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Cannabis Use Among Court-Involved Minority Sexual Orientation and Gender Identity Adolescents

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Abstract

We examined the effects of family functioning and beliefs regarding peers' cannabis use among minority ($n = 112$) and non-minority ($n = 275$) sexual orientation and gender identity (SOGI), first-time court-involved adolescents. We examined longitudinally the effects of baseline general family functioning and peer cannabis use beliefs on self-reported cannabis use and cannabis-related consequences after 12 months. At baseline, 39.2 percent of adolescents reported using cannabis. Minority SOGI adolescents reported worse family functioning ($p = .017$) and higher peer cannabis use beliefs ($p = .047$). Higher peer cannabis use beliefs at baseline predicted recent cannabis use at the 12-month assessment for both minority and non-minority SOGI adolescents. Better family functioning predicted a lower likelihood of recent cannabis use at 12 months for non-minority SOGI adolescents, but not for minority SOGI adolescents. Baseline peer cannabis use beliefs and family functioning predicted cannabis-related consequences for both cohorts at 12 months when accounting for intermediate (i.e., four-month and eight-month) data. Among all first-time court-involved adolescents, those who believed greater cannabis use among their peers reported more subsequent cannabis use themselves. Conversely, higher general family functioning may be less of a protective factor for minority SOGI adolescents. These results suggest the utility of feedback interventions to modify peer norm beliefs among first-time court-involved adolescents.

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Keywords

marijuana; cannabis; substance use; justice involvement; youth; sexual minorities

Most court-involved adolescents in the United States are not detained. In 2016 alone, approximately 73 percent of petitioned juvenile delinquency cases (e.g., drug possession, assault, robbery) and 94 percent of petitioned status cases (e.g., curfew violation, truancy) did not result in detention facility placement.¹ Instead, more than 620,000 delinquency cases and more than 89,000 status cases for adolescents are court-involved, nonincarcerated (CINI) and live in the community, often with their families. As a result, they are exposed to and influenced by many of the same family and peer factors as their non-court-involved peers.

Compared with adolescents in detention facilities, CINI adolescents have easier access to illicit substances such as cannabis. Cannabis use is common among CINI adolescents,² and rates of use significantly exceed those among non-clinical³ and non-court-involved clinical samples.⁴ Cannabis use demonstrates a bidirectional relationship with court involvement. Specifically, cannabis use is associated with involvement in the justice system,⁵ either directly by possession of an illegal substance or indirectly by facilitating other illegal behaviors. After entering the juvenile justice system, adolescents are at increased risk of initiation or continued use of cannabis.⁶

Minority sexual orientation and gender-identity (SOGI) adolescents (i.e., those with non-heterosexual orientation, same-sex sexual behavior or attraction, or transgender identification) report earlier onset of use, higher rates of lifetime use, and more rapid increases in frequency of cannabis use compared with non-minority SOGI adolescents.⁷ One explanatory model for this disparity is minority stress theory, which posits that social stressors such as victimization, social exclusion, homelessness, and internalized homophobia lead minority SOGI adolescents to engage in illicit drug use. Similarly, minority SOGI adolescents are overrepresented in juvenile detention facilities⁸ and among first-time CINI adolescents, where nearly one-third may be classified as minority SOGI.⁹

In addition to delinquency and court involvement, family functioning¹⁰ and peer cannabis use beliefs¹¹ are associated significantly with adolescent cannabis use. Family discord and lack of cohesion are risk factors for adolescent drug use.¹² Likewise, adolescents' beliefs regarding their peers' drug use is associated with initiation and escalation of drug use.¹³ Adolescents with higher peer drug use beliefs are more likely to use illegal drugs themselves.¹⁴ Poor family functioning, including family rejection, among minority SOGI adolescents is associated significantly with illegal drug use.¹⁵ Most studies examining parental or family influences on minority SOGI adolescent drug use have focused on risk (e.g., family rejection) rather than protective factors (e.g., family cohesion).¹⁶ Similarly, most studies focusing on peer-based factors associated with minority SOGI adolescent drug use have focused exclusively on the effects of peer victimization.¹⁷

Given the high prevalence of cannabis use and court involvement among minority SOGI adolescents, and that cannabis use increases risk for continued legal involvement, it

is important to identify modifiable risk factors for cannabis use and cannabis-related consequences among this group of adolescents. Despite evidence establishing strong associations between adolescent cannabis use and court involvement, family functioning, peer cannabis use beliefs, and minority SOGI status, to our knowledge no studies have explored the differential effects of peer and family factors on cannabis use and cannabis-related consequences among court-involved minority and non-minority SOGI adolescents. Using data from a unique cohort of CINI adolescents with a first-time offense followed over 12 months, we sought to compare the effects of adaptive family functioning and peer cannabis use beliefs on recent cannabis use and cannabis-related consequences between minority and non-minority SOGI adolescents. We hypothesized that both minority and non-minority SOGI adolescents' rates of self-reported cannabis use and severity of cannabis-related consequences would be associated significantly with peer cannabis use beliefs. In addition, we hypothesized that minority SOGI adolescents' cannabis use and cannabis-related consequences would be associated more strongly with peer cannabis use beliefs than with family functioning because many minority SOGI adolescents report low family support. Findings from this study may inform the development of interventions, tailored to the needs of these subgroups of court-involved adolescents, to reduce cannabis use and the adverse effects of cannabis.

Method

Participants and Procedure

Participants were drawn from the Epidemiological Study Involving Children in the Court (Project EPICC), a two-year longitudinal cohort study examining substance use, mental health, and HIV or sexually transmitted infection risk outcomes of CINI adolescents with a first-time offense.^{9,18,19} Adolescents (aged 12–18 years) were recruited from a large, Northeastern juvenile court between June 2014 and July 2016. Inclusion criteria included English-language proficiency and participation of one involved caregiver (i.e., a biological parent or legal guardian who had been living with the adolescent for at least six months, was proficient in English or Spanish, and was willing to participate in the study). Exclusion criteria included having a prior offense and presence of a cognitive impairment that would prevent completion of study assessments. The longitudinal sample included 401 adolescents; 387 provided data on variables of interest for the current study and thus comprise the current sample (Fig. 1). Adolescents and caregivers independently completed self-report instruments. We only used the adolescent reports for these analyses, however, because our aim was to study the behavioral effects of adolescent beliefs.

Potential participants were informed of the study in a letter accompanying standard court paperwork sent to the home ahead of the first court-related appointment. In collaboration with the court, trained research assistants approached all adolescent/caregiver dyads during their first meeting with an intake coordinator. Computer-administered surveys were completed at private locations convenient for participants, including participant homes, the project field office, or other community-based locations (e.g., libraries). The institutional review boards at the University of California, San Francisco and all collaborating sites approved all recruitment and study procedures. A federally issued certificate of

confidentiality was obtained to protect participant privacy. The current study used data from the baseline assessments and four-, eight-, and 12-month follow-up assessments.

Measures

Minority and non-minority SOGI status was identified by endorsement of at least one of the following criteria at baseline: non-binary gender, same-sex sexual behavior, same-sex attraction, non-heterosexual sexual orientation, or victim of sexual-orientation or gender-identity-based victimization. The final criterion regarding gender-expression- or sexual-orientation-based victimization was drawn from a study of detained sexual minority adolescents.⁸ These criteria have been applied to our sample of CINI adolescents previously.

Family functioning was assessed using the Family Assessment Device,²⁰ a 60-item measure of adolescents' perceptions of family functioning. The Family Assessment Device includes six subscales that assess the six dimensions of the McMaster Model of Family Functioning (i.e., affective involvement, affective responsiveness, behavioral control, communication, problem solving, and roles). The General Family Functioning Scale of the Family Assessment Device, which includes 12 statements about family communication and support (e.g., "In times of crisis we can turn to each other for support"), was included in the current study. Adolescents rated how well statements described their family on a four-point Likert-scale ranging from 1 = strongly disagree to 4 = strongly agree. Higher scores represent better family functioning. Adequate reliability and validity have been established.²¹ For the current sample, internal consistency for the General Functioning scale was $\alpha = 0.79$.

Although caregivers were also administered the Family Assessment Device, we focused on adolescent responses in this paper for three reasons: mean \pm SD caregiver-reported baseline scores on this measure did not differ significantly between minority and non-minority SOGI adolescents (3.25 ± 0.49 and 3.29 ± 0.58 , $p = .51$), whereas adolescent-reported baseline scores between the two cohorts did differ significantly (2.82 ± 0.55 and 2.96 ± 0.50 , $p = .02$); previous research among non-justice-involved adolescents suggests adolescent perceptions of family functioning are associated with substance use^{22,23}; and previous studies that have, similar to Project EPICC, applied an ecodevelopmental model, only considered adolescent-reported family functioning²⁴ because adolescent and caregiver reports do not correlate highly.²⁵

Peer cannabis use beliefs were assessed by adolescents' response to two items adapted from the Monitoring the Future Study.²⁶ Adolescents answered, "How many of your close friends are smoking marijuana occasionally?" and "How many of your close friends are smoking marijuana regularly?" Higher scores reflected greater frequency of believed peer cannabis use, ranging from 1 = *none of them* to 6 = *all*. The mean of these two items was used to reflect adolescents' peer cannabis use beliefs.

Cannabis use was assessed with a self-report binary (yes/no) item: "In the last four months, did you smoke any form of marijuana (e.g., pot, weed, blunts, hashish, grass, or ganja)?" A separate survey item addressed synthetic cannabinoid use; however, given the small number of adolescents who endorsed using these drugs at baseline (< 5%), we chose to exclude them from these analyses.

Cannabis-related consequences were assessed using the 21-item Brief Marijuana Consequences Questionnaire.²⁷ The total number of items endorsed (e.g., “I have spent too much time using marijuana”) were summed to yield a total score ranging from 0 to 21; adolescents who denied using cannabis at a given time point were assigned a score of 0 on this scale.

Analysis

Preliminary analyses consisted of descriptive statistics, bivariable correlations of all study variables, and evaluation of differences in primary study variables based on sexual or gender minority status; preliminary analyses used raw data with listwise deletion to account for missing values. Primary regression analyses to predict cannabis use and cannabis-related consequences separately at the 12-month follow-up were conducted in SAS9.4 (SAS Institute Inc., Cary, NC). We employed multiple imputation by chained equations (MICE) to impute for missing data. MICE assumes data are missing at random and differences in the observed data explain any systematic differences between the missing and the observed values.²⁸ For each model, we used PROC MI to impute 10 data sets in which all independent variables in each model were predicted iteratively with regression equations; the resultant models were fit on each data set and results were then pooled to approximate the uncertainty in the point estimates. Predictive effects of family functioning and peer cannabis use beliefs and their interaction with SOGI minority status were examined in two separate regression models for each of the two outcomes using PROC GENMOD followed by PROC MIANALYZE (i.e., one model with peer cannabis use as the primary independent variable, and a second model with family functioning as the primary independent variable). The outcomes for both models were past-four-month cannabis use and past-four-month cannabis-related consequences reported at the 12-month follow-up assessment (i.e., a total of four models). Gender, age, race or ethnicity, and baseline past-four-month cannabis use were entered as controls in all models. For each model, we entered covariates in three steps: demographics only, demographics and variables of interest, and finally adding the interaction term. Continuous independent variables were centered prior to computing interaction terms, thereby resulting in both negative and positive values for these scales.

To further examine the effects of intermediate time points, we applied generalized estimating equations (GEE) to model the predictive effects of baseline risk and protective factors on cannabis use and cannabis-related consequences reported at the four-, eight-, and 12-month follow-up assessments. GEE models use robust sandwich estimators to account for correlations associated with repeated measurements within individuals over time. The GEE models controlled for gender, age, race or ethnicity, and lifetime cannabis use at baseline. We applied MICE to the GEE models to account for missing data as described above.

Results

Descriptive Statistics and Bivariate Relationships

Over a quarter (28.9%) of adolescents were identified as SOGI minorities. Minority SOGI adolescents were more likely than non-minority adolescents to be female (66.1% versus 33.6%, $p < .001$). Minority and non-minority SOGI adolescents were similar in mean \pm

SD age (14.5 ± 1.4 years versus 14.5 ± 1.6 years, $p = .87$), and distribution of race or ethnicity (33.3% versus 32.2% white, non-Latinx; 26.8% versus 25.1% other, non-Latinx; 39.6% versus 42.5% Latinx; $p = .87$) (Table 1).

At baseline, 39.2 percent of adolescents (46.8% of minority SOGI, 36.1% of non-minority SOGI, $p = .05$) reported using cannabis in the previous four months. Minority SOGI adolescents reported significantly worse family functioning ($t(366) = 2.39$, $p = .017$) and higher peer cannabis use beliefs ($t(373) = -1.99$, $p = .047$) at baseline. At the 12-month follow-up assessment, 38.1 percent of adolescents (45.2% of minority SOGI, 34.9% of non-minority SOGI) reported using cannabis in the previous four months. Consequences of cannabis use were low at both baseline and the 12-month follow-up (Table 1), with no significant differences between minority SOGI and non-minority SOGI adolescents (baseline: $p = .25$; 12-month: $p = .21$).

Primary Analyses

Adolescents' baseline peer cannabis use beliefs significantly predicted subsequent cannabis use among minority ($B = 0.24$, $SE = 0.11$, $p = .04$) and non-minority SOGI adolescents ($B = 0.27$, $SE = 0.08$, $p < .001$) and there was a significant main effect for peer cannabis use beliefs (Table 2, Model 1, Step 2; $B = 0.22$, $p = .025$). Likewise, peer cannabis use beliefs did not differ significantly based on minority SOGI status. Regardless of minority SOGI status, higher baseline peer cannabis use beliefs were associated with greater likelihood of cannabis use. Baseline general family functioning did not predict subsequent cannabis use among minority SOGI adolescents ($B = 0.19$, $SE = 0.33$, $p = .57$), but it did predict significant subsequent cannabis use among non-minority SOGI adolescents ($B = -0.54$, $SE = 0.24$, $p = .025$), leading to a statistically significant interaction between minority SOGI status and family functioning (Table 2, Model 2, Step 3; $B = 1.20$, $p = .042$). Specifically, only among non-minority SOGI adolescents were higher levels of baseline family functioning associated with lower likelihood of cannabis use at the 12-month follow-up assessment (Fig. 2).

Among all adolescents, peer cannabis use beliefs predicted 12-month cannabis-related consequences (Table 3, Model 1, Step 2, $B = 0.31$, $SE = 0.11$, $p = .003$), but family functioning did not (Table 3, Model 2, Step 2, $B = 0.20$, $SE = 0.25$, $p = .43$). There was no significant interaction between peer cannabis use beliefs and minority SOGI status (Table 3, Model 1, Step 3, $B = 0.22$, $SE = 0.18$, $p = .21$) or between family functioning and minority SOGI status (Table 3, Model 2, Step 3, $B = 0.10$, $SE = 0.54$, $p = .86$) on 12-month cannabis-related consequences.

Secondary Analyses

Results of the GEE models for cannabis use closely reflected the results of the primary analyses. In the model including peer cannabis use beliefs, there was a significant main effect of perceptions of peer cannabis use ($B = 0.25$, $p < .0001$) and no significant interaction between minority SOGI status and peer cannabis use beliefs. In the model including family functioning, there was a statistically significant main effect of family

functioning ($B = -0.52, p = .029$) and a marginally significant interaction between minority SOGI status and family functioning ($B = .72, p = .062$).

Similarly, results of the GEE models predicting cannabis-related consequences closely reflected the results of the linear regression models summarized above. Namely, peer cannabis use beliefs predicted cannabis-related consequences among all adolescents ($B = 0.25, p = .01$), and there was no significant interaction between peer cannabis use beliefs and minority SOGI status ($B = 0.20, p = .29$) or between family functioning and minority SOGI status ($B = 0.16, p = .16$). In contrast to the linear regression models, however, worse family functioning predicted more problematic adolescent cannabis use ($B = 0.23, p = .002$).

Discussion

In this longitudinal analysis of CINI adolescents with first-time offense, we found that peer cannabis use beliefs predicted a higher prevalence of future cannabis use among both SOGI minority and non-minority adolescents. Higher general family functioning at baseline predicted a lower prevalence of cannabis use among SOGI non-minority adolescents; in contrast, general family functioning demonstrated no significant effect on cannabis use among SOGI minority adolescents. Peer cannabis use beliefs and family functioning (when accounting for intermediate time points) also predicted cannabis-related consequences; however, these factors did not affect adolescents' cannabis-related consequences differentially on the basis of their minority SOGI status. These results confirm our hypotheses in part; peer cannabis use beliefs were associated significantly with all first-time CINI adolescents' cannabis use, but general family functioning was only associated with non-minority SOGI adolescent cannabis use. These results do not support our hypothesis that family functioning would predict cannabis-related consequences more strongly among non-minority SOGI adolescents compared with minority SOGI adolescents.

This pattern of results with regard to cannabis use reflects previous research suggesting minority SOGI adolescents are more likely to experience family rejection than non-minority SOGI adolescents²⁹; therefore, minority SOGI adolescents may be more likely to be influenced by their peers or their chosen or found families than their birth families.³⁰ Furthermore, although baseline cannabis use was the strongest predictor of cannabis use at follow-up, our findings regarding the effects of peer cannabis use and general family functioning offer areas for focused interventions. To our knowledge, this study is the first to compare modifiable peer and family risk factors for cannabis use between minority and non-minority SOGI CINI adolescents.

Prior literature indicates that greater family acceptance of minority SOGI adolescents' sexual orientation and gender expression is associated with lower rates of adolescent substance use³¹; similarly, better family functioning and acceptance of minority SOGI adolescents are associated with higher levels of adolescent emotional adjustment.³² In studies that have not accounted for minority SOGI status, better caregiver-adolescent communication and relationship quality predicts lower rates of adolescent substance use, although the understanding of the effect of general family functioning (separate from acceptance of SOGI status) on minority SOGI adolescent substance use is limited.³³

Our results indicate that general family functioning was not a significant predictor of cannabis use among minority SOGI adolescents. Strong family support may protect minority SOGI adolescents against negative mental health outcomes.³⁴ Many minority SOGI adolescents experience family rejection, leading to a greater reliance on peer and school factors to shape their substance-use behaviors.³⁵ Furthermore, minority SOGI adolescents may seek natural mentoring relationships with peers and minority SOGI adults in place of (or in addition to) their caregivers.³⁶

In contrast to our finding regarding the effect of family functioning, we found cannabis use among both subgroups of CINI adolescents was influenced by peer cannabis use beliefs, which is in agreement with previous studies that demonstrated early adolescents who believe their peers are using cannabis often are more likely to engage in subsequent cannabis and other substance use.³⁷ Conversely, adolescents who believe their peers disapprove of cannabis are less likely to use cannabis themselves.³⁸

Our results suggest that modifying peer cannabis use beliefs when adolescents first interact with the justice system may decrease the likelihood they will use cannabis subsequently. The initial period in which adolescents first enter the justice system is formative, and any health interventions in this critical time may be protective against future risk-taking behavior. Because cannabis use increases the likelihood of ongoing legal involvement, this behavior represents one important target of intervention. Normative, peer-based interventions may be a potential method to address cannabis use when adolescents have their first contact with the justice system. Though there is scarce evidence to support the use of normative interventions among court-involved adolescents, multiple studies among other adolescent populations support the utility of peer-based interventions and norms modification. For instance, in a recent meta-analysis of 17 randomized controlled trials of school-based, peer-led interventions for substance use (three of which focused on cannabis use), adolescents assigned to work with trained peer leaders were less likely to report subsequent substance use.³⁹ Peer leaders had diverse roles among the studies included in this meta-analysis, ranging from having informational conversations with their peers about the risks of substance use to facilitating group discussions in classroom settings with teachers.

Among college students, brief motivational interviewing has been found to decrease alcohol use; this effect was moderated by modification of descriptive peer norms.⁴⁰ Similarly, among collegiate student-athletes exposed to a comprehensive set of interventions designed to communicate accurate norms regarding alcohol use, students with high program exposure demonstrated significant decreases in perceived peer alcohol use and reported alcohol consumption.⁴¹ Evidence from “whole-school” interventions, many of which include peer-based interventions designed to modify substance use norms, have demonstrated decreased substance use; however, the role of peer norm modification is difficult to isolate from these complex interventions.⁴²

Various school-based trials have demonstrated that time-limited interventions may enhance peer refusal skills effectively. For instance, among younger adolescents, role-playing common sources of peer pressure (e.g., smoking, shoplifting) leads to greater nonverbal assertiveness for the specific behavior in the role-play scenario.⁴³ Other factors that should

be considered in designing an adolescent peer-refusal intervention include internal factors (e.g., degree of autonomy from caregivers, strength of social supports, and self-efficacy) and external factors (e.g., relative social status of their peers).

This growing body of literature supporting the beneficial effects of peer norm modification on adolescent and young adult substance use, in combination with the results of our study, suggest similar interventions could effectively decrease cannabis use among first-time CINI adolescents. Such interventions would need to be designed carefully to address the developmental stage and unique needs of these adolescents. For instance, intervention strategies would need to account for court oversight, including negative repercussions for admitting to cannabis use. In addition, college-based samples may not represent the racial and ethnic demographics of CINI adolescents.

Forensic evaluators may use these data to inform their assessments of court-involved adolescents as well as their interactions with local jurisdictions and juvenile courts. When evaluating court-involved adolescents, forensic evaluators may explore adolescents' beliefs regarding their peers' cannabis use. For adolescents who hold a distorted understanding of their peers' cannabis use (e.g., believing all or most of their peers use cannabis regularly), the forensic evaluator may recommend that the adolescent participate in a peer norm modification intervention. In addition, although in this study we were not able to evaluate the accuracy of adolescents' beliefs regarding peer cannabis use, it is possible that they may be accurate. In that case, forensic evaluators may recommend the implementation of prosocial peer interventions to reduce actual cannabis use.⁴⁴

On a broader scale, forensic evaluators can encourage state and county leaders to develop and fund evidence-based peer norm modification intervention programs. Likewise, forensic evaluators can advocate for juvenile courts to offer such interventions as part of a comprehensive program of behavioral rehabilitation options.

The results of this study should be interpreted in the context of several limitations. We chose to focus on cannabis use because of the increasing rates of use among adolescents in recent years; in this sample, approximately half of the adolescents reported cannabis use.⁴⁵ In addition, only a small subset of the study cohort reported using any non-cannabis illicit drugs at baseline, thereby limiting our ability to detect differences in use between subgroups.^{9,45} Future studies among larger cohorts of CINI adolescents may have greater statistical power to examine patterns of non-cannabis illicit drug use. Cannabis use was measured using adolescent self-report, which may underestimate the true prevalence of cannabis use compared with a biological assay. Mean urinary excretion time for even chronic cannabis users is only 27 days,⁴⁶ however, which is significantly shorter than our four-month retrospective recall period. We also did not measure caregivers' reports of their adolescent's cannabis use; however, concordance between urine toxicology and adolescent reported cannabis use is higher than concordance between urine toxicology and parental report.⁴⁷ We also lacked information regarding the type, delivery method (e.g., smoked, consumed), and strength (e.g., tetrahydrocannabinol concentration) of the cannabis. It is possible, for instance, that although minority SOGI adolescents are more likely to report cannabis use, they may use lower-strength preparations of cannabis. Future studies

should collect more granular data regarding patterns of cannabis use, as well as measures of impairment or negative consequences related specifically to cannabis use. The cohort was based in a single state; the demographic and cultural characteristics of this sample therefore may not be generalizable to other CINI adolescents, although the diverse racial and ethnic groups in this cohort are reflective of the disproportionate representation of adolescents from minority racial and ethnic backgrounds in the juvenile justice system. Adolescents in this study needed to have an involved caregiver; minority SOGI adolescents, compared with their non-minority peers, are more likely to experience homelessness because of family rejection.⁴⁸ Therefore, our results may have overestimated the role of general family functioning among minority SOGI adolescents.

Conclusions

Among court-involved adolescents, regardless of SOGI status, peer cannabis beliefs predict subsequent cannabis use; this result suggests the utility of normative feedback interventions. Family-based interventions used in isolation to reduce cannabis use may be less effective specifically for minority SOGI adolescents, for whom family functioning is less protective against cannabis use.

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References

1. Hockenberry S, Puzanchera C: Juvenile court statistics, 2016. National Center for Juvenile Justice, 2018. Available at: <https://www.ojjdp.gov/ojstatbb/njcda/pdf/jcs2016.pdf>. Accessed July 22, 2019
2. Tolou-Shams M, Harrison A, Hirschtritt ME, et al. Substance use and HIV among justice-involved youth: intersecting risks. *Curr HIV/AIDS Rep*16:37–47, 2019 [PubMed: 30734906]
3. Miech RA, Schulenberg JE, Johnston LD, et al. National adolescent drug trends in 2018. *Monitoring the Future*, 2018. Available at: <http://monitoringthefuture.org/data/18data.html#2018data-drugs>. Accessed August 10, 2019
4. Aarons GA, Brown SA, Hough RL, et al. Prevalence of adolescent substance use disorders across five sectors of care. *J Am Acad Child Adolesc Psychiatry*40:419–26, 2001 [PubMed: 11314567]
5. Green KM, Doherty EE, Stuart EA, et al. Does heavy adolescent marijuana use lead to criminal involvement in adulthood? Evidence from a multiwave longitudinal study of urban African Americans. *Drug Alcohol Depend*112:117–25, 2010 [PubMed: 20598815]
6. Dembo R, Wareham J, Schmeidler J: Drug use and delinquent behavior: a growth model of parallel processes among high-risk youths. *Crim Just & Behav*34:680–96, 2007
7. Corliss HL, Rosario M, Wypij D, et al. Sexual orientation and drug use in a longitudinal cohort study of U.S. adolescents. *Addict Behav*35:517–21, 2010 [PubMed: 20061091]
8. Irvine A: “We’ve had three of them”: addressing the invisibility of lesbian, gay, bisexual, and gender nonconforming youths in the juvenile justice system. *Colum J Gender L*20:675, 2010
9. Hirschtritt ME, Dauria EF, Marshall BDL, Tolou-Shams M: Sexual minority, justice-involved youth: a hidden population in need of integrated mental health, substance use, and sexual health services. *J Adolesc Health*63:421–8, 2018 [PubMed: 30077548]
10. Butters JE: Family stressors and adolescent cannabis use: a pathway to problem use. *J Adolesc*25:645–54, 2002 [PubMed: 12490182]

11. Chabrol H, Chauchard E, Mabila JD, et al. Contributions of social influences and expectations of use to cannabis use in high-school students. *Addict Behav*31:2116–9, 2006 [PubMed: 16488548]
12. Sánchez-Queija I, Oliva A, Parra Á, et al. Longitudinal analysis of the role of family functioning in substance use. *J Child Fam Stud*25:232–40, 2016
13. D'Amico EJ, McCarthy DM: Escalation and initiation of younger adolescents' substance use: the impact of perceived peer use. *J Adolesc Health*39:481–7, 2006 [PubMed: 16982381]
14. Olds RS, Thombs DL, Tomasek JR: Relations between normative beliefs and initiation intentions toward cigarette, alcohol and marijuana. *J Adolesc Health*37:75, 2005
15. Ryan C, Huebner D, Diaz RM, et al. Family rejection as a predictor of negative health outcomes in white and Latino lesbian, gay, and bisexual young adults. *Pediatrics*123:346–52, 2009 [PubMed: 19117902]
16. Bouris A, Guilamo-Ramos V, Pickard A, et al. A systematic review of parental influences on the health and well-being of lesbian, gay, and bisexual youth: time for a new public health research and practice agenda. *J Prim Prev*31:273–309, 2010 [PubMed: 21161599]
17. Earnshaw VA, Bogart LM, Poteat VP, et al. Bullying among lesbian, gay, bisexual, and transgender youth. *Pediatr Clin North Am*63:999–1010, 2016 [PubMed: 27865341]
18. Folk JB, Brown LK, Marshall BDL, et al. The prospective impact of family functioning and parenting practices on court-involved youth's substance use and delinquent behavior. *J Youth Adolesc*49:238–51, 2020 [PubMed: 31399895]
19. Yonek JC, Dauria EF, Kemp K, et al. Factors associated with use of mental health and substance use treatment services by justice-involved youths. *Psychiatr Serv*70:586–95, 2019 [PubMed: 31138054]
20. Epstein NB, Baldwin LM, Bishop DS: The McMaster Family Assessment Device. *J Marital Fam Ther*9:171–80, 1983
21. Miller IW, Epstein NB, Bishop DS, et al. The McMaster Family Assessment Device: reliability and validity. *J Marital Fam Ther*11:345–56, 1985
22. Smart LS, Chibucos TR, Didier LA: Adolescent substance use and perceived family functioning. *J Fam Issues*11:208–27, 1990
23. Rosenblum A, Magura S, Fong C, et al. Substance use among young adolescents in HIV-affected families: resiliency, peer deviance, and family functioning. *Subst Use Misuse*40:581–603, 2005 [PubMed: 15887592]
24. Prado G, Huang S, Maldonado-Molina M, et al. An empirical test of ecodevelopmental theory in predicting HIV risk behaviors among Hispanic youth. *Health Educ Behav*37:97–114, 2010 [PubMed: 20130302]
25. Schwartz SJ, Pantin H, Prado G, et al. Family functioning, identity, and problem behavior in Hispanic immigrant early adolescents. *J Early Adolesc*25:392–420, 2005 [PubMed: 16912809]
26. Johnston LD, Miech RA, O'Malley PM, et al. National survey results on drug use 1975–2018: overview, key findings on adolescent drug use. *Monitoring the Future, 2019*. Available at: <http://www.monitoringthefuture.org/pubs/monographs/mtf-overview2018.pdf>. Accessed July 5, 2019
27. Simons JS, Dvorak RD, Merrill JE, et al. Dimensions and severity of marijuana consequences: development and validation of the Marijuana Consequences Questionnaire (MACQ). *Addict Behav*37:613–21, 2012 [PubMed: 22305645]
28. White IR, Royston P, Wood AM: Multiple imputation using chained equations: issues and guidance for practice. *Stat Med*30:377–99, 2011 [PubMed: 21225900]
29. Katz-Wise SL, Rosario M, Tsappis M: Lesbian, gay, bisexual, and transgender youth and family acceptance. *Pediatr Clin North Am*63:1011–25, 2016 [PubMed: 27865331]
30. McConnell EA, Birkett MA, Mustanski B: Typologies of social support and associations with mental health outcomes among LGBT youth. *LGBT Health*2:55–61, 2015 [PubMed: 26790019]
31. Ryan C, Russell ST, Huebner D, et al. Family acceptance in adolescence and the health of LGBT young adults. *J Child Adolesc Psychiatr Nurs*23:205–13, 2010 [PubMed: 21073595]
32. Darby-Mullins P, Murdock TB: The influence of family environment factors on self-acceptance and emotional adjustment among gay, lesbian, and bisexual adolescents. *J GLBT Fam Stud*3:75–91, 2007

33. Van Ryzin MJ, Fosco GM, Dishion TJ: Family and peer predictors of substance use from early adolescence to early adulthood: an 11-year prospective analysis. *Addict Behav*37:1314–24, 2012 [PubMed: 22958864]
34. McConnell EA, Birkett MA, Mustanski B: Typologies of social support and associations with mental health outcomes among LGBT youth. *LGBT Health*2:55–61, 2015 [PubMed: 26790019]
35. Jordan KM: Substance abuse among gay, lesbian, bisexual, transgender, and questioning adolescents. *Sch Psychol Rev*29:201–6, 2000
36. Torres RS, Harper GW, Sánchez B, et al. Examining natural mentoring relationships (NMRs) among self-identified gay, bisexual, and questioning (GBQ) male youth. *Child Youth Serv Rev*34:8–14, 2012 [PubMed: 23408225]
37. Roditis ML, Delucchi K, Chang A, et al. Perceptions of social norms and exposure to pro-marijuana messages are associated with adolescent marijuana use. *Prev Med*93:171–6, 2016 [PubMed: 27746339]
38. Wu L, Swartz MS, Brady KT, et al. Perceived cannabis use norms and cannabis use among adolescents in the United States. *J Psychiatr Res*64:79–87, 2015 [PubMed: 25795093]
39. Georgie JM, Sean H, Deborah MC, et al. Peer-led interventions to prevent tobacco, alcohol and/or drug use among young people aged 11–21 years: a systematic review and meta-analysis. *Addiction*111:391–407, 2016 [PubMed: 26518976]
40. Wood MD, Fairlie AM, Fernandez AC, et al. Brief motivational and parent interventions for college students: a randomized factorial study. *J Consult Clin Psychol*78:349–61, 2010 [PubMed: 20515210]
41. Perkins HW, Craig DW: A successful social norms campaign to reduce alcohol misuse among college student-athletes. *J Stud Alcohol*67:880–9, 2006 [PubMed: 17061005]
42. Fletcher A, Bonell C, Hargreaves J: School effects on young people’s drug use: a systematic review of intervention and observational studies. *J Adolesc Health*42:209–20, 2008 [PubMed: 18295128]
43. Nichols TR, Graber JA, Brooks-Gunn J, et al. Ways to say no: refusal skill strategies among urban adolescents. *Am J Health Behav*30:227–36, 2006 [PubMed: 16712437]
44. Bender K, Tripodi SJ, Sarteschi C, et al. A meta-analysis of interventions to reduce adolescent cannabis use. *Res Soc Work Pract*21:153–64, 2011
45. Tolou-Shams M, Brown LK, Marshall BDL, et al. The behavioral health needs of first-time offending justice-involved youth: substance use, sexual risk, and mental health. *J Child Adolesc Subst*28:291–303, 2019
46. Ellis GM, Mann MA, Judson BA, et al. Excretion patterns of cannabinoid metabolites after last use in a group of chronic users. *Clin Pharmacol Ther*38:572–8, 1985 [PubMed: 3902318]
47. Burleson JA, Kaminer Y: Adolescent alcohol and marijuana use: concordance among objective-, self-, and collateral-reports. *J Child Adolescent Subst Abuse*16:53–68, 2006
48. Keuroghlian AS, Shtasel D, Bassuk EL: Out on the street: a public health and policy agenda for lesbian, gay, bisexual, and transgender youth who are homeless. *Am J Orthopsychiatry*84:66–72, 2014 [PubMed: 24826829]

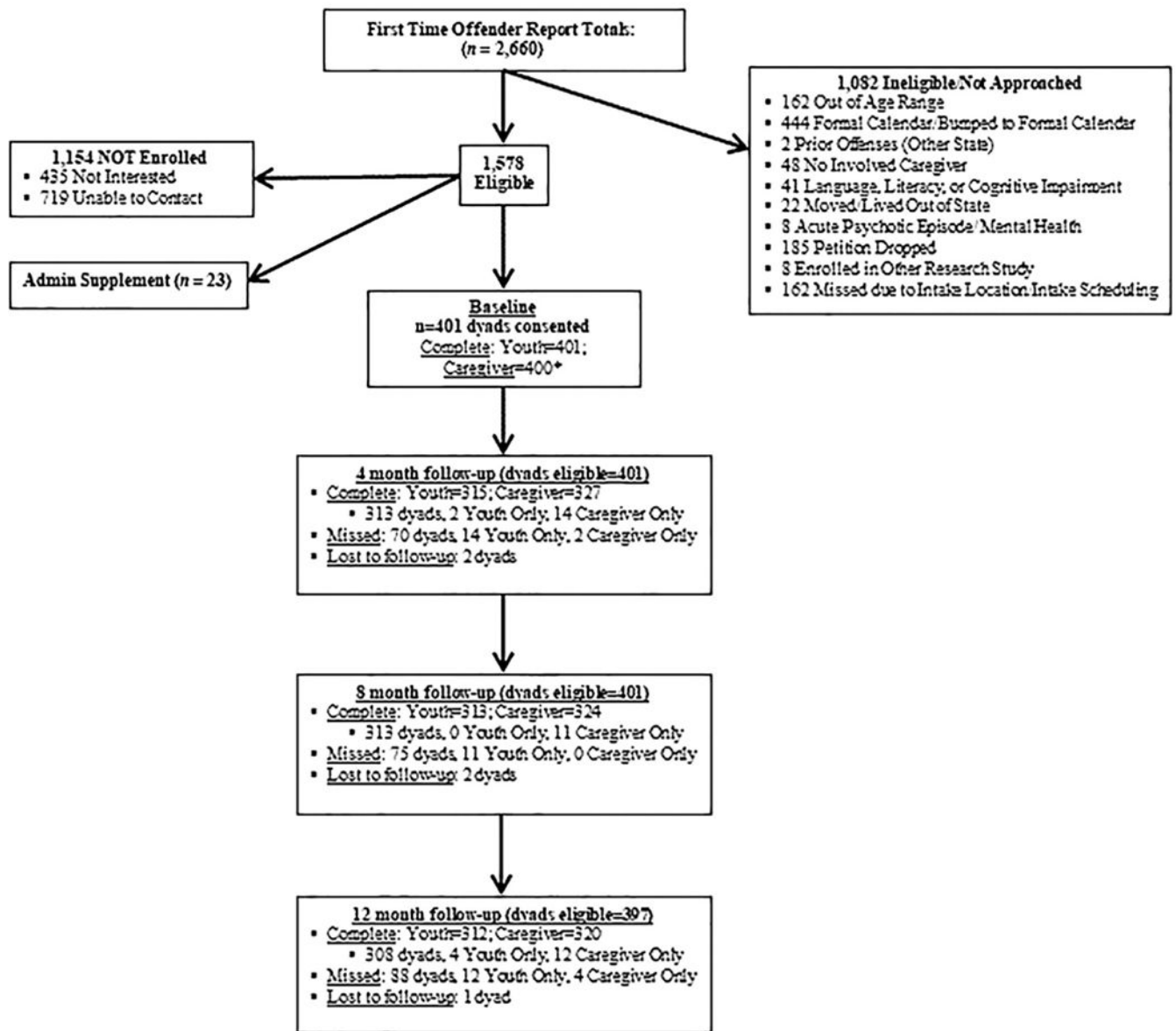


Figure 1.
Participant retention flowchart.

^a Baseline assessment was not completed for one caregiver, so this dyad is not part of the longitudinal sample for the current study.

Dyad = youth and caregiver completed or missed assessment; youth only = youth completed or missed assessment but caregiver did not; caregiver only = caregiver completed or missed assessment but youth did not.

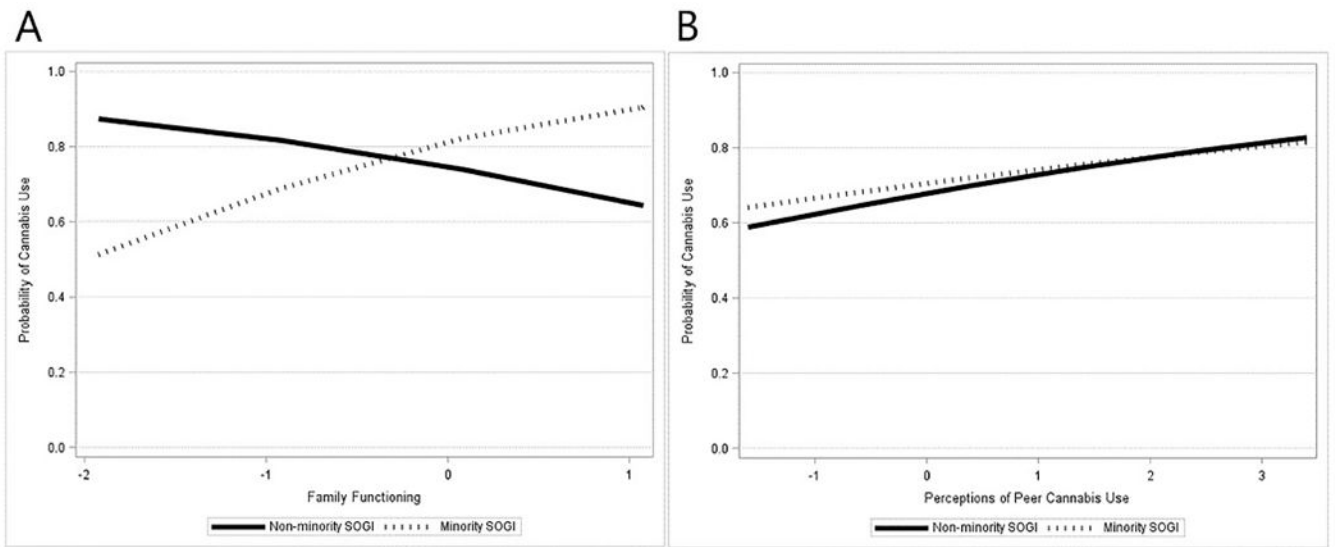


Figure 2. Interaction between sexual orientation or gender identity (SOGI) minority status and (A) general family functioning and (B) peer cannabis use beliefs in predicting cannabis use at 12-month follow-up.

Table 1
Descriptive Statistics for Primary Study Variables at Baseline and Follow-Up Assessments

	All	Minority SOGI	Non-Minority SOGI	P
Female	166 (43.0)	74 (66.1)	92 (33.6)	< .001
Race/ethnicity				.87
White, non-Latinx	125 (32.6)	37 (33.3)	88 (32.2)	–
Other, non-Latinx	99 (25.6)	30 (26.8)	69 (25.1)	–
Latinx	160 (41.7)	44 (39.6)	116 (42.5)	–
Age, y	14.5 ± 1.5	14.5 (1.4)	14.5 ± 1.6	.87
Family functioning,	2.9 ± 0.52	2.8 (0.6)	3.0 ± 0.5	.02
Peer cannabis use beliefs	1.6 ± 1.8	1.9 (1.9)	1.5 ± 1.7	.05
Cannabis use				
Baseline: lifetime use	184 (48.7)	63 (56.8)	121 (45.3)	.04
Baseline: recent use ^a	140 (39.2)	52 (46.8)	97 (36.1)	.05
4-month follow-up: recent use ^a	118 (38.7)	37 (41.1)	81 (37.7)	.57
8-month follow-up: recent use ^a	110 (37.5)	43 (47.3)	67 (33.2)	.02
12-month follow-up: recent use ^a	115 (38.1)	42 (45.2)	73 (34.9)	.09
Consequences of cannabis use, <i>n</i>				
Baseline: recent use ^a	1.2 ± 2.5	1.5 ± 3.1	1.11 ± 2.3	.25
4-month follow-up: recent use ^a	1.0 ± 2.8	1.4 ± 3.7	0.84 ± 2.3	.18
8-month follow-up: recent use ^a	1.0 ± 2.8	1.6 ± 3.7	0.74 ± 2.2	.05
12-month follow-up: recent use ^a	1.0 ± 2.7	1.3 ± 3.1	0.81 ± 2.6	.21

Data are presented as *n* (%) or mean ± SD. *N* = 387 subjects; Minority SOGI = 112 subjects; Non-Minority SOGI = 275 subjects. Independent sample *t* tests were conducted for continuous variables; chi-square tests were conducted for categorical variables. Mann-Whitney *U* tests were conducted for the consequences of cannabis use variables due to their non-normal distribution.

^aRecent use represents use during past 4 months.

SOGI = sexual orientation and gender identity.

Table 2
 Logistic Regression Models Predicting 12-Month Cannabis Use Among Court-Involved, Nonincarcerated Adolescents With First-Time Offense

Variable	Step 1			Step 2			Step 3		
	B (SE)	P		B (SE)	P		B (SE)	P	
Model 1: Peer Cannabis Use Beliefs									
Age	0.21 (0.11)	.05		0.16 (0.11)	.17		0.15 (0.11)	.18	
Gender	0.37 (0.29)	.21		0.31 (0.33)	.35		0.31 (0.33)	.35	
Race/ethnicity									
Other, non-Latinx	-0.51 (0.43)	.25		-0.43 (0.45)	.34		-0.42 (0.45)	.36	
Latinx	-0.64 (0.39)	.10		-0.59 (0.40)	.14		-0.59 (0.40)	.15	
Baseline cannabis use	2.51 (0.33)	<.0001		2.18 (0.36)	<.0001		2.19 (0.36)	<.0001	
Minority SOGI				0.12 (0.35)	.73		0.14 (0.34)	.69	
Peer beliefs				0.22 (0.10)	.03		0.24 (0.13)	.06	
Peer beliefs × minority SOGI							-0.05 (0.19)	.77	
Model 2: Family Functioning									
Age	0.24 (0.11)	.04		0.25 (0.12)	.03		0.24 (0.12)	.04	
Gender	0.27 (0.33)	.41		0.18 (0.35)	.62		0.16 (0.36)	.65	
Race/ethnicity ^a									
Other, non-Latinx	-0.48 (0.45)	.29		-0.48 (0.45)	.29		-0.50 (0.46)	.28	
Latinx	-0.65 (0.35)	.07		-0.65 (0.35)	.07		-0.67 (0.36)	.06	
Baseline cannabis use	2.53 (0.32)	<.0001		2.52 (0.33)	<.0001		2.56 (0.33)	<.0001	
Minority SOGI				0.33 (0.38)	.38		0.40 (0.38)	.30	
Family functioning				-0.01 (0.29)	.97		-0.46 (0.37)	.22	
Family functioning × minority SOGI							1.20 (0.59)	.04	

Multiple imputation by chained equations (MICE) was employed to account for missing data.

^aRace/ethnicity variables are contrast coded with white, non-Latinx as the comparison group.

SOGI = sexual orientation and gender identity.

Table 3

Linear Regression Models Predicting 12-Month Cannabis-Related Consequences Among Court-Involved, Nonincarcerated Adolescents With First-Time Offense

	Step 1		Step 2		Step 3	
	B (SE)	P	B (SE)	P	B (SE)	P
Model 1: Peer Cannabis Use Beliefs						
Age	0.19 (0.11)	.08	0.11 (0.11)	.31	0.13 (0.11)	.26
Gender	0.42 (0.30)	.17	0.36 (0.32)	.26	0.33 (0.32)	.31
Race/ethnicity						
Other, non-Latinx	-0.46 (0.39)	.24	-0.37 (0.39)	.34	-0.41 (0.40)	.30
Latinx	-0.10 (0.34)	.77	0.02 (0.34)	.96	0.00 (0.35)	.99
Baseline cannabis use	1.71 (0.35)	<.0001	1.13 (0.39)	.004	1.08 (0.40)	.01
Minority SOGI			0.13 (0.33)	.69	0.11 (0.34)	.75
Peer beliefs			0.31 (0.11)	.003	0.24 (0.12)	.05
Peer beliefs × minority SOGI					0.22 (0.18)	.21
Model 2: Family Functioning						
Age	0.19 (0.11)	.08	0.20 (0.11)	.07	0.21 (0.11)	.07
Gender	0.42 (0.30)	.17	0.37 (0.32)	.24	0.43 (0.33)	.19
Race/ethnicity^a						
Other, non-Latinx	-0.46 (0.39)	.24	-0.45 (0.39)	.26	-0.47 (0.41)	.25
Latinx	-0.11 (0.35)	.76	-0.10 (0.34)	.77	-0.08 (0.36)	.82
Baseline cannabis use	1.70 (0.35)	<.0001	1.70 (0.35)	<.0001	1.73 (0.36)	<.0001
Minority SOGI			0.19 (0.34)	.58	0.18 (0.33)	.58
Family functioning			0.20 (0.25)	.43	0.24 (0.35)	.50
Family functioning × minority SOGI					0.10 (0.54)	.86

Multiple imputation by chained equations (MICE) was employed to account for missing data.

^aRace/ethnicity variables are contrast coded with white, non-Latinx as the comparison group.

SOGI = sexual orientation and gender identity.