interest, family/peer risk was positively associated with pro-drug attitudes, alcohol use, and other drug use. Pro-drug attitudes were also positively associated with alcohol use and other drug use. Differences were observed based on demographic variables, with White youth reporting more alcohol and other drug use than Black youth and females reporting stronger pro-drug attitudes and alcohol use than males.

Relationship between Family/Peer Risk, Drug Attitudes, and Drug Use

Alcohol use—After controlling for gender, age and externalizing behaviors, a main effect was found for each leg of the path model, such that family/peer risk predicted pro-drug attitudes ($b = .47, p < .001$) and pro-drug attitudes predicted alcohol use ($b = .18, p < .001$). The indirect effect between family/peer risk, pro-drug attitudes, and alcohol use was significant (estimated indirect effect = 0.086, Boot CI [95] = 0.023–0.173). A remaining direct effect of family/peer risk on alcohol use was also observed ($b = .12, p = .016$). When examining the moderating effect of race, a conditional indirect effect was not found, as the indirect effect was positive for both White (estimated indirect effect = 0.198 SE = 0.111, Boot CI [95] = 0.028–0.455) and Black youth (estimated indirect effect = 0.070, SE = 0.038, Boot CI [95] = 0.010–0.171), with a non-significant difference in indirect effects across groups (index of moderated mediation = $-0.128, SE = .115, Boot CI [95] = -0.377-0.069$). Additionally, although the direct effect of family/peer risk on alcohol use was significant for White youth ($b = .22, p = .042$), but not for Black youth ($b = .06, p = .210$), these differences were not statistically significant. See Figure 1 for path coefficients.

Other substance use—After controlling for gender, age and externalizing behaviors, a main effect was found for each leg of the path model, such that family/peer risk predicted pro-drug attitudes ($b = .47, p < .001$) and pro-drug attitudes predicted other drug use ($b = .39, p < .001$). A direct effect of family/peer risk on other drug use was also observed ($b = .34, p < .001$). Additionally, as hypothesized, an indirect effect between family/peer risk, pro-drug attitudes, and other drug use was significant (estimated indirect effect = 0.185, Boot CI [95] = 0.059–0.302). When examining the moderating effect of race, although the indirect effect was non-significant for White youth (estimated indirect effect = 0.180, SE = 0.136, Boot CI [95] = $-0.041-0.495$) but significant for Black youth (estimated indirect effect = 0.182, SE = 0.061, Boot CI [95] = 0.064–0.310), the difference of effect across groups was non-significant (index of moderated mediation = 0.001, SE = .141, Boot CI [95] = $-0.262-0.282$). However, the direct effect of family/peer risk on other drug use did significantly differ across racial groups, with a stronger effect observed for White youth ($b = 0.72, p < .001$) than Black youth ($b = 0.24, p = .002$). See Figure 2 for path coefficients.

Discussion

Family and peer influences, such as a substance use history and association with delinquent peers, have been shown to increase risk for engagement in substance use among justice-involved youth (e.g., Ewing et al., 2015; Mauricio et al., 2009). However, limited research has been conducted examining the mechanisms through which this risk process operates among this population of at-risk youth. The current study aimed to fill this gap, finding that family/peer risk was directly associated with increased likelihood for past year illicit drug use, and this risk pathway operated indirectly through pro-drug attitudes. Although a direct effect of family/peer risk on alcohol use was not found, a significant indirect pathway through pro-drug attitudes was found. Lastly, given evidence of greater substance use and stronger effects of family/peer influences on substance use for White youth compared to Black youth, we examined whether the risk pathway differed across racial groups in our sample. Although the direct effect of family/peer risk on illicit drug use was stronger for White youth compared to Black youth, contrary to our hypothesis, the mediation pathway operated similarly for both racial groups.

These findings suggest that focusing interventions on family/peer relationships can help reduce substance use among justice-involved youth, in part by changing the youth's views on substance use. Yet, within juvenile corrections facilities the most commonly used substance use treatment are drug and alcohol education programs (Young, Dembo, & Henderson, 2007), with fewer more intensive services available for youth with problematic levels of substance use (Chassin, 2008; Young et al., 2007). Moreover, as noted by Chassin, Knight, Vargas-Chanes, Losoya, and Naranjo (2009), although the involvement of families within the treatment process results in better substance outcomes, this does not consistently occur within juvenile corrections facilities. Additionally, very few facilities adopt developmentally appropriate treatment programs that incorporate specific needs based on family, school, and peer influences (Henderson et al., 2007). Thus, future research can build upon our findings to test the inclusion of family and peers factors within substance use interventions among juvenile justice populations.

Additionally, in cases when evidence-based intervention programs are implemented in juvenile justice setting, there is evidence to suggest that family-based interventions (Chassin et al., 2009; Henderson et al., 2007; Young et al., 2007), such as functional family therapy (Gordon, Graves, & Arbutnot, 1995), multidimensional family therapy (Liddle, Dakof, Henderson, & Rowe, 2011), and multisystemic therapy (MST; Henggeler, Melton, & Smith, 1992) are effective at producing small to moderate effects on youth substance use (Tripodi & Bender, 2011). Of note, there has been strong support for the utility of MST, as it was developed specifically for juvenile offender populations and addresses the influence of not only family factors, but also individual, peer, school, school, neighborhood, and social network factors on the identified problem behavior through individualized interventions (Curtis, Ronan, & Borduin, 2004; Greenwood, 2008; Thompson, Pomeroy, & Gober, 2005). However, findings are mixed on the long-term effectiveness of MST in reducing substance use among justice-involved youth (Chassin, 2008; Curtis et al., 2004; Henggeler, Pinkrel, & Brondino, 1999; Henggeler, Clingempeel, Brondino, & Pickrel, 2002; Henggeler et al., 2006; Randall, Henggeler, Cunningham, Rowland, and Swenson 2001). It is plausible that

the lack of long-term effects for youth substance use is due to the failure of addressing important mechanistic factors within the risk process, such as substance related cognitions. However, to our knowledge, no published study has examined substance-use cognitions as a mechanism within MST or other family-focused interventions (Henggeler et al., 2009; Ozechowski & Liddle, 2000). Thus, studies are warranted assessing the mediating role of parental/peer risk factors and substance cognitions within family-based treatment programs among justice-involved youth. If these factors are not being addressed, it is plausible that treatment effectiveness in reducing substance use outcomes may be improved by explicitly drawing the connection between family/peer influences on youth's pro-drug attitudes, as well as addressing and challenging parent, peer, and youth pro-drug attitudes.

We also examined whether the effect of family/peer risk on substance use outcomes through pro-drug attitudes varied across racial groups. This is critical given evidence of higher rates of substance use and abuse among White youth than Black youth in the juvenile justice system (Office of Applied Studies, 2003; Vaughn et al., 2008). Moreover, among general population youth, family and peer influences on substance use has been found stronger for White youth than Black youth (Fagan et al., 2013; Mason et al., 2014). Our findings suggested that although the effect sizes for the indirect pathway were stronger for White youth than Black youth, differences were not statistically significant. This suggests that treatment programs aimed at reducing substance use through addressing pro-drug attitudes would be equally beneficial for both White and Black youth. However, the direct effect of family/peer risk on illicit drug use was stronger for White youth than Black youth. It is plausible that there are family/peer factors that directly impact substance use, such as parental or peer substance use, that may be stronger among White youth than Black youth (e.g., Fagan et al., 2013). Alternatively, there may be other factors that are associated with parent or peer risk that are stronger for White youth. Some potential mechanisms include parental support, parent/child conflict, negative life events, tolerance drug attitudes (Ashby Wills & Yaeger, 2003; Bahr et al., 2005). Thus, future work is needed to examine alternative mechanisms involved in risk for substance use as a consequence of family/peer factors and potential racial differences within the risk process.

Limitations and Future Research Directions

There are several strengths of this study, including the examination of family/peer influences for substance use among an at-risk population of youth and the use of reliable and valid clinical assessments. However, there are limitations that should be considered when interpreting the data. First, while the juvenile justice population is an important one to study, our sample comprised youth from one large Mid-western city; thus, it is possible the findings do not generalize to justice-involved youth from other regions of the United States or rural settings. Second, while our sample was characteristic of juvenile justice system demographics (Hockenberry & Puzanchera, 2015), the sample was mostly male (82%) and youth who self-identified as African American/Black (74%). Thus, replication of these findings among youth of varying demographics could aid in determining the generalizability of the study findings. Third, the assessments used to evaluate participants in this study are clinical measures that do not separate drug use categories, which is important to consider evidence that the influence of familial and peer factors varies based on substance type (Allen

et al., 2003). In addition, other social factors, such as level of attachment to family, peers, and school attachment are associated with substance use risk (Henry, Oetting, & Slater, 2009), but were not assessed in the current study. It is plausible that such factors may also mediate the pathway between family/peer risk and substance use and warrants exploration in future research. It is also important to consider the reciprocal nature of drug use and peer influence. Krohn et al. (1996), expanding upon Thornberry's (1987) Interactional Theory of Delinquency, found that there are many interacting factors that contribute to adolescent drug use and that these relationships are reciprocal, such that drug use may lead to choosing a particular type of friend as well as choosing a certain type of friend may lead to drug use. However, given the cross-sectional nature of our data, we were unable to control for prior attitudes or substance use. Thus, future studies employing a longitudinal design is warranted to include these variables. Future research in this area that employs a longitudinal study would also allow for the examination of both the short and long-term effects of family/peer influences on substance use attitudes and subsequent substance use outcomes among juvenile justice involved youth.

Our results support previous evidence that family/peer risk factors are associated with greater pro-drug attitudes (Hemovich, Lac, & Crano, 2010) and that pro-drug attitudes result in higher likelihood of substance use (Barkin, Smith, & DuRant, 2002; Johnston et al., 2016). Moreover, we found evidence to support the full indirect pathway, such that family/peer factors were associated with greater likelihood of engagement in problematic alcohol and illicit drug use through pro-drug attitudes. We examined this risk pathway among youth involved in the juvenile justice system, whom are at risk for severe consequences related to their substance use, including recidivism (Chassin, 2008; van der Put et al., 2014; Wiesner et al., 2005), finding that this risk pathway held for both White and Black youth. Future studies can build from these findings by testing the inclusion of developmentally appropriate family and peers factors within substance use interventions among juvenile justice populations.

Acknowledgments

Role of Funding Sources: Work was supported by NIH award KL2TR001106, K01DA043654, R25DA035163, P30DA027827, F31AA024682, and F31DA044728.

References

- Aarons GA, Brown SA, Coe MT, Myers MG, Garland AF, Ezzet-Lofstrom R, ... & Hough RL (1999). Adolescent alcohol and drug abuse and health. *Journal of adolescent health, 24*(6), 412–421. [PubMed: 10401969]
- Achenbach TM, & Rescorla LA (2001). *Manual for the ASEBA School-Age Forms & Profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families (USA).
- Akers RL (1977). *Deviant behavior: A social learning approach* (2nd ed.). Belmont, CA: Wadsworth.nd
- Allen M, Donohue WA, Griffin A, Ryan D, & Turner MMM (2003). Comparing the influence of parents and peers on the choice to use drugs: A meta-analytic summary of the literature. *Criminal Justice and Behavior, 30*(2), 163–186.
- Ashby Wills T, & Yaeger AM (2003). Family factors and adolescent substance use: Models and mechanisms. *Current Directions in Psychological Science, 12*(6), 222–226.
- Bahr SJ, Hoffmann JP, & Yang X (2005). Parental and peer influences on the risk of adolescent drug use. *Journal of Primary Prevention, 26*(6), 529–551. [PubMed: 16228115]

- Bandura A (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Barkin SL, Smith KS, & DuRant RH (2002). Social skills and attitudes associated with substance use behaviors among young adolescents. *Journal of Adolescent Health, 30*(6), 448–454. [PubMed: 12039515]
- Blanton H, Gibbons FX, Gerrard M, Conger KJ, & Smith GE (1997). Role of family and peers in the development of prototypes associated with substance use. *Journal of Family Psychology, 11*(3), 271–288
- Chassin L (2008). Juvenile justice and substance use. *The Future of Children, 18*(2), 165–183. [PubMed: 21338002]
- Chassin L, Knight G, Vargas-Chanes D, Losoya SH, & Naranjo D (2009). Substance use treatment outcomes in a sample of male serious juvenile offenders. *Journal of Substance Abuse Treatment, 36*(2), 183–194. [PubMed: 18657942]
- Chung HL, & Steinberg L (2006). Relations Between Neighborhood Factors, Parenting Behaviors, Peer Deviance, and Delinquency Among Serious Juvenile Offenders. *Developmental Psychology, 42*(2), 319–331. 10.1037/0012-1649.42.2.319 [PubMed: 16569170]
- Cleveland MJ, Gibbons FX, Gerrard M, Pomery EA, & Brody GH (2005). The impact of parenting on risk cognitions and risk behavior: A study of mediation and moderation in a panel of African American adolescents. *Child Development, 76*(4), 900–916. [PubMed: 16026504]
- Conn BM, & Marks AK (2014). Ethnic/racial differences in peer and parent influence on adolescent prescription drug misuse. *Journal of Developmental & Behavioral Pediatrics, 35*(4), 257–265. [PubMed: 24799264]
- Cooper K, May D, Soderstrom I, & Jarjoura GR (2009). Examining theoretical predictors of substance use among a sample of incarcerated youth. *Journal of Offender Rehabilitation, 48*(8), 669–695. doi:10.1080/10509670903287675
- Curtis NM, Ronan KR, & Borduin CM (2004). Multisystemic treatment: A meta-analysis of outcome studies. *Journal of family psychology, 18*(3), 411–419. [PubMed: 15382965]
- Deutsch AR, Crockett LJ, Wolff JM, & Russell ST (2012). Parent and peer pathways to adolescent delinquency: Variations by ethnicity and neighborhood context. *Journal of youth and adolescence, 41*(8), 1078–1094. [PubMed: 22460729]
- Dishion TJ, & Skaggs NM (2000). An ecological analysis of monthly” bursts” in early adolescent substance use. *Applied Developmental Science, 4*(2), 89–97.
- Ewing BA, Osilla KC, Pedersen ER, Hunter SB, Miles JN, & D’Amico EJ (2015). Longitudinal family effects on substance use among an at-risk adolescent sample. *Addictive Behaviors, 41*, 185–191. 10.1016/j.addbeh.2014.10.017 [PubMed: 25452064]
- Fagan AA, Van Horn ML, Hawkins JD, & Jaki T (2013). Differential effects of parental controls on adolescent substance use: For whom is the family most important?. *Journal of Quantitative Criminology, 29*(3), 347–368. [PubMed: 25339794]
- Feldstein Ewing SW, Filbey FM, Loughran TA, Chassin L, & Piquero AR (2015). Which matters most? Demographic, neuropsychological, personality, and situational factors in long-term marijuana and alcohol trajectories for justice-involved male youth. *Psychology Of Addictive Behaviors, 29*(3), 603–612. doi:10.1037/adb0000076 [PubMed: 26030166]
- Gomez R, Vance A, & Gomez RM (2014). Analysis of the convergent and discriminant validity of the CBCL, TRF, and YSR in a clinic-referred sample. *Journal of abnormal child psychology, 42*(8), 1413–1425. [PubMed: 24824190]
- Gordon DA, Graves K, & Arbuthnot J (1995). The effect of functional family therapy for delinquents on adult criminal behavior. *Criminal Justice and Behavior, 22*(1), 60–73.
- Greenwood P (2008). Prevention and intervention programs for juvenile offenders. *The Future of Children, 18*(2), 185–210. Retrieved from <http://www.jstor.org/stable/20179984> [PubMed: 21338003]
- Hawkins JD, Catalano RF, & Miller JY (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: implications for substance abuse prevention. *Psychological Bulletin, 112*(1), 64. [PubMed: 1529040]

- Hayes AF (2013). Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. Guilford Press.
- Hemovich V, Lac A, & Crano WD (2011). Understanding early-onset drug and alcohol outcomes among youth: The role of family structure, social factors, and interpersonal perceptions of use. *Psychology, Health & Medicine*, 16(3), 249–267.
- Henderson CE, Young DW, Jainchill N, Hawke J, Farkas S, & Davis RM (2007). Program use of effective drug abuse treatment practices for juvenile offenders. *Journal of Substance Abuse Treatment*, 32(3), 279–290. [PubMed: 17383552]
- Henggeler SW, Clingempeel WG, Brondino MJ, & Pickrel SG (2002). Four-year follow-up of multisystemic therapy with substance-abusing and substance-dependent juvenile offenders. *Journal of the American Academy of Child & Adolescent Psychiatry*, 41(7), 868–874. [PubMed: 12108813]
- Henggeler SW, Halliday-Boykins CA, Cunningham PB, Randall J, Shapiro SB, & Chapman JE (2006). Juvenile drug court: Enhancing outcomes by integrating evidence-based treatments. *Journal of Consulting and Clinical Psychology*, 74(1), 42. [PubMed: 16551142]
- Henggeler SW, Letourneau EJ, Chapman JE, Borduin CM, Schewe PA, & McCart MR (2009). Mediators of change for Multisystemic Therapy with juvenile sexual offenders. *Journal of Consulting and Clinical Psychology*, 77(3), 451–462. 10.1037/a0013971 [PubMed: 19485587]
- Henggeler SW, Melton GB, & Smith LA (1992). Family preservation using multisystemic therapy: An effective alternative to incarcerating serious juvenile offenders. *Journal of Consulting and Clinical Psychology*, 60(6), 953–961. 10.1037/0022-006X.60.6.953 [PubMed: 1460157]
- Henggeler SW, Pickrel SG, & Brondino MJ (1999). Multisystemic treatment of substance-abusing and-dependent delinquents: Outcomes, treatment fidelity, and transportability. *Mental health services research*, 1(3), 171–184. [PubMed: 11258740]
- Henry KL, Oetting ER, & Slater MD (2009). The role of attachment to family, school, and peers in adolescents' use of alcohol: A longitudinal study of within-person and between-persons effects. *Journal of counseling psychology*, 56(4), 564. [PubMed: 20228876]
- Hine DW, McKenzie-Richer A, Lewko J, Tilleczek K, & Perreault L (2002). A comparison of the mediational properties of four adolescent smoking expectancy measures. *Psychology of Addictive Behaviors*, 16(3), 187–195. doi: 10.1037//0893-164X.16.3.187 [PubMed: 12236453]
- Hockenberry S & Puzanchera C (2015). *Juvenile Court Statistics 2013*. Pittsburgh, PA: National Center for Juvenile Justice.
- Ivanova MY, Achenbach TM, Rescorla LA, Dumenci L, Almqvist F, Bilenberg N, Bird H, Broberg AG, Dobrea A, Dopfner M, & Erol N (2007). The generalizability of the Youth Self-Report syndrome structure in 23 societies. *Journal of consulting and clinical psychology*, 75(5), 729. [PubMed: 17907855]
- Johnston LD, O'Malley PM, Bachman JG, Schulenberg JE, & Miech RA (2016). Monitoring the Future national survey results on drug use, 1975–2015: Volume II, college students and adults ages 19–55.
- Kazdin AE (2007). Mediators and mechanisms of change in psychotherapy research. *Annual Review in Clinical Psychology*, 3, 1–27.
- Kazdin AE, & Kendall PC (1998). Current progress and future plans for developing effective treatments: Comments and perspectives. *Journal of Clinical Child Psychology*, 27(2), 217–226. [PubMed: 9648038]
- Krischer MK, Sevecke K, Lehmkuhl G, & Pukrop R (2007). Dimensional assessment of personality pathology in female and male juvenile delinquents. *Journal of Personality Disorders*, 21(6), 675–689. [PubMed: 18072868]
- Krohn MD, Lizotte AJ, Thornberry TP, Smith C, & McDowall D (1996). Reciprocal causal relationships among drug use, peers, and beliefs: A five-wave panel model. *Journal of Drug Issues*, 26(2), 405–428.
- Lewis TF, & Mobley AK (2010). Substance abuse and dependency risk: the role of peer perceptions, marijuana involvement, and attitudes toward substance use among college students. *Journal of drug education*, 40(3), 299–314. [PubMed: 21313988]

- Liddle HA, Dakof GA, Henderson C, & Rowe C (2011). Implementation outcomes of multidimensional family therapy-detention to community: A reintegration program for drug-using juvenile detainees. *International Journal of Offender Therapy and Comparative Criminology*, 55(4), 587–604. [PubMed: 20427547]
- Mason MJ, Mennis J, Linker J, Bares C, & Zaharakis N (2014). Peer attitudes effects on adolescent substance use: the moderating role of race and gender. *Prevention Science*, 15(1), 56–64. [PubMed: 23404666]
- Mauricio AM, Little M, Chassin L, Knight GP, Piquero AR, Losoya SH, & Vargas-Chanes D (2009). Juvenile Offenders' Alcohol and Marijuana Trajectories: Risk and Protective Factor Effects in the Context of Time in a Supervised Facility. *Journal of Youth and Adolescence*, 38(3), 440–453. 10.1007/s10964-008-9324-5 [PubMed: 19636756]
- McClelland GM, Teplin LA, & Abram KM (2004). Detection and prevalence of substance use among juvenile detainees. *Juvenile Justice Bulletin*. Washington, DC: U.S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention Retrieved from <https://www.ncjrs.gov/pdffiles1/ojjdp/203934.pdf>
- Miller FG, & Lazowski LE (2001). The adolescent SASSI-2 manual: Identifying substance use disorders. Springfield, IN: The SASSI Institute.
- Miller FG, Renn WR, & Lazowski LE (2001). The adolescent substance abuse subtle screening inventory—second edition (SASSI-A2): User's guide.
- Miller SM, Siegel JT, Hohman Z, & Crano WD (2013). Factors mediating the association of the recency of parent's marijuana use and their adolescent children's subsequent initiation. *Psychology of Addictive Behaviors*, 27(3), 848–853. doi:10.1037/a0032201 [PubMed: 23586448]
- Moss HB, Chen CM, & Yi HY (2014). Early adolescent patterns of alcohol, cigarettes, and marijuana polysubstance use and young adult substance use outcomes in a nationally representative sample. *Drug and alcohol dependence*, 136, 51–62. [PubMed: 24434016]
- Mulder E, Brand E, Bullens R, & Van Marle H (2011). Risk factors for overall recidivism and severity of recidivism in serious juvenile offenders. *International Journal of Offender Therapy and Comparative Criminology*, 55(1), 118–135. [PubMed: 20181776]
- Nelson BA (2016). *Juvenile Delinquency: Causes, Control and Consequences*: Nova Science Publishers, Incorporated.
- Office of Applied Studies. (2003). *Substance Use, Abuse, and Dependence among Youths Who Have Been in Jail or a Detention Center*. Rockville, MD: Substance Abuse and Mental Health Services Administration. Retrieved from <http://oas.samhsa.gov/2k4/DetainedYouth/detainedYouth.pdf>
- Ozechowski TJ, & Liddle HA (2000). Family-based therapy for adolescent drug abuse: Knowns and unknowns. *Clinical Child and Family Psychology Review*, 3(4), 269–298. [PubMed: 11225740]
- Perera-Diltz DM, & Perry JC (2011). Screening for Adolescent Substance-Related Disorders Using the SASSI-A2: Implications for Nonreporting Youth. *Journal of Addictions & Offender Counseling*, 31(2), 66–79.
- Petraitis J, Flay BR, & Miller TQ (1995). Reviewing theories of adolescent substance use: organizing pieces in the puzzle. *Psychological Bulletin*, 117(1), 67–86. [PubMed: 7870864]
- Prinstein MJ, Boergers J, & Spirito A (2001). Adolescents' and their friends' health-risk behavior: Factors that alter or add to peer influence. *Journal of pediatric psychology*, 26(5), 287–298. [PubMed: 11390571]
- Randall J, Henggeler SW, Cunningham PB, Rowland MD, & Swenson CC (2001). Adapting multisystemic therapy to treat adolescent substance abuse more effectively. *Cognitive and Behavioral Practice*, 8(4), 359–366.
- Reed MD, & Rountree PW (1997). Peer pressure and adolescent substance use. *Journal of Quantitative Criminology*, 13(2), 143–180.
- Rowe CL, Wang W, Greenbaum P, & Liddle HA (2008). Predicting HIV/STD Risk Level and Substance Use Disorders Among Incarcerated Adolescents. *Journal of Psychoactive Drugs*, 40(4), 503–512. [PubMed: 19283954]
- Stein LAR, Lebeau-Craven R, Martin R, Colby SM, Barnett NP, Golembeske C Jr, & Penn JV (2005). Use of the adolescent SASSI in a juvenile correctional setting. *Assessment*, 12(4), 384–394. [PubMed: 16244119]

- Thompson SJ, Pomeroy EC, & Gober K (2005). Family-based treatment models targeting substance use and high-risk behaviors among adolescents: A review. *Journal of Evidence-Based Social Work*, 2(1–2), 207–233.
- Thornberry TP (1987). Toward an interactional theory of delinquency. *Criminology*, 25(4), 863–892.
- Thurber S, & Hollingsworth DK (1992). Validity of the Achenback and Edelbrock Youth Self-Report with hospitalized adolescents. *Journal of Clinical Child and Adolescent Psychology*, 21(3), 249–254.
- Tripodi SJ, & Bender K (2011). Substance abuse treatment for juvenile offenders: A review of quasi-experimental and experimental research. *Journal of Criminal Justice*, 39(3), 246–252.
- van der Put CE, Creemers HE, & Hoeve M (2014). Differences between juvenile offenders with and without substance use problems in the prevalence and impact of risk and protective factors for criminal recidivism. *Drug and alcohol dependence*, 134, 267–274. [PubMed: 24238911]
- Vaughn MG, Wallace JM Jr, Davis LE, Fernandes GT, & Howard MO (2008). Variations in mental health problems, substance use, and delinquency between African American and Caucasian juvenile offenders: Implications for reentry services. *International Journal of Offender Therapy and Comparative Criminology*, 52(3), 311–329. [PubMed: 17717333]
- Vincent GM, Grisso T, Terry A, & Banks S (2008). Sex and race differences in mental health symptoms in juvenile justice: The MAYSI-2 national meta-analysis. *Journal of the American Academy of Child & Adolescent Psychiatry*, 47(3), 282–290. [PubMed: 18216730]
- Vreugdenhil C, van den Brink W, Ferdinand R, Wouters L, & Doreleijers T (2006). The ability of YSR scales to predict DSM/DISC–C psychiatric disorders among incarcerated male adolescents. *European child & adolescent psychiatry*, 15(2), 88–96. [PubMed: 16463011]
- Wallace JM, & Muroff JR (2002). Preventing substance abuse among African American children and youth: Race differences in risk factor exposure and vulnerability. *Journal of Primary Prevention*, 22(3), 235–261.
- Watt TT (2005). Race/ethnic differences in alcohol abuse among youth: An examination of risk-taking attitudes as a mediating factor. *Journal of Ethnicity in Substance Abuse*, 3(3), 33–47.
- Welty LJ, Harrison AJ, Abram KM, Olson ND, Aaby DA, McCoy KP, ... Teplin LA (2016). Health Disparities in Drug- and Alcohol-Use Disorders: A 12-Year Longitudinal Study of Youths After Detention. *American Journal of Public Health*, 106(5), 872–880. 10.2105/AJPH.2015.303032 [PubMed: 26985602]
- Wiesner M, Kim HK, & Capaldi DM (2005). Developmental trajectories of offending: Validation and prediction to young adult alcohol use, drug use, and depressive symptoms. *Development and psychopathology*, 17(1), 251–270. [PubMed: 15971769]
- Wills TA, & Yaeger AM (2003). Family factors and adolescent substance use: Models and mechanisms. *Current Directions in Psychological Science*, 12(6), 222–226.
- Young DW, Dembo R, & Henderson CE (2007). A National Survey of Substance Abuse Treatment for Juvenile Offenders. *Journal of Substance Abuse Treatment*, 32(3), 255–266. 10.1016/j.jsat.2006.12.018 [PubMed: 17383550]

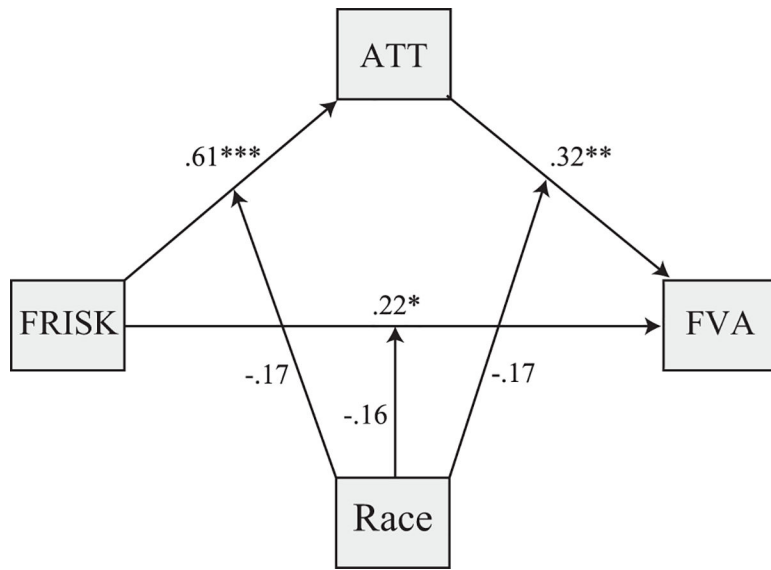


Figure 1.

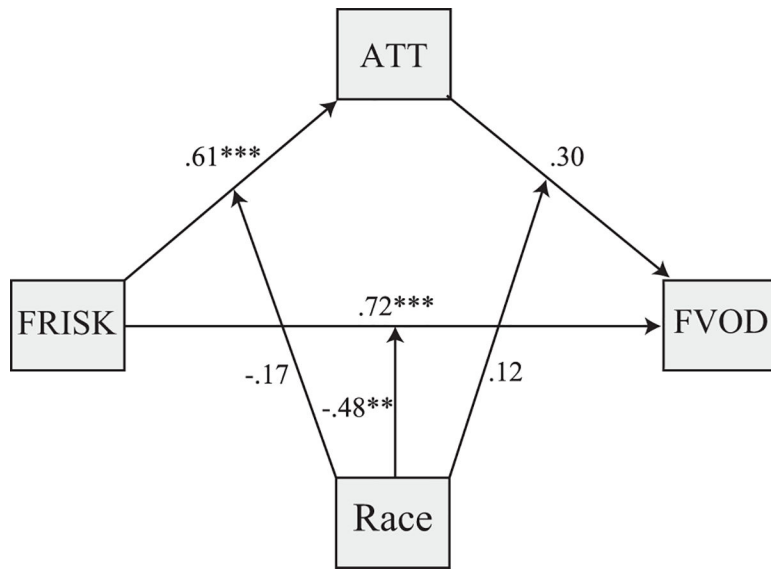


Figure 2.

Table 1

Demographics and Descriptive Statistics for the Sample

Variable	Total Sample N or Mean (% or SD) N=226
Age	15.53 (1.27)
Gender	
Male	185 (81.9%)
Female	41 (18.1%)
Race/Ethnicity	
African American/Black	168 (74.3%)
White	58 (25.7%)
Externalizing Behaviors	67.04 (58.76)
Attitudes	51.93 (10.56)
Family/Peer Risk	53.22 (11.03)
Face Valid Alcohol	46.21 (7.74)
Face Valid Other Drugs	56.26 (12.07)

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Table 2

Correlation Coefficient Matrix

	Age	Gender	Race	EXT	ATT	FRISK	FVA	FVOD
Age	—	-0.13	-0.15*	0.04	-0.12	-0.03	0.09	0.08
Gender		—	-0.04	-0.01	0.15*	-0.02	0.19**	-0.03
Race			—	-0.16*	0.07	-0.06	-0.27***	-0.13
EXT				—	0.03	0.13*	0.23**	0.14*
ATT					—	0.49***	0.35***	0.47***
FRISK						—	0.31***	0.49***
FVA							—	0.51***
FVOD								—

Notes: N=226. Gender: male = 0, female = 2. Race: White = 0, Black = 1. EXT=Externalizing Behaviors ATT= Attitudes; FRISK = Family/Peer Risk; FVA=Face Valid Alcohol; FVOD= Face Valid Other Drug.

*
 $p < .05$

**
 $p < .01$

 $p < .001$