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Situational HIV stigma and stimulant use: A day-level autoregressive cross-lagged pathmodel among HIV-positive gay and bisexual men

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Abstract

Background—Data on the association between HIV stigma and drug use are scarce, but some research suggests that internalized HIV stigma may be associated with increased drug use and that this association may be at least partially mediated by emotion dysregulation. We sought to test this hypothesis with event-level data to more accurately tease out the co-occurrence of these phenomena.

Methods—We utilized multivariate multilevel analysis to test an autoregressive cross-lagged path model of the direct and indirect effects of internalized HIV stigma and emotion dysregulation on non-prescription stimulant drug use in a sample of 52 HIV-positive gay and bisexual men who completed a 21-day, twice-daily ecological momentary assessment study.

Results—As hypothesized, we observed significant concurrent effects of internalized HIV stigma on emotion dysregulation as well as autoregressive associations of internalized HIV stigma and emotion dysregulation with themselves across the day. Furthermore, findings revealed direct effects of internalized HIV stigma on later emotion dysregulation and increased likelihood of stimulant use, but no direct effect of emotion dysregulation on stimulant use.

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Contributors:

HJR was responsible for study design, data collection, data analysis, interpreting the results, and drafting of the manuscript. BMM was responsible for drafting of the manuscript. JTP was responsible for study design and revising the manuscript. All three authors read, revised, and approved a final version of the manuscript.

Conflict of Interest:

None.

Conclusions—Internalized HIV stigma appears to exert a direct risk-enhancing effect on the likelihood of stimulant drug use and does not appear to do so through emotion dysregulation. Future research is needed to more carefully examine distinct affective experiences and regulation strategies to better understand what mechanism links internalized HIV stigma with drug use behaviors.

Keywords

Minority stress; emotion dysregulation; gay and bisexual men; ecological momentary assessment; stimulant use; drug use

1. Introduction

HIV stigma has several well-documented associations with adverse mental health outcomes for people living with HIV, including depression,[1–3] anxiety,[4,5] general distress,[6] and low self-esteem.[7] Internalized HIV stigma, whereby negative societal attitudes become directed towards oneself, has been shown to be particularly problematic for its effects on mental health and health behaviors among both general samples of HIV-positive individuals [7–12] and among HIV-positive gay and bisexual men (GBM), specifically.[13–18] In particular, rates of drug use and related problems are disproportionately higher for GBM in general as compared to their heterosexual peers[19,20] and, among GBM, disproportionately higher among HIV-positive compared to HIV-negative GBM.[21] Among GBM, stimulant drugs such as cocaine/crack and crystal methamphetamine are among the most frequently reported illicit drugs used,[22–26] and consequences of their use have included greater HIV transmission risk behavior and lower antiretroviral medication adherence.[27–30] Furthermore, stimulants such as cocaine/crack and crystal methamphetamine are known to have significant HIV-related health consequences, such as increased viral replication,[31–33] inflammation,[34] and quickened progression to AIDS.[35]

One prominent model for understanding the disproportionate burden of negative health outcomes observed among GBM is the minority stress model.[36–39] In both theoretical and empirical work, the link between sexual minority stress and behavioral outcomes such as drug use among GBM has been posited to operate through the mediating factor of emotion dysregulation.[30,36,40,41] Prior research has shown consistent effects of both sexual minority and HIV-related stigma on emotion dysregulation for HIV-positive GBM,[18] and that emotion dysregulation mediates the effect of these forms of stigma on negative mental health, sexual risk behavior, and substance use outcomes.[18,37,42] As such, there is a growing empirical basis for theorizing that stigma may lead to behaviors such as drug use through emotion dysregulation, whereby an individual experiences both behavioral disinhibition as well as a drive to seek such behavioral experiences in order to improve positive mood or distract from negative mood.

While a growing body of evidence has shown the links between HIV stigma and emotion dysregulation as cited above, research on HIV stigma's direct association with substance use has been relatively scarce and has focused mostly on heterosexual samples.[2,43–45] We are aware of only two studies looking at the association between HIV stigma and substance use

in GBM: one which observed a non-significant association between HIV stigma and alcohol dependency,[16] and another study which found that, among young Black GBM, those with greater HIV stigma reported higher odds of having sex while high or intoxicated.[46] Further investigation in this area is therefore needed, especially given the elevated rates of drug use among HIV-positive GBM, the link between emotion dysregulation and stimulant use,[25] and the detrimental effects of use on various HIV-related health outcomes.[25,47]

Most of the aforementioned research on the mental and behavioral health effects of HIV stigma has focused on links between global or enduring levels of HIV stigma and aggregate outcomes (e.g., depression, substance use dependency). However, a more temporally-precise understanding of the co-occurrence of HIV stigma and health outcomes has been provided by two recent studies looking at day-level associations. In the first study, Fazeli et al. showed a positive association between enacted and internalized HIV stigma using a 7-day experience sampling design.[48] In the second study, Rendina et al. showed a positive effect of situationally-fluctuating levels of internalized HIV stigma measured once daily on negative affect and emotion dysregulation using a 21-day ecological momentary assessment (EMA) design.[49] No study of which we aware has yet looked at event-level associations between HIV stigma and drug use, though three recent daily diary studies on sexual minority stigma among GBM—one showing that daily sexual minority stigma was associated with increased negative affect,[50] one showing that individual- level sexual minority stigma was associated with increased odds of alcohol and tobacco use on a given day,[51] and another showing that daily sexuality-based discrimination was associated with both daily nicotine and substance use[52]—further support the possibility that daily fluctuations in levels of internalized HIV stigma may be associated at an event-level with the experience of emotion dysregulation and drug use.

Building upon the existing data, the purpose of the present study was to examine an event-level, autoregressive cross-lagged path model of internalized HIV stigma, emotion dysregulation, and use of non-prescription stimulant drugs among HIV-positive GBM participating in a twice-daily, 21-day EMA study. As depicted in Figure 1, we hypothesized the following: (1) concurrent effects whereby afternoon levels of internalized HIV stigma would be positively associated with afternoon levels of emotion dysregulation (Path A) and the same would be true for the nighttime measurements (Path F); (2) autoregressive effects whereby afternoon levels of internalized HIV stigma would be positively associated with nighttime levels of internalized HIV stigma (Path B) and the same would be true for emotion dysregulation (Path C); (3) a positive cross-lagged effect of afternoon levels of internalized HIV stigma on nighttime levels of emotion dysregulation (Path E); (4) a positive direct effect of nighttime levels of emotion dysregulation on subsequent stimulant drug use (Path H); and (5) positive indirect effects (i.e., mediation) of afternoon internalized HIV stigma on stimulant drug use through nighttime emotion dysregulation (Path E–H). Based on the proposed theoretical model, we expected that internalized HIV stigma would be associated with higher levels of subsequent emotion dysregulation, but that the reverse would not be true—that is, that earlier experiences of emotion dysregulation would not be associated with later experiences of internalized HIV stigma (Path D). Similarly, based on prior work, we expected the effect of internalized HIV stigma on stimulant drug use would be through emotion dysregulation, so we expected no direct effect of internalized HIV stigma on

stimulant drug use (Path G). However, this was not tested as formal hypotheses due to the fact that a null hypothesis cannot be supported.

2. Method

Data for this paper were drawn from 52 participants enrolled in *day2day*, a 21-day twice-daily EMA study of HIV-positive GBM in New York City that was conducted in late 2015 and early 2016.

2.1 Participants and Procedures

Men were recruited using several online methods, including advertisements on social media websites and sexual networking apps. Eligibility for the study was assessed preliminarily over the phone and was confirmed during the in-person appointment. Participants were deemed eligible if they: (1) were aged 18 or older; (2) were cisgender male; (3) were HIV-positive and able to verify both their HIV status and an active prescription for antiretroviral therapy; (4) identified as gay or bisexual; (5) reported 2 or more days of club drug (i.e., crack, crystal meth, cocaine, ecstasy, ketamine, or GHB) in the prior 30 days; (6) reported 1 or more acts of HIV transmission risk behavior (i.e., condomless anal sex with an HIV-negative/unknown partner, excluding main partners who were on PrEP) in the prior 30 days; and (7) had daily access to the internet via smartphone.

Eligible participants were sent a link to complete an online survey from home that lasted approximately one hour, after which participants completed an in-person assessment at our research center. During this visit, participants were trained on how to use the twice-daily EMA system. Beginning the day after the baseline assessment and continuing for 21 days, participants were sent unique links twice a day—one at 12pm that expired at 4pm (i.e., the 'afternoon' measurement) and one at 8pm that expired at midnight (i.e., the 'nighttime' measurement)—that took them to the online EMA system within Qualtrics. Both the afternoon and nighttime surveys contained the emotion dysregulation and HIV stigma measures, providing two time points of measurement for each; because it often occurs in the late night and early morning, drug use was captured in the subsequent day's afternoon survey and the data were later lagged back to the previous day. Participants were compensated $50 for the in-person assessment and could earn up to $42 dollars for completion of the EMA. All protocols were approved by the Institutional Review Board of The City University of New York (CUNY).

2.2 Measures

During each EMA survey, participants began by reporting on their emotiondysregulation, after which they reported on experiences of HIV-related stress.

2.2.1 Situational HIV Stigma—Participants were asked to complete a total of nine items that were adapted from several published measures on HIV-related stressors.[53–56] Five items were used to capture situational experiences of internalized HIV stigma (e.g., "I've been feeling guilty because of my HIV status" and "I've been feeling emotionally upset or overwhelmed by my status") as described in more detail elsewhere.[49] Participants were

asked to rate the extent to which they had experienced each in the past few hours on a scale from 1 (*not at all*) to 4 (*completely*). The order of the items was randomly displayed during each survey and the average across items was taken to calculate a score at each time point.

2.2.2 Situational Emotion Dysregulation—Situational experiences of emotion dysregulation were measured by responses to four items adapted from the Difficulties with Emotion Regulation Scale[57] (e.g., "I've been experiencing my emotions as overwhelming," "I've been having difficulty making sense of my feelings"). Participants were asked to rate the extent to which they had been experiencing each in the past few hours on a scale from 1 (not at all) to 4 (completely). The order of the items was randomly displayed during each survey and the average across items was taken to calculate a score at each time point. The scale has previously been shown to be significantly positively associated with validated measures of situational negative affect.[49]

2.2.3 Daily Drug Use—In each day's afternoon survey, participants were asked about any substance use they had engaged in the prior day. Participants were provided with a list of drugs that included non-prescription stimulants (cocaine/crack and crystal meth), and were asked to respond to whether or not they had used these. When participants reported use of any drugs, they were asked at what time they first began using them—because we are focused on drug use as an outcome of nighttime reports of internalized HIV stigma and emotion dysregulation, we excluded reports of drug use prior to 8:00 p.m.

2.3 Statistical Analyses

Reports of HIV stigma and emotion dysregulation from each survey were disaggregated into a Level 2, grand-mean centered score corresponding to the individual's average across all time points and a Level 1, person-centered score corresponding to the individual's fluctuation from that average at each time point. We restructured the data by taking the "long" data (i.e., one row for each survey) and transposing the data such that the afternoon and nighttime reports for the same day were within the same row. We subsequently created a dichotomous indicator of daily stimulant use collected during the following day's afternoon survey and lagged this variable back to the prior day's reports of HIV stigma and emotion dysregulation. Multilevel modeling was conducted in *Mplus* Version 8.0 using random intercepts (i.e., TYPE = TWOLEVEL) with Bayesian estimation (i.e., ESTIMATOR = BAYES). The drug use outcome was specified as a categorical (i.e., dichotomous) outcome and modeled using the default probit regression. The use of Bayesian estimation allowed for the inclusion of all days where the afternoon survey was completed, even when the nighttime survey or the drug use report on the subsequent day were missing. Unlike standard multilevel modeling in which a single outcome is specified, the use of *Mplus* allowed for testing of a multivariate model in which all specified paths were estimated simultaneously. Level 1 effects were adjusted for the day of the EMA cycle centered at the middle day and whether or not the report was on a weekend (i.e., Friday, Saturday, or Sunday); Level 2 effects were adjusted for Black race, relationship status, and grand mean-centered age. We utilized model constraints to calculate coefficients and standard errors for indirect effects (i.e., the product of sequential direct paths). *Mplus* does not produce standard model fit

statistics for multilevel models of this kind, and as such we rely solely on reporting the parameter estimates of the path coefficients.

3. Results

One of the 53 men in the study was missing demographic data and excluded from analyses, resulting in an analytic sample of 52 participants. The median number of surveys completed per participant was 35 (83.3% of sent)—median completion for both the afternoon and nighttime surveys was 17, and we analyzed a total of 784 days' worth of data. Table 1 reports on the demographic characteristics of the sample, showing that most were men of color, gay-identified, single, and unemployed, and had completed some college but not a 4-year degree. The mean age was 38.6 and the average amount of time living with HIV was 10.6 years.

The unstandardized results of the model are presented within Table 2 and the Level 1 autoregressive cross-lagged portion of the model is represented graphically with standardized coefficients in Figure 2. Results confirmed our first set of hypotheses that there would be significant concurrent associations (curved paths A and F), with internalized HIV stigma and emotion dysregulation measured at the same time being significantly, positively correlated in both the afternoon and nighttime measurements. The findings also supported the second hypothesis regarding the autoregressive effects (paths B and C)—afternoon levels of internalized HIV stigma were significantly and positively associated with nighttime levels of internalized HIV stigma and the same was true for emotion dysregulation. The third hypothesis was supported (path E)—there was a significant cross-lagged effect of afternoon internalized HIV stigma on nighttime internalized HIV stigma. Although not a formal hypothesis, there was no cross-lagged association from afternoon emotion dysregulation to nighttime internalized HIV stigma (path D), as expected. We did not find support for our fourth hypothesis regarding a direct effect of nighttime emotion dysregulation on stimulant drug use (path H); contrary to our expectations, we *did* find a significant direct effect of nighttime internalized HIV stigma on stimulant drug use (path G). Given the lack of direct effect of nighttime emotion dysregulation on stimulant drug use, it was not surprising that we also did not find evidence for our fifth hypothesis regarding a significant indirect effect of afternoon internalized HIV stigma on stimulant drug use through nighttime emotion dysregulation (path E–H), B = −0.02, 95%CI[−0.10, 0.01].

Finally, it is worth noting that individual- level (i.e., Level 2) average scores for internalized HIV stigma and emotion dysregulation displayed in Table 2 were not significantly associated with the likelihood of daily stimulant drug use, suggesting these are primarily within-person rather than between-person associations.

4. Discussion

We examined an autoregressive cross-lagged path model of internalized HIV stigma, emotion dysregulation, and drug use within a twice-daily EMA study with HIV-positive GBM. In doing so, we found the following: (1) there were significant and positive concurrent associations between internalized HIV stigma and levels of emotion

dysregulation measured at the same time, which was true at both time points examined; (2) there were significant autoregressive effects of internalized HIV stigma in the afternoon on levels of internalized HIV stigma in the nighttime and of emotion dysregulation in the afternoon on emotion dysregulation in the nighttime; (3) there was a significant cross-lagged effect of afternoon internalized HIV stigma on nighttime emotion dysregulation, but not for afternoon emotion dysregulation on nighttime internalized HIV stigma; and (4) contrary to expectations, nighttime emotion dysregulation was not significantly associated with subsequent stimulant drug use whereas nighttime internalized HIV stigma was significantly associated. Taken together, these findings suggest a complex interplay between daily experiences of internalized HIV stigma, emotion dysregulation, and the daily use of both non-prescription stimulant drugs.

The first set of findings that is notable has to do with the association between internalized HIV stigma and emotion dysregulation. Taken together, the concurrent and crossed-lagged effects suggest that heightened internalized HIV stigma at earlier times may be associated with increases in emotion dysregulation at later times, but the opposite is not true—this is consistent with existing individual- level models establishing emotion dysregulation as one of the primary sequelae of minority stress experiences.[18,36,42] In addition to these findings suggesting a coupling of and downstream effects of internalized HIV stigma onto emotion dysregulation, autoregressive effects of these variables on themselves from one time point to the next suggests a mechanism through which these may be perpetuated. Together, these two findings highlight the three routes through which an experience of internalized HIV stigma can lead to a sustained increase in later emotion dysregulation: (1) the autoregressive “spill-over” of earlier stigma onto later stigma followed by the concurrent impact of stigma on emotion dysregulation; (2) the concurrent impact of stigma on emotion dysregulation followed by the autoregressive “spill-over” of earlier emotion dysregulation onto later emotion dysregulation; and (3) the direct cross-lagged effect of earlier internalized HIV stigma on later emotion dysregulation. Whereas internalized HIV stigma may be relatively domain-specific and avoided by shifting contexts or mindsets, its spill-over into the more global process of emotion dysregulation suggests its negative effects may nonetheless be sustained, at least within the span of several hours. Future research is needed to better understand these effects and the extent to which drug use—which appears to be more likely as a result of increased stigma—may itself further exacerbate the experience of stigma and emotion dysregulation, further propagating these negative minority stress effects over longer periods of time.

The second noteworthy set of findings has to do with the impact of internalized HIV stigma and emotion dysregulation on the use of non-prescription stimulant drugs later that day. The findings contradicted both of our original expectations—instead of direct effects of emotion dysregulation and no direct effects of internalized HIV stigma, we found the opposite. Nighttime internalized HIV stigma was significantly associated with increased likelihood of subsequent stimulant drug use, whereas nighttime emotion dysregulation was not associated. We posited that emotion dysregulation is the mechanism through which internalized HIV stigma acts to increase drug use, but instead found that HIV stigma itself was directly associated. These findings further underscore the negative impact of situational experiences of internalized HIV stigma—not only is it associated with increased and sustained emotion

dysregulation, it is also directly associated with greater likelihood of recreational stimulant drug use. However, the exact process linking internalized HIV stigma to stimulant drug use is as yet undetermined, and examining additional affective experiences may help to better understand these results.

With one notable exception in which researchers found a positive association between *aggregate* (i.e., individual-level) emotion dysregulation and stimulant use,[25] there is little existing research with which to compare these findings. In fact, when examined simultaneously, we found that situational variability in internalized HIV stigma was associated with stimulant drug use whereas individual differences in internalized HIV stigma were not. This suggests that individual differences observed in prior research may operate at a within-person level and more research using intensive longitudinal designs is warranted to better understand the mechanisms linking minority stress processes to health outcomes. Future research looking at subtypes of emotion dysregulation—or perhaps the use of specific emotion regulation strategies and/or one's flexibility in choosing adaptive strategies in a given situation[58]—is needed to better contextualize these results. Furthermore, our findings pertaining to the nighttime effects of stigma and stimulant use may also have implications for sleep health. Recent research has observed links between experiences of stigma with subsequent sleep disruption,[59] increased problems regulating emotions and behavior late at night,[60] and the protective or buffering role of good sleep on the effects of discrimination on mental health.[61] These links become even more important given that people living with HIV more commonly experience poor sleep health.[62]

Although preliminary in nature, if replicated these findings might hint at the potential utility of mobile health (i.e., mHealth) interventions that can be delivered "on-demand" during times when individuals are experiencing increased levels of internalized HIV stigma as a means of reducing both emotion dysregulation and the use of stimulants. Given that one of the defining features of internalized stigma is its negative, self-evaluative component,[63,64] interventions that bolster against self-evaluative threat may be particularly promising. Self-affirmation exercises—which often involve writing briefly about one's personal values or positive attributes—have received considerable attention in the social and health literature within the past decade as a means of bolstering against the very types of self-evaluative threats posed by internalized HIV stigma (for a review, see Cohen & Sherman, 2014). This technique may be particularly promising because, like the autoregressive pathways found for internalized HIV stigma and emotion dysregulation over time within the present study, self-affirmation interventions have been found to have self-propagating effects over time and a significant impact on health behavior.[66] Moreover, because self-affirmation exercises involve a simple writing task, they can be easily implemented within mobile delivery platforms such as those already being used to collect EMA data.

4.1 Study Strengths and Limitations

The present study has numerous strengths as well as limitations. Although this is the first study of which we are aware to utilize an EMA design to examine situational experiences of HIV stigma and emotion dysregulation and their impact on drug use, this was a pilot study of 52 men. Having found several significant effects suggests that we were adequately

powered for many, but others may have also reached significance with a larger sample and strengthened the conclusions. Although we considered it a strength of the study to focus on a population in great need of intervention, this was nonetheless a sample of high-risk HIV-positive GBM living in New York City, all of whom reported drug use and sexual HIV transmission risk behavior at baseline. As such, the findings should be interpreted with caution and future research should focus on replicating these findings with larger and more diverse samples. Participants were not asked about the mode of administration of stimulants, and this is something useful to capture in future research. Finally, the twice-daily diaries provided critical insights and allowed for the testing of a cross-lagged autoregressive path model, but such a design may be less feasible in larger studies, as it is resource-intensive for researchers and somewhat burdensome for participants. Future studies may consider less frequent reporting or other reporting schedules (e.g., event-contingent or random sampling) over a longer period.

4.2 Conclusions

The present study revealed that situational increases in internalized HIV stigma are positively associated with increases in emotion dysregulation and this occurs both directly through concurrent and cross-lagged increases as well as indirectly over time through autoregressive increases whereby internalized HIV stigma or emotion dysregulation at one time point has a “spill-over” effect on the level of the same variable at a later time point. Although we expected that internalized HIV stigma would increase the likelihood of drug use through emotion dysregulation, we instead found that increased internalized HIV stigma was *directly* associated with a significant increase in the likelihood of non-prescription stimulant drug use later in the day. Contrary to hypotheses, increases in emotion dysregulation were unassociated with the likelihood of stimulant use later in the day. Given that we found significant situational but not individual- level effects of internalized HIV stigma on substance use, it is important to note that aggregate and individual- level research may obscure the processes through which this operates. Further research is needed to replicate these findings in larger and more diverse samples as well as to better characterize the role that emotion dysregulation—and perhaps specific emotion regulation strategies—play in drug use behavior for this population. Given the event-level nature of drug use, intensive longitudinal designs represent an important methodolo gy for better understanding these behaviors and the present findings highlight that minority stress research can and should continue to be conducted within such a paradigm.

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Research Highlights

- Internalized HIV stigma is associated with subsequent increases in emotion dysregulation
- Internalized HIV stigma is associated with later use of stimulant drugs
- Emotion dysregulation was not associated with stimulant use
- Emotion dysregulation did not explain the link between internalized stigma and drugs

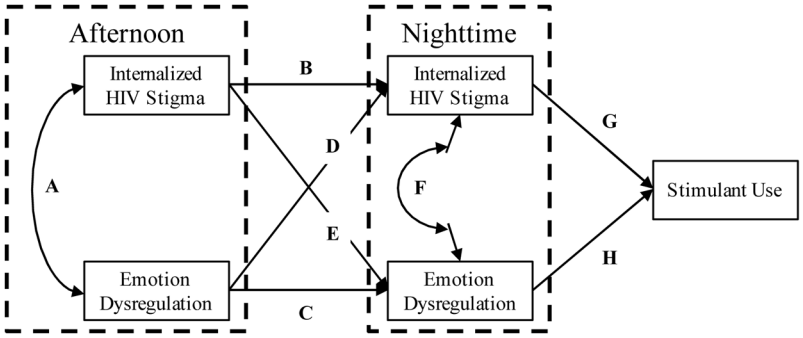

Figure 1.

This figure displays the specific paths being tested within the autoregressive path model that are used in text to reference specific hypotheses regarding concurrent associations (curved paths A and F), autoregressive effects (paths B and C), cross-lagged effects (paths D and E), and the direct effects on subsequent stimulant use (paths G and H).

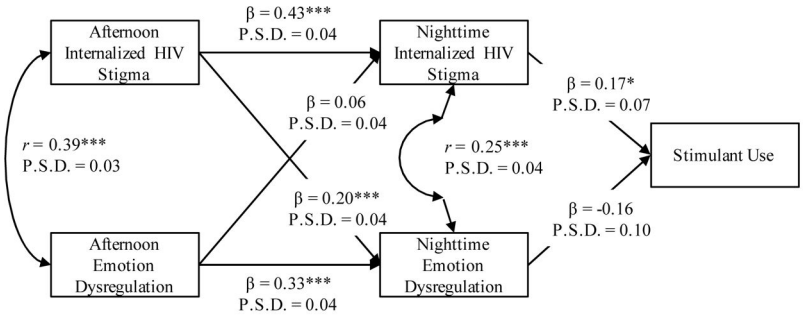

Figure 2.

This figure displays the standardized results of the Level 1 autoregressive cross-lagged path model whereby afternoon levels of internalized HIV stigma and emotion dysregulation predict nighttime levels of each, which subsequently predict stimulant use. At Level 1, the model was adjusted for the day of data collection and whether or not the report was on a weekend; at Level 2, the model was adjusted for cross-time average levels of internalized HIV stigma and emotion dysregulation, age, Black race, and relationship status. Standardized effects are reported. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$. P.S.D. = posterior standard deviation.

Table 1

Demographic characteristics of the sample.

	n	%
Race/Ethnicity		
Black	18	34.6
Latino	15	28.8
White	11	21.2
Multiracial/Other	8	15.4
Sexual Orientation		
Gay, queer, or homosexual	46	88.5
Bisexual	6	11.5
Employment Status		
Full-time	15	28.8
Part-time	7	13.5
Unemployed	30	57.7
Highest Educational Attainment		
High school diploma/GED or less	9	17.3
Some college or Associate's degree	29	55.8
Bachelor's or other 4-year degree	9	17.3
Graduate degree	5	9.6
Relationship Status		
Single	39	75.0
Partnered	13	25.0
	M	*SD*
Age (*Mdn* = 35.0)	38.6	10.3
Years since HIV diagnosis (*Mdn* = 10.0)	10.6	6.8

Table 2

Model results for the multilevel path analysis.

	Nighttime Internalized HIV Stigma		Nighttime Emotion Dysregulation	
	B	**95%CI**	**B**	**95%CI**
Fixed Components				
Level 1: Situational Level				
Intercept	−0.02	[−0.04, 0.01]	−0.01	[−0.03, 0.02]
Afternoon Internalized HIV Stigma	0.42***	[0.35, 0.49]	0.23***	[0.15, 0.31]
Afternoon Emotion dysregulation	0.05	[−0.01, 0.11]	0.32***	[0.25, 0.39]
Day of EMA cycle	0.00	[0.00, 0.00]	0.00	[−0.01, 0.00]
Weekend report (1 = yes)	0.01	[−0.03, 0.05]	−0.01	[−0.05, 0.04]

	Stimulant Use	
	B	95%CI
Fixed Components		
Level 1: Situational Level		
Intercept	−1.80***	[−2.51, −1.28]
Nighttime Internalized HIV Stigma	0.62*	[0.10, 1.19]
Nighttime Emotion dysregulation	−0.52	[−1.18, 0.06]
Day of EMA cycle	−0.02	[−0.05, 0.01]
Weekend report (1 = yes)	0.02	[−0.31, 0.36]
Level 2: Individual Level		
Average Internalized HIV Stigma	−0.02	[−1.19, 1.15]
Average Emotion Dysregulation	−0.06	[−1.48, 1.44]
Black race (1 = yes)	0.36	[−0.42, 1.14]
Relationship status (1 = partnered)	−0.15	[−1.18, 0.83]
Age	0.00	[−0.03, 0.04]
Random Components		
Intercept Variance	0.92***	[0.33, 2.72]

Note. $N = 52$, $N_{days} = 784$.

† $p < 0.08$;

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$. 95%CI = 95% credibility interval. Unstandardized model coefficients are presented. Continuous Level 1 variables were person mean -centered; continuous Level 2 variables were grand mean-centered. The modeled covariances between emotion dysregulation and internalized HIV stigma at each time point are excluded from this table and can be found presented within Figure 1.