Published in final edited form as:

Drug Alcohol Depend. 2015 August 1; 153: 187–193. doi:10.1016/j.drugalcdep.2015.05.028.

The role of sexual expectancies of substance use as a mediator between adult attachment and drug use among gay and bisexual men

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Abstract

Background—Research exploring substance use in gay and bisexual men has increasingly paid attention to interpersonal dynamics and relational concerns associated with the use of substances. The current study explored the role of adult attachment style on drug use as well as the potential mediating role of sexual expectancies of substance use among gay and bisexual men.

Methods—Online survey data were gathered from 122 gay and bisexual men across the U.S., with a mean age of 33 years of age. All participants were HIV-negative and identified their relationship status as single. Survey measures included attachment style, sexual expectancies of substance use, and recent drug use.

Results—While neither anxious or avoidant attachment were directly associated with the odds of recent drug use, they were positively associated with sexual expectancies of substance use ($\beta = .$

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Conflict of interest

The authors declare that they have no conflicts of interest.

Contributors

Tyrel Starks was primarily responsible for the study design. He also was primarily responsible for the development and execution of the analytic plan for the study. In addition, he is the PI on the grant which provided funding during the data analysis and manuscript production phase. Brett Millar, Andrew Tuck, and Brooke Wells were responsible for structuring introduction and discussion sections and contributed to the writing of the entire manuscript. All authors contributed to and have approved the final manuscript.

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27, $p < .01$, and $\beta = .21$, $p < .05$) which, in turn, were positively associated with the odds of drug use ($\exp B = 1.09$, $p < .01$). Bootstrapping tests of indirect effects revealed a significant indirect relationship between anxious attachment and drug use through sexual expectancies of substance use ($\beta = .11$, $p < .05$), but not for avoidant attachment.

Conclusions—This study highlights the importance of interpersonal expectancies as motivators for drug use among gay and bisexual men. Sexual expectancies of substance use were associated with drug use and anxious adult attachment was associated indirectly with drug use through these sexual expectancies.

Keywords

sexual minority; MSM; attachment; substance use

1. INTRODUCTION

Substance use among gay and bisexual men has remained a prominent focus of research in recent decades. Generally, the literature has indicated high rates of substance use among individuals in this population compared to heterosexuals (Austin and Bozick, 2011; Drabble et al., 2005; Marshal et al., 2009). Utilizing data from over 34,000 people in the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC, Wave 2) survey, McCabe et al. (2010) observed that the prevalence rate for a recent substance use disorder among gay men (31.4%) was double that of heterosexual men (15.6%). This elevated substance use among gay and bisexual men is especially concerning given established associations between substance use and sexual HIV transmission risk behaviors (Centers for Disease Control and Prevention, 2011; Colfax et al., 2004; Mansergh et al., 2008; Parsons et al., 2013).

Investigations of substance use patterns consistently demonstrate the influence of substance use expectancies (Bekman et al., 2011; Halkitis et al., 2007; Looby and Earlywine, 2010). Substance use expectancies are the beliefs an individual holds about the probability of the specific behavioral or experiential outcomes after drinking and/or drug use. Research has identified a range of positive and negative expectancies, including increased sociability, tension reduction, increased aggression or risk behavior, and expectations for a variety of sexual effects, such as enhanced sexuality, increased sexual vulnerability, and increased sexual risk-taking (Abbey et al., 1999; Dermen and Cooper, 1994a; Ham et al., 2005). Sexual expectancies of substance use, then, are the beliefs one holds about the sexual effects of substance use.

Accordingly, understanding individual expectancies about how substance use influences sexual intimacy, pleasure, and risk-taking, has become an important component of research related to motivations for substance use. Sexual expectancies of substance use have been found to be associated with increased substance use generally, among both heterosexual and gay/bisexual samples (e.g. Buckner and Schmidt, 2008; Jones et al. 2001; Mullens et al., 2010, 2011a; Rohsenow et al., 2004; Schafer and Brown, 1991), as well as substance use directly before or during sex (Dermen and Cooper, 1994b; Hendershot et al., 2010; Wells et al., 2011). Although the majority of expectancy theory studies have concentrated on alcohol,

recent research indicates that general expectancies (i.e., not specifically related to sex or intimacy) operate similarly across other substances such as nicotine, opioids, and stimulants (Kouimtsidis et al., 2014).

The link between drug use and sexual expectancies of substance use has been explored in a small number of studies of MSM. For example, Bimbi et al. (2006) found that expectancies of sexual risk-taking were correlated with sexual compulsivity, receptive (but not insertive) condomless anal intercourse, romantic obsessions, alcohol use, and drug use. In another study of 252 gay or bisexual men, those with higher sexual expectancies of substance use reported greater numbers of recent casual sex partners after using substances than those with lower sexual expectancies (Wells et al., 2013) – and the effect of expectancies on casual sex after substance use was enhanced by psychological conflict about the use of condoms.

Significantly, most formulations of sexual expectancies involve an interpersonal component relating to expectations that substance use will facilitate emotional and physical intimacy. This component is prominent in concerns about expressing desire to others (e.g., “I’m more likely to let others know I’m attracted to them when I use cannabis”, from Mullens, et al., 2010), sociability or being accepted (e.g., “After a few drinks of alcohol I feel closer to a sexual partner,” from Dermen and Cooper, 1994a) and pleasing one’s partner sexually (e.g., “My sexual performance is enhanced when using amyl,” from Mullens et al., 2011a). The importance of interpersonal functioning in one’s beliefs about the sexual effects of substance use indicates the need to explore underlying interpersonal interaction styles in the associations between sexual expectancies and substance use. As such, research needs to better understand difficulties related to emotional intimacy in order to further contextualize the associations between sexual expectancies and substance use.

One useful framework by which to organize these interpersonal considerations is attachment theory (Hazen and Shaver, 1994). According to attachment theory, early experiences with caregivers inform schemas related to interpersonal bonding that persist into adulthood (Ainsworth et al., 1978; Bowlby, 1969). These schemas are comprised of “working models” of self and of others; that is, the view of whether oneself is likeable and worthy of attention or love, and the view of whether others are trustworthy and reliable, respectively (Bowlby, 1969, 1977). These models may be reinforced or changed across one’s lifetime through repeated interactions with caregivers, romantic partners, friends, etc. (Ainsworth, 1985; Bowlby, 1969), and shape an individual’s relationships with the same (Bowlby, 1969; Hazen and Shaver, 1987, 1994). Three types or styles of attachment have been discussed with some consistency throughout the attachment literature: secure, anxious-ambivalent, and avoidant. Relationships with secure attachment are characterized by mutual warmth and reciprocal commitment; *anxious-ambivalent*, or *anxious* attachment, is characterized by holding close others in high esteem but fearing that they will abandon them; *anxious-avoidant*, or *avoidant* attachment, is characterized by a desire for emotional distance in relationships with others (Ainsworth et al., 1978; Hazen and Shaver, 1994).

Most of the literature on the subject has found a link between both anxious and avoidant attachment and substance use (Caspers et al., 2005; Kassel et al., 2007; Molnar et al., 2010; Thorberg and Lyvers, 2006; Vungkhanching et al., 2004). Though most research has

focused on heterosexual adults, links between attachment and substance use have also been found among gay and bisexual emerging adults (Gwadz et al., 2004; Rosario et al., 2014). Finally, while the bulk of the literature has focused on alcohol use, both types of insecure attachment have also been linked with illicit drug use (both lifetime and recent; Caspers et al., 2005; Rosario et al., 2014).

Attachment-related behavior refers to behavior which achieves or maintains proximity to an emotionally significant other (Ainsworth, 1985; Bowlby, 1977). Inherent in this notion is the idea that individuals are motivated to behave in ways that establish a desired degree of proximity to significant individuals in their social world. Existing literature examining mediators of the attachment-substance use link suggest that it may be reasonable to conceptualize substance use as a form of attachment-related behavior. A handful of studies on heterosexual samples have begun to explore psychological mediators that may explain connections between anxious attachment style and substance use; identified mediators include low self-esteem (Kassel et al., 2007), low perceived social support (Caspers et al., 2005), and coping or social facilitation motives for alcohol use (McNally et al., 2003; Molnar et al., 2010). This collection of identified mediators incorporates interpersonal concerns involving negative affect, negative self-evaluation, and anxious expectancies about evaluation from others. Though no mediators of avoidant attachment and substance use have yet been identified, given the established association between avoidant attachment and drinking to reduce emotional dependency on others (Schindler et al., 2005), it is likely that at least some mediators of avoidant attachment and substance use are interpersonal in nature.

To date, no studies have specifically examined expectancies for the effect of substance use on sex and intimacy as potential mediators of the association between adult attachment and substance use among MSM. However, available data support such a potential set of relationships. For instance, among heterosexual individuals, insecure attachment is associated with greater concerns about partner approval with regard to sex, such as feeling doubts about being loved during sex or suspecting one's partner of avoiding sex (e.g., Birnbaum et al., 2006; Brassard et al., 2007). To the degree that individuals expect substance use to improve intimacy and facilitate sexual encounters, it follows that their attachment expectancies would predict their sexual expectancies, and that sexual expectancies may then drive substance use as a relational or sexual strategy. Though most research has focused on heterosexual adults, links between insecure attachment and aspects of sexual relationship quality have been observed among gay and bisexual men as well (Starks and Parsons, 2014). Sexual expectancies of drug use may serve as the link between the attachment concerns and the use of drugs to address those sexual concerns.

The existing literature provides evidence suggesting that adult attachment and sexual expectancies of substance use are associated with substance use behavior; however, this literature is limited by a focus on heterosexual populations and a lack of attention to substances other than alcohol (particularly in studies of sexual expectancies). The purpose of the current study was to examine the role of sexual expectancies of substance use as a mediator between attachment style and drug use (excluding alcohol) among gay and bisexual men. Based on previous results, we hypothesized that 1) there would be a significant and positive association between anxious attachment and the odds of drug use

generally; 2) there would be a significant and positive association between anxious attachment and sexual expectancies of substance use; and 3) the indirect pathway from anxious attachment to the odds of drug use through sexual expectancies would be significant. Because the data related to avoidant attachment is relatively more limited, no specific hypotheses were made; however, we anticipated that associations similar to those expected for anxious attachment might be present.

2. METHODS

2.1. Participants and Procedures

Eligible participants included biological men who identified as male, indicated a gay or bisexual orientation, and reported their relationship status as single. Participation was further restricted to individuals who lived in the United States, were 18 or older, reported an HIV-negative serostatus based upon at least one HIV test in the previous 5 years, and had the ability to complete the survey in English.

Data were collected online between March and May, 2014, via *ProofPilot*, an internet survey host. Participants were recruited online through Huffington Post and social networking sites. In addition, the study utilized an incentivized snowball sampling technique. Participants were given the opportunity to provide email addresses of up to two individuals who they thought might be interested in completing the survey. Participants who referred someone to the study received a promotional code which could be redeemed for a small discount at an online vendor (approximate value ranged between \$1.00 and \$10.00). Online recruitment materials indicated that the study was open to single individuals regardless of gender or sexual orientation. Materials contained study contact information and a direct link to the survey platform. The current study utilized only data gathered from male-identified respondents who indicated a gay or bisexual orientation.

The study link directed participants to the *ProofPilot* survey platform. Potential participants created a password-protected user account and provided demographic information that could be utilized to determine preliminary eligibility. Participants who were preliminarily eligible (those who were 18 years of age or older, reported they were not currently in a relationship, and indicated they were able to communicate in English) were given the option to view detailed consent information and enroll. Similar to the recruitment incentive, participants received a promotional code which could be redeemed for a discount (approximate value ranged between \$1.00 and \$10.00) at an online vendor upon completion. All procedures were approved by the institutional review board of blinded for review].

2.2. Measures

2.2.1 Demographic characteristics—Participants reported their date of birth, race/ethnicity, level of education, and relationship status. Chronological age was calculated by comparing date of birth to date of survey completion. Participants were asked when they last received an HIV test. Participants who reported receiving an HIV test in the previous 5 years were asked to report the test result.

2.2.2. Substance use—Participants reported on whether or not they used (in the past 30 days) any of the following substances: marijuana, cocaine, crack, crystal methamphetamine, ecstasy, gamma-hydroxybutyrate (GHB), ketamine, heroin, and poppers. Drug use in the past 30 days has been used elsewhere as a measure of current drug use (i.e., Golub et al., 2010; Wells et al., 2011) and substances assessed were reflective of those used in these previous studies. Data from individual substances were aggregated into a single variable indicating the use (or non-use) of any of these substances.

2.2.3. Adult attachment style—Adult attachment style was assessed using the *Experiences in Close Relationships* short form (Wei et al., 2007). The scale is comprised of 12 items, divided across two subscales. Participants indicate their level of agreement with each item on a Likert scale from 1 (completely disagree) to 7 (completely agree). Six items assess the avoidant dimension of attachment (e.g., “I try to avoid getting too close to a partner”) and six assess the anxious dimension of attachment (e.g., “I need a lot of reassurance that I am loved by my partner.”). The ECR has been validated among gay and bisexual men (Matte et al., 2009) and has since been used in a number of studies on this population (e.g., Bouaziz et al., 2013; Zamora et al., 2013). Both subscales demonstrated adequate reliability in the current sample (Cronbach’s $\alpha = .71$ and .78, respectively).

2.2.4. Sexual expectancies of substance use—Sexual expectancies were assessed using six items. Four of these items were based upon existing measures of sexual expectancies (Abbey, 1999; Brown et al., 1987). These items (with the stem “After using a drug or having a few drinks...”) included the following: “I feel closer to a sexual partner,” “I am less likely (to ask a partner) to use a condom,” “I am more likely to have sex on a first date,” and “I find it easier to have an orgasm.” The remaining two items (with the same stem) were created by the study authors to assess expectancies specifically related to sexual intimacy and emotional closeness: “Sex is more intensely emotional” and “I feel like sex is more likely to lead to a relationship.” Participants indicated their level agreement with each statement on a Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). The scale demonstrated good reliability in the current sample (Cronbach’s $\alpha = .82$). To insure that unidimensional scoring of this adapted measure was appropriate, an exploratory principal components analysis with oblique rotation was conducted. The Kaiser-Mayer-Olsen statistic suggested the data were appropriate for factor analysis (KMO = .81). Using an eigenvalue > 1.0 criteria a single factor was extracted which described 53.4% of the item variance.

2.3. Analytic plan

Analyses were conducted in two steps using Mplus 7.0. The first step tested the direct effect of adult attachment on the odds of drug use in the absence of the hypothesized mediator (sexual expectancies of substance use) using logistic regression. In this model, age, race, and education were included as covariates. In the second step, a path model was calculated that included sexual expectancies of substance use as a mediator between adult attachment measures and drug use. The significance of the indirect effects of attachment measures on the outcome (through sexual expectancies) were tested using bootstrapping tests of significance with 1000 bootstrapping draws. All models utilized weighted least squares means and variances estimation, which permits the use of bootstrapping tests of mediation.

The analytic plan was formulated to provide an estimate of both the direct association between adult attachment and the odds of drug use as well as the potential for sexual expectancies to explain a link between these two constructs regardless of the presence of a direct effect. The procedures outlined, similar to those utilized by Starks et al., (2013) and Wells et al. (in press), are consistent with the recommendations of Hayes (2009) who summarized criticism of the causal step approach (Baron and Kenny, 1986). This approach utilizes a sequence of regression models to test whether the direct association between two variables is explained all or in part by a third variable (the mediator); however it is less likely to detect the presence of a true indirect effect than bootstrapping methods. One reason for this is that causal step approaches typically begin by testing the significance of the direct association between a predictor and an outcome. Where this association is non-significant, the analysis is halted. Hayes (2009) asserted that significant indirect effects may exist even in the absence of a significant direct effect. Such a finding may result when multiple indirect pathways exist between predictor and outcome and these effects are of opposing direction. The total direct effect may be null despite the presence of significant specific indirect associations.

3. RESULTS

The exact number of participants who viewed recruitment messages cannot be determined; however, 854 individuals followed the study link and registered with the *ProofPilot* platform. Of these, 541 (63.3%) were preliminarily eligible (they were at least 18 years old, they were not currently in a relationship, and they were able to complete the survey in English); 535 of these (98.9%) opened the baseline survey and 327 (62.6%) completed it. Of these, 274 (87.8%) reported a US residence; 172 (62.8%) US residents identified as male; 157 (92.3%) men identified as gay or bisexual. Among gay and bisexual men, 122 (77.7%) reported a negative HIV status based upon an HIV test in the previous 5 years and were retained in the analytic sample for this study. Among these participants median survey completion time was 23.3 minutes and 17.3 minutes was the modal time. Based upon a review of IP addresses and an examination of demographic data including zip codes, no cases were excluded due to concerns about repeated participation.

Demographic data for the sample are contained in Table 1. The average age of respondents was 33.0 years ($SD = 10.8$ years). The sample was majority White (65.6%) and 68.9% had earned at least a four-year college degree. Table 1 also contains substance use data for specific substances. Twenty-seven percent of the sample reported the use of at least one substance. The most frequently reported substance was marijuana (18.9%), followed by poppers (10.7%).

3.1. Direct associations between adult attachment and drug use

Table 2 contains the results of these analyses. Neither anxious or avoidant attachment were directly associated with the odds of drug use.

3.2. Indirect associations between adult attachment and drug use

Path model results which incorporated sexual expectancies are depicted in Figure 1. Both anxious and avoidant attachment were associated with increased sexual expectancies of substance use, as was younger age. The only predictor significantly associated with the odds of drug use was sexual expectancies of substance use. Bootstrapping tests of indirect effects suggested that anxious attachment accounted for a significant amount of variance in drug use through its association with sexual expectancies ($B = .013$; $SE = .007$; $\beta = .11$; $p = .047$). The indirect effect of avoidant attachment on drug use through sexual expectancies was not significant ($B = .015$, $SE = .01$; $\beta = .08$; $p = .11$). Table 3 contains regression coefficients and 95% confidence intervals for all predictors and covariates involved in the prediction of drug use, and sexual expectancies of substance use. Age, race, and education were unrelated to the odds of drug use.

4. DISCUSSION

Findings from the current study supported the hypothesis that sexual expectancies of substance use may provide a link between adult attachment expectancies and drug use. The pattern of findings highlights the relevance of interpersonal concerns and motivations for drug use among gay and bisexual men. Furthermore, it supports the use of attachment theory as a framework for conceptualizing motivations for drug use. The current study found a significant relationship between sexual expectancies of substance use and actual drug use, replicating findings in studies involving both heterosexuals (e.g., Buckner and Schmidt, 2008; Jones et al., 2001; Rohsenow et al., 2004) and MSM (Mullens et al., 2010, 2011a). Critically, the current study found a significant relationship between sexual expectancies of substance use and attachment style and, while a direct association between attachment and actual drug use was not observed, the study did find an indirect association between anxious attachment and drug use, mediated by sexual expectancies of substance use.

These results of this study extend findings from previous studies focused on sexual risk-taking and substance use in conjunction with sex. Bimbi et al. (2006) identified a link between actual drug use and sexual risk-taking expectancies of drug use. The current study extends these findings by measuring a range of substance use expectancies not restricted solely to sexual risk-taking. The current study also extends the findings of Mullens et al. (2010, 2011a) linking sexual expectancies of substance use and actual drug use among MSM, by characterizing the nature of this association in light of interpersonal concerns and attachment. In addition, the current study explored drug use while most previous research examining this connection has focused on alcohol rather than drug use (Mullens et al., 2011b).

The finding that both anxious and avoidant attachment styles were directly associated with sexual expectancies highlights the importance of considering attachment-related concerns in relation to the expectancies that unpartnered gay and bisexual men have for the effect that substance use will have on sexual pleasure and intimacy. This finding is consistent with previous studies linking anxious attachment with sexual concerns (Caspers et al., 2005; Kassel et al., 2007; McNally et al., 2003; Molnar et al., 2010). This link between the general interpersonal expectancies which comprise attachment and behavior-specific expectancies

related to substance use suggests a continuity between global and domain-specific schemas. Such consistency may arise because individuals who are generally more anxious or less comfortable being close in intimate relationships are more apt to detect, remember, and value the impact of substance use on interpersonal interactions specifically.

The study found an indirect effect of anxious attachment on drug use through sexual expectancies of substance use, but did not find a significant indirect effect of avoidant attachment. It is possible that drug use may operate, in anxiously-attached individuals, to help them reduce or cope with negative affect arising from worries about the loss of important social others, in a way that is less pronounced for avoidantly-attached individuals. Alternatively, this finding of non-significance may be a reflection of limited power in the current sample. The current findings are probably best viewed as presenting clear evidence of the relevance of anxious attachment to drug use through associations with sexual expectancies of substance use and the need for additional studies, with greater power to clarify the potential for such an indirect association with avoidant attachment.

Conceptualizing drug use as an attachment-related behavior, whose operant function is to achieve and maintain proximity or facilitate social and sexual interactions with a potential intimate partner, has intervention implications. Such a formulation implies that as individuals decrease substance use, they may need to employ other behavioral skills to facilitate social and sexual interactions with partners. This suggests that interventions which include a social skill-building component may be relevant for gay and bisexual men who use substances and have a high degree of attachment anxiety. Furthermore, these findings suggest that drug use interventions may benefit from incorporating a focus on interpersonal schemas. In addition, the finding that sexual expectancies mediate the link between these schemas and drug use suggests the potential utility of interventions which address perceived sexual benefits of substance use. Omitting these interpersonal factors may overlook critical aspects of an individual's motivations for drug use.

These findings must be viewed in light of a number of limitations. These self-reported, cross-sectional data were collected from a sample of HIV-negative, gay and bisexual, well-educated, and mostly White single men across the U.S., which may limit generalizability to other populations. HIV status may interact with interpersonal expectancies of substance use in important ways, which warrant detailed examination in future research. Expectancies related to condom use may function differently for HIV-positive men given the potential for sero-sorting and other alternative strategies for managing HIV related risk (Maisto et al., 2008). Furthermore, HIV-related stigma may alter expectancies related to potential intimacy and emotional closeness with a possible relationship partner (Kahler et al., 2015), though some research indicates similar expectancy scale function in HIV-positive individuals (Maisto et al., 2008). The analyses were limited to men who were not in relationships, as the specific measure of interpersonal expectancies has several items which may function differently for men in primary relationships compared to men who are single. Some items may simply be less relevant for partnered men (e.g., "sex is more likely to lead to a relationship"). Other items may have elicited very different responses depending upon whether participants were thinking of a main partner or casual partners (e.g., "sex is more intensely emotional" or "I am less likely to use a condom"). Future research should attend to

such potential differences and explore the possibility of developing versions of sexual expectancies measures that address partner type clearly in a manner that permits differentiating expectancies related to sex with casual partners from those related to sex with main partners.

In addition, self-reported drug use did not include alcohol and was restricted to the past 30 days, which may not be representative of their typical drug use patterns. Also, though previous research has found a link between both anxious and avoidant attachment and drug use before sex (Feeney et al., 2000), this study analyzed general substance use in the past 30 days and not necessarily the use of drugs before or during sex. Furthermore, this study did not address actual sexual behavior and can make no claims regarding the role of sexual expectancies on subsequent sexual activity. Future studies which explore alcohol use, sexual behavior, and the use of substances before and/or during sex are needed. Finally, this study utilized a brief measure of sexual expectancies of substance use, which included items that addressed content related to sexual risk taking behavior, emotional closeness, and physical pleasure. Examining these motivations separately could help to better characterize the nature of their relationship to substance use and attachment style.

In conclusion, these findings highlight the relevance of attachment to drug use among gay and bisexual men. Furthermore, they illustrate the role sexual expectancies may play in linking attachment and drug use. The findings that adult attachment style was associated with increased perceptions of sexual benefits associated with substance use, and that substance use expectancies were in turn associated with increased odds of drug use implies that substance use interventions with gay and bisexual men may benefit from incorporating a focus on interpersonal relationships generally and sexual relationship factors specifically. Furthermore, these results point to the need for closer consideration in future research of the role of adult attachment style in sexual expectancies of substance use, and subsequent sexual and substance use behavior.

Acknowledgments

Role of funding source

Data collection was funded through a faculty development award from Pace University. Data analysis was supported in part by a National Institute on Drug Abuse grant (R34 DA036419; PI Starks). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. Neither Pace University or NIDA had further role in study design; in the collection, analysis and interpretation of data; in the writing of the report; or in the decision to submit the paper for publication.

The authors would like to acknowledge the contributions of the ProofPilot team, including Mathew Amsden, Lochlan McHale, and David Sperber. They would also like to acknowledge the study's media partner, the Huffington Post, especially Noah Michelson. Special thanks also to Julia Bassiri, Jennifer Kierce, Lucio Forte and Storey Day.

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HIGHLIGHTS

- Anxious and avoidant attachment predicted sexual expectancies of substance use.
- Sexual expectancies of substance were positively associated with recent drug use.
- Anxious attachment was indirectly associated with drug use through expectancies.

Figure 1. Attachment, sexual expectancies, and drug use: Path model results. $*p < .05$; $**p < .01$

Table 1

Demographic characteristics

Characteristic	M (SD)
Age	33.0 (10.8)
	<u>n (%)</u>
Sexual Orientation	
Gay	106 (86.9)
Bisexual	12 (9.8)
Queer/Uncertain	4 (3.3)
Race [†]	
White	80 (65.6)
African American	12 (9.8)
Latino	14 (11.5)
Other	7 (5.7)
Completed College	
Less than four years	38 (31.1)
4 or more years	84 (68.9)
Region	
Northeastern	30 (24.6)
Midwestern	24 (19.7)
Southern	32 (26.2)
Pacific	36 (29.5)
Any recent drug use	33 (27.0)
Marijuana	23 (18.9)
Poppers	13 (10.7)
Cocaine	4 (3.3)
Ecstasy (X), Ketamine, Gamma hydroxybutyrate (GHB)	3 (2.5)
Other drugs	2 (1.6)

[†]Variable contains missing data for some cases.

Table 2

Direct effects of adult attachment on odds of drug use and sexual expectancies of substance use

	Odds of Drug Use (Logistic Regression)		
	OR	95% CI	β
Race (referent = non-White)	0.90	(0.37, 2.16)	-.03
Age	0.99	(0.95, 1.04)	-.05
Education (referent = < 4 yr degree)	1.28	(0.50, 3.29)	.06
Attachment			
Anxious	0.97	(0.93, 1.03)	-.12
Avoidant	0.98	(0.92, 1.05)	-.05

*
 $p < .05$;**
 $p < .01$

Table 3

Path model coefficients

	Odds of Drug Use			Sexual Expectancies		
	OR	95% CI	β	B	95% CI	β
Race (referent = non-White)	0.96	(0.48, 1.43)	-.09	1.40	(-0.55, 3.35)	.13
Age	1.04	(0.98, 1.03)	.04	-.010*	(-0.20, -.01)	-.21
Education (referent = < 4 yr degree)	0.89	(0.60, 1.82)	.02	1.04	(-0.67, 2.76)	.10
Sexual Expectancies	1.09**	(1.03, 1.15)	.41	NA		
Attachment						
Anxious	0.97	(0.94, 1.01)	-.24	0.16**	(0.06, 0.26)	.27
Avoidant	0.99	(0.93, 1.02)	-.14	0.18*	(0.02, 0.34)	.21

* $p < .05$;

** $p < .01$