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Minority Stress and Drug Use among Transgender and Gender Diverse Adults: A Daily Diary Study

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Abstract

Background: Transgender and gender-diverse people are at higher risk for drug use and drug use disorder than their cisgender peers. Theory and research has suggested that external minority stressors (e.g., discrimination, violence, and rejection) and internal minority stressors (e.g., internalized transphobia) may contribute to this health disparity. However, few studies have examined the proximal (e.g., same-day) association between minority stress and drug use.

Methods: The present study tested the same-day association of external and internal minority stressors with use of drugs in a sample of 38 transgender and gender-diverse participants residing in two Southeastern cities. Participants reported their previous day's experiences with minority stress and drug use over the course of 30 days. A total of 836 daily surveys were collected (73.3% compliance rate).

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Results: Multilevel modeling revealed that external minority stress (i.e., violence, harassment, discrimination, rejection), but not internalized stigma, was associated with increased odds of drug use on a given day, while controlling for time, same-day depressive affect and cognition, same-day gender dysphoria symptoms, demographics, and baseline levels of drug use.

Conclusions: These findings suggest that external minority stress is associated with drug use on the same day. Future empirical and theoretical work may examine factors that could moderate these associations. Clinicians working with transgender and gender-diverse individuals should assess for minority stress and possible related drug use behavior.

Keywords

substance use; gender minority; gender identity; violence; trauma; internalized stigma

1. Introduction

Transgender and gender-diverse people (TGD; i.e., individuals whose gender identity is not fully congruent with society's expectations based on their assigned sex at birth; Bockting, 1999) are a population with high risk for drug use (DU) (Benotsch et al., 2013; Garofalo et al., 2006; Keuroghlian et al., 2015; Reback and Fletcher, 2014; Santos et al., 2014). A large study of TGD individuals in the United States revealed that 24.4% of TGD individuals engaged in cannabis use in the past three months, with 11.6% engaging in non-cannabis drug use (Gonzalez et al., 2017). DU contributes to the burden of disease experienced by TGD people and is in need of further study (Reisner et al., 2016a).

Researchers have long speculated that minority stress experiences faced by TGD people may contribute to their risk for DU. Expanding from the minority stress model for sexual minorities (Meyer, 2003), the gender minority stress and resilience theory states that TGD people experience external and internal stressors unique to their gender identity that negatively impact their mental health in the long-term (Hendricks and Testa, 2012). External minority stressors include interpersonal victimization (harassment, threats, or physical or sexual assault), discrimination (refusal of medical care, housing, or employment), rejection (social alienation), and gender nonaffirmation (one's gender identity is not acknowledged) (Hendricks and Testa, 2012; Reisner et al., 2016b). These experiences are theorized to lead to internal minority stress, including internalized stigma (or transphobia), negative expectations for the future, and concealment of one's gender identity (Hendricks and Testa, 2012). Indeed, studies have shown that minority stressors of discrimination and violence victimization negatively impact the psychological well-being of TGD people (Bockting et al., 2013).

Minority stress experiences may also impact DU outcomes, as TGD people may use drugs to cope with external stressors of gender-based discrimination and violence victimization (Gonzalez et al., 2017; Grant et al., 2011; Keuroghlian et al., 2015; Livingston et al., 2017; Nuttbrock et al., 2014; Rowe et al., 2015). Additionally, internal minority stress related to internalized stigma was associated with cannabis use among TGD women, but not TGD men (Gonzalez et al., 2017). However, this study assessed stigma over a one week period and cannabis use over the past three months, limiting conclusions that can

be drawn about the temporal proximity of minority stress in relation to DU. Potentially addressing these temporal issues, an ecological momentary assessment study demonstrated that discrimination predicted later DU within the same day among gender and sexual minority individuals (Livingston et al., 2017). However, this study did not examine other minority stress experiences (e.g., rejection, violence victimization) and also included non-TGD participants.

Thus, the literature is limited by two major factors. First, there are very few investigations of predictors of DU among TGD people in general. Most studies combine TGD people with lesbian, gay, and bisexual peers, limiting opportunities for exploring the unique needs of this population. Second, there is scarce investigation of the temporal proximity of the associations between minority stress experiences and DU. Although minority stress models emphasize minority stress as a chronic experience, with longstanding effects on health outcomes, one cannot ignore the potential for short-term effects of individual minority stress experiences on health outcomes such as DU. Research with greater sensitivity to more fine-grained temporal (e.g., same-day) associations is needed to improve our understanding of the potential effects of minority stress on DU among TGD people (Livingston et al., 2017). The purpose of the present study was to examine whether external and minority stress-related experiences associated with increased likelihood of DU on a given day. We hypothesized that external and internal minority stressors would be associated with greater odds of DU on a given day, while controlling for time, baseline levels of past year DU and demographic factors associated with DU (i.e., age, education level, race/ethnicity, and employment status) (Swendsen et al., 2009). These findings will help guide future empirical and theoretical work examining factors that may signal acute risk for DU in TGD persons, which could have downstream effects of improved treatment efforts for substance use disorders in this population.

2. Method

2.1 Procedures

Institutional review board approval for the study procedures was granted by the institutions of the first and last author. Data were collected from a parent study examining risk factors for suicidal ideation and behaviors among self-identified TGD individuals who were 18 years of age or older. Data were collected from August 2017 to December 2019.

2.1.1 Inclusion Criteria—To be included in the study, participants must have been 18 years old or older and identified as transgender, gender-diverse, of trans experience, or has transitioned.

2.1.2 Recruitment—Participants were recruited from two mid-sized cities in the Southeastern United States. Trained graduate and undergraduate research assistants distributed flyers advertising the study at agencies and groups that serve TGD people (student mental health clinic, student health center, campus pride center, local HIV treatment center), a university campus, local trans-related events (e.g., gender affirmative healthcare conference), and Facebook pages for TGD people in the local areas. Participants were also told they could pass study information on to TGD people they knew in the community.

2.1.3 Data Collection—Data were collected using an online survey platform. Informed consent was obtained electronically from all participants included in the study. Individuals who consented participated in a baseline survey, which took participants, on average, 50 minutes. Given the parent study aims, the baseline survey included measures of risk factors for suicidal thoughts and behaviors in addition to demographic questions.

Following the baseline survey, participants provided their e-mail addresses to participate in the daily surveys. Participants completed brief, five-minute surveys each day for 30 days, which were e-mailed to them at 6 A.M., with a reminder at 12 P.M. daily. Participants reported on their previous day's experience, defined as the time they woke up to the time they went to bed. Participation was confidential, and data collection was anonymous; no personally identifiable information, including e-mail and IP address, was linked to participants' data. Participants' baseline and daily survey data were linked using participant-generated identification codes only known to the participant (Yurek et al., 2008). Participants were compensated with a \$5.00 Walmart electronic gift card for completing their baseline survey, with \$0.50 added for each daily survey, totaling to \$20 of possible compensation. Following each survey, mental health resources were presented to the participant, including the first author's phone number, if they wished to speak to someone about their thoughts and feelings.

2.2 Participants

Of the 68 individuals screened for the study, 60 (89.6%) were eligible (i.e., self-identified as TGD and were 18 years of age or older) and completed the baseline surveys. Sixty-three percent ($n = 38$; $n = 21$ at Site 1 and $n = 17$ at Site 2) of the baseline sample continued to the daily phase and completed at least three daily surveys to be included in the multilevel analyses. Of the 1,140 daily surveys sent, 836 (73.3%) surveys were completed. Sites did not differ in demographic characteristics, baseline drug use, or drug use at the daily level (p s > .05). Participants who completed daily surveys did not differ from those who did not complete at least three surveys in the daily phase of the study in site, demographic characteristics, or baseline levels of drug use (all p s > .05). See Table 1 for participant characteristics of this subset of the sample. Briefly, most of the sample was White/Non-Hispanic (84.2%). On average, participants were 29 years old ($SD = 11.62$) and had at least 14 years of education. The distribution of the sample selecting non-mutually exclusive categories of gender identity appeared even across feminine spectrum (36.8%), masculine spectrum (47.4%), and gender diverse categories (39.5%). A majority earned below \$50,000 in annual income (63.9%) and were employed at least part-time (57.9%).

2.3 Measures

2.3.1 Primary Baseline Measures—We assessed demographic variables including gender identity, sexual orientation, race/ethnicity, age, income, education, and employment status. Consistent with recommendations to include a wide range of gender identity options in research (Sausa et al., 2009), we developed a list of 26, non-mutually exclusive gender identities seen in the literature from which participants selected (e.g., trans woman, trans man, man, woman, gender fluid, gender non-binary, agender).

Baseline levels of DU over the past 12 months were measured using a 14-item drug use inventory developed by (Stuart et al., 2003). Seven items assess the use of various substances (e.g., opioids, anxiolytics, stimulants) on 5-point Likert scale (0 = never to 4 = daily/almost daily use), and seven items assess substance use disorder symptoms (e.g., withdrawal, tolerance, impaired functioning). The total score is obtained by summing the 14 items, with total possible scores ranging from 0 to 56. Higher scores indicate greater DU and substance use disorder symptoms. The scale demonstrated poor internal consistency in the present study ($\alpha = .58$); however, it has demonstrated good reliability and validity in past clinical samples (Stuart et al., 2003). We examined whether internal consistency would be improved with removal of items with low inter-correlations; however, no improvement in the reliability was gained. Poor reliability could be due to a number of reasons including poor inter-relatedness of the items or multidimensionality of the scale in this sample (Tavakol and Dennick, 2011). Unfortunately, the sample size was too small to run a factor analysis. Given that Cronbach's alpha provides a lower bound estimate of internal consistency (Tavakol and Dennick, 2011) and this measure was not our outcome measure (but rather a baseline measure), we decided to retain the measure in our analyses.

2.3.2 Daily Measures

2.3.2.1 Drug Use.: Participants were asked if they consumed any drugs on the day prior (0 = no, 1 = yes). If participants consumed drugs, they were asked what type of drug (e.g., opiates, stimulants, sedatives, cannabis, other).

2.3.2.2 External Minority Stress.: The Gender Minority Stress and Resilience discrimination (5 items), rejection (6 items), and victimization (6 items) subscales (Testa et al., 2015) were condensed into seven total items to assess these external minority stressors. One item assessed discrimination ("I felt unfairly treated or discriminated against at my place of work, residence, school, or other place because of my gender identity or expression."). One item assessed rejection ("I was rejected, distanced, or made to feel unwelcome by friends, family, acquaintances, co-workers, or other people in my community because of my gender identity or expression."). These items were on a 7-point Likert scale (0 = strongly disagree, 6 = strongly agree). Three items assessed verbal aggression/harassment victimization (e.g., threatened physical harm, threatened being "outed"...because of my gender identity), and one item assessed physical aggression victimization (i.e., pushed, shoved, hit, had something thrown at...because of my gender identity) on a yes (1) – no (0) scale. One item assessed gender-related sexual victimization (sexual contact against will because of my gender identity or expression) on a yes (1) – no (0) scale. These items were summed to create a total score of external minority stress, with possible total scores ranging from 0 to 17 (higher scores indicating higher minority stress).

2.3.2.3 Internalized Stigma.: Internalized stigma was measured using a modified 2-item version of the internalized stigma scale of the Gender Minority Stress and Resilience Scale (Testa et al., 2015), which assessed internalized stigma on a 7-point Likert scale (0 = strongly agree to 6 = strongly disagree). The items assessed the degree to which the person felt unhappy or embarrassed about their gender identity.

2.3.2.4 Depressive Cognition and Affect.: We measured depressive cognition and affect using three items from the depression-dejection subscale of the Profile of Mood States, Short Form (Shacham, 1983). The POMS has been used in other daily diary studies and has been shown to be psychometrically sound (Cranford et al., 2006; Curran et al., 1995).

2.3.2.5 Gender Dysphoria Symptoms.: Gender dysphoria symptoms were measured briefly each day using two items from the Transgender Congruence Scale (Kozee et al., 2012). Individuals rated on a 7-point Likert scale (0 = strongly agree to 6 = strongly disagree) the degree to which they felt satisfied with the way their appearance expressed their gender identity and accepting of their gender identity.

2.4 Data Analytic Strategy

First, compliance rates for the daily data were computed by calculating the percentage of missed surveys in relation to total surveys. Due to the nested design of the data (daily data nested within individuals) and our interest in the average effects of the predictors on the outcomes, multilevel modeling using fixed slopes was used to test hypotheses. We used full information maximum likelihood estimation, using all available data from participants who had at least three daily surveys (the minimum needed to be included in analysis). Hierarchical Linear Modeling, Version 8, was used to analyze the data, with Level-1 variables being the daily (within-person) variables and Level-2 variables being baseline (between-person) variables.

Second, the associations of internalized stigma and external minority stressors with same-day DU were examined while controlling for the potential effects of time, same-day depressive cognition and affect, and same-day gender dysphoria symptoms. Baseline, past year DU, age, education level, race/ethnicity, and employment status were entered at Level-2 to account for the Level-1 intercept (π_{0i}) to control for between-person differences in DU. Equation (1) shows the Level-1 model.

$$\begin{aligned} \text{Prob}(\text{drug use}_{ti} = 1 \mid \pi_i) &= \phi_{ti} \\ \log[\phi_{ti}/(1 - \phi_{ti})] &= \eta_{ti} \\ \eta_{ti} &= \pi_{0i} + \pi_{1i}(\text{time}) + \pi_{2i}(\text{depressive affect and cognition}) + \pi_{3i} \\ &\quad (\text{external minority stressors}) + \pi_{4i}(\text{internalized stigma}) + \pi_{5i} \\ &\quad (\text{gender dysphoria symptoms}) \end{aligned} \quad (1)$$

Given the binary nature of the dependent variable, a Bernoulli sampling distribution was utilized, and a population-average model was interpreted to evaluate the sample rather than specific individuals.

3. Results

Dichotomization of the baseline drug use variable revealed that 19 (51.4%) participants engaged in some level of drug use over the past year. The most commonly used drug was cannabis ($n = 19$; 50%), followed by sedatives ($n = 6$; 15.8%) and opioids ($n = 6$; 15.8%). Of the 1,140 daily surveys sent, 836 (73.3%) surveys were completed. Participants completed, on average, 21.84 surveys ($SD = 8.55$), with completion rates decreasing with each week

(percentage of surveys completed each week: Week 1 = 82.7%, Week 2 = 78.6%, Week 3 = 69.1%, and Week 4 = 63.5%).

Participants reported consuming drugs on 121 (14.6%) of the completed daily surveys. The most frequently reported drug used on DU days was cannabis (106 days of use, 9.3%). Thirteen (34%) participants engaged in DU on at least one day over the 30-day assessment window. Regarding descriptives of the daily minority stress experiences, means and standard deviations are reported in Table 1. For descriptive purposes, we also report the following frequencies of the minority stress experiences. We dichotomized the external minority stress variable such that any experience of external minority stress (e.g., at least somewhat agreeing they experienced rejection or discrimination or reporting experience of harassment or violence) was coded as “1.” External minority stress occurred on 183 days (22.3% of completed days).

Twenty-six (68%) of the participants experienced external minority stress on at least one day. For internalized stigma, we dichotomized this variable such that if participants at least somewhat agreed they experienced internalized stigma, internalized stigma was coded as “1.” Internalized stigma occurred on 256 days (30.8% of completed days). Twenty-nine (76%) of the participants experienced internalized stigma on at least one day.

The multilevel model controlling for time, depressive cognition and affect, and gender dysphoria symptoms at Level 1 and baseline levels of DU and demographic variables at Level 2 revealed that external minority stress (Odds Ratio [OR] = 1.16, $p = .01$), but not internalized stigma (OR = 0.91, $p = .15$), was related to increased odds of DU (albeit, these increases were small), such that DU was more likely to occur on days when more external minority stressors occurred. See Table 2 for model parameters.

4. Discussion

This is one of the first studies to examine the same-day associations between minority stressors and DU among TGD people. The study revealed a high prevalence of DU across participants and days. While controlling for time, depressive cognition and affect, gender dysphoria, past year DU, and demographic variables, we found that external minority stressors, but not internalized stigma, was associated with DU. Specifically, external minority stressors were associated with an increased likelihood of DU on the same day.

The present findings generally converge with past research demonstrating concerning rates of DU among TGD people (Benotsch et al., 2013; Garofalo et al., 2006; James et al., 2016; Keuroghlian et al., 2015; Reback and Fletcher, 2014; Santos et al., 2014). Comparing the prevalence of DU from the current study with past research is made difficult by timeframe differences and lack of overall DU prevalence statistics (cannabis and non-cannabis use are often reported separately). Nonetheless, the prevalence of past month DU in the present study (14.6%) was not markedly different from past three-month prevalence reported among TGD people in prior studies (non-cannabis: 11.6%; cannabis: 24.4%) (Gonzalez et al., 2017). Additionally, the past year cannabis use reported in the present study (50%) also approximated reports of another TGD sample (39.6%) (Keuroghlian et al., 2015). Our study

design afforded the benefit of less recall bias and thus corroborates the consensus of studies (albeit with convenience samples) thus far that DU may be a prevalent health issue within the TGD community.

Our study replicated past cross-sectional studies that show external minority stressors are associated with increased likelihood of DU (Gonzalez et al., 2017; Grant et al., 2011; Keuroghlian et al., 2015). Our study is the first to demonstrate a same-day association within a sample of exclusively TGD people, and mirrors past work done with sexual and gender minorities (Livingston et al., 2017). Internalized stigma was not associated with DU; however, this may have been due to our measurement of this construct being limited to two items. Future work using more expanded measurement may shed more light on its association with DU. Alternatively, external minority stressors (e.g., discrimination) may have a greater impact on individuals' means to cope because of their association with social support. In contrast, experiencing high internalized stigma (e.g., embarrassment about one's gender identity) does not necessarily imply a lack of social support. Therefore, experiences of rejection and discrimination may be more indicative of one's limited social support (and by extension, coping resources) and thus risk for DU compared with internalized stigma. However, it is also possible that external minority stress impacts DU through internalized minority stress experiences or related negative cognition and affect (Hendricks and Testa, 2012; Livingston et al., 2017). Studies with larger samples and expanded measurement of these constructs are needed to test these questions.

Finally, although our study is unique in that it examines the same-day relations between minority stressors and DU, the minority stress model focuses on *chronic* effects of minority stress. Additional daily diary research that focuses on acute effects as well as overarching, chronic experiences of minority stress would help elucidate these issues. For example, individual experiences of minority stress could lead to initiation of or continued DU as a means to cope, with chronic experiences of minority stress ultimately leading to increased severity of DU and long-term substance use disorders. Longitudinal studies with larger samples and longer timeframes of assessment or qualitative studies would be invaluable to answering these questions.

4.1 Limitations and Future Research Directions

The present study had some limitations that future work should seek to improve upon. First, the sample was a small, non-probabilistic, and racially and ethnically homogenous sample recruited from the Southeastern region of the United States, limiting the generalizability of the findings. Second, we did not assess whether DU occurred before or after minority stress experiences; therefore, we are not confident in the temporal directionality of the relations found. Although we suspect that DU may occur after minority stress experiences as a means to cope (Grant et al., 2011), DU may have preceded minority stress experiences in the present study. For example, individuals under the influence of substances are at higher risk for physical violence victimization (Felson and Burchfield, 2004). Future daily diary work should inquire about the temporal relations between these events (Livingston et al., 2017). Third, although the compliance rates were good, participants who used drugs or experienced frequent minority stress the day before may have been more likely to miss the survey due to

recovering from drug use or desire to avoid revisiting the previous day's experience. Future research could inquire about participants' reasons for missing days. Fourth, potential third variables (e.g., past year minority stress, posttraumatic stress disorder symptoms, housing instability, sex work) were not included in the present analysis due to limited data and the small sample size. Additionally, we did not assess sex assigned at birth for all participants, gender minority resilience factors (e.g., pride), nor the minority stressors of nonaffirmation of gender identity, nondisclosure of gender identity, and expectations of negative events. Future research should assess these factors. Fifth, our baseline measurement of past year DU had poor internal consistency, which may be due to a number of reasons including poor inter-relatedness of the items or multidimensionality of the scale in this sample (Tavakol and Dennick, 2011). Although Cronbach's alpha provides a lower bound of reliability (Tavakol and Dennick, 2011), a more reliable measure of baseline DU may have changed the results by accounting for greater variance in DU on a given day (and reducing variance contributed by same-day minority stress). Therefore, replication of these findings with a more reliable measure of baseline DU is important. Finally, because daily diary studies require brief items, we modified an existing measure of gender minority stress to assess these constructs, and the reliability and validity of such items over time is unknown (Testa et al., 2015).

4.2 Clinical and Policy Implications

The present findings suggest preliminary clinical and policy recommendations. First, clinicians should consider the high prevalence of internal and external minority stressors that TGD people face, especially in areas like the Southeastern United States. Paired with past research (Gonzalez et al., 2017), the present findings suggest that report of external minority stressors should indicate a need to inquire about DU and need for treatment. Increasing TGD individuals' adaptive coping skills and connection with community resources may help prevent minority stress experiences from leading to DU. However, it is unclear whether this will prevent initiation and/or progression of DU. Future work, particularly prevention and treatment studies, is needed to explore these possibilities.

Nonetheless, substance use disorder prevention and treatment for TGD people would likely benefit from a trauma-informed care model given the impact of external minority stress on TGD people. Even discrimination experiences, which often may not meet the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2013) definition of trauma, are associated with posttraumatic stress disorder symptoms above and beyond other traumatic experiences among TGD people (Reisner et al., 2016c). Substance use disorder treatment providers must be aware of the potential for chronic trauma exposure among their TGD patients. Further, such programs should implement program evaluations surrounding the quality of care they provide TGD people. A systematic review has shown a significant deficiency in tests of the efficacy of substance use disorder interventions with TGD people (Glynn and van den Berg, 2017), casting concern about whether our treatments are suitable to TGD. An important first step would be ensuring that TGD people do not experience minority stress within the treatment milieu. The National Transgender Discrimination Survey revealed that TGD people unfortunately experience significant discrimination, rejection, and sometimes violence victimization in healthcare settings (Grant et al., 2011). Treatment agencies should include gender identity in their non-discrimination

policies as a protected class, regardless of federal guidelines, to encourage a culture of affirmation within the treatment milieu. Providers should continuously evaluate themselves and the treatment environment to prevent these negative treatment experiences.

Finally, the current findings that external minority stressors are associated with DU during the same day underlines the need for anti-discrimination policy and guideline changes at the federal level. For example, the Trump administration announced plans to remove protections for TGD people in health care settings among other protections (Department of Health and Human Services, 2020). Federal policies changes would have downstream effects on potential minority stress experienced by TGD individuals at work, school, and when seeking medical care and housing. TGD people should be included as a class protected from discrimination given their vulnerability to such on a daily basis and its impact on their well-being (Grant et al., 2011) and risk for DU as demonstrated in the present study.

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Highlights

- Transgender people are at risk for drug use.
- Understanding of proximal correlates of drug use in this community is limited.
- External minority stress was associated with increased odds of same-day drug use.

Table 1.

Sample Characteristics

Baseline Variables	<i>n</i>	%
Gender identity (<i>n</i> = 38; <i>non-mutually exclusive categories</i>)		
Female, MTF, on MTF spectrum, transfeminine, trans woman, woman of trans experience	14	36.8
Male, FTM, on FTM spectrum, transmasculine, trans man, man of trans experience	18	47.4
Genderqueer/fluid/diverse, bigender, agender, intersex, pan/polygender, two-spirit, androgyne	15	39.5
Sex assigned at birth (<i>n</i> = 16, only collected at one site)		
Male	4	23.5
Female	12	70.6
Sexual orientation (<i>n</i> = 38)		
Bisexual	14	36.8
Gay	6	15.8
Heterosexual	3	7.9
Other (pansexual; polyamorous; asexual)	15	39.5
Employed at least part time (<i>n</i> = 38)	22	57.9
Degree-seeking status (<i>n</i> = 38, Student status)	16	42.1
Race (<i>n</i> = 38)		
African American/Black	2	5.3
Multiracial	3	7.9
Other race	1	2.6
White/Non-Hispanic	32	84.2
Yearly Income less than \$50,000 (<i>n</i> = 38)	23	63.9
Relationship status (<i>n</i> = 38)		
Single, not dating anyone	18	47.4
Dating	11	28.9
Engaged to be married	2	5.3
Married	5	13.2
Divorced	2	5.3
Baseline Variables	<i>M</i>	<i>SD</i>
Age (range: 18–64; <i>n</i> = 38)	28.63	11.62
Education years (range: 2–22; <i>n</i> = 38)	13.93	4.17
Baseline drug use (Drug Use Disorder Identification Test; range: 0–14; <i>n</i> = 37)	3.57	4.48
Daily Variables	<i>M</i>	<i>SD</i>
External minority stressors (range: 0–16; <i>n</i> = 822)	2.96	2.80
Internalized stigma (range: 0–12; <i>n</i> = 832)	4.33	3.24
Gender dysphoria (range: 0–12; <i>n</i> = 831)	4.39	3.37
Depressive cognition and affect (range 0–12; <i>n</i> = 832)	3.59	3.52

Note: MTF = male-to-female, FTM = female-to-male, total sample size displayed next to variable name. Gender identities were combined to create the gender categories and are not mutually exclusive.

Table 2.

Parameters for Hierarchical Linear Model Predicting Daily Drug Use

Level-1 (Daily) Variables	B	OR, [95% CI]	SE	t	df	p
Intercept	-1.63	0.19 [0.04, 0.88]	0.74	-2.21	31	.04
Day	0.01	1.01 [0.99, 1.04]	0.01	1.16	749	.25
Depressive cognitive and affect	0.03	1.03 [0.94, 1.13]	0.05	0.69	749	.49
Gender dysphoria symptoms	-0.05	0.93 [0.82, 1.05]	0.06	-0.84	749	.40
External minority stressors	0.15	1.16 [1.03, 1.30]	0.06	2.52	749	.01
Internalized stigma	-0.10	0.91 [0.80, 1.04]	0.07	-1.43	749	.15
Level-2 (Baseline) Variables predicting Level-1 Intercept	B	OR, [95% CI]	SE	t	df	p
Drug use	-0.002	1.00 [0.78, 1.27]	0.12	-0.02	31	.98
Education Years	-0.06	0.94 [0.71, 1.23]	0.13	-0.48	31	.49
Race/ethnicity (0 = White/Non-Hispanic, 1 = Non-White/Hispanic)	-0.77	0.46 [0.02, 9.05]	1.46	-0.53	31	.60
Unemployed (0 = Employed, 1 = Unemployed)	-0.30	0.74 [0.08, 7.12]	1.11	-0.27	31	.79
Age	-0.03	0.97 [0.87, 1.07]	0.05	-0.71	31	.49

Note: OR = Odds ratio