



Published in final edited form as:

J Adolesc Health. 2023 February ; 72(2): 230–236. doi:10.1016/j.jadohealth.2022.09.029.

In the Presence of Parents: Parental Heterosexism and Momentary Negative Affect and Substance Craving among Sexual Minority Youth

Jamie E. Parnes, Ph.D.^{a,b}, Ethan H. Mereish, Ph.D.^{a,c}, Samuel N. Meisel, Ph.D.^{a,b}, Hayley Treloar Padovano, Ph.D.^a, Robert Miranda Jr., Ph.D.^{a,b}

^aCenter for Alcohol and Addiction Studies, Department of Behavioral & Social Sciences, Brown University, Providence, RI 02906

^bE. P. Bradley Hospital, Riverside, RI

^cDepartment of Psychology, University of Maryland, College Park, MD 20742; Department of Health Studies, American University, Washington, DC 20016

Abstract

Purpose: We examined the influence of parental heterosexism on in-vivo negative affect and substance craving among sexual minority youth (SMY) who use nicotine and other substances, and if that relation was strengthened when in the presence of their parent(s).

Methods: SMY ($n = 42$, ages 15-19) completed baseline assessments, including experiences of parental heterosexism (PH), and a 30-day ecological momentary assessment (EMA). EMA reports included affective states (i.e., anger, anxiety, depression), substance craving (i.e., nicotine, cannabis, alcohol), and other contextual factors (e.g., presence of parents). Multilevel logistic regression models evaluated the study hypotheses.

Results: PH was associated with greater odds of reporting in-the-moment anger, depression, cannabis craving, and alcohol craving. Parental presence was associated with lower odds of reporting anxiety or depression, and greater odds of reporting nicotine craving. There was a significant interaction when predicting the odds of reporting anxiety. For SMY low in PH, parental presence was related to lower odds of reporting anxiety. As PH increased, parental presence had diminishing associations with the odds of reporting anxiety.

Conclusions: Parenting behaviors can serve as protective and risk factors for negative affect and substance craving among SMY. Improving family-based interventions for SMY may be integral for enhancing healthy development and reducing health disparities.

Corresponding Author: Ethan H. Mereish, Ph.D., Lavender Lab, Department of Psychology, University of Maryland, College Park, 1121 Biology-Psychology Bldg, 4094 Campus Drive, College Park, MD 20742, College Park, USA, emereish@umd.edu.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Authors have no conflicts of interest to report.

Keywords

adolescents; ecological momentary assessment; minority stress; sexual minorities; gender minorities

Sexual minority adolescents and emerging adults (i.e., sexual minority youth; SMY; e.g., lesbian, gay, bisexual) experience less supportive and more conflictual relationships with their parents compared to heterosexual youth¹. Parental non-acceptance of SMY's sexual orientation identity (i.e., parental heterosexism (PH)) is one reason why SMY may have less supportive relationships with their parents, on average, compared to heterosexual youth². PH includes overt behaviors, such as expressed disapproval of a youth's sexual identity, and covert behaviors, such as suggesting sexual minority identities are a phase³. Findings from cross-sectional and longitudinal studies indicate that PH increases poor mental health (e.g., negative affect, depression) and substance use (e.g., nicotine, alcohol) outcomes for SMY²⁻⁹. However, research has yet to identify how PH is associated with SMY adjustment in their day-to-day lives.

PH and SMY Adjustment

Understanding influences of PH on negative affect, substance use, and craving may be of particular importance, as SMY report greater negative affect and substance use relative to heterosexual peers^{7,10,11}. Further, SMY's internalizing symptoms and substance use are prospectively linked to mental health and substance-related problems in adulthood^{12,13}. These findings align with the minority stress framework that contends high levels of stigma-based stressors experienced by SMY, such as PH, account for their elevated rates of substance use and depression¹⁴.

Limited research has examined how PH may influence negative affect and substance use. SMY assigned female at birth and sexual minority girls who experience low parental support report greater alcohol, marijuana, and other substance use as an adult^{4,5}. Similarly, sexual minority girls who experience low parental warmth have greater risk of developing alcohol use disorder in adulthood¹⁵. More broadly, sexual minority young adults exhibit greater negative affect and alcohol craving in response to laboratory-induced sexual minority-related stigma, relative to other stressors¹⁶. Findings from ecological momentary assessment (EMA) studies indicate that daily discrimination experiences are associated with greater same-day negative affect and substance use among sexual minorities¹⁷⁻¹⁹.

Together, these findings implicate minority stressors, including PH, as possible explanations for increased SMY negative affect and substance use. These findings also align with evidence that non-supportive/rejecting parenting is prospectively associated with increased risk for internalizing and externalizing symptoms, including substance use, among broader populations^{20,21}. Although PH may heighten risk for negative outcomes for SMY, our understanding of how it relates to SMY's day-to-day adjustment remains at a nascent stage.

Momentary assessments of parent-child interactions provide critical information on family dynamics, such as PH, that contribute to youth adjustment²². Dynamic Systems Theory

describes parent-child relationships as transactional interactions that promote stabilizing and destabilizing behaviors²³. For example, the presence of a critical parent at a given moment may induce an adolescent's negative affect²⁴. Among SMY, poor parent-child interactions are related to internalizing symptoms and substance use²⁵. Consistent with this perspective, intensive longitudinal studies using EMA have begun to better understand how parent-child interactions relate to youth adjustment²⁶. For example, depressed and non-depressed youth experienced greater levels of negative affect when in the presence of their parents relative to being with their peers²⁷. Additionally, adolescents report greater depression and anger on days they perceive lower parental support compared to days with greater perceived support^{26,28}. These findings suggest that being in the presence of parents and general parental non-support/rejection may translate to daily experiences of negative affect.

Current Study

Leveraging EMA methods, this study is the first, to our knowledge, to examine associations between PH and adolescent negative affect and substance use craving in daily life. EMA captures rich data in natural environments and day-to-day within-person contextual changes. We focused on the relation between PH, negative affect (i.e., anger, anxiety, and depression²⁹), and substance (i.e., nicotine, cannabis, and alcohol) craving given elevated rates of these indicators of maladjustment among SMY^{7,10}. We focused on substance craving rather than use because adolescent use is often limited by contextual factors (e.g., availability), whereas craving fluctuates within persons and across days, and it is associated with use^{30,31}. We focused on nicotine, cannabis, and alcohol use craving because these are most commonly used by SMY^{10,13}. Lastly, Dynamic Systems Theory suggests parent-child stressors are more strongly activated when a parent and child are together²². Thus, we examined the interaction between PH and parental presence, as being with a rejecting parent may further induce negative affect and craving.

We hypothesized that greater PH (1) would be related to higher levels of momentary negative affect and craving among SMY, and (2) that these associations would be stronger when SMY are in the presence of their parent(s). Study hypotheses and analytic plan were pre-registered on OSF (<https://osf.io/eb7k3/>).

Method

Participants

Participants ($N=85$) were part of a larger study of SMY who use nicotine (author citation) recruited through social media platforms and community outreach. Recruitment materials advertised the study as examining sexual minority teen tobacco use, stress, and health. Inclusion criteria were (a) self-identification as a SMY, (b) ages 14-19, (c) active nicotine use, (d) experienced at least three sexual orientation-based minority stressors in the past month, and (e) ability to read English. Current smoking cessation treatment, psychosis, or suicidality were exclusionary. The authors' Institutional Review Board approved the protocol. For details about the larger study, see (author citation).

Procedure

Interested youth were phone screened and potentially eligible youth completed an in-person screening/baseline. Youth ages 18-19 provided informed consent. Minors provided assent; parental permission was obtained. Consent forms indicated the study examined stress and health behaviors but did not mention the focus on SMY to avoid disclosure to parents/guardians. Eligible youth completed a baseline battery and received EMA training.

Participants completed 30-days of EMA using MetricWire Inc. (Ontario, Canada) on their personal devices; youth without a device received a study-provided device. Participants completed device-initiated reports, randomly delivered five times per day between 9am and 11:15pm, at least 2.75 hours apart. They were instructed to complete random reports within 30-minutes of notification unless it was unsafe or inappropriate (e.g., driving, during class/work) and received reminders until it was completed or expired. Participants were compensated with gift cards: \$45 for in-person screening/baseline, \$35 for the end-of-study visit; up to \$4.50 per EMA day; and \$10 bonus for each 10-day period with 80% or better EMA compliance.

Static Measures

Demographics.—Age, sex assigned at birth, gender identity, sexual orientation, race, ethnicity, socioeconomic status, school grade, and who lived in the participant’s home were collected at baseline.

Timeline Follow Back (TLFB).—A 30-day TLFB³² for nicotine, cannabis, and alcohol use was collected at baseline. Nicotine use was coded as either daily (1) or non-daily (0) use. Frequency of use (i.e., sum of use days) was calculated for cannabis and alcohol.

Parental Heterosexism.—PH was assessed with the 11-item Family Rejection subscale of the Sexual Minority Adolescent Stress Inventory³³ (e.g., “parents are sad that I am LGBTQ”). Response options were No (0) or Yes (1). Responses were summed and converted to a percentage³³ ($\alpha=0.89$).

Outness Inventory.—Outness to parent(s) was assessed using the Outness Inventory³⁴ Parent subscale. This subscale is a mean of 2 items assessing degree of outness to one’s mother and father, from not at all out (1) to openly out (7) ($\alpha=.75$).

Dynamic EMA Measures

Substance Craving.—Nicotine, cannabis, and alcohol craving was measured using single-item visual analog scales rated from 0 (*no urge*) to 10 (*strongest ever*) at every random report (e.g., “How strong is your urge to use nicotine right now?”). Due to non-parametric distributions with an overrepresentation of reports endorsing no craving (nicotine 25.4%, cannabis 45.4%, alcohol 74.4%), each score was dichotomized to no craving (0) and any craving (1)³⁵.

Negative Affect.—Participants rated negative affect (anger, anxiety, and depression) using the modified version of Profile of Mood States (POMS) for EMA studies³⁶ at every

random report. Participants indicated how they felt “right now” on a scale from 0 (*not at all*) to 10 (*extremely*). Due to non-parametric distributions with an overrepresentation of reports endorsing no affect (anger 54.5%, anxiety 36.2%, depression 47.0%), subscales were dichotomized to no affect (0) and any affect (1)³⁵.

Parental Presence.—Participants were asked “Who are you with?” at every random report. Response options were: No one; friends; boy/girlfriend; parent(s); other family member(s); other relative(s); co-worker(s); or someone else. Parental presence was defined as being with one’s parent(s) (present=1, not present=0). Parental presence was also calculated as the proportion of time each SMY spent with their parent(s) by dividing the number of reports that endorsed parental presence by their total EMA reports.

Contextual Variables.—Peer presence was determined by the presence of friends and/or boy/girlfriend (present=1, not present=0). Participants were also asked “Where are you?” at every random report. Response options were: home; friend's house; dorm; school; work; club or bar; restaurant; car, bus, or other transportation; elsewhere (public place), or elsewhere (private place). Location was coded as their primary residence (i.e., home or dorm=1) or elsewhere (0). Report date/time indicated time of day (6am-12pm, 12pm-6pm, 6pm-12am) and weekday (Monday-Thursday=0) versus weekend (Friday-Sunday=1).

Analytic Strategy

Multilevel logistic regression models using residual pseudo-likelihood were conducted in SAS 9.4 and accounted for the nesting of repeated observations (level 1) within participants (level 2).

Six outcomes were tested: anger, anxiety, depression, nicotine craving, cannabis craving, and alcohol craving. Independent variables were PH, parental presence, and total proportion of time spent with one’s parent(s). For cannabis and alcohol craving outcomes, the analytic sample was restricted to individuals reporting baseline cannabis and alcohol use, respectively. Tested covariates included age, gender identity (cisgender man, cisgender woman, gender minority), sexual identity (gay/lesbian, bisexual, pansexual/queer), ethnicity (Hispanic, non-Hispanic), race (White, racial minority), outness, time of day, weekday versus weekend, peer presence, location, and baseline nicotine, cannabis, and alcohol use. All continuous, between-person independent variables and covariates were grand-mean centered.

Model building occurred in a sequential fashion. First, we tested all study covariates for inclusion based on their relation to each outcome. Only those statistically related to each outcome ($p < .05$) were retained. Next, we tested if PH (level 2) and retained covariates were associated with each outcome. Then, we tested if parental presence (level 1), proportion of time spent with parent(s) (level 2), and covariates were related to outcomes. Parental presence and proportion of time spent with parent(s) were tested as a set to distinguish between individual differences in overall amount of time spent with one’s parents and in-the-moment influence of parental presence. If parental presence was significant, a random effects model determined if the magnitude of the effect varied between participants. All random effects models examining these relations either did not converge or were

nonsignificant. Cross-level interactions then tested for moderation. The final model for each outcome included retained covariates and significant focal variables; non-significant predictors were trimmed for parsimony. We probed significant interactions following methods from Dawson³⁷ to account for multilevel transformed parameter estimates.

Results

EMA Reports and Participant Characteristics

Participants ($n=85$) completed 6,004 random reports throughout the study period. Ninety reports were not completed within 30 minutes and thus removed. Participants who never reported being with their parent(s) ($n=43$ participants, 2,409 reports) were removed as being with one's parent(s) was the focal moderator. There were no significant differences between participant's proportion of reports endorsing negative affect or substance craving, or PH.

3,506 prompts from $n=42$ participants were maintained for analyses. The full analytic sample had an average age of 17.89 years old ($SD=1.3$, range 15-19). Participants were 88.1% cisgender (71.4% cisgender women), 83.3% White, and 57.1% reported daily nicotine use. For cannabis and alcohol craving, data was subset from participants who reported baseline cannabis ($n=36$, 2,894 reports, $M=14.5$ days, $SD=10.9$, range 1-30 days, 13.9% reported daily use) and alcohol ($n=31$, 2,654 reports, $M=4.4$ days, $SD=3.6$, range 1-13 days). See Table 1 for characteristics of each analytic sample.

Participants completed an average of 83.5 reports (58.5% of prompts, $SD=33.2$, range 6-142, $M=2.9$ per day) throughout the study period. Seventy-six percent ($n=32$) completed all 30 study days (range 3-30 days, $M=28.5$, $SD=4.6$). The number of missing random reports was correlated with baseline alcohol use ($r=-0.41$, $p=0.006$) and was uncorrelated with age, baseline nicotine use, and baseline cannabis use. Missing reports did not vary by sexual or gender identity. Number of missing reports increased across the study (correlation with study day $r=.63$, $p<.001$). Our EMA program required participants to answer all items within a report, which resulted in no missing data for completed reports.

Negative Affect and Craving

Intraclass correlation coefficients (ICCs) were estimated for each outcome using intercept-only models to describe the ratio of partitioned variance between- and within-participants (see Table 2). ICCs noted that approximately 50-62% of the variance among affect and craving variables were due to person-level factors. Bivariate associations among variables are presented in Table 3.

After testing covariates, gender identity, sexual orientation, ethnicity, outness, location, baseline nicotine, and baseline alcohol use were unassociated with focal outcomes and excluded from the final models (see Table 4 for significant covariates). When examining negative affect, PH was associated with greater odds of reporting momentary anger, $AOR=7.35$, $p=0.03$, anxiety, $AOR=10.44$, $p=0.01$, and depression, $AOR=6.30$, $p=0.05$. Similarly, PH was related to greater odds of momentary cannabis craving for participants who reported baseline cannabis use, $AOR=5.57$, $p=0.05$, and greater odds of momentary alcohol craving for participants who reported baseline alcohol use, $AOR=12.17$, $p=0.04$. PH

was not associated with nicotine craving. Being with one's parent(s) was associated with lower odds of reporting momentary anxiety, $AOR=0.68$, $p=0.01$, and depression, $AOR=0.74$, $p=0.05$; however, parental presence was associated with greater odds of reporting momentary nicotine craving, $AOR=1.48$, $p=0.02$. Full multilevel logistic regression model results are available in Table 4.

There was a significant interaction between PH and parental presence related to odds of reporting momentary anxiety. When probing the interaction, those low in PH had lower odds of reporting anxiety when with their parent(s) compared to when not with their parent(s). As PH increased, however, the odds anxiety when with their parent(s) became more like the odds of anxiety when not with their parent(s) (see Figure 1). Among those with the highest level of PH, being with one's parent(s) no longer appeared related to the odds of anxiety. Interactions were not significant for all other outcomes.

Discussion

In this study, we hypothesized that greater PH would be related to higher levels of momentary negative affect and substance craving, and that these associations would be stronger in moments when SMY are in the presence of their parent(s). Results largely upheld hypotheses relating PH to negative affect and craving, while moderation hypotheses were mostly not supported. SMY who experienced greater PH reported overall higher odds of experiencing momentary negative affect and cannabis and alcohol craving. These findings build on prior research relating parental SMY rejection and later cannabis and alcohol use^{4,6,7,13}. PH was not associated with nicotine craving, which is contrary to previous studies relating rejection to tobacco use¹³.

While parental presence was associated with increased nicotine craving relative to when parent(s) were not present, it was also related to lower anxiety and depression. These results are a novel contribution relating momentary parental presence with craving, and consistent with a prior EMA study indicating parental presence may influence affect²⁷. This study was also the first to examine interactions between PH and parental presence. We found a significant interaction between rejection and parental presence, such that reductions in reported anxiety associated with parental presence were attenuated as PH increased.

These findings fit with the minority stress model, which purports that SMY experience distal minority stressors (e.g., PH) that influence mental health (e.g., negative affect) and substance use outcomes¹⁴. Building on previous research^{3,6}, results demonstrated that distal minority stress (i.e., PH) manifests in momentary-level negative affect and cannabis and alcohol craving, which are precursors to substance use. Repeated experiences of momentary negative affect may partially explain findings from longitudinal studies indicating SMY rejection leads to greater mental health symptoms and substance use^{3,4,12}.

Results also found having a parent present was related to lower reported depression and moderated the association between PH and momentary anxiety. Among SMY, having supportive and affirming parents may help alleviate negative affective and promote healthy emotional development^{2,5,9}. Importantly, increased PH weakened the relation between

parental presence and anxiety reduction. This interaction is consistent with previous research that identified potential harms of PH^{2,3,5}. While non-rejecting parents may provide security and assurance for SMY, rejection appears to undermine that security. As purported by the minority stress model¹⁴, high levels of distal minority stress (i.e., PH) may result in increased negative mental health symptoms (i.e., anxiety). In turn, SMY with highly rejecting parents may not feel as safe when in their presence, and this discomfort may perpetuate anxiety, rather than alleviate it.

Consistent with previous research⁶, PH was related to greater momentary-level substance cravings among SMY. Building on alcohol research⁶, PH also predicted increased odds of momentary alcohol and cannabis craving in this study. While PH was unassociated with nicotine craving, we recruited SMY who regularly used nicotine products, which may have limited variability in the number of reports endorsing nicotine craving.

When examining contextual factors, parental presence was associated with increased nicotine craving. This may be due, in part, to our sample of SMY who regularly use nicotine, and in turn, may experience greater nicotine craving in settings where they cannot use (i.e., with their parents). Conversely, parental presence was unassociated with cannabis and alcohol craving. Cannabis and alcohol intoxication may be more readily apparent than nicotine intoxication, thus deterring use when around parents. Relatedly, SMY may be less likely to associate their parents' presence with alcohol or cannabis use and experience craving for those substances.

Important clinical implications can be drawn from our findings. Foremost, these findings indicate that PH has a deleterious influence on SMY mental health and substance craving. Relative to other predictors, PH had a notable association with our study outcomes, underscoring its meaningfulness as an intervention target. Additionally, parental presence's associations with lower negative affect highlights the importance of positive parent interactions. In turn, clinicians working with SMY should incorporate parent interventions that increase identity affirmation, support, and positive interactions. This may be important as some benefits related to supportive parenting may be offset by PH. Limited interventions for parents of SMY with these aims exist, with one such intervention suggesting benefits for highly distressed parents³⁸. Similar interventions may be beneficial for heterosexist parents, particularly as they are likely to be distressed by their SMY's identity². Reductions in PH may also alleviate negative affect and substance use cravings, thus possibly improving longer-term SMY outcomes.

Our findings must be considered in context of the study's limitations and strengths. Participants were recruited based on regular nicotine use. SMY who infrequently or do not use nicotine may have different affect and craving experiences. There was also an overrepresentation of cisgender girls and women, which may limit generalizability to gender minorities and cisgender boys and men. Additionally, the sample had limited racial and ethnic diversity; therefore, study results may have limited generalizability to racial and ethnic minority SMY. The SMASI family rejection subscale was utilized to measure PH. Since family rejection subscale assesses both PH and broader family rejection, it is a less specific measure of solely PH. Moreover, SMY reports did not distinguish between

each parent's levels of heterosexism. Therefore, it is possible that parents differed on level of heterosexism, and their presence may differentially influence affect and craving. We were unable to determine if SMY had moved away from home (e.g., college), which may have given some SMY more control over spending time with their parents. Similarly, SMY with more rejecting parents may have minimized parental interactions. However, we did not assess the duration or quality of parental interactions. Importantly, this study measured parental presence, affect, and craving concurrently; therefore, we are unable to make claims regarding temporal sequencing and causality between these constructs. Dichotomizing outcomes reduced response variability, which prohibited examining negative affect and craving intensity (e.g., low to high anxiety). Due to differences in endorsement rates (see Table 2), the degree of uncaptured information varied across outcomes. Also, our EMA compliance rate was lower than recommended cutoffs, though similar to some other adolescent EMA studies³⁹. Effects estimates with wide confidence intervals must be interpreted as informing directionality for future research rather than representing a reliable estimate of effect size.

Despite these limitations, we leveraged real-time measurements of affect and craving, which reduces recall bias and may more accurately depict momentary fluctuations. Moreover, participants completed reports in their natural environment, which improved external validity. Study participants also had varying sexual identities, thus increasing the sample's representation of SMY.

In conclusion, we found parenting behaviors can serve as protective and risk factors for SMY mental health and substance craving. These competing influences become enunciated among heterosexist parents and may result in adverse outcomes over time. Early intervention for SMY and their families may help offset later struggles and encourage healthy development. Given differences in PH and substance use among SMY⁴⁰, future research should examine if relations between PH, parental presence, negative affect, and craving vary by sexual and gender identity. Additionally, research should test whether moment-to-moment variation in parental rejection relates to fluctuations in SMY affect and craving. Lastly, research should examine how other types of minority stigma impact affect and craving among SMY who hold additional minority identities.

Acknowledgements:

The National Institutes of Health supported this project (R21MD010761, K08AA025011, K23AA024808, K24AA026326, F32AA028414, F32DA054718, P20GM130414).

Works Cited

1. Watson RJ, Barnett MA, Russell ST. Parent support matters for the educational success of sexual minorities. *J GLBT Fam Stud*. 2016;12(2):188–202. doi:10.1080/1550428X.2015.1028694
2. Puckett JA, Woodward EN, Mereish EH, Pantalone DW. Parental rejection following sexual orientation disclosure: impact on internalized homophobia, social support, and mental health. *LGBT Health*. 2015;2(3):265–269. doi:10.1089/lgbt.2013.0024 [PubMed: 26788675]
3. Ryan C, Huebner D, Diaz RM, Sanchez J. Family rejection as a predictor of negative health outcomes in white and latino lesbian, gay, and bisexual young adults. *Pediatrics*. 2009;123(1):346–352. doi:10.1542/peds.2007-3524 [PubMed: 19117902]

4. Fish JN, Russell BS, Watson RJ, Russell ST. Parent-child relationships and sexual minority youth: Implications for adult alcohol abuse. *J Youth Adolesc.* 2020;49(10):2034–2046. doi:10.1007/s10964-020-01299-7 [PubMed: 32772330]
5. Needham BL, Austin EL. Sexual orientation, parental support, and health during the transition to young adulthood. *J Youth Adolesc.* 2010;39(10):1189–1198. doi:10.1007/s10964-010-9533-6 [PubMed: 20383570]
6. Newcomb ME, Heinz AJ, Mustanski B. Examining risk and protective factors for alcohol use in lesbian, gay, bisexual, and transgender youth: A longitudinal multilevel analysis. *J Stud Alcohol Drugs.* 2012;73(5):783–793. [PubMed: 22846242]
7. Rosario M, Corliss HL, Everett BG, et al. Sexual orientation disparities in cancer-related risk behaviors of tobacco, alcohol, sexual behaviors, and diet and physical activity: Pooled youth risk behavior surveys. *Am J Public Health.* 2014;104(2):245–254. doi:10.2105/AJPH.2013.301506 [PubMed: 24328632]
8. Luk JW, Gilman SE, Haynie DL, Simons-Morton BG. Sexual orientation and depressive symptoms in adolescents. *Pediatrics.* 2018;141(5). doi:10.1542/peds.2017-3309
9. Mereish EH, Cox DJ, Harris JC, Anderson QR, Hawthorne DJ. Familial influences, shame, guilt, and depression among sexual minority adolescents. *Fam Relat.* 2021;70(5):1546–1555. doi:10.1111/fare.12514
10. Marshal MP, Friedman MS, Stall R, et al. Sexual orientation and adolescent substance use: a meta-analysis and methodological review. *Addict Abingdon Engl.* 2008;103(4):546–556. doi:10.1111/j.1360-0443.2008.02149.x
11. Hobaica S, Alman A, Jackowich S, Kwon P. Empirically based psychological interventions with sexual minority youth: A systematic review. *Psychol Sex Orientat Gend Divers.* 2018;5(3):313–323. doi:10.1037/sgd0000275
12. London-Nadeau K, Rioux C, Parent S, et al. Longitudinal associations of cannabis, depression, and anxiety in heterosexual and LGB adolescents. *J Abnorm Psychol.* 2021;130(4):333–345. doi:10.1037/abn0000542 [PubMed: 34180699]
13. Goldbach JT, Tanner-Smith EE, Bagwell M, Dunlap S. Minority Stress and Substance Use in Sexual Minority Adolescents: A Meta-analysis. *Prev Sci.* 2014;15(3):350–363. doi:10.1007/s11121-013-0393-7 [PubMed: 23605479]
14. Meyer IH. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychol Bull.* 2003;129(5):674–697. doi:10.1037/0033-2909.129.5.674 [PubMed: 12956539]
15. Coulter RWS, Jun HJ, Truong N, et al. Effects of familial and non-familial warmth during childhood and adolescence on sexual-orientation disparities in alcohol use trajectories and disorder during emerging adulthood. *Drug Alcohol Depend.* 2019;205:107643. doi:10.1016/j.drugalcdep.2019.107643 [PubMed: 31689643]
16. Mereish EH, Miranda R Jr. Exposure to stigma elicits negative affect and alcohol craving among young adult sexual minority heavy drinkers. *Alcohol Clin Exp Res.* 2019;43(6):1263–1272. doi:10.1111/acer.14055 [PubMed: 31099903]
17. Livingston NA, Flentje A, Heck NC, Szalda-Petree A, Cochran BN. Ecological momentary assessment of daily discrimination experiences and nicotine, alcohol, and drug use among sexual and gender minority individuals. *J Consult Clin Psychol.* 2017;85(12):1131–1143. doi:10.1037/ccp0000252 [PubMed: 29189029]
18. Kiekens WJ, Mereish EH. The association between daily concealment and affect among sexual and gender minority adolescents: the moderating role of family and peer support. *J Adolesc Health.* Published online In Press. doi:10.1016/j.jadohealth.2021.11.019
19. Mereish EH, Miranda R Jr., Liu Y, Hawthorne DJ. A daily diary study of minority stress and negative and positive affect among racially diverse sexual minority adolescents. *J Couns Psychol.* 2021;68(6):670–681. doi:10.1037/cou0000556 [PubMed: 34166050]
20. Yap MBH, Cheong TWK, Zaravinos-Tsakos F, Lubman DI, Jorm AF. Modifiable parenting factors associated with adolescent alcohol misuse: a systematic review and meta-analysis of longitudinal studies. *Addiction.* 2017;112(7):1142–1162. doi:10.1111/add.13785 [PubMed: 28178373]

21. Pinquart M Associations of Parenting Dimensions and Styles with Internalizing Symptoms in Children and Adolescents: A Meta-Analysis. *Marriage Fam Rev.* 2017;53(7):613–640. doi:10.1080/01494929.2016.1247761
22. Granic I, Patterson GR. Toward a comprehensive model of antisocial development: A dynamic systems approach. *Psychol Rev.* 2006;113(1):101–131. doi:10.1037/0033-295X.113.1.101 [PubMed: 16478303]
23. Schermerhorn AC, Mark Cummings E. Transactional Family Dynamics: A New Framework for Conceptualizing Family Influence Processes. In: Kail RV, ed. *Advances in Child Development and Behavior.* Vol 36. *Advances in Child Development and Behavior.* JAI; 2008:187–250. doi:10.1016/S0065-2407(08)00005-0 [PubMed: 18808044]
24. Meyer A, Carlton C, Chong LJ, Wissemann K. The Presence of a Controlling Parent Is Related to an Increase in the Error-Related Negativity in 5–7 Year-Old Children. *J Abnorm Child Psychol.* 2019;47(6):935–945. doi:10.1007/s10802-018-0503-x [PubMed: 30610550]
25. Smetana JG, Rote WM. Adolescent–parent relationships: progress, processes, and prospects. *Annu Rev Dev Psychol.* 2019;1(1):41–68. doi:10.1146/annurev-devpsych-121318-084903
26. Janssen LHC, Elzinga BM, Verkuil B, Hillegers MHJ, Keijsers L. The link between parental support and adolescent negative mood in daily life: Between-person heterogeneity in within-person processes. *J Youth Adolesc.* 2021;50(2):271–285. doi:10.1007/s10964-020-01323-w [PubMed: 32997209]
27. Silk JS, Forbes EE, Whalen DJ, et al. Daily emotional dynamics in depressed youth: A cell phone ecological momentary assessment study. *J Exp Child Psychol.* 2011;110(2):241–257. doi:10.1016/j.jecp.2010.10.007 [PubMed: 21112595]
28. Fosco GM, LoBraico EJ. Elaborating on premature adolescent autonomy: Linking variation in daily family processes to developmental risk. *Dev Psychopathol.* 2019;31(5):1741–1755. doi:10.1017/S0954579419001032 [PubMed: 31455441]
29. Curran SL, Andrykowski MA, Studts JL. Short Form of the Profile of Mood States (POMS-SF): Psychometric information. *Psychol Assess.* 1995;7(1):80–83. doi:10.1037/1040-3590.7.1.80
30. Ramirez J, Miranda R. Alcohol craving in adolescents: Bridging the laboratory and natural environment. *Psychopharmacology (Berl).* 2014;231(8):1841–1851. doi:10.1007/s00213-013-3372-6 [PubMed: 24363093]
31. Treloar H, Miranda R. Craving and acute effects of alcohol in youths' daily lives: Associations with alcohol use disorder severity. *Exp Clin Psychopharmacol.* 2017;25(4):303–313. doi:10.1037/pha0000133 [PubMed: 28627928]
32. Sobell LC, Sobell MB. Timeline Follow-Back. In: Litten RZ, Allen JP, eds. *Measuring Alcohol Consumption: Psychosocial and Biochemical Methods.* Humana Press; 1992:41–72. doi:10.1007/978-1-4612-0357-5_3
33. Goldbach JT, Schragger SM, Mamey MR. Criterion and Divergent Validity of the Sexual Minority Adolescent Stress Inventory. *Front Psychol.* 2017;8:2057. doi:10.3389/fpsyg.2017.02057 [PubMed: 29234292]
34. Mohr J, Fassinger R. Measuring Dimensions of Lesbian and Gay Male Experience. *Meas Eval Couns Dev.* 2000;33(2):66–90. doi:10.1080/07481756.2000.12068999
35. Vasilenko SA, Piper ME, Lanza ST, Liu X, Yang J, Li R. Time-Varying Processes Involved in Smoking Lapse in a Randomized Trial of Smoking Cessation Therapies. *Nicotine Tob Res.* 2014;16(Suppl 2):S135–S143. doi:10.1093/ntr/ntt185 [PubMed: 24711627]
36. Cranford JA, Shrout PE, Iida M, Rafaeli E, Yip T, Bolger N. A Procedure for Evaluating Sensitivity to Within-Person Change: Can Mood Measures in Diary Studies Detect Change Reliably? *Pers Soc Psychol Bull.* 2006;32(7):917–929. doi:10.1177/0146167206287721 [PubMed: 16738025]
37. Dawson JF. Moderation in Management Research: What, Why, When, and How. *J Bus Psychol.* 2014;29(1):1–19. doi:10.1007/s10869-013-9308-7
38. Goodman JA, Israel T. An online intervention to promote predictors of supportive parenting for sexual minority youth. *J Fam Psychol JFP J Div Fam Psychol Am Psychol Assoc Div 43.* 2020;34(1):90–100. doi:10.1037/fam0000614

39. Jones A, Remmerswaal D, Verveer I, et al. Compliance with ecological momentary assessment protocols in substance users: a meta-analysis. *Addict Abingdon Engl.* 2019;114(4):609–619. doi:10.1111/add.14503
40. Gamarel KE, Watson RJ, Mouzoon R, Wheldon CW, Fish JN, Fleischer NL. Family Rejection and Cigarette Smoking Among Sexual and Gender Minority Adolescents in the USA. *Int J Behav Med.* 2020;27(2):179–187. doi:10.1007/s12529-019-09846-8 [PubMed: 31925674]

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Implications and Contributions:

This study found that parental heterosexism and parental presence were related to momentary-level negative affect and substance craving among sexual minority youth. Findings underscore the importance family interventions to reduce risk factors and improve sexual minority youth development.

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

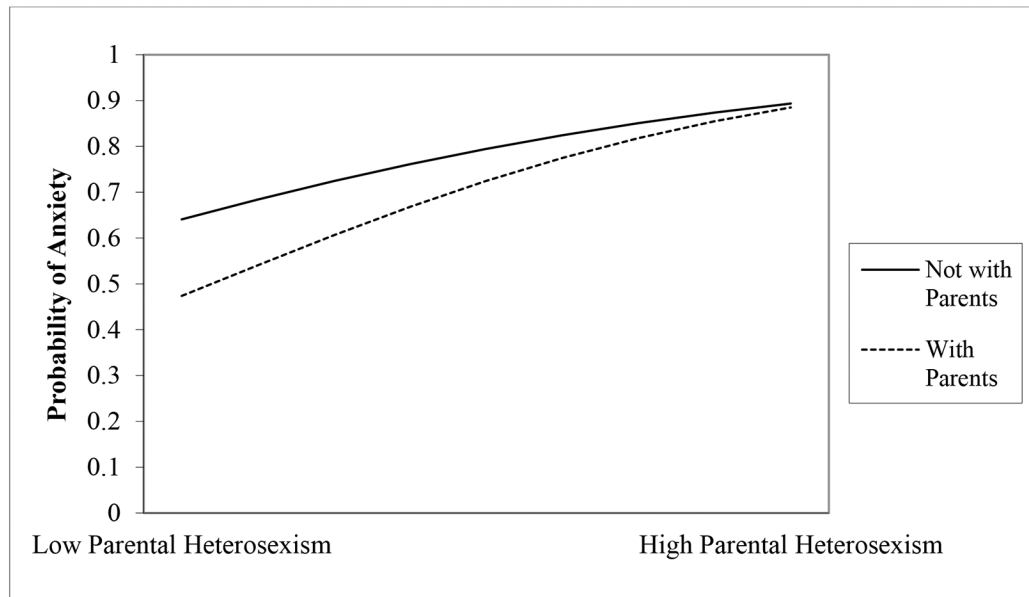


Fig. 1. Interaction plot for parental heterosexism and parental presence predicting anxiety, estimated using average participant age and peers not present.

Table 1

Participant Demographic Characteristics

	Full Sample (Nicotine Users) (<i>n</i> = 42)		Past 30-Day Cannabis Use (<i>n</i> = 36)		Past 30-Day Alcohol Use (<i>n</i> = 31)	
	M	SD	M	SD	M	SD
Age	17.89	1.26	17.78	1.22	17.71	1.32
	N	%	N	%	N	%
Gender						
Cisgender Men	7	16.67	7	19.44	5	16.13
Cisgender Women	30	71.43	24	66.67	23	74.19
Gender Minority	5	11.90	5	13.89	3	9.68
Sexual Identity						
Gay or Lesbian	9	21.43	8	22.22	6	19.35
Bisexual	24	57.14	21	58.33	19	61.29
Pansexual or Queer	9	21.43	7	19.44	6	19.35
Race						
Asian	1	2.38	1	2.78	1	3.23
Black/African American	2	4.76	1	2.78	2	6.45
White	35	83.33	30	83.33	26	83.87
Biracial/Multiracial	4	9.52	4	11.11	2	6.45
Hispanic/Latino(a)	6	14.29	6	16.67	4	12.90
Daily Nicotine Users	24	57.14	21	58.33	18	58.06
School Grade						
9	1	2.56	1	2.94	1	3.23
10	4	10.26	3	8.82	3	9.68
11	5	12.82	5	14.71	5	16.13
12	7	17.95	7	20.59	5	16.13
13	18	46.15	14	41.18	14	45.16
14	4	10.26	4	11.76	3	9.68
Who Lives in the Home						
Father	22	52.38	18	50.00	16	51.61
Mother	38	90.48	32	88.89	29	93.55
Guardian(s)	8	19.05	7	19.44	7	22.58
Sibling(s)	32	76.19	27	75.00	23	74.19
Grandparent(s)	2	4.76	2	5.56	2	6.45
Other	1	2.56	1	2.78	1	3.23

Table 2

Study Variable Descriptive Statistics

	Full Sample (Nicotine Users) (n = 42)		Past 30-Day Cannabis Use (n = 36)		Past 30-Day Alcohol Use (n = 31)	
	M	SD	M	SD	M	SD
SMASI - Parental Heterosexism	0.35	0.33	0.35	0.32	0.39	0.35
Baseline Cannabis Use Days	12.45	11.27	14.53	10.85	12.84	11.62
Baseline Alcohol Use Days	3.24	3.68	3.22	3.52	4.39	3.65
Proportion of Time with Parents	0.12	0.11	0.13	0.11	0.11	0.10
Outness	4.67	1.52	4.72	1.47	4.81	1.54
	% of reports (N = 3,506)	ICC	% of reports (N = 2,892)	ICC	% of reports (N = 2,652)	ICC
Anger	45.55	0.50	41.36	0.47	45.55	0.55
Anxiety	63.78	0.54	59.75	0.52	61.88	0.57
Depression	53.02	0.52	48.82	0.50	54.26	0.56
Nicotine Craving	74.65	0.54	73.81	0.52	76.18	0.57
Cannabis Craving	46.53	0.62	54.63	0.53	46.71	0.60
Alcohol Craving	24.29	0.61	23.18	0.65	28.60	0.58
Parent Present	11.97	-	12.44	-	10.28	-
Peers Present	41.64	-	42.05	-	43.85	-
Weekend	41.84	-	41.84	-	42.42	-
Time of Day: 6am-12pm	18.82	-	19.19	-	19.12	-
Time of Day: 12pm-6pm	37.42	-	37.31	-	37.18	-
Time of Day: 6pm-12am	43.75	-	43.50	-	43.70	-
Location: Primary Residence	51.83	-	48.96	-	49.36	-

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 3

Bivariate Correlations among Focal Study Variables

	1	2	3	4	5	6	7	8
1. Parental Heterosexism	-	-	-	-	-	-	-	-
2. Parental Presence	.08	-	-.02	-.03	-.02	.03	.00	-.01
3. Anger	.35	-.06	-	.27	.35	.02	.02	.06
4. Anxiety	.29	-.14	.86	-	.32	.06	.04	.05
5. Depression	.24	-.11	.84	.78	-	.01	.05	.05
6. Nicotine Craving	.28	.00	.43	.55	.40	-	.18	.16
7. Cannabis Craving	.06	.14	.03	-.01	.08	.17	-	.26
8. Alcohol Craving	.45	-.01	.52	.35	.39	.38	.30	-

Note: Within-person correlations are presented above the diagonal. Between-person correlations are presented below the diagonal. Dichotomous negative affect and substance craving variables were used to estimate correlations.

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 4
Multilevel Logistic Regression Adjusted Odds Ratios (and 95% Confidence Intervals)

	Anger	Anxiety	Depression	Nicotine Craving	Cannabis Craving	Alcohol Craving
Intercept	0.37 (0.10, 1.35)	3.87 (2.14, 7.00)	1.93 (1.06, 3.51)	4.40 (2.29, 8.45)	0.72 (0.41, 1.29)	0.09 (0.04, 0.22)
<i>Level 1 (Within-Participants)</i>						
Time of Day: 12pm-6pm	-	-	-	-	1.36 (1.04, 1.78)	1.78 (1.23, 2.57)
Time of Day: 6pm-12am	-	-	-	-	2.94 (2.25, 3.84)	4.97 (3.47, 7.12)
Weekend	0.80 (0.67, 0.95)	-	0.78 (0.65, 0.94)	-	1.31 (1.08, 1.60)	1.75 (1.38, 2.21)
Peer Presence	0.77 (0.64, 0.93)	0.55 (0.45, 0.67)	0.58 (0.47, 0.71)	1.53 (1.21, 1.94)	1.38 (1.12, 1.71)	1.65 (1.28, 2.12)
Parental Presence	-	0.68 (0.50, 0.92)	0.74 (0.55, 1.00)	1.48 (1.06, 2.07)	-	-
<i>Level 2 (Between-Participants)</i>						
Age	0.55 (0.35, 0.85)	0.52 (0.32, 0.85)	0.62 (0.38, 1.00)	-	0.51 (0.32, 0.81)	-
Race	3.82 (0.94, 15.58)	-	-	-	-	-
Baseline Cannabis Use	0.98 (0.94, 1.03)	-	-	-	1.15 (1.09, 1.22)	-
Proportion of Time with Parents	-	0.02 (0.00, 4.77)	0.05 (0.00, 10.81)	1.11 (0.00, 353.58)	-	-
Parental Heterosexism	7.35 (1.50, 35.99)	10.44 (1.66, 65.66)	6.30 (1.02, 39.03)	-	5.57 (1.0, 30.90)	12.17 (1.14, 130.32)
<i>Cross-Level Interaction</i>						
Parental Rejection × Parental Presence	-	2.47 (1.09, 5.62)	-	-	-	-

Note: Only significant findings are presented in this table; dashes indicate non-significant findings. An exception is proportion of time with parents, which is retained whenever parental presence is retained to partition between and within effects of parental presence. Not with parents is the reference group for parental presence, not with peers is the reference group for peer presence, 6am-12pm is the reference group for time of day, minority race is the reference group for race, weekdays are the reference group for weekend. Baseline nicotine and alcohol use were also tested and non-significant in all models.