An Integrated Theoretical Approach to Substance Use and Risky Sexual Behavior Among Men Who Have Sex with Men

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Abstract

Research demonstrates a consistent association between substance use and sexual risk, particularly among men who have sex with men (MSM). The present study builds upon two existing theories (Cognitive Escape Theory and Expectancy Theory) to examine the synergistic role of sexual conflict (surrounding unsafe sex) and expectancies in sexual behavior among 135 MSM. Two conflicts were examined: (1) The conflict between motivation to practice safer sex and temptation for unprotected sex; and (2) The conflict between motivation to practice safer sex and perceived benefits of unprotected sex. Factorial ANOVAs (2×2; high versus low expectancies and conflict versus no conflict) revealed a significant interaction between conflict and expectancies— individuals who reported high levels of conflict were more sensitive to the effect of expectancies than were those experiencing low levels of sexual conflict. Results demonstrate the synergistic effects of conflict and expectancies and highlight the importance of integrating existing theories to more fully consider the intrapsychic operation and experience of sexual conflicts.

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Introduction

Decades of research demonstrate a consistent association between substance use and sexual risk behavior, particularly among men who have sex with men (MSM). MSM who use substances are more likely to engage in sexual risk behavior [1, 2] and are more likely to be HIV? or test positive for a sexually transmitted infection (STI) [1, 3]. Further, situational evidence demonstrates that the concurrency of sexual behavior and substance use predicts risky sexual behavior [4, 5] and HIV/STI transmission [6, 7]. The mechanism(s) by which these associations occur, however, is still not entirely clear. While some studies suggest that personality factors, namely sensation seeking, may explain the association between substance use and sexual risk behavior [8, 9], longitudinal research shows that MSM engage in more risky sex during periods of heavy substance use compared to periods of abstinence or lighter substance use [10], indicating that overarching personality factors may not fully explain the substance use-risk association. Further, despite the evidence for a causal link, there are certainly MSM who engage in sexual risk behavior without using substances and there are men who engage in substance use but do not engage in sexual risk behavior [11]. Thus, it is important to more thoroughly examine for which individuals and under which conditions the co-occurrence of substance use and sex is likely to lead to sexual risk behavior.

Accordingly, this paper integrates two theories regarding the association between substance use and sexual risk in an exploratory attempt to improve our understanding of the mechanisms underlying sexual risk under the influence. Identifying mechanisms of risk under the influence will lead to more targeted and specific points of intervention and prevention as well as provide a more nuanced profile of those at risk for the deleterious sexual effects of substance use.

Theoretical Understandings of the Association Between Substance Use and Sexual Risk

Various underlying mechanisms of causation may explain the differential associations between substance use and risk. Specifically, two primary theories have been developed to understand the association between substance use and sexual risk behavior: Expectancy Theory and Cognitive Escape Theory. Research increasingly points to the utility of considering both of these theoretical constructs simultaneously and to the need to more explicitly extend these theories to account for the effects of sexual conflict, as described below.

Expectancy Theory—Expectancy theory [12–15] focuses on the importance of internalized cultural and social expectations about the effects of substances on sexual behavior. In this theory, individuals' expectations that substance use lowers sexual inhibitions and/or enhances sexual pleasure moderates its relationship to sexual behavior, making sexual behavior under the influence more likely and more risky as such expectations increase. For example, individuals who drink report beliefs that alcohol reduces sexual inhibitions, helps them feel closer or more open to other people, and enhances sexual pleasure [16]. There is evidence that expectancies alone, even in the absence of actual alcohol consumption, are enough to change people's behavioral intentions. For example, in a balanced placebo design study, individuals who believed they had consumed alcohol, but who had actually consumed a placebo drink, reported stronger intentions to engage in unsafe sex and lower perceptions of risk when compared to those who consumed a placebo and did not believe they were drinking alcohol [17]. In research with MSM, those who reported unprotected sex more strongly believed in the sexual effects of substances, when compared to men who did not engage in unprotected sex [18].

Cognitive Escape Theory—Cognitive Escape Theory [19] builds upon the social psychological literature regarding the cognitive load imposed by behavioral restraint, e.g., dieting, avoiding alcohol. McKirnan et al. [19] hypothesize that constantly avoiding sexual risk becomes cognitively burdensome, motivating a behavioral "rebound" that allows individuals to escape from this constraint. For example, constant thought suppression regarding desire to engage in sexual risk behavior predicts unsafe sexual encounters occurring through public or internet meeting venues [20–22]. As such, cognitive restraint or burden is considered a vulnerability in the escape model. Expectancies are also considered a vulnerability in the escape model, with McKirnan et al. hypothesizing that, cognitive restraint, "when combined with specific expectancies or personality dispositions, lead people to use substances strategically to induce a state of cognitive escape regarding personal risk" [19, p. 660]. Substance use is a strategy used to facilitate cognitive escape and facilitates general cognitive disengagement, wherein people are more sensitive to external pressures. For example, research shows that the association between substance use and unsafe sex was stronger among men who score higher on a measure of effortful sexual restraint when compared to men whose scores reflected less effortful adherence to safer sex norms [23]. McKirnan et al. [24] also found that gay men who both frequently used drugs and strongly expected that alcohol and drugs facilitated cognitive escape, reported more sexual risk behavior than those with weaker expectancies.

Sexual Conflict—Borrowing from the ideas of cognitive dissonance, wherein an individual may simultaneously hold inconsistent beliefs, motivations, or other cognitions, research suggests that sexual conflict, or conflicting thoughts or beliefs about unprotected sex, may also predict risky sex. For example, an individual may simultaneously be strongly motivated to engage in safer sex, but also strongly believe in the benefits of unprotected sex. Research indicates that conflict regarding sexual identity (e.g., internalized homophobia), ambivalence toward sexual behavior, and internalization of sexual double standards are associated with risk-taking behavior, including decreased condom and contraceptive use among both men and women [25–27], as well as increased alcohol or substance use in sexual situations [28]. These sexual conflicts likely create the kind of cognitive burden and/ or necessitate the cognitive restraint discussed in Cognitive Escape Theory. In other words, these conflicts may be one of the underlying intrapsychic operations that lead to cognitive burden. As such, we propose an integrated model that extends Cognitive Escape Theory to encompass sexual conflict, described below.

Integrating the Theories

Clearly, each of these bodies of literature contributes to our understanding of the association between substance use and sexual risk behavior. Integrating these literatures into one model and extending our understanding of the intrapsychic operation of sexual conflict, as proposed in this paper, is useful for two primary reasons. First, to our knowledge, no studies have examined cognitive burden and expectancies in one model; rather, research has relied on one or the other characteristic to support cognitive escape theory (c.f. [24, 29]). Second, we posit that sexual conflict may be a critical antecedent to cognitive burden in that these conflicts likely increase the restraint necessary to prevent unprotected sex. As such, it is important to consider both the factors leading to cognitive restraint or burden and expectancies in one integrated model. As proposed in Cognitive Escape Theory, these intrapsychic sexual conflicts may interact with expectancies to produce a state in which an individual feels conflicted about his behavior and recognizes that substance use may remove, albeit temporarily, those conflicting feelings. Consequently, we propose a theoretical integration, which focuses on the synergistic effect of sexual conflict and expectancies.

This model, depicted in Fig. 1, highlights the interacting effects of sexual conflict and expectancies on sexual behavior under the influence of substances. Utilizing this integrated theoretical model, we propose that individuals who are both sexually conflicted and strongly believe in the sexual effect of substances will engage in a higher percentage of their sexual acts under the influence and will engage in more of their risk behavior while under the influence, compared to those who are either not conflicted (with high or low expectancies) and those who are conflicted, but have low sexual expectancies associated with substance use. Evidence for this model will also provide two distinct places for intervention and prevention efforts. First, intervention development might focus on dismantling sexual expectancies and eliminating beliefs that substance use is an effective means of escape from conflict around sexuality. Second, efforts might target sexual conflicts themselves, helping individuals to reduce conflicting attitudes and desires about their sexual behavior, thereby reducing the need for conflict resolution through substance use.

Present Study

The current study presents a preliminary exploration of the proposed integrated model. Informed by critical components of each theory, we hypothesize that individuals who are both conflicted and strongly believe that substance use influences their sexual behavior will behave differently from those who are either conflicted but do not hold strong expectancies or those who are not conflicted, regardless of their expectancies. Specifically, we hypothesize that individuals who are both conflicted about their behavior *and* strongly believe that substance use influences their sexual behavior will engage in more of their sexual activity under the influence of substances and will report that more of their high risk sexual activity (unprotected sexual activity with a casual partner) occurs under the influence, in comparison to the other groups (conflicted-low expectancies, not conflicted-low expectancies, not conflicted-high expectancies). In other words, we posit that expectancies will function most strongly among those who are highly conflicted, as illustrated in Fig. 1. Because we believe that individuals who are both conflicted and strongly believe in the sexual influence of substances are conceptually distinct, we have chosen to examine these variables categorically, in a 2×2 design (conflict versus no conflict, high expectancies versus low expectancies). As this is an exploratory study of the proposed integrated model, evidence of the utility of the constructed measures of conflict and a significant interaction between conflict and expectancies will highlight the utility of this approach and the need for additional research.

Methods

To test this model, we present a secondary analysis of data collected from 135 MSM who are enrolled in a randomized controlled trial testing the efficacy of a brief intervention designed to reduce substance use and sexual risk behavior. Men were eligible for the study if they were HIV negative, reported at least five instances of substance use (including cocaine, methamphetamine, GHB, ecstasy, ketamine, or poppers) in the last 3 months, and reported at least one incident of unprotected anal intercourse with a casual partner or a serodiscordant main partner in the last 3 months. Men completed baseline assessments wherein they completed psychosocial measures via ACASI and a Timeline Follow-Back (TLFB) that assessed recent (30-day) substance use and sexual behavior, as described more fully below.

Procedures

MSM were recruited through a multimethod approach implemented in diverse geographic areas in New York City. Both active and passive recruitment strategies were used. For active recruitment, recruiters screened potential participants for eligibility using palm pilots in a variety of venues catering to MSM—including bars, clubs, streets in predominately gay

neighborhoods, and at LGBT community events. For passive recruitment, "tear-off flyers" and project recruitment cards were distributed to potential participants, who then called for eligibility screening. These two approaches were supplemented with online recruitment (using chat rooms and banner ads), friendship referrals, and print advertising. Eligible participants were scheduled for a baseline assessment.

In the baseline assessment, after informed consent and initial screening for cognitive ability and the absence of psychiatric symptoms that would make participation potentially dangerous or unethical, research staff administered the baseline assessment battery via computer (self-report measures) and the TLFB interview. After the baseline assessment, all eligible subjects were randomized into one of two experimental conditions. Given the scope of this paper, these analyses utilize only baseline data, collected from participants prior to their involvement in the intervention. These procedures were approved by the Institutional Review Board of the sponsoring university.

Participants

For these analyses, we included only the men who reported any risky sex during the preceding 30 days, defined as at least one incident of unprotected anal sex with a casual partner or with a serodiscordant main partner. Because inclusion criteria for the study required unprotected sexual acts in the previous 90 days but the TLFB collected event-level data only in the previous 30 days (collecting summary risk measures for the 60 days prior to the 30-day window), we excluded men who did not engage in any risky sex during the 30-day TLFB window (their risky sex occurred in the 60 days prior to the TLFB window) so as to maximize the availability of outcome variability in the TLFB data. Thirty-seven of the 172 men did not engage in risky sex in the prior 30 days and were excluded from analyses, yielding a final sample of 135. The average age was 28.9 (SD = 7.23), with age ranging from 18 to 65. More than half of the sample reported that they were a member of a racial or ethnic minority group, with only 39% of the sample being white. Men were relatively well-educated, though half of the sample reported a yearly income of less than $30,000 and less than half reported full-time employment. See Table 1 for participant characteristics.

Measures

The measures utilized in these analyses consist of a direct measure of the sexual expectancies of substances and two measures of conflict regarding unsafe sex that were created by combining three other measures—a measure of motivation to engage in safer sex practices contrasted with two measures that could be in conflict with motivation (belief in the benefits of unsafe sex and temptation to engage in unsafe sex). Though much research measures conflict directly through a short series of questions (i.e., "I felt very unsure about whether or not to use a condom, or to insist that my partner use one" [30]), the present study utilized these constructed measures of conflict for two primary reasons. First, the original study for which this data were collected did not directly assess conflict about sexual risk behavior; because this is a secondary data analysis, proxy measures were necessary. Second, while these direct conflict measures certainly contribute to our understanding of conflict, individuals may not always consciously identify their conflicted feelings. As such, proxy measures may better capture both conscious and unconscious conflict.

Further, we chose to construct two separate conflict constructs because we believe that conflict is a complex construct that may be reflected differently by using different psychosocial variables. As such, the present study constructs two separate measures of conflict surrounding sexual risk, one utilizing beliefs about unsafe sex and the other using temptations around unsafe sex, as each of these variables may differently influence the

nature and strength of conflict. Measures are described below and the procedures utilized to construct the conflict variables are outlined in the "Data Analysis" section.

Sexual Expectancies Scale—The Sexual Expectancies of Substance Use scale is a scale adapted from Rawson and colleagues [31] to apply more broadly to club drugs rather than a single substance. The scale consists of 11 items, with yes or no responses; scores ranged from 0 to 11, with higher scores indicating stronger beliefs. The scale includes items such as, "My sexual thoughts, feelings, and behaviors are often associated with using club drugs," and "I'm more likely to practice risky sex when using club drugs."

Motivation to Change—The Contemplation Ladder (CL) [32] is an assessment tool based on the Transtheoretical Model (TTM) [33] that has been used extensively to measure motivation to change substance use behaviors [32, 34] and has also been applied to safer sex behaviors [35–37]. This tool is visually structured like a ladder—with 10 "rungs" that reflect the stages of change, with a higher rung indicating more readiness to change. Instructions read: "Each rung on this ladder represents the way a person may relate to the idea of using condoms during anal sex with his casual partners. Circle the number that best represents where you are now." Each number corresponds to a statement describing one's motivation to change. For example, the statement corresponding to the lowest rung (1) reads, "I enjoy anal sex without condoms and have decided to never change it. I have no interest in using condoms," whereas the statement for the highest rung (10) reads, "I have used condoms regularly and will never go back to having unprotected anal sex." Higher scores on the CL are associated with stronger intentions to stop (or engage in) the behavior in question, higher levels of treatment engagement, and lower frequency of the behavior in question [32, 34, 35].

Decisional Balance—Benefits of Unprotected Sex—The Decisional Balance for Unprotected Sex [38, 39] contains two subscales; one scale assesses the cons of unsafe sex while the other assesses the benefits of unsafe sex. This scale was designed by Parsons et al. [39] based on the pros and cons approach outlined by Prochaska et al. [38]. These analyses utilized the 10 items that assessed the benefits of unprotected sex. The overarching question asks, "How important is each statement to you at the present time in relation to the decisions you make about unprotected sex (to use or not to use a condom)?" The benefits subscale includes such items as, "Unprotected sex is more spontaneous," "Not using a condom with a partner shows him that I trust him," and "It feels better to have sex without a condom." Participants responded on a five-point Likert scale ranging from "Not at all" to "Extremely;" scores are summed and could range from 10 to 50, with higher scores indicating greater perceived benefits of unprotected sex.

Temptation for Unsafe Sex—To assess temptations for unprotected sex in various situations, we utilized a 13-item scale that is a modified version of the Temptation Scale designed by Parsons and colleagues [39, 40] based on a scale utilized by Redding and Rossi [41] in their assessment of self-efficacy for safer sex. These items ask, "How tempted would you be to have anal sex without a condom with a sex partner…" and pose various situations, such as, "When I really want sex," and "When I think the risk of STDs is low." Participants responded on a five-point Likert scale ranging from "Not at all" to "Extremely;" scores are summed and could range from 13 to 65, with higher scores indicating greater temptation for unprotected sex.

TLFB—The TLFB [42] is a commonly used, well-supported semi-structured interview designed to collect information about patients' daily behavior over a specified period of time. Critical life events (i.e., vacations, birthdays, paycheck days) are reviewed

retrospectively to prompt recall of daily behaviors, which are recorded on a personalized calendar. The TLFB has demonstrated good test–retest reliability, convergent validity, and agreement with collateral reports for sexual behavior [43–45] and substance use [46], and has been used extensively with MSM [47, 48]. Interviewers for this project were well-trained in utilizing the TLFB, trained and skilled in developing rapport with participants, and were trained to emphasize the non-judgmental and sex-positive environment of the research center, techniques which were designed to facilitate honest self-report and to respect the values and behaviors of all participants. Utilizing a calendar, interviewers asked participants to report the type of sexual activity (anal or oral intercourse; protected or unprotected) by partner type (main or casual) on each day of the preceding 1-month period. For each behavior, participants also reported whether they were sober or under the influence of drugs. Participants also reported days of drug use when sexual activity did not occur. High risk sex was defined as unprotected anal intercourse with a casual partner or with an HIV+ or status unknown main partner. Because of the specific hypotheses related to the proposed model, the two variables utilized as outcomes in these analyses were (a) the percent of one's sex that occurred under the influence and (b) the percent of one's high risk sex that occurred under the influence.

Data Analysis

To construct measures of conflict, the research team combined variables that were conceptually theorized as potentially conflicting with each other. First, an individual's motivation to change his unsafe sexual behavior could be in conflict with his perceived benefits of unsafe sex (Motivation × Benefits Conflict). One's motivation to change his unsafe sexual behavior could also be in conflict with his temptation to engage in unsafe sex (Motivation × Temptation Conflict). The two separate conflict variables were constructed in the following manner. First, each variable (Motivation, Benefits, and Temptation) was split into high and low categories using median splits (see Table 1 for descriptive scale information). Second, the dichotomous Motivation variable was cross-tabulated with the dichotomous Benefits variable and the dichotomous Temptation variable (separately) so as to create two conflict variables, each with four categories. For each conflict, a participant could fall into any one of the following four categories: (a) Low on both variables; (b) low motivation score, high temptation/benefits score; (c) high motivation score, low temptation/ benefits score; or (d) high motivation score, high temptation/benefits score. Individuals who report low motivation for safer sex and high temptation or benefits scores would be considered prone to high risk behavior, but not conflicted about their behavior. Similarly, individuals who report high motivation for safer sex, but low temptation or benefits scores for unsafe sex would be considered likely to engage in less risky sex and not conflicted about their behavior. Conceptually, the individuals falling into the fourth category (high motivation score, high temptation/ benefits score) are those theorized to be experiencing some conflict. In other words, they are highly motivated to engage in safer sex behavior but simultaneously very tempted to practice unsafe sex or strongly perceive benefits to engaging in unsafe sex. Those in the conflicted category were compared to individuals who are not conflicted (those in the other three categories). Though we might expect varying patterns of behavior between the three other non-conflicted categories, because the focus of the analyses is to examine the interaction between conflict and expectancies, we have chosen to group the other three non-conflicted groups together to facilitate an examination of conflict.

Sexual expectancies were also analyzed categorically so as to construct specific groups of individuals based on the interactions between conflict and expectancies about the impact of substance use on sexual behavior. Specifically, the sexual expectancies variable was also dichotomized using a median split into those with high expectancies and those with low expectancies. A 2 × 2 factorial ANOVA was used to compare the following groups: (a) low

conflict/ low expectancies; (b) low conflict/high expectancies; (c) high conflict/low expectancies; and (d) high conflict/high expectancies. According to the proposed model (see Fig. 1), we hypothesized that those both high in conflict and high in expectancies would report the highest percentage of sex under the influence and the highest percentage of risky sex under the influence.

Univariate analyses were conducted to find initial group differences that were controlled for in the final regression analyses. In the motivation × temptation conflict analyses, we controlled for age (those who were conflicted about unprotected sex were significantly younger than those who were not conflicted); no other demographic or behavioral variables differed according to conflict category. In the motivation × benefits conflict, there were no significant demographic or behavioral differences according to conflict category. Finally, we ran two separate 2 × 2 factorial ANO-VAs, for each of the outcome variables (percent of sex under the influence and percent of high risk sex under the influence).

Results

Sample Characteristics

Though the intervention trial did not target individuals seeking help in changing their behaviors, the individuals in this study were relatively motivated to change, with an average score of 6.91 out of 10 (SD = 2.29) on the motivation to change their sexually risky behavior ladder (see Table 1). Individuals were, on average, moderately tempted to engage in unsafe sexual practices, with a mean score of 22.81 (SD = 12.87) on the temptations for unsafe sex scale, which could range from 13 to 65. Similarly, individuals scored an average of 18.27 (SD = 8.84) on the benefits subscale of the decisional balance scale, which could range from 10 to 50. Participants scored, on average, in the middle of the expectancies scale, $M = 5.62$, SD = 2.98, demonstrating moderately strong sexual expectancies associated with substance use. See Table 1 for scale descriptives. Using median splits to divide the sample into low and high groups for each of these variables, we then created conflict categories, as described above. As shown in Table 1, roughly 20% of people experienced each type of conflict. There was substantial, though not complete, overlap in conflict scores. Of those who experienced the Motivation × Temptation conflict, 91.7% also experienced the Motivation × Beliefs conflict. On average, 66% of these men's sexual activity and 71% of their high risk sex occurred while under the influence. See Table 1 for all scale, conflict, and behavioral descriptives.

Factorial ANOVAs

Motivation × Temptation Conflict—In the first ANOVA, the dependent variable was the percentage of acts that occurred under the influence of substances. Not surprisingly, this analysis revealed a significant main effect of expectancies, $F(1, 135) = 15.74$, $P < 0.001$, $\eta^2 = 0.108$, such that higher sexual expectancies were associated with a higher percentage of acts under the influence. This main effect is qualified by a significant interaction between conflict and expectancies, $F(1, 135) = 4.19$, $P = 0.043$, $\eta^2 = 0.031$. Essentially, conflict changed the overall influence of expectancies. For those high in conflict, expectancies had a large effect on their sexual activity under the influence, while for those low in conflict, expectancies did not have such a substantial impact. Post-hoc analyses indicate that the high conflict/ high expectancy group engaged in a significantly higher percentage of their sexual acts under the influence than the high conflict/low expectancy group ($P < 0.01$), and the low conflict/low expectancy group ($P = 0.048$), but that behavior did not differ significantly between low conflict/ high expectancy and low conflict/low expectancy group, $P = 0.071$ (the high conflict/high expectancy group did not differ significantly from the low conflict/ high expectancy group, $P = 0.769$). In other words, as depicted in Fig. 2, those high in

conflict appear more sensitive to the effect of expectancies, compared to their low conflict counterparts. The full model accounted for 11.4% of the variance in the percent of sexual acts that occurred under the influence. In the second ANOVA, the dependent variable was the percentage of high risks acts that occurred under the influence. Although there was a significant main effect of expectancies, $F(1, 135) = 9.31$, $P = 0.003$, $\eta^2 = 0.067$, there was not a significant interaction, $F(1, 135) = 0.904$, $P = 0.343$. Despite the lack of statistical significance, the interaction between conflict and expectancies was still in the hypothesized direction (see Fig. 3). The full model accounted for 8.7% of the variance in the percentage of high risk acts that occurred under the influence. See Table 2 for full analyses.

Motivation × Benefits Conflict—In the first ANOVA, where the dependent variable was the percentage of acts that were under the influence of substances, the analysis revealed a significant main effect of expectancies, $F(1, 135) = 19.89$, $P < 0.001$, $\eta^2 = 0.128$, such that higher sexual expectancies were associated with a higher percentage of acts under the influence. This main effect is qualified by a significant interaction between conflict and expectancies, $F(1, 135) = 6.64$, $P = 0.011$, $\eta^2 = 0.048$. Similar to results presented above, the magnitude of the impact of expectancies varied by level of conflict. For those high in conflict, sexual behavior differed significantly between those with high versus low expectancies ($P < 0.001$), but for those low in conflict, behavior was equivalent at both high and low levels of expectancy ($P = 0.235$). In other words, those who are high in conflict appear to be the most sensitive to the effect of expectancies on the combination of sexual behavior and substance use (see Fig. 4). The full model accounted for 13.6% of the variance in the percentage of sexual acts occurring under the influence. In the second ANOVA, in which the dependent variable was the percentage of high risks acts that were under the influence, there was, again, a significant main effect of expectancies, $F(1, 135) = 13.83$, $P < 0.001$, $\eta^2 = 0.096$, such that higher sexual expectancies were associated with a higher percentage of high risk acts under the influence. Again, this main effect was qualified by a significant interaction between conflict and expectancies, $F(1, 135) = 3.98$, $P = 0.048$, $\eta^2 = 0.029$. Again, post-hoc tests revealed the same pattern as in previous analyses (see Fig. 5), indicating a stronger association between expectancies and high-risk sex under the influence among those high in conflict. The full model accounted for 10.3% of the variance in the percentage of high risk sexual acts under the influence. See Table 2 for full analyses.

Discussion

These results provide support for the importance of integrating the concepts of sexual conflict and expectancies, demonstrating that individuals experiencing conflict may bemore sensitive to the effect of expectancies than those who are not experiencing conflict. We had hypothesized that individuals who reported both high levels of conflict and high-expectancies would report the *highest* percentages of sex and high-risk sex under the influence. This prediction was not borne out, as patterns of sexual behavior did not differ significantly between those high in both conflict and expectancies and those high in expectancies but low in conflict. However, the significant interaction effect highlights the extent to which expectancies may operate differently for MSMwith different levels of conflict about their sexual behavior. For individuals with high levels of conflict about sexual behavior, patterns of sexual behavior and risk under the influence appear to be significantly impacted by expectancies (see Fig. 2, Fig. 3, Fig. 4, Fig. 5). These findings were consistent across two different definitions of conflict: (a) conflict betweenmotivation topractice safe sex and temptation for unprotected sex; and (b) conflict between motivation to practice safe sex and perceived benefits of unprotected sex. As such, these preliminary data demonstrate the importance of expanding our understanding of the role of substance use in sexual behavior to include the interaction between sexual expectancies and intrapsychic conflict regarding sexual behavior.

The results of this study replicate previous findings supporting the utility of expectancy theory and the strength of expectancies as a predictor of sexual behavior and risk [49–52]. In all analyses, individuals with greater expectancies regarding the effect of substances on sexual behavior reported a higher percentage of sexual behavior under the influence and of high risk sexual behavior under the influence. However, in these analyses, expectancies interacted with conflict such that, for those who reported high levels of conflict, expectancies mattered much more in predicting sexual activity and risky sexual activity under the influence, when compared to those reporting low levels of conflict. Conflict, however, did not operate on its own to influence sexual behavior under the influence of substances. There are several possible explanations for the lack of a main effect of conflict. First, there is some evidence that conflict may be more salient for women than for men [30], with expectancies working more strongly for men than for women [50]. As such, our results may reflect the greater salience of expectancies among men. Second, we used proxy measures of conflict that were conceptually driven (as the larger study was not designed to capture conflict), which may have not best captured the most relevant conflicts that men in this population experienced, such as conflict about one's sexual identity, partner choices, etc.

A final explanation for the lack of conflict's main effect (and the explanation most congruent with the proposed model) is that conflict may only (or may best) predict sexual behavior under the influence in the presence of expectancies that substance use will facilitate cognitive escape or otherwise alleviate the conflict. In this way, cognitive escape theory [19] provides the theoretical link that connects sexual conflict and expectancies, with cognitive escape (or the desire for such escape) serving as the mechanism by which conflict and expectancies interact to predict sexual risk behavior associated with substance use. For those who are both conflicted and believe that substances will strongly influence their behavior, substance use may facilitate the cognitive escape necessary to avoid conflicting cognitions and ultimately bring about their desired sexual outcome (i.e., unprotected sexual activity). Clearly, this evidence indicates the need to integrate these three theories by testing models wherein cognitive escape motivations (i.e., specific scales tapping into the motivations to use substances in sexual contexts or the strategies used to resolve sexual conflicts, as outlined by Nemeroff et al. [29]) may serve as a mediating or moderating factor in the associations found in this paper.

These findings have clear implications for prevention and intervention efforts geared at reducing sexual risk behavior, particularly among MSM. First, screening protocols should include assessments of both conflict (including cognitive restraint or burden) and expectancies. Identifying a profile of those most at risk of sexual risk under the influence (and the underlying mechanism of that association) would allow for more targeted intervention efforts that could address both factors as well as their interaction. Identifying conflicts surrounding sexuality will be important insomuch as interventions can be designed to resolve those conflicts without substance use. As Motivational Interviewing (MI) is well-suited to resolving ambivalence [53], MI might then be an ideal counseling style to address conflict around one's sexual behavior. These conflicts may also vary according to group membership so that identifying these conflicts may inform the development of community level interventions. For example, there is some research indicating that men of color experience conflict related to the stigma associated with holding a minority sexual identity within communities of color [54, 55]. Identifying these specific community level conflicts could then inform prevention efforts aimed at changing social norms in these communities and teaching strategies for reducing conflict. Similarly, identifying and challenging expectancies may be an incredibly useful prevention strategy, as evidenced by the predictive strength of expectancies. These expectancies may also vary according to group membership and the community norms associated with that group (i.e., MSM may hold different sexual

expectancies than heterosexual men). Researchers have experienced some success with expectancy challenges [56, 57]. Expectancy challenges involve group interactions (typically a Pictionary game per the original expectancy challenge design [58, 59]) in which, unbeknownst to the participants, some participants are consuming alcohol and others are consuming placebos. After the interaction, participants are asked to name the individuals who were drinking and those who were not. Identification errors are used to discuss and challenge one's expectancies about alcohol's effects. In one study, even a single expectancy challenge (conducted at a bar or community center) demonstrated changed expectancies and reduced alcohol consumption 6 weeks later [60]. Finally, related to expectancies and cognitive escape, intervention and prevention efforts should specifically target the expectation that substances facilitate cognitive escape and work to promote cognitive engagement in sexual situations.

Despite the strong findings and implications noted above, there are limitations to the current study. First, this is a highly specific sample of MSM who use substances (at least five in the previous 90 days) and engage in unsafe sex (at least once in the previous 90 days). However, this specific group of MSM who are engaging in club drug use and unsafe sex are often the target of intervention and prevention efforts, thus highlighting the need for research in this specific subsample of MSM. Second, the small sample size, especially the small number of people who experienced conflict, may limit the generalizability of these findings. However, the significant findings despite these small cell sizes are an indicator of the strength of the interaction between expectancies and conflict. Finally, the current study did not directly assess conflict (as that was not the focus of the original study), but rather used conceptually driven measures of conflict. These measures may not have assessed the conflicts that were most salient or influential for the men in this sample. Further, in combining the non-conflicted groups (high motivation/benefits, low temptation, low motivation/benefits, low temptation, and low motivation/benefits, high temptation), we may have increased the variability in the non-conflicted group, perhaps explaining the lack of a main effect of conflict. Finally, though we recognize that the use of the original variables (Motivation, Temptation, and Benefits) is different than the standard uses of these variables, constructing conflict in this way represents a first exploratory step in designing more nuanced and complex measures of conflict. In this paper, conflict was operationalized as inconsistent responding on key measures (i.e., high motivation to reduce risk, high temptation to engage in risk behavior) and it is possible that some individuals are merely inconsistent responders, rather than truly conflicted, limiting the generalizability of our findings. Future research should utilize both the more standard and direct measures of conflict (i.e., Dermen and Cooper's original 3-item direct measures [30]) and cognitive escape (i.e., Nemeroff et al.'s Cognitive Escape Scale [29]) while also constructing more complex and indirect measures with which to compare to the direct measures. Despite some limitations of this exploratory study, these innovative conceptualizations of conflict are an important step in moving towards the more nuanced measures that are necessary to fully understand the conflict construct.

Future research should utilize both qualitative and quantitative methods to identify various types of conflict and appropriate ways to assess conflict. Research integrating cognitive escape and expectancy theories may also benefit by working to match specific types of conflict with specific expectancies. For example, if an individual's conflict is specifically related to casual sexual encounters (i.e., simultaneously desiring to engage in casual sex but strongly believing that casual sex is wrong), the best predictor of substance's effects may be the specific expectancy that substance use leads to disinhibition regarding sexual partner choices. By finding specific pairings of conflict and expectancies that best predict risky sexual behavior under the influence of drugs and alcohol, practitioners can tailor intervention and prevention efforts to these pairings that are most prevalent in various

communities. Finally, this study adds to the literature demonstrating the utility and necessity of more wholly and explicitly integrating expectancy theory and cognitive escape theory.

Acknowledgments

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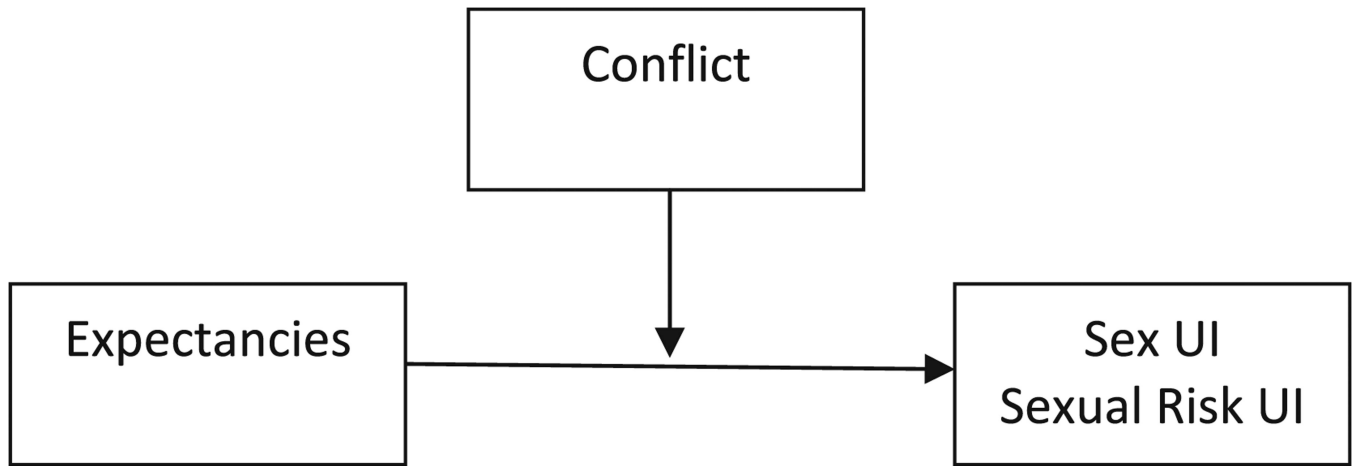**Fig. 1.**
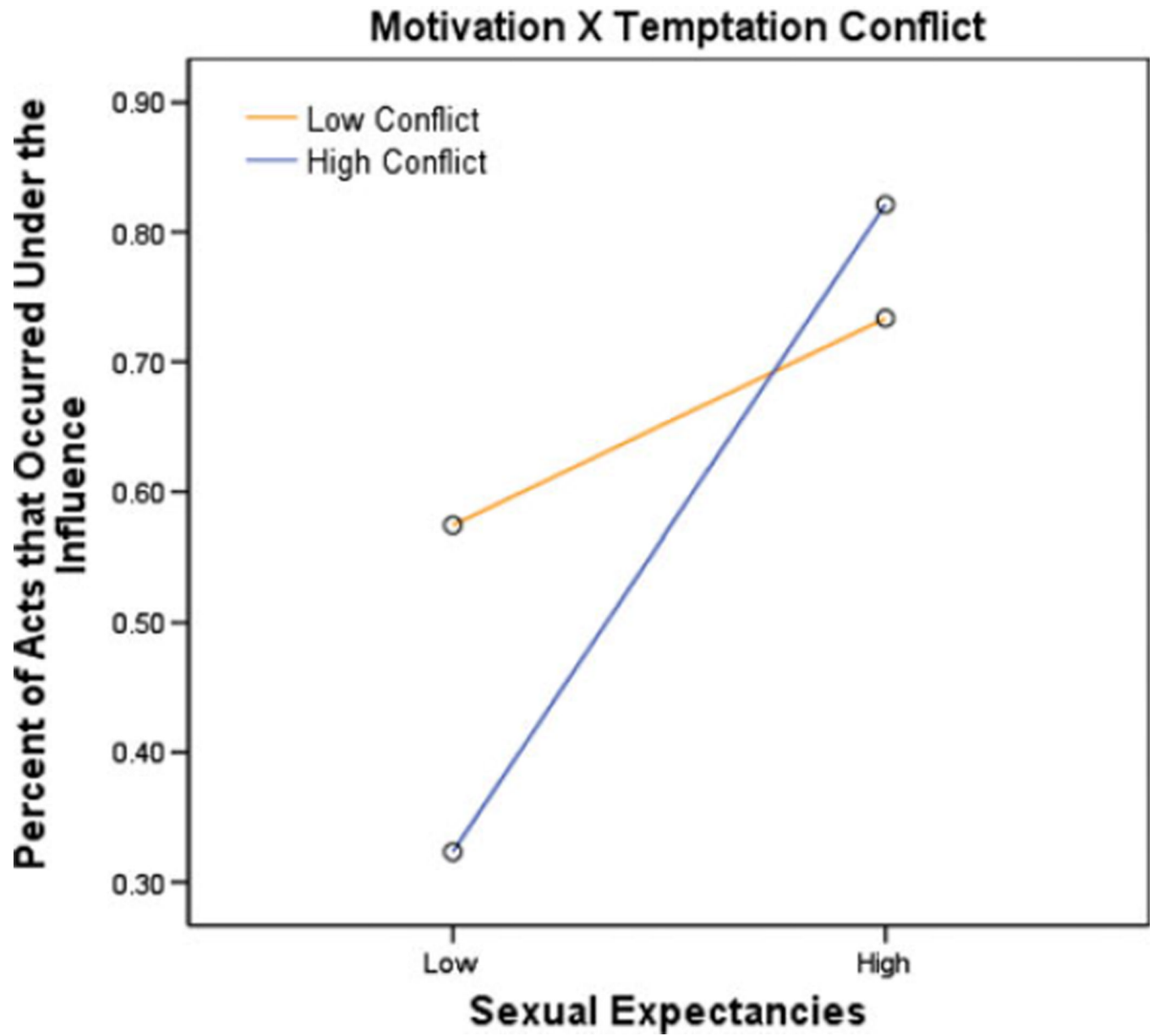Hypothesized association between expectancies, conflict, and sexual behavior under the influence (UI)

Fig. 2.
The interaction between expectancies and the motivation × temptation conflict, predicting the percent of sexual events that occurred under the influence (UI)
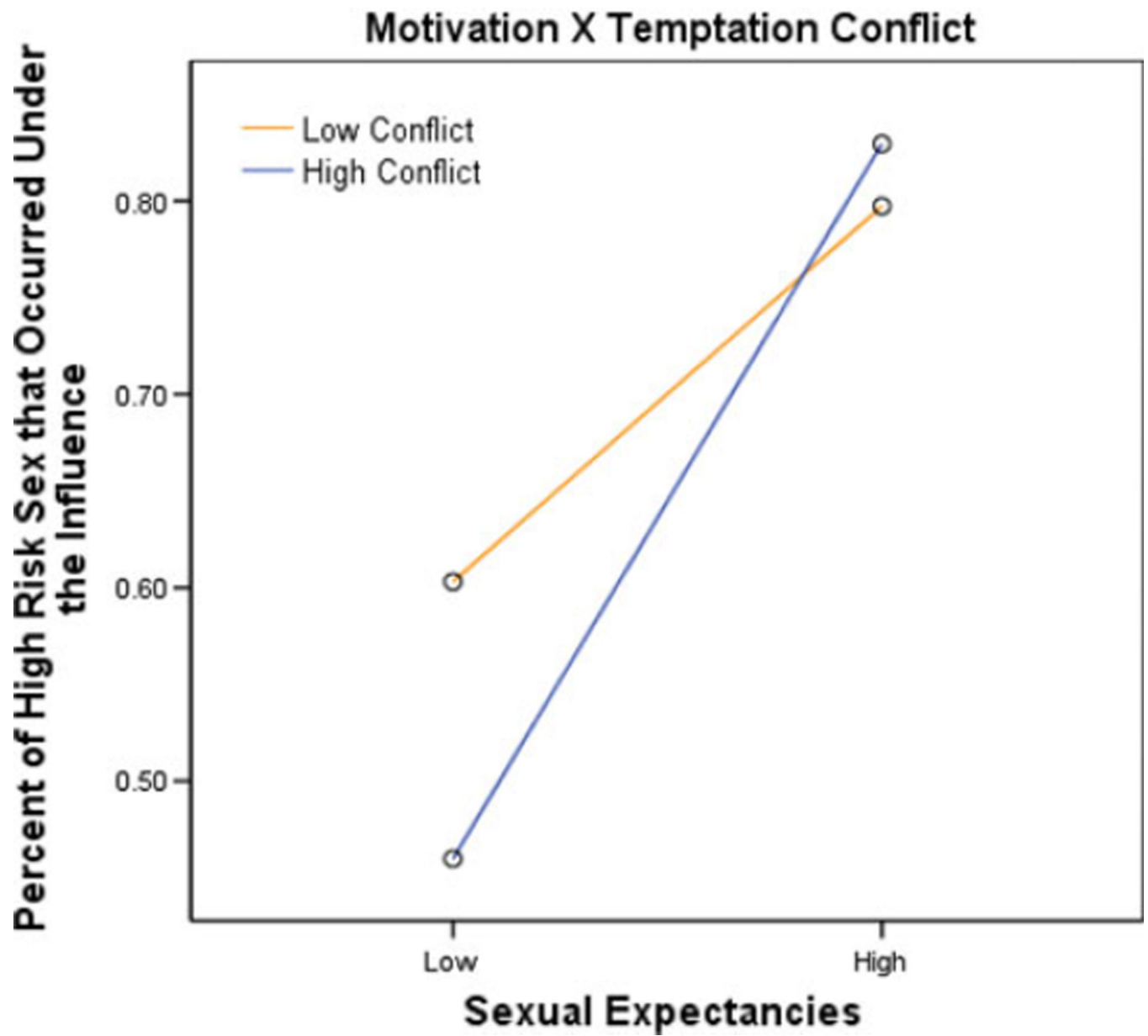
Fig. 3.
The interaction between expectancies and the motivation × temptation conflict, predicting the percent of high risk sexual acts that occurred under the influence (UI)
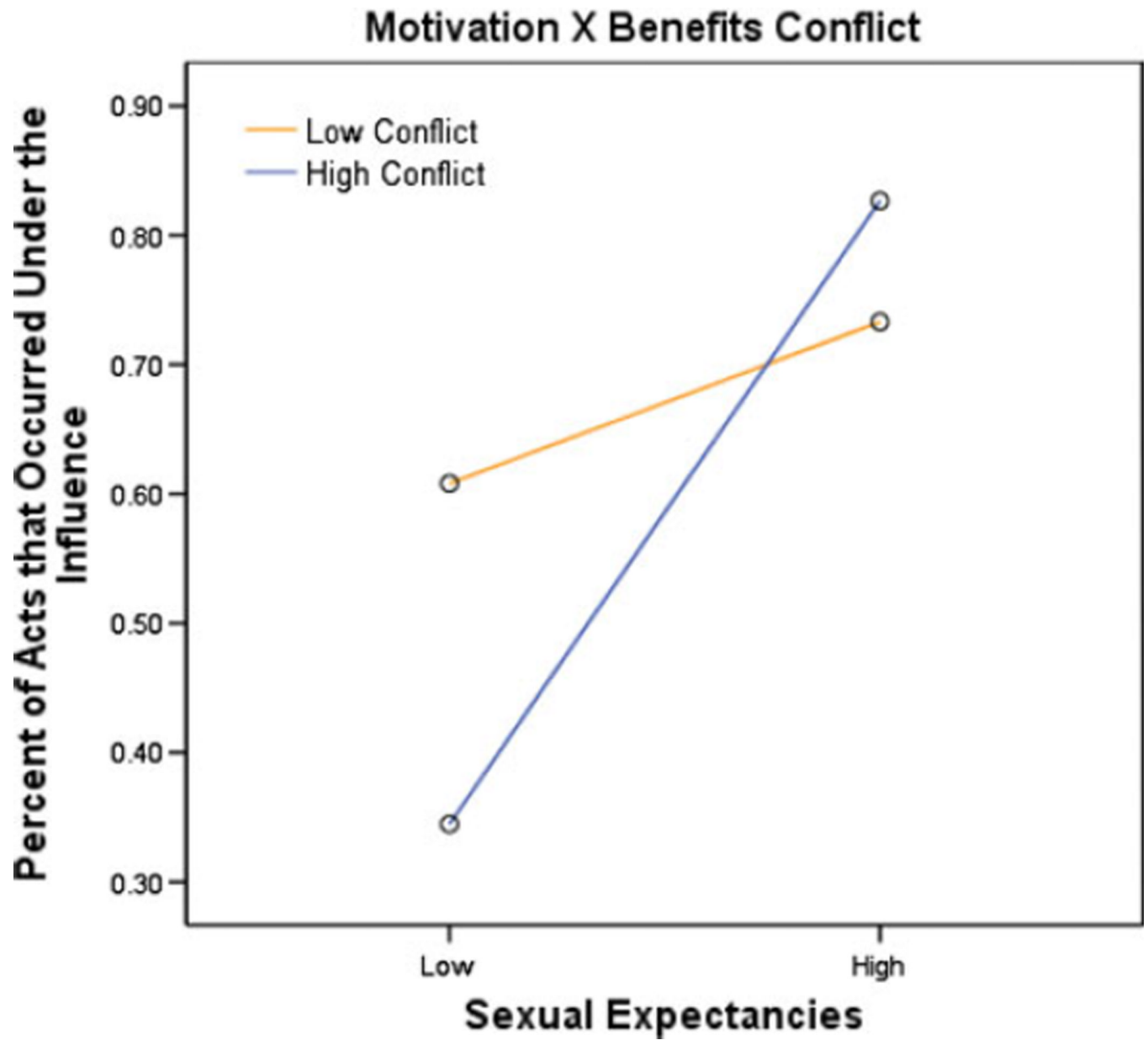
Fig. 4.
The interaction between expectancies and the motivation × benefits conflict, predicting the percent of acts that occurred under the influence (UI)
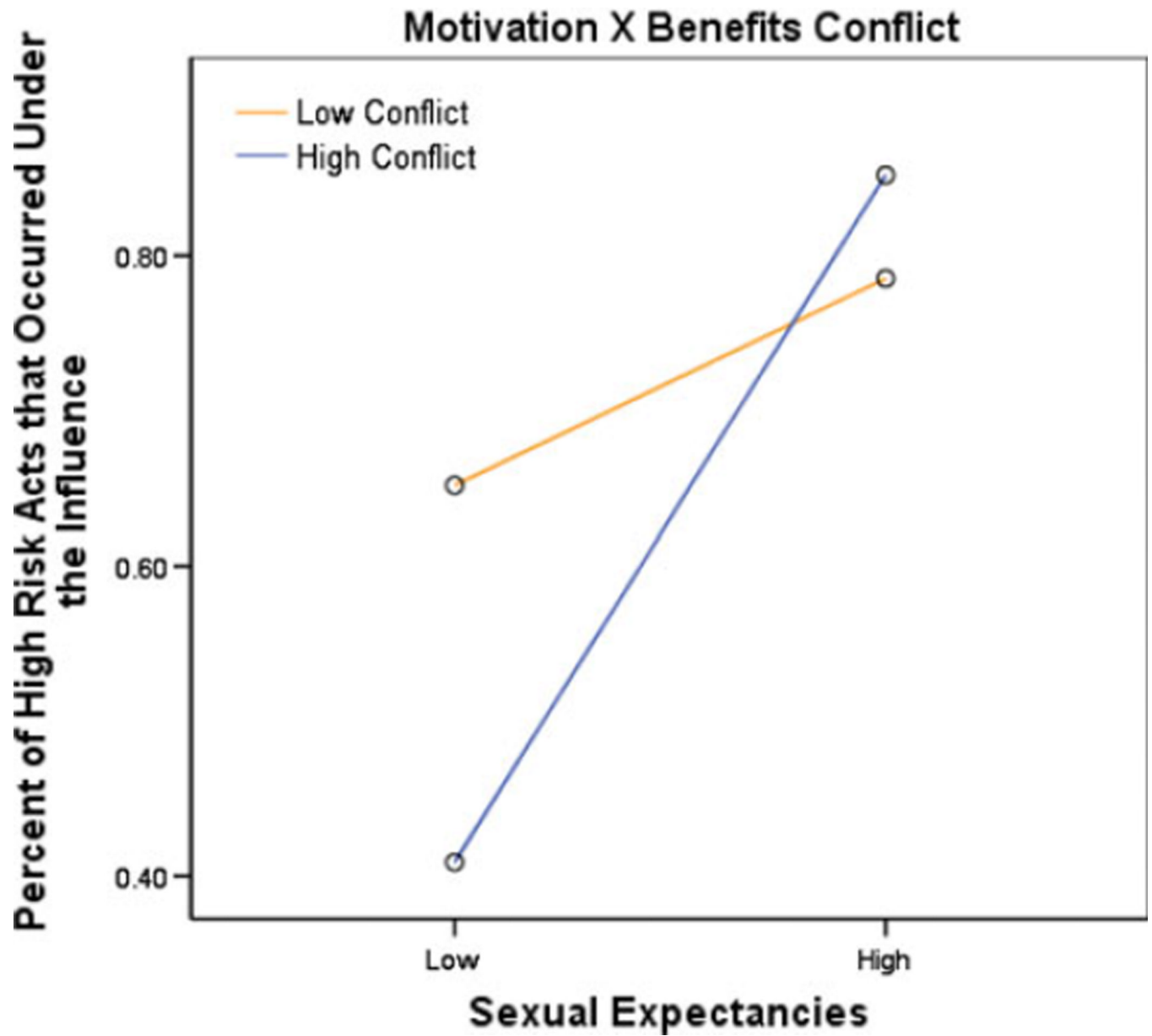
Fig. 5.
The interaction between expectancies and the motivation × benefits conflict, predicting the percent of high risk acts that occurred under the influence (UI)

Table 1

Sample descriptives

	M or %	SD or *N*
Demographics		
Age	28.9	7.23
Ethnicity		
White	39.26%	53
Latino	29.63%	40
African American	20%	27
API	3.70%	5
Multiracial	4.44%	6
Other	2.97%	4
Education		
H.S./G.E.D.	22.20%	30
Some college/currently enrolled	36.33%	49
4-year degree	33.33%	45
Professional degree	8.14%	11
Income		
<30 K/year	51.11%	69
30–50 K/year	23.70%	32
>50 K/year	25.19%	34
Employment status		
Unemployed/disability	35.55%	48
Part-time employed	25.93%	35
Full-time employed	38.52%	52
Scale descriptives		
Ladder		
Average score	6.91	2.29
Median split (med = 8)		
Low motivation to change	53.70%	72
High motivation to change	46.30%	62
Decisional balance–pros		
Average score	18.27	8.84

Table 2

Analyses of variance predicting sexual risk behavior under the influence of substances

	Outcome: percent of sexual acts that were under the influence			Outcome: percent of high risk sexual acts that were under the influence		
	df	F	η^2	df	F	η^2
Motivation–temptation conflict						
Full model	(4, 134)	4.199 **	0.114	(4, 134)	3.085 *	0.087
Age	(1, 134)	0.01	0	(1, 134)	1.42	0.011
Motivation–temptation conflict (1 = yes)	(1, 134)	0.96	0.007	(1, 134)	0.36	0.003
Expectancies (dichotomized, 1 = high)	(1, 134)	15.74 ***	0.108	(1, 134)	9.31 **	0.067
Interaction term (conflict × expectancies)	(1, 134)	4.19 *	0.031	(1, 134)	0.90	0.007
Motivation–pros conflict						
Full model	(3, 134)	6.847 ***	0.136	(3, 134)	5.006 **	0.103
Motivation–temptation conflict (1 = yes)	(1, 134)	1.50	0.011	(1, 134)	1.286	0.01
Expectancies (dichotomized; 1 = high)	(1, 134)	19.19 ***	0.128	(1, 134)	13.832 ***	0.096
Interaction term (conflict × expectancies)	(1, 134)	6.64 **	0.048	(1, 134)	3.982 *	0.029

*
$P < 0.05$

**
$P < 0.01$

***
$P < 0.001$