



Published in final edited form as:

*Psychol Addict Behav.* 2009 March ; 23(1): 175–184. doi:10.1037/a0014284.

## Disclosure of Sexual Orientation and Subsequent Substance Use and Abuse Among Lesbian, Gay, and Bisexual Youths: Critical Role of Disclosure Reactions

**Margaret Rosario,**

Department of Psychology, The City University of New York – City College and Graduate Center

**Eric W. Schrimshaw, and**

Center for the Psychosocial Study of Health & Illness, Department of Sociomedical Sciences, Mailman School of Public Health, Columbia University

**Joyce Hunter**

HIV Center for Clinical and Behavioral Studies, New York State Psychiatric Institute

### Abstract

Research on whether disclosure of sexual orientation promotes lower substance use among lesbian, gay, and bisexual (LGB) individuals has been inconsistent. One reason for this may be that disclosure results in accepting and rejecting reactions. The current report longitudinally examines whether the types of reactions to disclosure are associated with substance use and abuse among an ethnically diverse, urban sample of 156 LGB youths (ages 14 – 21 years). Neither the number of disclosures nor the numbers of accepting or neutral disclosure reactions experienced were associated with substance use or abuse. However, the number of rejecting reactions to disclosure was associated with current and subsequent alcohol, cigarette, and marijuana use even after controlling for demographic factors, social desirability, and emotional distress. Further, high numbers of accepting reactions were found to moderate or protect youths from the negative role of rejecting reactions on alcohol use, but not other substances. This research indicates that, rather than disclosure per se, it is the number of accepting and rejecting reactions in response to disclosure that are critical to understanding substance use among LGB youths. Further, the results suggest that to be maximally effective in helping LGB youths, substance use prevention and treatment efforts should address the rejecting reactions to disclosure of sexual orientation.

### Keywords

Alcohol; Cigarette; Marijuana; Self-Disclosure; Rejection; Acceptance; Sexual Orientation; Sexual Identity; Longitudinal

---

Extensive research using large representative samples has examined the potential role of sexual orientation as a risk factor for substance use and abuse among adolescents and young adults

---

Address correspondence to Margaret Rosario, Ph.D., Department of Psychology, The City University of New York – City College and Graduate Center, NAC Building 7–120, Convent Avenue and 138<sup>th</sup> Street, New York, NY 10031; mrosario@gc.cuny.edu.

**Publisher's Disclaimer:** The following manuscript is the final accepted manuscript. It has not been subjected to the final copyediting, fact-checking, and proofreading required for formal publication. It is not the definitive, publisher-authenticated version. The American Psychological Association and its Council of Editors disclaim any responsibility or liabilities for errors or omissions of this manuscript version, any version derived from this manuscript by NIH, or other third parties. The published version is available at [www.apa.org/journals/adb](http://www.apa.org/journals/adb)

(e.g., Bontempo & D'Augelli, 2002; Eisenberg & Wechsler, 2003a; Russell, Driscoll, & Truong, 2002). A recent meta-analysis of this research concludes that lesbian, gay, and bisexual (LGB) youths are significantly more likely to report alcohol, tobacco, and other drug use than are heterosexual youths (Marshal et al., 2008). The meta-analysis also finds that the higher risk among LGB youths occurs among both sexes and regardless of definition of sexual orientation (e.g., self-identification as LGB, same-sex attractions; Marshal et al., 2008). Another meta-analysis finds sexual-orientation disparities in substance abuse (Meyer, 2003). Despite the considerable research demonstrating differences with heterosexuals, not all LGB youths report substance use, indicating that sexual orientation alone does not account for the disparity and implying that other risk or protective factors related to sexual orientation may be involved (Hughes & Eliason, 2002). Although critical for theoretical, preventative, and intervention efforts, the reasons why some LGB youths report increased levels of substance use and abuse remain under-examined.

The substance use and abuse reported by some LGB youths must be examined and understood within the context of the youths' unique experiences and challenges (Rosario, Schrimshaw, & Hunter, 2006). One major developmental event involves accepting and disclosing their sexual orientation to others (what is commonly referred to as "coming out"). Not only is the act of disclosing to others an indication of self-acceptance, but disclosure may also reduce the stresses associated with concealing one's sexual orientation, and serve as a necessary precursor to obtaining support from friends and family (Cass, 1979; Morris, 1997; Rosario, Hunter, Maguen, Gwadz, & Smith, 2001; Savin-Williams, 1998; Troiden, 1989; see Corrigan & Matthews, 2003, for review). Indeed, the theorized benefits of disclosure of sexual orientation are consistent with the larger theoretical literature on the benefits of disclosure (Greene, Derlega, & Matthews, 2006; Pennebaker, 1989; Stroebe, Schut, & Stroebe, 2006) and the negative consequences of concealment (Larson & Chastain, 1990; Pachankis, 2007). As such, disclosure has been widely hypothesized to be associated with increased self-esteem, social support, and psychological adjustment among LGB populations (e.g., D'Augelli, Hershberger, & Pilkington, 1998; D'Augelli, Grossman, & Starks, 2005; Elizur & Ziv, 2001).

By extension, disclosure is hypothesized to be related to substance use, such that LGB individuals who do not disclose may use various licit and illicit substances to cope with their feelings of shame and discomfort. However, the empirical literature examining the relation between disclosure and substance use has been largely inconsistent. Although disclosure to family has been associated with fewer problems with alcohol consumption among lesbians and gay men (DiPlacido, 1998; Stall et al., 2001; Whittington, 2000), as the disclosure hypothesis maintains, other studies have found no association between disclosure and alcohol, tobacco, or drug use among LGB youths (Rosario, Rotheram-Borus, & Reid, 1996; Rosario, Schrimshaw, & Hunter, 2004; Wright & Perry, 2006). Furthermore, and contrary to the hypothesis, several studies of LGB individuals have found that disclosure is associated with significantly greater alcohol and drug use (Kipke et al., 2007; Klitzman, Greenberg, Pollack, & Dolezal, 2002; McKirnan & Peterson, 1989; Thiede et al., 2003; Wong, Kipke, & Weiss, 2008). In addition, although disclosure to parents has been associated with reduced alcohol abuse (Stall et al., 2001; Whittington, 2000), these same studies find that greater disclosure to friends is associated with greater drug use and alcohol abuse. Reasons for the inconsistent associations between disclosure of sexual orientation and substance use and abuse remain relatively under-examined.

One potential explanation is the failure of most studies to consider the potential reactions that LGB individuals encounter when they do disclose. Although disclosure of sexual orientation to family, friends, and others is an important part of the coming-out process for LGB youths, reactions to disclosure vary considerably and these reactions are not within the youths' control. LGB youths frequently disclose to a close friend before disclosing to parents and other family

members (Beals & Peplau, 2006; D'Augelli et al., 1998; Grossman & Kerner, 1998), and although friends' reactions tend to be accepting, many LGB youths worry about losing friends due to their sexual orientation (Diamond & Lucas, 2004). Indeed, openness about one's sexual orientation is related to more victimization in school (D'Augelli, Pilkington, & Hershberger, 2002), suggesting that disclosure to friends and acquaintances may have potential negative consequences. Disclosure to mothers typically occurs before disclosure to fathers, but the reactions of parents typically do not differ by sex (D'Augelli et al., 2005; Savin-Williams & Ream, 2003). In comparison to friends, who are typically supportive, parental reactions to disclosure are variable (Merighi & Grimes, 2000; Savin-Williams, 2001; Valentine, Skelton, & Butler, 2003). Although many parents are supportive or accepting (27%–55%; D'Augelli et al., 2005; D'Augelli et al., 1998; Savin-Williams & Ream, 2003), a significant number of LGB youths experience intolerant and rejecting reactions (12%–51%) including experiences of verbal abuse, threats, and physical victimization (D'Augelli et al., 1998). Thus, it is unsurprising that the main reasons LGB youths report for not disclosing to a parent is fear of negative reactions and rejection (D'Augelli et al., 2005).

Clearly, the psychological and behavioral implication of disclosure should differ depending on whether the reaction is one of acceptance versus rejection. Accepting reactions should have salutary effects on health and health behaviors. By contrast, rejecting reactions should have negative effects. The possible reasons for the differential impact of these two types of reactions are many (see Corrigan & Matthews, 2003 for review). Whereas accepting reactions may relieve fears of rejection and lead to a new source of support, rejecting reactions may result in additional stressors (including verbal and physical confrontation), the loss of support and increased social isolation, and the reinforcement of negative self-image. Accounting for disclosure reactions results in a more nuanced hypothesis of disclosure than what is prevalent in the literature and may explain why the relation between disclosure and substance use has been inconsistent. Indeed, no studies were found that examined the association between reactions to disclosure and substance use or abuse. However, a few studies have examined the association between parental reactions to youths' disclosure and the youths' mental health. LGB youths who experienced more rejecting (or fewer accepting) reactions to disclosure have been found to report poorer psychological adjustment (Elizur & Ziv, 2001; D'Augelli, 2002). However, the associations with disclosure (without considering reaction to disclosure) were largely nonsignificant (D'Augelli, 2002).

Although we anticipate that accepting reactions are associated with lower substance use, and rejecting reactions are associated with higher substance use, most LGB youths probably have experienced both types of reactions. Indeed, most LGB youths experience more positive reactions to disclosure than negative reactions (D'Augelli et al., 1998; 2005; Savin-Williams & Ream, 2003). Thus, the question arises whether experiencing a large number of accepting reactions might compensate for the experience of rejecting reactions. Indeed, if accepting reactions lead to greater self-esteem and greater support as noted above, then such accepting reactions should serve a stress-buffering role to protect youths from the negative consequences of rejecting reactions. This type of moderating relation, in which positive aspects of social relationships serve to protect against stress and other negative events, has been widely hypothesized in the larger literature on stress and health (e.g., Lepore, 1992; Peirce, Frone, Russell, & Cooper, 1996; Wills & Cleary, 1996; see Wills & Fegan, 2001 for review).

The current report builds on our own earlier work and that of others to examine not only the relations between disclosure of sexual orientation and substance use and abuse, but also whether reactions of others to disclosure prove more important for substance use. Specifically, we hypothesize that the extent to which LGB youths have disclosed their sexual orientation will not be significantly associated with substance use, but rather that the number of accepting and rejecting reactions that youths have experienced in reaction to their disclosure will be most

predictive. We also hypothesize that accepting reactions to disclosure will serve a salutary or buffering effect to counteract the negative effects of rejecting reactions on substance use. In contrast to earlier research in this area, which has been exclusively cross-sectional, the current report longitudinally examines these issues on subsequent substance use and abuse. Moreover, because the relations between disclosure or disclosure reactions and substance use may be confounded by other factors (e.g., emotional distress, social desirability), we rule out such rival explanations of substance use.

## METHOD

### Participants

One-hundred and sixty-four youths, ages 14 to 21 years, were recruited from three LGB-focused community-based organizations (CBOs, 85%) and two LGB college student organizations (15%) in New York City. Eight youths were excluded because they did not meet eligibility criteria, resulting in a final sample of 156 youths (49% female), mean age of 18.3 years ( $SD = 1.65$ ). The 156 youths identified as lesbian or gay (66%), bisexual (31%), or other (e.g., “free spirit”, “confused” 3%). They were Latino (37%), Black (35%), White (22%), or Asian and other ethnic backgrounds (7%). Of the youths, 34% reported having a parent who received welfare, food stamps, or Medicaid; these youths were classified as low socioeconomic status (SES) and the remainder as high SES.

### Procedure

Youths provided voluntary and signed informed consent. The Commissioner of Mental Health for New York State waived parental consent for youths under age 18. Instead, an adult at each CBO served *in loco parentis* to safeguard the rights of every minor in the study. The university’s Institutional Review Board and recruitment sites approved the study.

A 2- to 3-hour structured interview was conducted at recruitment (Time 1) with follow-up interviews occurring 6 and 12 months later (Times 2 and 3, respectively). Youths were interviewed between October 1993 and June 1994, with follow-up interviews conducted through August 1995. The retention rates were 92% ( $n = 143$ ) for the 6-month assessment and 90% ( $n = 140$ ) for the 12-month assessment. Youths lost to one or more follow-up assessments did not differ from those interviewed at all three assessments on any demographic factors or any other Time-1 variable examined in this report (e.g., disclosure, substance use, emotional distress). Youths received \$30 at each interview.

### Measures of Sexual Orientation Disclosure & Disclosure Reactions

Four primary disclosure variables were employed in the study: The number of important individuals disclosed to, the number of accepting reactions to disclosure, the number of rejecting reactions to disclosure, and the number of neutral reactions to disclosure. Specifically, youths were asked to identify all the individuals who were (or had been) important to them and who knew or suspected their sexual orientation. For each of these individuals, youths reported whether these individuals learned about it from the youths (i.e., disclosure) or from others, discovered on their own, or came to suspect the youths’ sexuality. Counts were computed of the numbers of individuals who were aware of the youths’ sexuality by any of these various means at Time 1. The youths also indicated whether they perceived each individual’s reaction to disclosure as accepting, neutral (i.e., neither accepting nor rejecting), or rejecting.<sup>1</sup> A count

---

<sup>1</sup>The disclosure reactions are based on the youths’ own self-reported perceptions of the reaction, not on objective characteristics of the reactions themselves. Thus, youths may differ on the types of reactions they perceive as rejecting (or accepting). We believe it is the youths’ perceptions, rather than the objective qualities of the reactions, that are likely to be most important for subsequent behavioral outcomes.

of each of these three types of disclosure reactions at Time 1 was computed as the number of individuals who accepted, were neutral, or rejected the youth. Disclosure and disclosure reactions were assessed at all three longitudinal assessments. However, because few new disclosures occurred at Time 2 and Time 3, the current report focuses only on disclosures and reactions by Time 1. In addition, descriptive information about disclosure was obtained, including the youths' report of the individual to whom they first disclosed and how old the youths were when every nominated individual learned about their sexual identity.

### Measures of Substance Use and Abuse

The quantity of cigarette, alcohol, and marijuana use, as well as the frequency of alcohol and marijuana use, were assessed at all three assessments with the Alcohol and Drugs Schedule (ADS). The ADS, which has demonstrated good test-retest reliability (Rosario, Hunter, & Gwadz, 1997), was adapted from several measures used in national surveys of substance use among youths. It was adapted to include the street terms commonly used for substances in New York City (see Rosario et al., 1997 for details). All questions measured substance use in the past 3 months at Time 1, and within the past 6 months (since the last interview) at each subsequent assessment. The average quantity of cigarette use per day was assessed on a 7-point scale ranging from "Did not smoke cigarettes in the past [three/six] months" (0) to "About two packs or more per day (over 35 cigarettes)" (6). The quantity of alcohol and marijuana use consisted of how many drinks youths typically have when they drink or how many joints they usually smoke when they use marijuana. Because the distributions of quantity of alcohol and marijuana were positively skewed, the quantity of alcohol was computed as 0, 1, 2, or 3 or more drinks, and the quantity of marijuana as 0, 1, or 2 or more joints. The frequency of alcohol and marijuana use was the number of times youths had any alcoholic drink in the past three/six months and the number of times they smoked marijuana in the past three/six months. Given the positively skewed distributions of these data, the frequency of both alcohol and marijuana use was trichotomized to 0, 1 (i.e., 1 – 6), and 2 (i.e., 7 or more) times.

The ADS also included symptoms associated with abuse of alcohol and other drugs. At all three assessments, symptoms were assessed with 11 items (e.g., "Felt you needed or were dependent on alcohol and/or drugs") derived from the Diagnostic Interview Schedule for Children (National Institute of Mental Health, 1992). A count of the number of items endorsed was computed as the index of substance abuse.

### Measures of Potential Covariates

Three aspects of emotional distress were measured at all assessment periods. Depressive and anxious symptoms during the past week were assessed using the Brief Symptom Inventory (BSI; Derogatis, 1993), with its 5-point response scale ranging from "not at all" (0) to "extremely" (4) distressing. The means were computed of the 6 items of depressive symptoms and the 6 items of anxious symptoms, with higher scores indicating greater distress ( $\alpha_{\text{depression}} = .81$  to  $.83$  and  $\alpha_{\text{anxiety}} = .80$  to  $.82$  over the three assessments). The BSI was selected because it has been validated among adolescent samples (Derogatis, 1993) and has been used with LGB youths (e.g., D'Augelli, 2002). In addition, conduct problems were assessed using a 13-item index based on items (e.g., skipping school, vandalism, stealing, fighting, running away) in the DSM-III-R (American Psychiatric Association, 1987). This measure has been previously used in a study of gay and bisexual male youths (Rotheram-Borus, Rosario, van Rossem, Reid, & Gillis, 1995). A count of the number of problems was computed.

The Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1964) was self-administered at Time 1 using a true-false response scale to assess the degree to which youths provided socially desirable responses. A factor analysis of our data found 12 items that loaded on a single factor. A count of these 12 items was computed as our measure of socially desirable

response bias ( $\alpha = .74$ ). Similar procedures have been used elsewhere to reduce the Marlow-Crowne measure with LGB youths (Safren & Heimberg, 1999).

## Data Analysis

To examine the role of disclosure and disclosure reactions on substance use and abuse, three sets of analyses were conducted. First, Pearson correlation coefficients were computed to provide an initial examination of the associations between the number of disclosures and the number of disclosure reactions of each type at Time 1 with various indicators of substance use and abuse at each assessment. Next, linear regression analysis was used to examine the relations of disclosure with each substance use outcome while simultaneously controlling for potential socio-demographic confounders of these relations. Further, to rule out the possibility that emotional distress may account for these relations, linear regression equations were recomputed with controls imposed for emotional distress. Linear regression was also used to assess whether accepting reactions moderated the relations between rejecting reactions and substance use, after controlling for covariates. For these analyses, as recommended by J. Cohen and colleagues (Cohen, Cohen, Aiken, & West, 2003), the accepting and rejecting reactions were centered about their means before their product was computed. The product term was entered hierarchically, after the main effects of accepting and rejecting reactions.

## Results

Overall, substance use was prevalent among the LGB youths. At Time 1, 49% reported smoking cigarettes, 65% drinking alcohol, and 38% using marijuana in the past three months. At Time 2, 48% reported cigarette use, 73% alcohol use, and 48% marijuana use in the past six months. At Time 3, 58% reported cigarette use, 86% alcohol use, and 51% marijuana use in the past six months. These rates are particularly high given the illicit nature of marijuana use, the fact that the nearly all youths were too young (i.e., under age 21) to legally purchase alcohol or enter a bar, and many were too young to purchase cigarettes (i.e., under age 18).

Descriptive information on youths' disclosure of their sexual identity to others is provided in Table 1. At Time 1, all but four youths (97%, 152/156) had disclosed to someone. The youths waited approximately 4.8 years ( $SD = 3.5$ ) since first awareness of their unfolding sexual orientation as LGB before disclosing to anyone. Approximately three years ( $M = 2.9$ ,  $SD = 2.3$ ) elapsed since their first disclosure and Time 1. The target of the youths' first disclosure was usually a friend (57%). By Time 1, over 90% of youths had disclosed to one or more friends. In addition, by Time 1, many youths (79%) had disclosed to at least one parent and approximately two-thirds had disclosed to at least one sibling and at least one extended family member.

Most individuals became aware of the youths' sexual orientation by means of the youths' disclosure (see Table 2). However, over half of the youths also had at least one person who found out from someone else. Most individuals reacted positively to the youths' disclosure, with nearly all youths being accepted by at least one person to whom they disclosed (96%). Nevertheless, 55% of the youths reported being rejected by at least one person.

## Bivariate Relations Involving Substance Use

The bivariate relations between disclosure and substance use and abuse were examined (Table 3). The total numbers of disclosures, as well as the numbers of accepting and neutral reactions to disclosure, were, at best, inconsistently related to substance use. However, the numbers of rejecting reactions to disclosure were consistently related to more substance use and abuse at Time 1 and Time 2.

## Potential Covariates

We examined the relations between potential confounders of the relations between rejecting disclosure reactions and substance use. The findings indicated the need to control for sex, age, and social desirability. In addition, we controlled for emotional distress as a potential rival explanation for the observed link between rejection and substance use. Controls for family socioeconomic status, sexual identity as lesbian/gay vs. bisexual, and race/ethnicity were unnecessary, given only one significant finding emerged for each of these potential covariates, essentially what would be expected by chance alone ( $1.05 = .05 \times 21$  tests consisting of substance use at three times, and accepting, neutral, and rejecting disclosure reactions).

Female youths as compared with male youths significantly ( $p < .05$ ) reported more rejecting reactions to disclosure ( $r = .17$ ), and substance abuse symptoms at Time 1 ( $r = .18$ ), and more frequent use of alcohol at Time 2 ( $r = .22$ ). Younger as compared with older youths smoked more cigarettes at Time 2 ( $r = -.24$ ) and Time 3 ( $r = -.23$ ) and used more marijuana at Time 3 ( $r = -.22$ ).

Social desirability was related significantly to several factors. Youths who provided more socially desirable responses reported more accepting reactions to disclosure ( $r = .16$ ). Youths providing more socially desirable responses also reported at Time 1 lower quantity of marijuana use ( $r = -.16$ ), and fewer substance abuse symptoms ( $r = -.21$ ). In addition, they reported less frequent marijuana use at Time 2 ( $r = -.17$ ) and symptoms of substance abuse ( $r = -.23$ ) at Time 3.

Emotional distress indicators of anxiety, depression, and conduct problems were related to disclosure reactions and to cotemporaneous substance use. Here we present the findings for Time 1 only, given that findings for Time 2 and Time 3 were comparable. Anxious symptomatology at Time 1 was significantly related to more rejecting reactions ( $r = .16$ ), as well as to more symptoms of substance abuse at Time 1 ( $r = .27$ ). Depressive symptomatology at Time 1 was significantly related to fewer accepting reactions ( $r = -.19$ ) and greater quantity of marijuana use at Time 1 ( $r = .18$ ). Conduct problems at Time 1 were significantly related to various Time 1 substance use indicators: greater quantity of tobacco, alcohol, and marijuana use ( $r = .39, .21, \text{ and } .22$ , respectively), greater frequency of alcohol and marijuana use ( $r = .18 \text{ and } .20$ , respectively), and more substance abuse symptoms ( $r = .20$ ).

## Multivariate Relations Involving Disclosure Reactions and Substance Use

Multiple linear regression was used to control for sex, age, and social desirability when examining the relations between rejecting reactions and substance use. Regression equations were also computed that controlled for the aforementioned covariates and emotional distress indicators of anxiety, depression, and conduct problems that were cotemporaneous with substance use. Both sets of findings were comparable (see Table 4). Relative to the unadjusted (i.e., bivariate) correlations (Table 3), being rejected by those to whom the youths disclosed continued to be related to more substance use at Time 1 and Time 2. In addition, rejection was now related to more symptoms of substance abuse at Time 3.

## Moderating Role of Accepting Reactions

Although accepting relations were not found to have a direct effect on substance use and abuse, as suggested earlier, they may moderate or buffer the negative role of rejecting reactions. To examine this hypothesis, we added the interaction term of accepting by rejecting reactions to the linear regression analyses described above. Four significant interaction terms were identified. All involved alcohol use, specifically frequency of alcohol use at Time 1 ( $\beta = -.23$ ,  $\Delta R^2 = .05$ ,  $F(1, 149) = 8.35$ ,  $p < .005$ ), quantity of alcohol at Time 1 ( $\beta = -.22$ ,  $\Delta R^2 = .04$ ,  $F(1, 149) = 7.35$ ,  $p < .01$ ), frequency of alcohol at Time 2 ( $\beta = -.16$ ,  $\Delta R^2 = .02$ ,  $F(1, 136) = 3.76$ ,

$p < .06$ ), and quantity of alcohol at Time 3 ( $\beta = -.20$ ,  $\Delta R^2 = .04$ ,  $F(1, 119) = 4.89$ ,  $p < .05$ ). These moderating findings were nearly identical across models that did or did not control for emotional distress.

Figure 1 depicts the regression slopes for the four moderating relations. In all cases, accepting reactions buffered the relation between rejecting reaction and alcohol use, in which accepting reactions protected youths from the negative role of rejecting reactions on alcohol use. Specifically, among youths with fewer (1 *SD* below the mean) accepting reactions, alcohol frequency and quantity were found to increase as the number of rejecting reactions increased. However, for youths with a high number of accepting reactions (1 *SD* above the mean), the associations of rejecting reactions with alcohol use were largely attenuated, such that youths with more accepting reactions reported a consistently low/moderate level of alcohol use, regardless of the number of rejecting reactions experienced.

## Discussion

The current report examined whether reactions to disclosure may account for the literature's inconsistent findings between disclosure and substance use and abuse. As hypothesized, we found that although youths had disclosed to a number of individuals by Time 1 (i.e., recruitment), the numbers of disclosures were not particularly informative of substance use. Instead, it was the number of perceived rejecting reactions that mattered for substance use. Specifically, more rejecting reactions by Time 1 were associated with greater substance use at Time 1 and Time 2, including greater tobacco, alcohol, and marijuana use frequency and quantity, as well as a greater number of symptoms of substance abuse.

These findings held after controlling for sex, age, and social desirability, and emotional distress. In fact, controlling for these factors increased the magnitude of the association between rejecting disclosure reactions and the number of symptoms of substance abuse at Time 3 (which were only marginally associated with rejecting reactions prior to imposing controls). The fact that these findings held even after controlling for emotional distress indicates that emotional distress did not explain the association between rejecting reactions and substance use (i.e., rejecting reactions do not promote distress, which in turn, promotes substance use). Rather, rejecting reactions had a direct association with substance use, regardless of emotional distress, suggesting that substances were not used to cope with the emotional distress caused by rejecting disclosure reactions. However, youths may be using substances to cope with emotional distress from other sources or from other stressors not examined here, such as negative self-evaluations (i.e., low self-esteem) or negative evaluations of one's homosexuality/bisexuality (i.e., internalized homophobia). Future research should examine these potential mediators.

Our findings suggest that rejecting disclosure reactions may have long-term implications for substance use and abuse, given that rejecting disclosure reactions occurring before Time 1 were related to tobacco, alcohol, and marijuana use at Times 1 and 2, as well as substance abuse at Time 3. Indeed, three to four years had elapsed since the youths' first disclosures and the Time 1 through Time 3 assessments, suggesting that some of these rejecting reactions continued to impact substance use long after disclosure. Furthermore, this association endured despite changes in the youths' relationships that may have occurred subsequent to the disclosure reactions at Time 1. For example, youths may have distanced themselves from those individuals who rejected them, previously rejecting individuals may have become more accepting, and youths may have new disclosures and disclosure reactions that occurred after Time 1 (albeit few in this sample). Although we were unable to examine the roles played by these changes in this study, they should be considered in future research. Nevertheless, the fact that the initial rejecting reactions at Time 1 continued to be associated with subsequent substance use suggests that subsequent disclosures or relationship improvements did not attenuate the association.

In addition to the negative role of rejecting reactions, accepting reactions were found to have an important role in substance use. Although accepting reactions were not directly associated with substance use, they were found to moderate or buffer the negative association of rejecting reactions on concurrent and subsequent alcohol use. Such buffering has important implications, indicating that accepting reactions may blunt the potential negative consequences of rejecting reactions, at least for alcohol use. In other words, the potential distress associated with being rejected by some individuals may be blunted by being accepted by other individuals. Furthermore, consistent with the long-term effects of rejecting reactions, accepting reactions were found to protect youths against alcohol use not only at Time 1, but also at Times 2 and 3. However, there are important limitations to the protective role of accepting reactions in that these moderating findings were only found for alcohol use, not for tobacco, marijuana, and substance abuse. Reasons for this are unclear. The mechanism by which rejecting reactions influence tobacco and marijuana use may differ from that of alcohol use, such that accepting reactions are not able to buffer the former outcomes. It may be that the association between rejecting reactions and tobacco and marijuana use is too strong to be overcome by accepting reactions. Regardless, the moderating findings have important implications, suggesting that neither all LGB youths nor all youths who experience rejecting reactions are at risk for substance use.

### **A New Hypothesis: The Disclosure Reaction Hypothesis**

The findings that youths' level of disclosure of their sexual orientation was unrelated to substance use, but rather that reactions to disclosure were more critical, gives rise to a more nuanced set of hypotheses for understanding LGB substance use, as well as other LGB health outcomes. Specifically, rejecting reactions to disclosure may place youths at risk for poor health-related outcomes and accepting reactions may buffer or protect youths from the adverse consequences of rejection. This new disclosure reaction hypothesis may help one understand some findings in the literature that heretofore have contradicted the prevalent hypothesis that disclosure is healthy (e.g., Kipke et al., 2007; Klitzman et al., 2002; McKirman & Peterson, 1989; Thiede et al., 2003). Furthermore, the new hypothesis may have implications for understanding the role of disclosure on various other health and adaptational outcomes.

### **Limitations**

The report has a number of limitations requiring mention, which future research may want to address. The sample of youths was small, although we had sufficient numbers of cases to detect medium effects. In addition, the sample was recruited from gay-focused settings and, therefore, is not representative of all LGB youths. Our youths may be more open about their sexual orientation and may have disclosed more widely than LGB youths who do not attend LGB organizations. As such, most youths had disclosed prior to Time 1 and many had no new disclosures after Time 1, preventing us from examining whether additional new disclosures were associated with substance use. In addition, as noted earlier, youths in the sample initiated substance use in early adolescence (Rosario, et al., 1997), on average 2 years before their first disclosure ( $M = 15.4$ ). Thus, the current study was unable to examine whether rejecting reactions were related to initiation of substance use. Finally, because disclosures and disclosure reactions occurred well before our assessments of emotional distress, the ability of emotional distress to mediate the relation between disclosure and substance use may have been reduced.

### **Implications**

Despite the limitations, the report provides potential insights into why LGB youths report more substance use and abuse than heterosexual peers (Marshal et al., 2008). It highlights that a unique experience of LGB youths – disclosure of their sexual orientation – may result in rejection and that this rejection is linked to coincident and subsequent substance use.

Furthermore, accepting reactions may buffer against the potential negative consequences of rejecting reactions. These findings suggest that efforts to educate parents and other societal entities about homosexuality and the potential negative effects of rejection seem necessary to prevent and reduce substance use and abuse, as well as other poor health-related outcomes among LGB individuals. As individuals and communities recognize the detrimental effects of rejection, they may provide settings that promote a secure base to protect LGB youths and address the youths' concerns. Indeed, supportive programs have been associated with reductions in substance use and other health-related risk behaviors among LGB youths (e.g., Blake et al. 2001; Eisenberg & Wechsler, 2003b; Goodenow, Szalacha, & Westheimer, 2006). Such efforts may indicate why we found that accepting reactions buffered the relations between rejecting reactions and alcohol use. Nevertheless, until such efforts are widespread throughout societal levels and institutions, LGB individuals may continue to be at risk for substance use and abuse and other poor health-related outcomes. Furthermore, our findings may have implications for the treatment of LGB youths who use or abuse substances. Specifically, the findings suggest that treatment programs and therapeutic interventions may need to address the consequences of experiencing rejecting reactions in order to most successfully address the needs of LGB youths. By preventing and addressing the impact of rejecting reactions, LGB youths may be helped to grow into healthy and substance-free adults.

## Acknowledgments

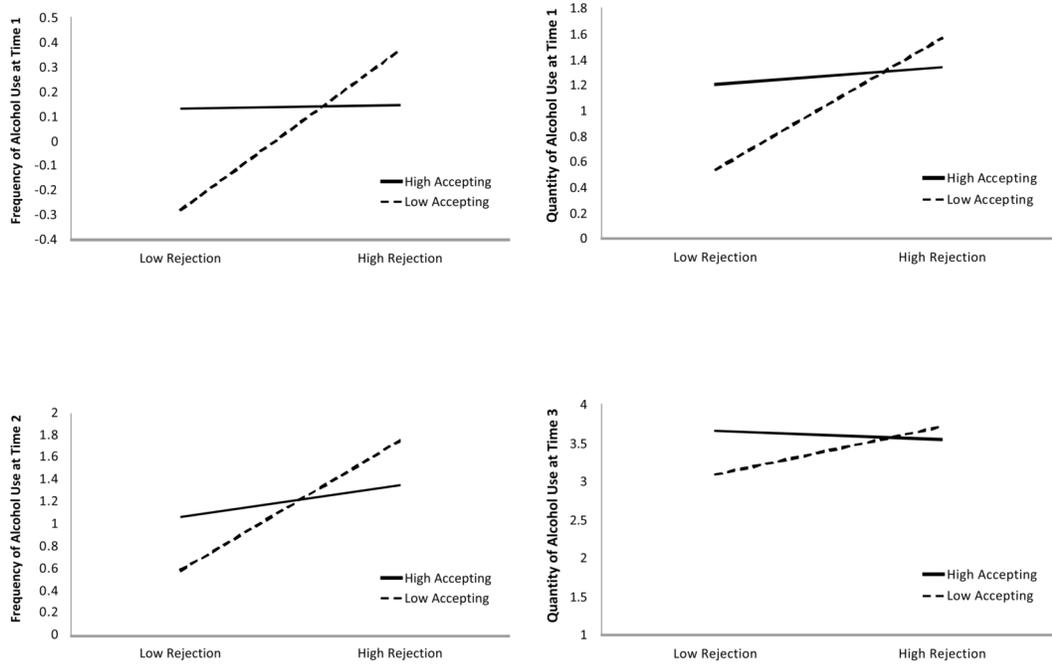
This work was supported by Center Grant P50-MH43520 from the National Institute of Mental Health (Margaret Rosario, Project PI; Anke Ehrhardt, Center PI).

## References

- American Psychiatric Association. Diagnostic and statistical manual of mental disorders: DSM-III-R. 3. Washington, DC: Author; 1987. Rev. ed
- Beals KP, Peplau LA. Disclosure patterns within social networks of gay men and lesbians. *Journal of Homosexuality* 2006;51:101–120. [PubMed: 16901869]
- Blake SM, Ledsky R, Lehman T, Goodenow C, Sawyer R, Hack T. Preventing sexual risk behaviors among gay, lesbian, and bisexual adolescents: The benefits of gay-sensitive HIV instruction in schools. *American Journal of Public Health* 2001;91:940–946. [PubMed: 11392938]
- Bontempo DE, D'Augelli AR. Effects of at-school victimization and sexual orientation on lesbian, gay, or bisexual youths' health risk behavior. *Journal of Adolescent Health* 2002;30:364–374. [PubMed: 11996785]
- Cass VC. Homosexual identity formation: A theoretical model. *Journal of Homosexuality* 1979;4:219–235. [PubMed: 264126]
- Cohen, J.; Cohen, P.; West, SG.; Aiken, LS. Applied multiple regression/correlation analysis for the behavioral sciences. 3. Mahwah, NJ: Erlbaum; 2003.
- Corrigan PW, Matthews AK. Stigma and disclosure: Implications for coming out of the closet. *Journal of Mental Health* 2003;12:235–248.
- Crowne, DP.; Marlowe, D. The approval motive. Westport, CT: Greenwood Press; 1964.
- D'Augelli AR. Mental health problems among lesbian, gay, and bisexual youth ages 14 to 21. *Clinical Child Psychology and Psychiatry* 2002;7:433–456.
- D'Augelli AR, Grossman AH, Starks MT. Parents' awareness of lesbian, gay, and bisexual youths' sexual orientation. *Journal of Marriage and Family* 2005;67:474–482.
- D'Augelli AR, Hershberger SL, Pilkington NW. Lesbian, gay, and bisexual youth and their families: Disclosure of sexual orientation and its consequences. *American Journal of Orthopsychiatry* 1998;68:361–371. [PubMed: 9686289]
- D'Augelli AR, Pilkington NW, Hershberger SL. Incidence and mental health impact of sexual orientation victimization of lesbian, gay, and bisexual youths in high school. *School Psychology Quarterly* 2002;17:148–167.

- Derogatis, LR. BSI, brief symptom inventory: Administration, scoring, and procedures manual. Minneapolis, MN: National Computer Systems; 1993.
- Diamond LM, Lucas S. Sexual-minority and heterosexual youths' peer relationships: Experiences, expectations, and implications for well-being. *Journal of Research on Adolescence* 2004;14:313–340.
- DiPlacido, J. Minority stress among lesbians, gay men, and bisexuals: A consequence of heterosexism, homophobia, and stigmatization. In: Herek, GM., editor. *Stigma and sexual orientation: Understanding prejudice against lesbians, gay men, and bisexuals*. Thousand Oaks, CA: Sage; 1998. p. 138-159.
- Eisenberg M, Wechsler H. Substance use behaviors among college students with same-sex and opposite-sex experience: Results from a national study. *Addictive Behaviors* 2003a;28:899–913. [PubMed: 12788264]
- Eisenberg M, Wechsler H. Social influences on substance-use behaviors of gay, lesbian, and bisexual college students: Findings from a national study. *Social Science and Medicine* 2003b;57:1913–1923. [PubMed: 14499515]
- Elizur Y, Ziv M. Family support and acceptance, gay male identity formation, and psychological adjustment: A path model. *Family Process* 2001;40:125–144. [PubMed: 11444052]
- Goodenow C, Szalacha L, Westheimer K. School support groups, other school factors, and the safety of sexual minority adolescents. *Psychology in the Schools* 2006;43:573–589.
- Greene, K.; Derlega, VJ.; Matthews, A. Self-disclosure in personal relationships. In: Vangelisti, AL.; Perlman, D., editors. *The Cambridge Handbook of Personal Relationships*. New York: Cambridge; 2006. p. 409-427.
- Grossman AH, Kerner MS. Support networks of gay male and lesbian youth. *Journal of Gay, Lesbian, and Bisexual Identity* 1998;3:27–46.
- Hughes TL, Eliason M. Substance use and abuse in lesbian, gay, bisexual and transgender populations. *Journal of Primary Prevention* 2002;22:263–298.
- Kipke MD, Weiss G, Ramirez M, Dorey F, Ritt-Olson, et al. Club drug use in Los Angeles among young men who have sex with men. *Substance Use & Misuse* 2007;42:1723–1743. [PubMed: 17934992]
- Klitzman RL, Greenberg JD, Pollack LM, Dolezal C. MDMA ('ecstasy') use, and its association with high risk behaviors, mental health, and other factors among gay/bisexual men in New York City. *Drug and Alcohol Dependence* 2002;66:115–125. [PubMed: 11906799]
- Larson DG, Chastain RL. Self-concealment: Conceptualization, measurement, and health implications. *Journal of Social and Clinical Psychology* 1990;9:439–455.
- Lepore SJ. Social conflict, social support, and psychological distress: Evidence of cross-domain buffering effects. *Journal of Personality and Social Psychology* 1992;63:857–867. [PubMed: 1447698]
- Marshal MP, Friedman MS, Stall R, King KM, Miles J, et al. Sexual orientation and adolescent substance use: A meta-analysis and methodological review. *Addiction* 2008;103:546–556. [PubMed: 18339100]
- McKirnan DJ, Peterson PL. Psychosocial and cultural factors in alcohol and drug abuse: An analysis of a homosexual community. *Addictive Behaviors* 1989;14:555–563. [PubMed: 2589134]
- Merighi JR, Grimes MD. Coming out to families in a multicultural context. *Families in Society* 2000;81:32–41.
- Meyer IH. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin* 2003;129:674–697. [PubMed: 12956539]
- Morris JF. Lesbian coming out as a multidimensional process. *Journal of Homosexuality* 1997;33:1–22. [PubMed: 9210010]
- National Institute of Mental Health. *Diagnostic Interview Schedule for Children: Child informant (interview about self)*. Rockville, MD: Author; 1992.
- Pachankis JE. The psychological implications of concealing a stigma: A cognitive-affective-behavioral model. *Psychological Bulletin* 2007;133:328–345. [PubMed: 17338603]
- Peirce RS, Frone MR, Russell M, Cooper ML. Financial stress, social support, and alcohol involvement: A longitudinal test of the buffering hypothesis in a general population survey. *Health Psychology* 1996;15:38–47. [PubMed: 8788539]

- Pennebaker, JW., editor. *Emotion, disclosure, and health*. Washington DC: American Psychological Association; 1989.
- Rosario M, Hunter J, Gwadz M. Exploration of substance use among lesbian, gay, and bisexual youth: Prevalence and correlates. *Journal of Adolescent Research* 1997;12:454–476.
- Rosario M, Hunter J, Maguen S, Gwadz M, Smith R. The coming-out process and its adaptational and health-related associations among gay, lesbian, and bisexual youths: Stipulation and exploration of a model. *American Journal of Community Psychology* 2001;29:133–160. [PubMed: 11439825]
- Rosario M, Rotheram-Borus MJ, Reid H. Gay-related stress and its correlates among gay and bisexual male adolescents of predominantly Black and Hispanic background. *Journal of Community Psychology* 1996;24:136–159.
- Rosario M, Schrimshaw EW, Hunter J. Predictors of substance use over time among gay, lesbian, and bisexual youths: An examination of three hypotheses. *Addictive Behaviors* 2004;29:1623–1631. [PubMed: 15451129]
- Rosario M, Schrimshaw EW, Hunter J. A model of sexual risk behaviors among young gay and bisexual men: Longitudinal associations of mental health, substance abuse, sexual abuse, and the coming-out process. *AIDS Education and Prevention* 2006;18:444–460. [PubMed: 17067255]
- Rotheram-Borus MJ, Rosario M, Van Rossem R, Reid H, Gillis R. Prevalence, course, and predictors of multiple problem behaviors among gay and bisexual male adolescents. *Developmental Psychology* 1995;31:75–85.
- Russell ST, Driscoll AK, Truong N. Adolescent same-sex romantic attractions and relationships: Implications for substance use and abuse. *American Journal of Public Health* 2002;92:198–202. [PubMed: 11818291]
- Safren SA, Heimberg RG. Depression, hopelessness, suicidality, and related factors in sexual minority and heterosexual adolescents. *Journal of Consulting and Clinical Psychology* 1999;67:859–866. [PubMed: 10596508]
- Savin-Williams, RC. “...And then I became gay”: Young men’s stories. New York: Routledge; 1998.
- Savin-Williams, RC. *How families negotiate coming out*. Washington DC: American Psychological Association; 2001. Mom, dad. I’m gay.
- Savin-Williams RC, Ream GL. Sex variations in the disclosure to parents of same-sex attractions. *Journal of Family Psychology* 2003;17:429–438. [PubMed: 14562466]
- Stall R, Paul JP, Greenwood G, Pollack LM, Bein E, et al. Alcohol use, drug use and alcohol-related problems among men who have sex with men: The urban men’s health study. *Addiction* 2001;96:1589–1601. [PubMed: 11784456]
- Stroebe M, Schut H, Stroebe W. Who benefits from disclosure? Exploration of attachment style differences in the effects of expressing emotions. *Clinical Psychology Review* 2006;26:66–85. [PubMed: 16194589]
- Thiede H, Valleroy LA, MacKellar DA, Celentano DD, Ford WL, et al. Regional patterns and correlates of substance use among young men who have sex with men in 7 US urban areas. *American Journal of Public Health* 2003;93:1915–1921. [PubMed: 14600066]
- Troiden RR. The formation of homosexual identities. *Journal of Homosexuality* 1989;17:43–73. [PubMed: 2668403]
- Valentine G, Skelton T, Butler R. Coming out and outcomes: Negotiating lesbian and gay identities with, and in, the family. *Environment and Planning D: Society and Space* 2003;21:479–499.
- Whittington SA. Effects of coming out, age, mental health, and abuse on alcohol related behaviors in lesbians. (Doctoral dissertation, Pacific Graduate School of Psychology). *Dissertation Abstracts International* 2000;61:1067. (AAI9959036).
- Wills TA, Cleary SD. How are social support effects mediated? A test with parental support and adolescent substance use. *Psychology of Addictive Behaviors* 1996;71:937–952.
- Wills, TA.; Fegan, MF. Social networks and social support. In: Baum, A.; Revenson, TA.; Singer, JE., editors. *Handbook of Health Psychology*. Mahwah, NJ: Erlbaum; 2001. p. 209-234.
- Wong CF, Kipke MD, Weiss G. Risk factors for alcohol use, frequent use, and binge drinking among young men who have sex with men. *Addictive Behaviors* 2008;33:1012–1020. [PubMed: 18495364]
- Wright ER, Perry BL. Sexual identity distress, social support, and the health of gay, lesbian, and bisexual youth. *Journal of Homosexuality* 2006;51:81–110. [PubMed: 16893827]



**Figure 1.** Significant interactions between accepting and rejecting reactions to disclosure and their association with alcohol use at Times 1, 2, and 3.

Table 1

Disclosure to Others by Youths.

	Individuals to whom youths first disclosed ( <i>n</i> = 147)		Individuals to whom youths disclosed by Time 1 ( <i>n</i> = 152)	
	<i>M</i>	( <i>SD</i> )	%	<i>n</i>
Age at Time 1	18.3	(1.7)		
Age at first disclosure	15.4	(2.3)		
Age at first awareness of sexual orientation	10.7	(3.3)		
Disclosure to:				
Parent			9.5	14
Mother		(8.8)	(8.8)	(13)
Father		(0.7)	(0.7)	(1)
Sibling		6.8	61.2	10
Sister		(6.1)	(44.7)	(9)
Brother		(0.7)	(32.2)	(1)
Extended Family <sup>1</sup>		13.6	64.5	20
Friend		57.1	90.8	84
Partner/lover		5.4	23.0	8
Formal adult <sup>2</sup>		3.4	23.0	5
Other <sup>3</sup>		4.1	21.0	6

Note. Percentages for individuals to whom youths first disclosed may not sum to 100% due to rounding error. The sum of percentages for individuals to whom youths have disclosed by Time 1 exceeds 100% because youths had disclosed to multiple individuals.

<sup>1</sup> Extended family includes, for example, grandparent, aunt/uncle, cousin, and niece/nephew.

<sup>2</sup> Formal adults include, for example, religious leader, teacher, coach, therapist, and counselor.

<sup>3</sup> Others include acquaintances (e.g., roommates, co-worker, neighbor; *n* = 16) and other individuals not included elsewhere (*n* = 16).

Table 2

Method by Which Individuals Became Aware of Youth's LGB Sexuality and Reactions by Others to Youth's Disclosure.

	Number of Individuals by Method			Number of Youths Experiencing Each Method		
	<i>M</i>	<i>SD</i>	Range	%	<i>(N = 156)</i>	
Disclosure by Youth	6.7	4.88	0 – 25	97.4	152	
Learned From Another Person	1.3	1.88	0 – 13	52.6	82	
Discovered on Own	0.6	1.02	0 – 6	34.0	53	
Suspected	1.0	1.40	0 – 7	50.0	78	

	Number of Reactions to Disclosure			Number of Youths Experiencing Each Reaction		
	<i>M</i>	<i>SD</i>	Range	%	<i>(N = 156)</i>	
Total Disclosure Reactions	6.7	4.88	0 – 36	97.4	152/156	
Accepting	5.5	4.75	0 – 30	96.1	150/156	
Neutral	0.7	1.16	0 – 6	42.3	66/156	
Rejecting	0.7	1.01	0 – 5	54.5	85/156	

*Note.* Total numbers of disclosure reactions do not equal the sum of accepting, neutral, and rejecting reactions due to rounding error.

Pearson Correlation Coefficients of Disclosure and Disclosure Reactions With Substance Use, and Means and Standard Deviations of Substance Use.

**Table 3**

	Number of Disclosures			Number of Disclosure Reactions			Level of Substance Use	
	Accepting	Neutral	Rejecting	M	SD			
Time 1 (N = 156):								
Number of Cigarettes Used	.10	.08	.14 <sup>†</sup>	.14 <sup>†</sup>	1.28	1.58		
Frequency of Alcohol Use	.05	.02	.04	.19*	0.92	0.78		
Quantity of Alcohol Used	.11	.06	.07	.21**	1.37	1.20		
Frequency of Marijuana Used	.05	-.01	.06	.21**	0.52	0.72		
Quantity of Marijuana Used	-.01	-.09	.07	.25**	0.52	0.73		
Number of Substance Abuse Symptoms	.12	.07	.01	.14 <sup>†</sup>	2.26	3.15		
Time 2 (N = 143):								
Number of Cigarettes Used	.11	.07	.13	.25**	1.31	1.54		
Frequency of Alcohol Use	.18*	.07	.11	.28**	1.28	1.02		
Quantity of Alcohol Used	.18*	.09	.06	.21**	1.50	1.17		
Frequency of Marijuana Used	-.05	-.14	.07	.23**	0.76	0.86		
Quantity of Marijuana Used	.01	-.06	.09	.18*	0.97	1.29		
Number of Substance Abuse Symptoms	.11	.02	.06	.30**	1.24	2.12		
Time 3 (N = 140):								
Number of Cigarettes Used	.03	.03	.12	.09	1.42	1.49		
Frequency of Alcohol Use	.10	.08	.08	.09	1.56	0.95		
Quantity of Alcohol Used	.07	.07	.07	.06	1.86	1.06		
Frequency of Marijuana Used	-.10	-.15 <sup>†</sup>	.05	.14 <sup>†</sup>	0.80	0.86		
Quantity of Marijuana Used	-.09	-.14 <sup>†</sup>	.06	.12	0.74	0.81		
Number of Substance Abuse Symptoms	.01	-.03	-.03	.14 <sup>†</sup>	2.25	3.04		

<sup>†</sup> p < .10,

\* p < .05,

\*\* p < .01.

**Table 4**  
Multiple Regression of Substance Use on Number of Rejections to Disclosure.

	Rejecting Reactions <sup>1</sup>			Rejecting Reactions <sup>2</sup>		
	Beta	B	95% CI for B	Beta	B	95% CI for B
Time 1:						
Number of Cigarettes Used	.13	.21	-0.04, 0.46 <sup>†</sup>	.11	.17	-0.06, 0.41
Frequency of Alcohol Use	.16	.13	0.00, 0.25*	.16	.12	0.00, 0.25*
Quantity of Alcohol Used	.20	.23	0.04, 0.42*	.19	.22	0.03, 0.41*
Frequency of Marijuana Used	.20	.14	0.03, 0.26*	.19	.13	0.02, 0.25*
Quantity of Marijuana Used	.23	.16	0.05, 0.28**	.20	.15	0.03, 0.26*
Substance Abuse Symptoms	.09	.26	-0.22, 0.75	.04	.13	-0.34, 0.61
Time 2:						
Number of Cigarettes Used	.28	.42	0.18, 0.67***	.25	.37	0.13, 0.62**
Frequency of Alcohol Use	.24	.24	0.08, 0.41**	.25	.25	0.08, 0.42**
Quantity of Alcohol Used	.19	.22	0.03, 0.41*	.17	.19	-0.00, 0.39 <sup>†</sup>
Frequency of Marijuana Used	.22	.19	0.05, 0.33**	.20	.17	0.03, 0.32*
Quantity of Marijuana Used	.28	.31	0.13, 0.48***	.27	.30	0.11, 0.48**
Substance Abuse Symptoms	.44	.69	0.46, 0.92***	.39	.61	0.37, 0.85***
Time 3:						
Number of Cigarettes Used	.12	.18	-0.09, 0.45	.12	.18	-0.09, 0.45
Frequency of Alcohol Use	.09	.09	-0.08, 0.26	.08	.08	-0.10, 0.25
Quantity of Alcohol Used	.08	.08	-0.11, 0.27	.07	.07	-0.12, 0.26
Frequency of Marijuana Used	.15	.13	-0.01, 0.27 <sup>†</sup>	.15	.13	-0.01, 0.27 <sup>†</sup>
Quantity of Marijuana Used	.12	.10	-0.04, 0.23	.12	.10	-0.04, 0.23
Substance Abuse Symptoms	.20	.52	0.12, 0.92*	.18	.48	0.07, 0.88*

<sup>1</sup> Controls were imposed for sex, age, and social desirability in each analysis.

<sup>2</sup> Controls were imposed for sex, age, social desirability, and emotional distress coincident with substance use in each analysis.

<sup>†</sup> p < .10.

\*  $p < .05$ ,  
\*\*  $p < .01$ ,  
\*\*\*  $p < .001$ .