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A Daily Diary Study of Minority Stress and Negative and Positive Affect among Racially Diverse Sexual Minority Adolescents

Ethan H. Mereish,

Lavender Lab, Department of Health Studies, American University, Washington, D.C.

Robert Miranda Jr.,

Center for Alcohol and Addiction Studies, Brown University, Providence, R.I.

Yang Liu,

Department of Human Development and Quantitative Methodology, University of Maryland School, College Park, M.D.

David J. Hawthorne

Department of Behavioral and Community Health, University of Maryland School of Public Health, College Park, M.D.

Abstract

We conducted an intensive longitudinal study of sexual minority adolescents to address gaps in the literature, limitations in retrospective reporting, and test tenets of the minority stress model. We examined the frequency of daily minority stressors and their within-person associations with negative and positive affect. We also tested the moderating effects of depressive symptomology on these associations. Sexual minority adolescents ($N = 94$; 35.1% were bisexual; 31.9% were gender minority; 45.2% were racial/ethnic minority), ages 12–18 years old ($M = 16.1$, $SD = 1.5$), were recruited from the community and completed a baseline questionnaire and then a 21-day daily diary (82.5% response rate). Participants experienced at least one minority stressor, with an average of 16.96 minority stressors ($SD = 18.7$, Range: 0–83), over the 21-day monitoring period. Some minority stressors were more commonly experienced than others (e.g., vicarious minority stress) and most participants attributed their sexual orientation to these stressors. Participants also attributed other marginalized identities to these stressors (e.g., gender identity, race). Daily minority stressors were associated with greater negative affect but not positive affect. Participants had greater negative affect on days where sexual orientation-specific minority stressors were endorsed compared to days where minority stressors were not reported. These associations were not moderated by depression symptomology. The results underscore that minority stressors are pervasive experiences of sexual minority adolescents' daily life and natural environment and they are associated with daily emotions. The findings have implications for the minority stress model and future research and interventions.

Keywords

depression; sexual minority adolescents; minority stress; negative affect; positive affect

Affect and emotions are integral facets of mental health and general wellbeing (Boumparis, Karyotaki, Kleiboer, Hofmann, & Cuijpers, 2016; Forbes & Dahl, 2005). For example, negative affect plays an important role in the development of anxiety and depressive symptoms, whereas low positive affect is a precursor to depression (Clark & Watson, 1991; Clark, Watson, & Mineka, 1994; Joiner Jr, Catanzaro, & Laurent, 1996). Sexual minority adolescents are more likely to experience a host of disruptions in affective and mood states, including anxiety, depression, and psychological distress, than their heterosexual peers (Lucassen, Stasiak, Samra, Frampton, & Merry, 2017; Marshal et al., 2011). Yet, despite mounting evidence that stigma-related stressors (e.g., minority stressors) confer risk for disruptions in affect and mood, whether and how they relate to changes in affective states in adolescents' daily lives remains unknown. Elucidating factors associated with negative and positive affect among sexual minority adolescents is essential for understanding important psychological and mental health disparities in this population and advancing research, interventions, and clinical practice.

Minority Stress among Sexual Minority Adolescents

The minority stress model posits that sexual minority adolescents experience unique and chronic stressors related to their stigmatized identities (i.e., minority stress) that lead to adverse mental health outcomes (Brooks, 1981; Meyer, 2003). Specifically, within this framework, sexual minorities can experience both distal minority stressors (i.e., external experiences with stigma and oppression, such as discrimination and victimization) and proximal minority stressors (i.e., internalization of stigma, concealment of one's sexual orientation, and anticipation of minority stress; Meyer, 2003). This model has also been adapted for gender minority individuals to capture their additional and unique experiences with minority stress (e.g., misgendering experiences; Testa, Habarth, Peta, Balsam, & Bockting, 2015). On the whole, there is compelling evidence that distal and proximal minority stressors related to sexual orientation, gender identity, race, or other marginalized identities are associated with adverse mental health among adolescents (Baams, Grossman, & Russell, 2015; Burton, Marshal, Chisolm, Sucato, & Friedman, 2013; Chodzen, Hidalgo, Chen, & Garofalo, 2019; Hatchel, Valido, De Pedro, Huang, & Espelage, 2019; Mereish, Sheskie, Hawthorne, & Goldbach, 2019; Poteat, Mereish, DiGiovanni, & Koenig, 2011). Furthermore, adaptations of the minority stress model underscore the role of psychological processes, such as dysregulated affective mechanisms, in explaining the link between minority stress and health (Hatzenbuehler, 2009; Mereish & Poteat, 2015).

Sexual minority adolescents are at heightened risk for minority stress given the many contexts they encounter (e.g., schools, peers, family). For instance, virtually all (99%) of sexual and gender minority youth report hearing homophobic remarks, 87% report hearing transphobic remarks, and 60% report hearing racist remarks at school; additionally, 70% experience verbal harassment directly related to their sexual orientation (Kosciw, Greytak,

Zongrone, Clark, & Truong, 2018). Although sexual minority adolescents have heterogeneous sexual orientations, gender identities, racial and ethnic backgrounds, and associated unique and intersecting marginalization experiences, they also share broader experiences of stress and oppression related to their sexual orientation.

Limitations in Prior Methodology and the Need for Daily Diary Methods

Although research suggests that mental health disparities between sexual minority and heterosexual adolescents can be explained by minority stress (Burton et al., 2013; Mereish et al., 2019), measures of minority stress among adolescents have only focused on lifetime or recent (e.g., past 30-day) experiences. Moreover, a recent systematic review of 632 studies of sexual and gender minorities over 15 years found that the majority primarily relied on cross-sectional research designs (Walch et al., 2020). Additionally, research has almost exclusively focused on sexual minority peoples' experiences with minority stress as a group by looking at person-level mean of minority stress; very little work has examined day-to-day within-person fluctuations in minority stress experiences (Mohr & Sarno, 2016). Lastly, there is a dearth of research examining how within-person variability in minority stressors is related to daily fluctuations in affective states among adolescents.

Experience sampling methods (e.g., daily diary methods) yield rich longitudinal data about events, thoughts, feelings, and behaviors as they unfold in real-time in daily life (Larson & Csikszentmihalyi, 2014; Trull & Ebner-Priemer, 2020). These approaches have high ecological validity and can mitigate limitations of recall biases that often exist with traditional self-report measures (Heron, Everhart, McHale, & Smyth, 2017). Elucidating how day-to-day fluctuations in minority stress relate to health outcomes is crucial for advancing our understanding of whether and how minority stress relates to health outcomes among sexual minority adolescents, thereby advancing the minority stress model and informing the development of tailored interventions.

A small but burgeoning body of research using daily diary methodologies suggests daily minority stress is associated with higher negative affect and lower positive affect among sexual minority adults (Eldahan et al., 2016; Flanders, 2015; Livingston et al., 2020; Mohr, 2016; Mohr & Sarno, 2016). Specifically, this work shows that daily within-person fluctuations in minority stress among adults are related to same- and next-day adverse health outcomes, namely negative affect, lower positive affect, psychological distress, and anxiety. No studies to date, however, have examined these associations among adolescents. Adolescence is pivotal a developmental period of affective, social, cognitive, and brain maturation (Crone & Dahl, 2012; Steinberg, 2005), and thus it is important to understand whether findings from adults generalize to youth. Moreover, most adult studies examined predominantly White samples with limited diversity in gender identity even though many sexual minorities have other intersecting identities (Bowleg, 2008; Mereish et al., 2019). Documenting the frequency of other marginalized identities targeted in minority stress experiences (e.g., racism) can inform how sexual orientation-specific minority stress is associated with affect while accounting for other types of minority stress.

Purpose

Although mounting cross-sectional and recent longitudinal evidence implicates minority stress as a key contributor to adverse mental health outcomes, the prospective daily and chronic impact of these stressors on the emotional functioning of sexual minority adolescents is largely unknown. This study leveraged daily diary methods to document the frequency of distal minority stressors over a 21-day monitoring period and understand how these experiences relate to same-day affect among sexual minority adolescents. Specifically, we examined associations between day-to-day within-person variability in the occurrence of distal minority stressors related to any marginalized identity and same-day negative and positive affect. We hypothesized that youth would report more negative and less positive affect when they experienced a greater number of daily distal minority stressors related to any of their marginalized identities. Although adolescents have intersecting identities and may experience minority stressors related to multiple forms of oppression, we tested associations between sexual orientation-specific minority stressors, as one shared axis of oppression, and negative and positive affect. We hypothesized that on days youth experienced sexual orientation-specific minority stressors, they would report greater negative and lower positive affect than on days when no minority stressors occurred.

Lastly, we explored potential nuances in the associations between daily minority stressors and affect based on symptoms of depression. Depression can heighten sensitivity to negative affect and unpleasant experiences and dampen sensitivity to positive affect or pleasant experiences (Forbes & Dahl, 2005; MacLeod & Byrne, 1996). Moreover, research shows that individuals with depression might be more sensitive to experiencing stress-induced negative affect (Wichers et al., 2007). Despite sexual minority adolescents' greater risk for depression and depression's effects on sensitivity to affect, there are no studies to date that examine differences in the associations between minority stress and negative and positive affect based on depressive symptomatology. Therefore, we explored the moderating effects of depressive symptomatology on the associations between daily minority stressors and same-day affect.

Methods

Participants

Participants were 94 sexual minority adolescents ages 12 to 18 years ($M = 16.10$, $SD = 1.50$). Participants' sex assigned at birth was female (90.4%) and male (9.6%) and current gender identification was: female (58.5%), gender queer/gender non-conforming (11.7%), trans male/boy/man (11.7%), male (10.6%), or a different gender identity (7.4%; e.g., agender, gender fluid). Based on the two-step method of assessing sex and gender identity (Reisner et al., 2014), 68.1% of participants were cisgender ($n = 64$) and 31.9% were gender minority ($n = 30$). Participants' sexual orientation identification was: bisexual (35.1%), lesbian (17%), pansexual (16%), gay (12.8%), queer (10.6%), asexual (5.3%), questioning (2.1%), and don't know (1.1%). Participants were racially diverse: White (54.8%), Black/African American (23.7%), Biracial or Multiracial (16.1%), Asian/Asian American or Pacific Islander (2.2%), and other (3.2%). Only 11.7% of the sample identified their ethnicity as Hispanic/Latino(a). Participants were mostly in high school (81.9%), whereas

some were in middle school (8.5%) and others were incoming first-year college students or were already a first-year student in college (9.6%). As an indicator of socioeconomic status, 34% received free or reduced lunch at school.

Procedures

Participants were recruited from the community through outreach and advertising at school- and community-based organizations and student clubs (e.g., Gender Sexuality Alliance) and sexual and gender minority-based events (e.g., Pride Festival) in a Mid-Atlantic metropolitan city. Adolescents were screened for inclusion criteria and potentially eligible youth were invited to an in-person meeting. The only inclusion criteria were self-identification as lesbian, gay, bisexual, transgender, or queer (LGBTQ) and age 12 to 18 years old.

Study procedures were explained and 18-year-old youth provided written consent; minors provided written assent. Consistent with other research with LGBTQ adolescents (Smith & Schwartz, 2019), parental consent was waived to mitigate potential risks related to disclosure of one's sexual orientation or gender identity. Participants completed a baseline survey at our laboratory or in private rooms in community locations (i.e., public libraries, LGBTQ-based community centers) to accommodate adolescents with limited access to transportation. The first authors' Institutional Review Board approved the protocol. Ninety-six adolescents completed the baseline survey, received a \$10 prepaid gift card, and were invited to participate in the daily diary portion of the study; 94 agreed to participate in the daily diary and two declined. At the end of the daily diary study, participants completed a final survey to evaluate their comprehension of the minority stress scale used in this study and provide overall feedback about the study.

Daily diary procedures.—After the baseline survey, participants received instructions for completing the daily diary surveys and enrolled in the 21-day daily diary portion of the study. Participants received an individual, personalized email with a link to their daily diary survey every evening at 7:30 p.m. The email also provided tailored feedback regarding their progress in the study (e.g., “You’re on day 10 of 21. Fantastic job — you are almost half way through!”). Participants received a reminder at 9:30 p.m. if they had not completed the survey. Uncompleted surveys expired at 5 a.m. the next morning and were considered missed reports.

Participants were asked to reflect on the past 24 hours when completing the questions. Participants received \$1 for each day they completed the daily survey plus a weekly incentive for completing 5 of the 7 days for each week (\$5 for week 1, \$10 for week 2, and \$10 for week 3). All payments were provided in gift cards.

Missing data.—The data were cleaned and screened for missing cases. There were some minor missing data on the item level; however, no item had more than 0.25% item-level missingness, which is small (Parent, 2013). Specifically, the missingness at the item level across the monitoring period for the minority stress measure ranged from zero to 0.06% (e.g., four items had one missing value each only once across the 1,629 days), zero to 0.18% for negative affect items, and zero to 0.25% for positive affect items. Given the very small

amount of missing data, we imputed missing data using the mean item response for that scale given by the participant on the respective day of the daily diary.

Measures

Minority stress.—Participants completed the 9-item Everyday Identity Stress Scale at baseline and daily over the 21-day daily diary period to assess their lifetime and daily experiences. Due to the lack of daily minority stress measures for adolescents, this instrument was developed specifically for this study based on focus groups with sexual minority adolescents and a review of the literature and existing minority stress scales. The scale assesses multiple forms of daily distal minority stressors (e.g., discrimination, prejudice, harassment, rejection) by capturing a range of relatively slight experiences (e.g., “People stared at me because of my identity”) to more acute forms of minority stressors (e.g., “I was targeted or harassed because of my identity”). Participants first received a definition of identity (i.e., “The following questions refer to your identity, which means any and all of your identities such as your gender, race, ethnicity, sexual orientation, social class, religion, nationality, body size, or any other identities.”). They then indicated whether they perceived stressors occurred because of one or more of their identities by selecting all that applied (e.g., sexual orientation, gender identity, race/ethnicity). Response options for the nine minority stress items were dichotomous: *No* or *Yes*. At baseline, participants were asked to report if they experienced any of the nine minority stressors over their lifetime. Over the daily diary period, participants were asked to report if they experienced any of the minority stressors over the past 24 hours. The scale was summed to provide the total number of different stressors experienced at baseline and each day.

To rigorously test the convergent validity of the Everyday Identity Stress Scale, we also assessed distal and proximal minority stressors experienced by sexual minority adolescents using two subscales of the Sexual Minority Adolescent Stress Inventory (SMASI; Goldbach, Schrager, & Mamey, 2017). To assess distal minority stress, we used the 10-item Work subscale ($\alpha = .76$), which was modified to be inclusive of work or school environments if adolescents did not work (e.g., “I have felt unsafe or threatened at school/work because I am LGBTQ”). To assess one form of proximal minority stress, we used the 7-item Internalized Homonegativity subscale ($\alpha = .79$; e.g., “I am uncomfortable with being LGBTQ”). Response options were dichotomous: *No* or *Yes*. This measure was developed for sexual minority adolescents, and it has good overall and test-retest reliability (Schrager, Goldbach, & Mamey, 2018) and well established criterion and divergent validity (Goldbach et al., 2017). Consistent with the scoring instructions (Goldbach et al., 2017), responses were summed and converted to a percentage.

Daily negative and positive affect.—For brevity of the daily diary survey, select items from the Positive and Negative Affect Scale (PANAS-X) assessed daily negative and positive affect (Watson & Clark, 1994). The PANAS-X is widely used in daily diary research with strong validity and reliability (Hruska, Zelic, Dickson, & Ciesla, 2017; Raposa & Hammen, 2018), including studies with sexual minority young adults (Mohr & Sarno, 2016). Eight items from the PANAS-X assessed negative affect (i.e., upset, guilty, scared, irritable, ashamed, nervous, jittery, stressed) and 3 items assessed positive affect (i.e., excited, proud,

inspired). Participants rated items using a 5-point scale from 0 “*very slightly or not at all*” to 4 “*extremely*” and the scales were averaged. We computed the between- and within-person alpha reliability coefficients based on the estimated two-level saturated covariance structure (Geldhof, Preacher, & Zyphur, 2014), which was obtained using the unweighted least square estimator in *Mplus* (Muthén & Muthén, 1998–2017). The reliability coefficients for negative and positive affect were $\alpha_{\text{within}} = 0.73$ and 0.63 , respectively, at the within-person level, and $\alpha_{\text{between}} = 0.94$ and 0.90 , respectively, at the between-person level, which suggests that both affect scales are sufficiently reliable to gauge both the individual differences and daily fluctuations of affect.

General adolescent stress.—The Adolescent Stress Questionnaire (Byrne, Davenport, & Mazanov, 2007) assessed several domains of baseline stress, including school performance, school attendance, teacher interactions, financial pressures, and school/leisure conflict. Example items included: “Keeping up with schoolwork” or “Not enough money to buy the things you need”. Participants rated 27-items on a 5-point scale from 1 = *Not at all stressful (or is irrelevant to me)* to 5 = *Very stressful*. This measure has good reliability with sexual minority adolescents and it is positively associated with minority stressors, such as family rejection and heterosexist climate (Goldbach, Schrager, & Mamey, 2017). The total scale was summed and each subscale demonstrated strong internal consistency in the present sample (α 's = .77 to .86).

Depression symptoms.—Depressive symptoms were assessed at baseline with the Center of Epidemiologic Studies Depression Scale (CES-D; “I felt depressed”; Radloff, 1977). Participants rated 20-items on a 4-point scale from 0 = “*rarely or none of the time (less than 1 day)*” to 3 = “*most or all of the time (5–7 days)*.” The CES-D is a widely used, valid, and reliable scale of depression in youth and adults; it has demonstrated good reliability and validity in a sample of Black American sexual minority adolescents (Mereish et al., 2019). The CES-D was summed and demonstrated strong internal consistency in the present study ($\alpha = .88$). Using the most widely used cut-off score for clinical depression, which is a score of 16 or greater (Radloff, 1977), 66% of participants met risk for clinical depression. However, using a recent recommendation for a more conservative cut off score of 20 (Vilagut, Forero, Barbaglia, & Alonso, 2016), 48.9% met criteria risk for clinical depression.

Data Analytic Plan

We first tested the psychometric properties of the Everyday Identity Stress Scale at both baseline and over the daily diary. We then examined frequencies of minority stressors and their attributions over the entire sample and aggregated at the participant level. Due to the non-independence of the data for examining within person effects and linear relationships among our variables, we tested hypotheses with generalized estimating equation (GEE) models, which control for autocorrelation without biasing results (Hardin, 2005). Models used an autoregressive covariance matrix structure and assumed a normal link function. To properly select a model that produced efficient parameter estimation using a robust estimator, other covariance matrix structures were tested but an autoregressive matrix structure produced the best fit based on the quasi-likelihood under independence model

criterion (Pan, 2001). Psychometric analyses of the Everyday Identity Stress Scale were performed using flexMIRT (Cai, 2017) and *Mplus* (Muthén & Muthén, 1998–2017). GEE analyses were performed using IBM SPSS Statistics 25.

To test the hypothesis that adolescents experience more negative affect and less positive affect on days when they experienced a greater number of minority stressors related to any of their identities, we ran separate models for each type of affect (i.e., negative and positive). Daily minority stress was a within-person variable that represented the total number of different types of minority stressors that occurred each day. It was centered at the person mean and thus reflected daily deviations from a person's average minority stress level over the monitoring period. To explore whether depression moderated the associations between daily minority stress and affect, we tested additional models with an interaction term of depression and minority stress.

To test the hypothesis that sexual orientation-specific minority stressors have unique and independent associations with daily negative and positive affect, we ran models examining the effects of sexual orientation-specific daily stressors on daily affect, with negative and positive affect as separate dependent variables. In these models, sexual orientation-specific stress was a dichotomous variable (i.e., 0 = No minority stressor endorsed on that day, 1 = At least one sexual orientation-specific minority stressor endorsed on that day). We also entered other identity attributions (e.g., gender identity, race, body size) as a nominal predictor in each model with the no daily minority stress as the reference. This approach tested whether daily sexual orientation-specific or other identity attributions significantly differed from the reference (no minority stress day). We also tested the moderating effects of depression by conducting additional models with a separate interaction term of depression and minority stress.

For specificity, all models included lagged indicators of yesterday's minority stress. By lagging our models, we tested whether the occurrence of minority stress is associated with same-day affect, while accounting for prior day's minority stress. For all models, the between person-level variables were reported at baseline: age, gender identity (dichotomous with cisgender as reference), general stress, lifetime experiences of minority stress, and depressive symptoms. Race and socioeconomic status were not included as covariates because they were not associated with our outcomes. For all models, day and weekday (dichotomous with weekend as reference) and prior day's minority stressors were within-person covariates.

Models testing the link between minority stressors and affect included a between-person minority stress variable (i.e., the person average of the total number of minority stressors endorsed each day over the monitoring period). Models testing the associations between sexual orientation-specific minority stressors and affect included a between-person sexual minority stress variable (i.e., the person average of the total number of sexual minority stressors endorsed each day over the monitoring period) and a between-person other identity-based minority stress (i.e., the person average of the total number of other non-sexual-orientation-related identity attributions-based minority stressors endorsed each day over the monitoring period).

Results

Response Rate

Participants completed a total of 1,629 surveys (days). This produced a response rate of 82.52%. The mean number of daily diary surveys completed per participant was 17.33 ($SD = 4.28$) with a range of 1 to 21 days.

Psychometric Properties of the Everyday Identity Stress Scale

Baseline psychometric properties.—A Rasch model (Birnbaum, 1968) was fitted using the software package flexMIRT (Cai, 2017); the tenability of the unidimensionality assumption was assessed by the global and local goodness of fit tests. In particular, the limited-information M_2 test (Maydeu-Olivares & Joe, 2005) was not significant: $M_2 = 45.32$, $df = 35$, $p = 0.11$, $RMSEA_2 = 0.06$, which suggested an adequate overall fit (Maydeu-Olivares & Joe, 2014). The Chen-Thissen X^2 statistics (Chen & Thissen, 1997) was also computed to examine the fit to each pair of items. We found that the largest $X^2 = 5.1$, $df = 1$, $p = 0.02$, between the vicarious and the uncomfortable/unsafe items, which was insignificant after a Bonferroni adjustment of multiple comparisons. As such, we conclude that the unidimensional Rasch model attains a reasonably good fit to the data. Results from the item response theory analysis showed that the scale had a reliability coefficient of 0.82, which indicates strong internal consistency in this sample. As reported in Table 1, the scale was positively correlated with depressive symptoms, distal minority stress in work/school contexts, proximal minority stress (internalized homonegativity), and general stress at baseline, suggesting adequate criterion validity.

Daily psychometric properties.—Each respondent's score of this scale can be decomposed as the sum of the individual mean score (across a maximum of 21 days) and the daily fluctuation around the individual mean. The reliability of the test scores should therefore be evaluated at both the between- and within-person levels. In this regard, we computed the between- and within-person alpha reliability coefficients (Geldhof et al., 2014) based on the estimated two-level saturated covariance structure, which was obtained using the unweighted least square estimator in *Mplus* (Muthén & Muthén, 1998–2017). The reliability coefficients are $\alpha_{\text{within}} = 0.65$ at the within-person level and $\alpha_{\text{between}} = 0.90$ at the between-person level, which suggests that the summed scores are sufficiently reliable to gauge both the individual differences and daily fluctuations of minority stress.

Item comprehension and face validity.—At the end of the daily diary study, participants completed a survey to rate their comprehension of each item to assess the scale's face validity. For each item, participants were asked “how well did you understand this question?” and rated their comprehension from 1 = *very poorly* to 5 = *very well* (3 = *acceptable*). Overall, 86% to 100% of participants reported understanding the items as *acceptable* to *very well* (Table 2).

Frequency of Daily Minority Stressors

Types of minority stressors.—At least one minority stressor was reported on 654 days of the 1,629 total days of the study (40.2%). Almost all of the participants (91.5%; $n = 86$)

reported at least one minority stressor over the monitoring period ($M = 16.96$, $SD = 18.67$, Range: 0–83). We first examined the frequency of minority stressors and their attributions across entire sample. To better understand the variability of minority stressors and their attributions across participants, we also aggregated days within participants. As reported in Table 2, the following were the four most commonly experienced minority stressors across all days: vicarious minority stress (23.7%), being made to feel uncomfortable or unsafe because of one's identity (17.6%), experiencing one's identity to interfere with their life (17.2%), and being misunderstood because of one's identity (14.5%). When days were aggregated within participants, most participants reported the following mostly commonly experienced minority stressors at least once over the monitoring period: vicarious minority stress (79.8%), uncomfortable/unsafe (67%), misunderstood (60.7%), and identity interference (54.6%).

Identity attributions related to minority stressors.—As reported in Table 2, on days when youth reported minority stressors, they attributed these stressors to the following identities: sexual orientation (65%), gender identity (39.6%), gender expression (29.8%), race/ethnicity (13.5%), body size (10.4%), mental/physical disability (10.2%), social class (2.6%), and other identities (2.1%). When days were aggregated within participants, most participants reported at least one day in which they experienced a sexual orientation minority stressor (81.9%; $n = 77$) over the monitoring period, with a mean of 4.52 days ($SD = 4.59$; range = 0 to 20 days).

Correlations among Study Variables

As reported in Table 1, lifetime minority stressors reported were associated with greater depressive symptoms and general stress at baseline as well as greater averaged daily minority stressors and negative affect across the daily diary monitoring period. Work or school minority stressors, internalized homonegativity, and general stress at baseline and averaged daily minority stressors and negative affect across the monitoring period were all positively associated with depressive symptoms. Work or school minority stressors, internalized homonegativity, and general stress at baseline were associated with greater daily negative affect across the monitoring period. Positive affect was not associated with any of the variables. Descriptives are also reported in Table 1.

Effects of Daily Minority Stressors on Negative and Positive Affect

As hypothesized, at the within-person level, on days when participants experienced a greater number of different types of minority stressors they reported higher same-day negative affect ($B = .096$, $p < .001$; see Table 3). This association was observed over and above participants' average number of daily minority stressors over the monitoring period, prior day's minority stressors, and other person-level covariates. This association was not significant for same-day positive affect ($B = -.033$, $p = .170$). Prior day's within-person minority stressors were not associated with next day's negative or positive affect. At the between-person level, participants who had a greater number of minority stressors on average across the monitoring period reported higher levels of daily negative ($B = 0.260$, $p < .001$) and positive affect ($B = 0.132$, $p = .094$).

Next, we explored whether the link between minority stressors and affect varied as a function of depressive symptoms. The total number of different types of minority stressors experienced each day and same-day negative affect were not different based on number of depressive symptoms. Specifically, the two-way interaction terms of within-person daily minority stress by depression ($B = .001$, Standard Errors [SE] = .002, 95% Confidence Interval [CI]: $-.002, .004$, $p = .588$) was not statistically significant. Similarly, the associations between the within-person total number of types of minority stressors each day and same-day positive affect were not different based on number of depressive symptoms ($B = -.002$, $SE = .002$, 95% CI: $-.005, .001$, $p = .175$). Because these interactions terms were not significant, Table 3 presents parsimonious models without them included.

Effects of Sexual Orientation-Specific Minority Stressors on Negative and Positive Affect

As reported in Table 4, on days when participants experienced at least one sexual orientation-based minority stressor they reported more same-day negative affect ($B = .120$, $p = .023$) than on days when no minority stressor occurred. This association was observed over and above participants' average number of sexual orientation-based minority stress days over the monitoring period, prior day's minority stressors, same-day other identity-based minority stressors, and other person-level covariates. Days with at least one sexual orientation-based minority stressor were not significantly associated with positive affect compared to days when minority stress was not reported ($B = -.056$, $p = .465$). Participants also reported higher negative affect ($B = .186$, $p = .005$) and lower positive affect ($B = -.137$, $p = .015$) on days when minority stressors occurred that were attributed to other (i.e., not sexual orientation related) identities compared to days when no minority-related stressors were reported. Prior day's within-person minority stressors attributed to their sexual orientation or other identities were not associated with next day's negative or positive affect. Additionally, at the between-person level, participants' who experienced sexual orientation-based stressors on more days during the monitoring period had higher daily negative affect ($B = .612$, $p = .019$). There was no association with positive affect ($B = .471$, $p = .273$).

Associations between sexual orientation-based stressors and same-day negative affect did not differ as function of depressive symptoms. Specifically, the two-way interaction term of within-person sexual orientation-based daily minority stress by depression ($B = .004$, $SE = .006$, 95% CI: $-.007, .015$, $p = .494$) was not statistically significant. Similarly, the associations between within-person sexual orientation-based daily minority stress and same-day positive affect were not different based on depressive symptoms ($B = -.005$, $SE = .008$, 95% CI: $-.020, .010$, $p = .520$).

Discussion

This study presents new insights regarding sexual minority adolescents' daily experiences with minority stressors and their associations with negative and positive affect. Findings from our racially and gender identity diverse community sample from a Mid-Atlantic metropolitan city demonstrate that sexual minority adolescents experience minority stressors almost daily and sexual orientation-related minority stressors on a weekly basis. As

hypothesized, a greater number of different types of minority stressors were associated with greater negative affect on the same day. Additionally, sexual minority adolescents experienced heightened negative affect on days when they experienced a sexual orientation-specific minority stressor compared to days where no minority stressors occurred. A similar association between minority stressors and greater negative affect and lower positive affect was found on days when stressors occurred that were attributed to other identities. We did not find support for the idea that these associations would differ as a function of depressive symptoms. Lagged effects of minority stress from one day to the next day's affect were not significant. Finally, we found psychometric support for a new measure assessing daily minority stress among sexual minority adolescents.

Pervasiveness of and Deleterious Effects of Minority Stress on Negative and Positive Affect

Our results demonstrate that minority stressors are pervasive in sexual minority adolescents' daily life. Most sexual minority adolescents in this sample experienced at least one minority stressor, with an average of about 17 minority stressors over the monitoring period. Some minority stressors were more commonly experienced than others (e.g., vicarious minority stress) and most attributed their sexual orientation to these minority stressors. Consistent with intersectionality approaches to research (Bowleg, 2008; Mereish & Bradford, 2014; Mereish et al., 2019), sexual minority adolescents also attributed other marginalized identities to these stressors (e.g., gender identity, race). Our findings are consistent with research documenting that minority stress is common among sexual minority adolescents (Kosciw et al., 2018), and we extended these studies to capture the occurrence of these events on a daily basis. However, our sample was a community sample of adolescents from a Mid-Atlantic metropolitan city; therefore, it is not representative of all sexual minority adolescents.

Our findings also demonstrate the granularity of the associations between daily minority stress and affect at the within-person level. They indicate that daily minority stressors and their related identity attributions are associated with same-day negative fluctuations among sexual minority adolescents. Specifically, we found that daily increases in the number of different types of minority stressors from one's average number of types of minority stressors is related to higher levels of negative affect on the same day. We also found that youth had greater negative affect on days when sexual orientation-specific minority stressors were endorsed compared to days when minority stressors were not reported. These results provide additional support for the minority stress model among sexual minority adolescents (Meyer, 2003) and are consistent with prior studies using daily diary and momentary methods among sexual minority adults (Eldahan et al., 2016; Flanders, 2015; Livingston et al., 2020; Mohr & Sarno, 2016). Given that most work in this area used cross-sectional studies of overall lifetime or recent experiences with minority stress (Walch et al., 2020), our use of daily diary methods addresses limitations of retrospective reporting and recall bias among adolescents (Heron et al., 2017).

The lack of moderation effects of depression symptomology provide further specificity and support for the overarching deleterious effects of daily minority stress on affect. Although

depression can lead to overall sensitivity to negative affect, dampening of positive affect, and vulnerability to experiencing stress-induced negative affect (Forbes & Dahl, 2005; MacLeod & Byrne, 1996; Wichers et al., 2007), our results suggest that depressive symptoms do not impact the associations between daily minority stressors and affect. Since minority stressors are identity-specific experiences, these findings suggest that minority stressors may potentiate negative affect among sexual minority adolescents regardless of their depressive symptoms.

Daily fluctuations in minority stress were not associated with same-day positive affect and minority stressors from the prior day were not associated with daily affect. The lack of significant associations between minority stress and positive affect is consistent with one prior study that found that heterosexist negative identity-salient experiences were not associated with daily positive affect among sexual minority young adults (Mohr & Sarno, 2016). The lack of significant findings in our lagged analyses are in contrast to a study of sexual minority men that found significant lagged associations (Eldahan et al., 2016). Our findings may differ because their study measured proximal minority stress (e.g., “Today, I felt good about myself as a gay/bisexual man”; Eldahan et al., 2016), whereas, we examined distal minority stressors (e.g., experiences of harassment, rejection). Additionally, our sample is comprised of adolescents with a differing sociodemographic composition from their study of middle-aged gay and bisexual men; we also accounted for additional key within- and between-person variables that they did not include. Nonetheless, it is plausible that the effects of minority stress may not persist across days for adolescents. Compared to adulthood, adolescence is characterized by rapid maturation in brain systems that govern emotional reactivity and regulation and frequent fluctuations in affective states (Crone & Dahl, 2012; Steinberg, 2005). Future work with larger sample sizes is needed to better understand whether these lack of associations are unique to developmental factors in adolescence or whether other factors play a role. Despite the lack of lagged associations, minority stressors have a cumulative and deleterious effect on sexual minority adolescents’ mental health (Brooks, 1981; Mustanski, Andrews, & Puckett, 2016).

It is noteworthy that on days youth experienced minority stressors related to marginalized identities other than their sexual orientation, they reported greater negative affect and lower positive compared to days when they experienced no minority stressors. Our sample has a diverse representation of gender and racial identities and participants reported experiencing many minority stressors related to those identities; therefore, it is not surprising that minority stressors related to their other intersectional identities are also associated with more same-day negative and lower positive affect. This is consistent with prior work showing associations between intersecting minority stressors, including daily racist experiences, and poor mental health among Black adolescents (English et al., 2020), including Black sexual minority adolescents (Mereish et al., 2019). It is important to note, however, that our study did not directly test tenets of intersectionality (e.g., intersection of heterosexism and racism); thus, future work is needed to examine intersectional minority stress on the daily level and test how it relates to affect and mental health.

Limitations

This study has important limitations. Perhaps most noteworthy is the correlational nature of the data. Although we captured day-to-day fluctuations in the experience of minority stressors and affect, our data were limited to day-level associations. Consequently, any associations between minority stress and affect are necessarily correlational and not causal. Additionally, despite the sample's sociodemographic diversity, the sample was predominately comprised of adolescents who are assigned female at birth, was limited to a metropolitan city in one region of the United States, and participants were primarily recruited through sexual and gender minority organizations; future research should increase the sex diversity of their samples and conduct more nationally representative studies to increase the generalizability of these findings as well as to understand geographical differences in experiences of minority stress, especially among rural or conservative regions. This will also help minimize the potential for biased samples (e.g., participants who already have access to sexual and gender minority-specific community resources) and demand characteristics in future work.

Although we tested the psychometric properties of our minority stress measure in multiple methods and found support for it, we were unable to test the factor structure of the scale over the daily diary monitoring period due to our sample size. Future work is needed to conduct multilevel models testing the psychometric properties of the scale with larger samples. Our measure of minority stress examined multiple acute and subtle forms of distal minority stressors; however, it did not capture proximal minority stressors, such as sexual orientation concealment or internalized stigma. Additional research is needed to examine how these types of minority stress unfold from day to day and are related to affect among sexual minority adolescents. Although we measured identity attributions for the daily minority stress scale, we did not examine identity attributions for each type of stressor or item in the scale as well as appraisals of these stressors. Future work is needed to build on these findings and examine how appraisals of minority stressors may play a role in their impact on daily affect and other health outcomes.

Implications for Practice and Future Research

Our results have implications for practice and intervention development for sexual minority adolescents, as they show a within-person association between minority stress and affect. Our findings underscore the need to tailor clinical interventions for each sexual minority adolescent, as experiences of minority stressors are intersectional in nature (e.g., sexual orientation, race, gender, body size, etc.) and vary in their magnitude and frequency day to day. Clinical interventions should assess multiple types and differing interconnected minority stress among adolescents across contexts, understand and validate how they impact their well-being and daily life, and help clients' resist their experiences with oppression in varying contexts. Clinicians should help clients develop strategies to manage the negative emotional consequences of minority stress through emotional regulation skills. Clinicians should also bolster their clients' capacity for building positive affect (e.g., mindful interventions that increase attention to positive emotions; Yen et al., 2020). Incorporating existing evidenced-based interventions to help reduce associations between minority stress

and mental health, such as brief expressive writing strategies (Pachankis et al., 2020), may also further alleviate the negative toll of minority stress.

Structural interventions, such as anti-heterosexism policies and laws (e.g., same-sex marriage; anti-bullying policies; Hatzenbuehler, Shen, Vandewater, & Russell, 2019) or supportive in-school organizations (e.g., Gender Sexuality Alliances), can reduce the occurrence of minority stress for sexual minority adolescents and reduce mental health disparities. Given the role of counseling psychologists in social justice work, prevention work is needed to develop and test structural interventions, including minority stress reduction interventions and policies.

Our findings extend prior work and support the minority stress model in key ways: we focused on adolescents; accounted for key between-person baseline (e.g., general stress, lifetime minority stress, depression, and sociodemographics) and daily diary (e.g., person average of minority stressors over the monitoring period) covariates as well as within-person covariates (e.g., prior day's minority stress); recruited a diverse sample in terms of sexual orientation, gender, and racial identities; and rigorously tested the minority stress model by documenting the uniqueness and deleterious effects of within-person fluctuations of minority stress more broadly as well as sexual orientation-specific minority stressors on daily affect. Given the lack of empirically tested interventions for sexual minority adolescents and the alarming disparities in depression and other mental health outcomes, future research is urgently needed to improve the daily lives of sexual minority adolescents and reduce disparities.

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Public Significance Statement:

The findings of this study demonstrate that stigma and unique stressors are pervasive experiences in sexual minority adolescents' daily life, and these daily experiences are associated with greater negative affect.

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Table 1.

Correlations among study variable and descriptive statistics.

	Lifetime Minority Stressors	SMASI – Work/School	SMASI – Internalized Homonegativity	Baseline Depressive Symptoms	Baseline General Stress	Daily Minority Stressors	Daily Negative Affect	Daily Positive Affect
Lifetime Minority Stressors	---							
SMASI – Work/School	0.66 ^{***}	---						
SMASI – Internalized Homonegativity	0.33 ^{***}	0.42 ^{***}	---					
Baseline Depressive Symptoms	0.44 ^{***}	0.45 ^{***}	0.21 ^{**}	---				
Baseline General Stress	0.22 [*]	0.33 ^{***}	0.18	0.35 ^{***}	---			
Daily Minority Stressors	0.53 ^{***}	0.58 ^{***}	0.38 ^{***}	0.40 ^{***}	0.12	---		
Daily Negative Affect	0.37 ^{***}	0.45 ^{***}	0.28 ^{***}	0.49 ^{***}	0.22 [*]	0.70 ^{**}	---	
Daily Positive Affect	0.10	0.14	0.01	-0.13	-0.04	0.13	0.19	---
Mean	4.77	20.75	15.51	20.44	82.04	1.05	1.06	1.52
Standard Deviation	2.80	21.07	23.42	10.18	20.96	1.20	0.65	0.76

Note. SMASI = Sexual Minority Adolescent Stress Inventory; means and standard deviations for daily measures reflect day-level variables aggregated to the person level.

* $p < .05$

*** $p < .01$

Table 2. Frequency of each type of daily minority stressor and each identity attribution related to daily minority stressors.

Minority Stressor	Total Number of Days (N = 1629)				Participant Level (N = 94)			
	Days Endorsed (N)	% of Total Number of Days	N	%	Mean (SD)	Range	Item Comprehension	
1. I was targeted or harassed because of my identity.	33	2.03%	18	19.15%	0.35 (1.02)	0–8	100.00%	
2. I saw or heard negative, hurtful, or offensive messages or stereotypes about my identity or people with the same identity.	386	23.70%	75	79.79%	4.11 (4.33)	0–20	98.80%	
3. I was ignored, isolated, or made to feel invisible because of my identity.	80	4.91%	32	34.04%	0.85 (1.71)	0–9	97.50%	
4. I was misunderstood because of my identity.	236	14.49%	57	60.64%	2.51 (3.39)	0–15	86.40%	
5. People stared at me because of my identity.	155	9.52%	42	44.68%	1.65 (2.70)	0–11	95.10%	
6. I was not accepted because of my identity.	71	4.36%	31	32.98%	0.76 (1.56)	0–10	95.10%	
7. Someone made me feel uncomfortable or unsafe because of my identity.	286	17.56%	63	67.02%	3.04 (3.90)	0–19	98.80%	
8. My identity interfered with my life.	279	17.13%	51	54.26%	2.97 (4.69)	0–19	86.40%	
9. Someone made me feel less of a human because my identity.	68	4.17%	27	28.72%	0.72 (1.71)	0–12	95.00%	

Identity Attributions	Day Level		Participant Level				
	Days Endorsed (N)	% of Total Number of Days	% of Minority Stress Endorsed Days (n = 654)	N	%	Mean (SD)	Range
Sexual orientation	425	26.09%	64.98%	77	81.91%	4.52 (4.59)	0–20
Gender identity	259	15.90%	39.60%	50	53.19%	2.76 (4.53)	0–18
Gender expression	195	11.97%	29.82%	35	37.23%	2.07 (4.04)	0–18
Race/ethnicity	88	5.40%	13.46%	25	26.60%	0.94 (2.64)	0–20
Body size	68	4.17%	10.40%	33	35.11%	0.72 (1.37)	0–7
Mental/physical disability	67	4.11%	10.24%	20	21.28%	0.71 (2.21)	0–14
Social class	17	1.04%	2.60%	10	10.64%	0.18 (0.73)	0–6
Other	14	0.86%	2.14%	8	8.51%	0.15 (0.59)	0–4

Note. Total Number of Days = total number of days across the entire sample (N = 1629); Participant Level = aggregated information for all 94 participants; Days Endorsed = the total number of days on which participants reported each type of minority stress occurred; % of Total Number of Days = percentage of each identity attribution was endorsed across the entire sample of days; % of Minority Stress Endorsed Days = percentage of each identity attribution was endorsed on days participants reported experiencing at least one minority stressor.

Table 3.

Effects of daily minority stressors on negative and positive affect.

	Negative Affect					Positive Affect				
	<i>B</i>	<i>SE</i>	<i>LL</i>	<i>UL</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>LL</i>	<i>UL</i>	<i>p</i>
Person-Level Variables										
Age	-0.046	0.034	-0.114	0.021	0.177	0.014	0.048	-0.081	0.109	0.776
Gender Identity (Gender Minority)	0.099	0.103	-0.102	0.300	0.335	0.045	0.149	-0.247	0.338	0.761
General Stress	0.003	0.002	<0.001	0.007	0.075	-0.003	0.004	-0.011	0.005	0.516
Lifetime Minority Stress (MS)	-0.011	0.015	-0.040	0.019	0.480	0.015	0.037	-0.057	0.087	0.683
Depressive Symptoms	0.014	0.005	0.004	0.025	0.009	-0.015	0.010	-0.034	0.003	0.110
Person-Average of Daily MS	0.260	0.060	0.143	0.377	<0.001	0.132	0.079	-0.022	0.286	0.094
Within-Person Variables										
Day	-0.009	0.003	-0.015	-0.002	0.009	-0.010	0.005	-0.021	0.000	0.045
Weekday	-0.020	0.039	-0.096	0.055	0.601	0.078	0.054	-0.028	0.184	0.148
Prior day's Minority Stress	-0.010	0.013	-0.035	0.016	0.458	0.010	0.020	-0.029	0.050	0.608
Same-day Minority Stress	0.096	0.017	0.062	0.129	<0.001	-0.033	0.024	-0.081	0.014	0.170

Table 4.

Effects of sexual orientation-based minority stressors on negative and positive affect.

	Negative Affect							Positive Affect		
	B	SE	95% CI			p	B	SE	95% CI	
			LL	UL	UL				LL	UL
Person-Level Variables										
Age	-0.036	0.034	-0.102	0.031	0.292	0.010	0.050	-0.088	0.109	0.836
Gender Identity (Gender Minority)	0.007	0.100	-0.188	0.203	0.941	0.047	0.163	-0.273	0.366	0.775
General Stress	0.002	0.002	-0.001	0.006	0.226	-0.003	0.004	-0.011	0.005	0.447
Lifetime Minority Stress	-0.013	0.016	-0.044	0.019	0.425	0.025	0.035	-0.043	0.094	0.470
Depressive Symptoms	0.017	0.005	0.007	0.027	0.001	-0.013	0.010	-0.031	0.006	0.180
Sexual Orientation-Attribution	0.612	0.260	0.102	1.123	0.019	0.151	0.308	-0.454	0.755	0.625
Other Identity-Attributions	1.034	0.343	0.362	1.705	0.003	0.471	0.430	-0.371	1.312	0.273
Within-Person Variables										
Day	-0.009	0.003	-0.016	-0.003	0.006	-0.011	0.005	-0.021	-0.001	0.034
Weekday	-0.019	0.037	-0.093	0.054	0.601	0.079	0.054	-0.026	0.185	0.141
Prior Day's Other Identity-Attributions	-0.049	0.050	-0.146	0.048	0.320	-0.026	0.087	-0.196	0.145	0.768
Prior Day's Sexual Orientation-Attribution	0.014	0.041	-0.067	0.095	0.728	0.061	0.059	-0.054	0.176	0.297
Same-day Other Identity-Attributions	0.186	0.066	0.057	0.314	0.005	-0.137	0.056	-0.246	-0.027	0.015
Same-day Sexual Orientation-Attribution	0.120	0.053	0.016	0.224	0.023	-0.056	0.076	-0.205	0.093	0.465