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Outcome Expectancy and Sexual Compulsivity among Men who have Sex with Men Living with HIV

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Abstract

Sexual compulsivity is operationalized by engaging in repetitive sexual acts, having multiple sexual partners and/or the excessive use of pornography. Outcome expectancy refers to the beliefs about the consequences of engaging in a given behavior. Research examining the relationship between outcome expectancy and sexual compulsivity is limited. The aim of this study was to assess the association between outcome expectancy and sexual compulsivity among men who have sex with men (MSM) living with HIV. Data were obtained from 338 MSM. Simple and multiple linear regression models were used to assess the association between outcome expectancy and sexual compulsivity. After adjusting for age, race/ethnicity, income, education, and employment status, for every one point increase in outcome expectancies for condom use, HIV disclosure and negotiation of safer sex practices, there was, on average, an approximate one point decrease in sexual compulsivity score. Prevention and intervention programs geared towards reducing sexual compulsivity among MSM should focus on increasing outcome expectancies for condom use, HIV disclosure and negotiation of safer sex practices.

Keywords

sexual compulsivity; outcome expectancy; HIV disclosure; condom use; MSM

Introduction

Sexual compulsivity is defined as a lack of control over one's sexual behavior, which tends to be anxiety-based [1], is often associated with distress [2], and may affect daily living and functioning [3]. A person may be sexually compulsive with one or multiple partners [1]. Nevertheless, compulsive sexual behavior is usually operationalized by a variety of factors including engaging in repetitive sexual acts [4, 5], experiencing intrusive sexual thoughts [4, 5], having multiple sexual partners [5], and/or the excessive use of pornography [5].

Prior research has suggested that sexual compulsivity fits into a syndemics framework for HIV risk among men who have sex with men (MSM) due to its association with multiple risk factors [6, 7]. Specifically among MSM, sexual compulsivity has been shown to be positively associated with frequent unprotected sexual activity with more partners, as well as

cocaine use with sex [8]. Indeed, sexual compulsivity has been independently associated with serodiscordant unprotected anal intercourse among a probability-based sample of MSM in San Francisco [9]. Higher sexual compulsivity has also been linked with lower self-esteem [8], lower likelihood of HIV disclosure [10], lower self-efficacy for condom use [11], and lower self-efficacy for HIV disclosure [11].

Outcome expectancy, which has been linked to self-efficacy [12, 13], is defined as the belief about physical, social and other consequences that will result because of engaging in a given behavior(s), and is a critical factor in determining performance of and/or change in a behavior [12, 14]. Some outcome expectancies, with regards to sexual health, measure the beliefs that certain results will occur due to condom use, disclosure of HIV serostatus, and negotiation of safer sex practices. People generally are driven to execute behaviors that result in advantageous outcomes [15]. Alcohol and drug use outcome expectancies, (beliefs about sexual enhancements due to drinking and drug use) have been found to be influenced by sensation seeking. These outcome expectancies have also been found to be positively associated with substance use before sex, which was positively associated with having multiple sexual partners among MSM [16]. These findings suggest that sexual outcome expectancies for substance use or the beliefs about potential gains from substance use for sexual enhancement [17], may be a mediator in the association between sensation seeking and the use of substances before sex. Therefore, addressing outcome expectancies may reduce risky sexual behaviors, such as substance use with sex, and having multiple sexual partners among MSM who have high levels of sensation seeking [16].

Prior studies have examined the relationship between sociodemographic characteristics and outcome expectancy, and with sexual compulsivity. Nevertheless, there is a lack of research assessing outcome expectancies among populations living with HIV. Some of these studies have shown that outcome expectancy may change with age [12], educational level [18], and income [19], albeit among other populations. Research has also shown that sexual compulsivity does not appear to differ by education [6, 8, 20], race/ethnicity [6, 8, 20], employment [8, 20] or income [6, 8, 20]. Data on sexual compulsivity and age, however, is mixed with some studies suggesting that it varies by age [11, 21] with others finding that it does not [8, 20]. MSM living with HIV tend to report higher sexually compulsive behavior compared to MSM who are HIV-negative [22]. The literature comparing outcome expectancies among MSM living with HIV compared to HIV-negative MSM is scarce. Nevertheless, outcome expectancies for condom use, HIV disclosure and negotiation of safer sex practices, may also differ for MSM living with HIV compared to HIV-negative MSM as HIV-positive MSM may have different beliefs and expectations of sexual health behaviors surrounding condom use, HIV disclosure and negotiation of safer sex practices compared to men without HIV. These differences in sexual compulsivity and potential variation in outcome expectancies by HIV status may contribute to disparities in the association between outcome expectancies and sexual compulsivity among men living with and without HIV.

One theory that may be used to explain the potential association between outcome expectancy and sexual compulsivity is the Theory of Planned Behavior [23]. This theory links beliefs to behavior and suggests that intention and attitudes towards behavior can shape behavioral performance and change. Therefore, theoretically, having higher outcome

expectancies or better attitudes towards expectations for condom use, HIV disclosure, and negotiation of safer sex practices may be linked to lower sexual compulsivity, which is conceptualized by greater control of one's sexual behavior.

At present, no study has been identified examining the association between outcome expectancy and sexual compulsivity among MSM. Williams [13] states that assessing individuals' expected outcomes of specific behaviors is crucial to understanding their perceived capabilities, which may be predictive of behavioral outcomes. Examining this relationship is important so as to determine important focal points for interventions geared towards reducing sexual compulsivity among MSM. Therefore, the aim of the current study was to assess the extent to which outcome expectancies for condom use, HIV disclosure and negotiation of safer sex practices are associated with sexual compulsivity among an HIV-positive MSM sample. We hypothesized that higher outcome expectancies would be associated with lower sexually compulsive behavior.

Methods

Data were obtained from 338 MSM at the baseline assessment of a longitudinal randomized controlled trial of an HIV disclosure intervention. The intervention was conducted from December 2009 to December 2014 across two metropolitan statistical areas (MSA; held for review). Men were eligible for the intervention study if they were living with HIV, 18 years old or older, were sexually active (with two or more partners in the last 12 months, of which at least one was a man), and indicated that they were interested in learning more about disclosure of HIV serostatus to sexual partners. Participants were recruited through advertising efforts with local/state AIDS service organizations and at HIV-related venues and forums held throughout the MSAs. Participants completed a baseline questionnaire using audio-computer assisted self-interviewing (ACASI). The study was approved by the Institutional Review Boards associated with Ohio State University and the University of South Florida.

Study participants and recruitment

Men ranged in age from 19 to 68 with a mean age of 42 years ($SD=11$ years). The range of time since diagnosis was 0.1 to 28.8 years with a mean time of 10.7 years ($SD = 8.2$). Participants were recruited through AIDS service organizations (ASOs), where caseworkers were informed about the study. Handouts were made available for distribution through newsletters and direct mailings. Advertisements were also featured on websites of ASOs, and related materials and information were sent to clients for recruitment purposes. Materials were also distributed at HIV-related venues and forums held throughout the MSAs and at local eateries and drinking establishments. Advertisements were also placed in local daily newspapers.

Data collection

Participants completed a baseline questionnaire using audio-computer assisted self-interviewing, which has shown to be linked with more complete reporting of sensitive behaviors [24, 25]. Data on person-level characteristics (items and scales asked only once of

participants) including sociodemographic characteristics and sexual/disclosure activity during the past 30 days were obtained. Data on encounter-level items (count measures of specific activities) included sexual activity and disclosure of HIV serostatus during the most recent five sexual encounters during the 30 days prior to baseline were also garnered.

Measures

Outcome Expectancy for Condom Use—Outcome expectancy for condom use was operationalized by five items asking about beliefs of the role of condom use in sexual feelings and activity, which was partially modified from Semple et al. [26]. For example, “I believe that condoms will protect my sexual partner(s) from getting HIV.” Table 1 lists the items for outcome expectancy for condom use. Items were scored using a 4-point Likert-type scale ranging from *Strongly disagree* to *Strongly agree*. Responses were reverse-coded when needed so that higher scores represented higher outcome expectancy for condom use. In the current study, the standardized Cronbach's alpha for the outcome expectancy for condom use measure was .68.

Outcome Expectancy for HIV Disclosure—Outcome expectancy for HIV disclosure was operationalized by four items asking about beliefs of the expectations and impact disclosure of HIV serostatus on the individual, his relationships, and sexual pleasure, which was also partially modified from Semple et al. [26]. For example, “I believe that disclosing my HIV status to my sexual partner(s) will increase my sexual pleasure.” Table 1 lists the items for outcome expectancy for HIV disclosure. Items were scored using a 4-point Likert-type scale ranging from *Strongly disagree* to *Strongly agree*. Responses were reverse-coded when needed so that higher scores represented higher outcome expectancy for HIV disclosure. The standardized Cronbach's alpha for the outcome expectancy for HIV disclosure measure was .52 in the current study.

Outcome Expectancy for Negotiation of Safer Sex Practices—Outcome expectancy for negotiation of safer sex practices was operationalized by five items asking about beliefs of the expectations of negotiating safer sex practices with partners and its impact on the individual and his relationships, which was also partially revised from Semple et al. [26]. For example, “I believe that my partner will trust me if I suggest safer sex practices.” Table 1 lists the items for outcome expectancy for negotiation of safer sex practices. Items were scored using a 4-point Likert-type scale ranging from *Strongly disagree* to *Strongly agree*. Responses were reverse-coded when needed so that higher scores represented higher outcome expectancy for the negotiation of safer sex practices. For the current study, the standardized Cronbach's alpha for the outcome expectancy for HIV disclosure measure was .83.

Sexual Compulsivity—Sexual compulsivity was operationalized by 13 items measuring how often participants had trouble controlling sexual urges, behavior, or felt guilty or shameful about sexual behavior, or used sex to deal with life's problems [27]. Items were scored using a 5-point Likert-type scale ranging from *Never* (1) to *Very frequently* (5) with higher scores representing higher levels of sexually compulsive behavior. The standardized Cronbach's alpha for sexual compulsivity in the current study was .91.

Analytic Approach

Sociodemographic characteristics were examined in the eligible study population. Mean sexual compulsivity scores were assessed based on categories of sociodemographic characteristics.

The potential confounders, age, race/ethnicity, income, education, and employment status considered in the current study, were determined *a priori* based on literature review [6, 8, 12, 18-21]. Nevertheless, studies reviewed used a scale developed by Kalichman et al. [28] to measure sexual compulsivity, while the current study used a scale developed by Coleman et al. [27]. Therefore, in addition, confounding assessment was performed by placing each confounder in separate models with each outcome expectancy measure (condom use, HIV disclosure, and negotiation of safer sex practices) as the exposure variable and sexual compulsivity as the outcome variable. The confounder that changed the effect of the outcome expectancy measure on sexual compulsivity the most was then retained for the next iteration. In the models with outcome expectancy for condom use and sexual compulsivity, and with outcome expectancy for negotiation of safer sex practices and sexual compulsivity, inclusion of all potential sociodemographic confounders (age, income, race/ethnicity, education, and employment status) resulted in a change in estimate (CIE) >10%. The largest confounders were race/ethnicity for the model with outcome expectancy for condom use and sexual compulsivity (CIE, 14%) and age for the model with outcome expectancy for negotiation of safer sex practices and sexual compulsivity (CIE, 38%). However, in the model with outcome expectancy for HIV disclosure and sexual compulsivity, no confounder changed the association >10%.

Four sets of linear regression models were used to determine the association between outcome expectancies for condom use, HIV disclosure and negotiation for safer sex practices, and sexual compulsivity: 1) Simple or unadjusted models; 2) Multiple or adjusted models controlling for age (continuous) alone; 3) Adjusted for race/ethnicity (White, Other, vs. Black) alone; and 4) Adjusted for age, race/ethnicity, income (continuous), education (less than high school, finished high school, some college, vs. finished college or advanced degree), and employment status (employed vs. unemployed).

Results

Table 2 shows the sociodemographic characteristics of the study population, overall mean (SD) and range values for outcome expectancy, and sexual compulsivity. The average age of the study population was 42.1 years ($SD = 11.0$ years). The mean (SD) values for outcome expectancy for condom use, HIV disclosure, and negotiation of safer sex practices was 13.9 (3.3), 11.6 (2.3), and 16.2 (3.2), respectively. The overall mean (SD) value for sexual compulsivity was 32.8 (10.8). Sexual compulsivity by sociodemographic characteristics was also assessed. As age and education level increased, sexual compulsivity decreased (Table 2).

The associations between outcome expectancy for condom use, HIV disclosure, and negotiation of safer sex practices and sexual compulsivity among MSM living with HIV are presented in Table 3. Overall, there were negative associations between outcome expectancy

and sexual compulsivity. Crude estimates show that for every one point increase in outcome expectancy scores for condom use, and HIV disclosure, there was, on average, an approximate one point decrease in sexual compulsivity score (β : -0.71; 95% CI: -1.05, -0.36; β : -0.84; 95% CI: -1.34, -0.34, respectively). For every one point increase in negotiation of safer sex practices, there was on average, an approximate 0.5 decrease in sexual compulsivity score (β : -0.49; 95% CI: -0.84, -0.13). After adjusting for age, race/ethnicity, income, education, and employment status, for every one point increase in outcome expectancy scores for condom use, HIV disclosure and negotiation of safer sex practices, there was an approximate one point decrease in sexual compulsivity score (β : -0.85; 95% CI: -1.20, -0.50; β : -0.88; 95% CI: -1.37, -0.38; β : -0.71; 95% CI: -1.07, -0.35, respectively).

Discussion

This study is the first to examine the association between outcome expectancy and sexual compulsivity among MSM living with HIV. In the crude and adjusted models, outcome expectancies for condom use, HIV disclosure and negotiation of safer sex practices were negatively associated with sexual compulsivity.

As previously stated, to our knowledge, no prior study has examined the relationship between outcome expectancy and sexual compulsivity. However, Semple et al. [11] examined the association between self-efficacy and sexual compulsivity and found that lower self-efficacy for condom use was associated with higher sexual compulsivity. Outcome expectancy and self-efficacy have been shown to be distinguishable but related factors [14]. Bandura [12] stated that the beliefs that individuals have about their capacities (self-efficacy) differ from the outcomes that are anticipated from specific actions (outcome expectancy); but they are related as those beliefs about one's ability may partially determine the outcome expectations.

Nevertheless, controversies and contradictions in self-efficacy and outcome expectancy exist and these have been highlighted by Williams [13]. Williams stated that Bandura contradicted the self-efficacy theory when he suggested that self-efficacy cannot be causally influenced by outcome expectancies but later conceded that self-efficacy theories are still validated when they are causally influenced by outcome expectancies. If outcome expectancy influences self-efficacy, then self-efficacy may have a mediational role in the relationship between outcome expectancy and sexual compulsivity. However, an alternative explanation could be that self-efficacy influences outcome expectancy and the relationship between outcome expectancy and sexual compulsivity is explained by a direct association rather than via self-efficacy as a potential mediator.

As previously stated, the association between outcome expectancy and sexual compulsivity may vary depending on HIV status, especially for those outcome expectancies that are more specific to living with HIV versus not. Grov and colleagues showed that sexually compulsive behavior varied statistically significantly by HIV status. However, similar studies examining outcome expectancy by HIV status are lacking. Nevertheless, it is possible that men living with HIV may have varying beliefs about specific outcomes, whether related to sense of self or concrete consequences due to an action, compared to other men due to their lived

experiences with HIV. Men living with HIV may have higher outcome expectations for condom use, HIV disclosure, and negotiation for safer sex practices due to resilience as a result of living with HIV or they may have lower outcome expectations due to discrimination and stigma they may undergo as a result of living with HIV. These differences may result in living with HIV being a moderator in the association between outcome expectancy and sexual compulsivity.

One theory that may help to explain the association between outcome expectancy and sexual compulsivity is the Theory of Planned Behavior [23]. This theory was chosen as it links beliefs to behavior and suggests that intention and attitudes towards behavior can shape behavioral performance and change. The main aim of the study was to determine the association between outcome expectancies and sexual compulsivity among MSM living with HIV. We were interested in examining potential risk factors for sexual compulsivity and to date and to our knowledge, no study has examined the association between outcome expectancy and sexual compulsivity. As previously stated, the Theory of Planned Behavior links beliefs to behavior, therefore we hypothesized that higher outcome expectancies, more positive expectations from condom use, HIV disclosure, and negotiation of safer sex practices, would be linked to lower sexual compulsivity. In the current study, the higher the expectations of individuals' beliefs on condom use and its impact on sexual experiences, and of HIV disclosure and negotiation of safer sex practices on interpersonal and intrapersonal relationships, the lower their sexually compulsive behavior. In other words, as an individual has more positive beliefs about condom use, HIV disclosure and negotiation of safer sex practices, they are less sexually compulsive. This finding is crucial as it highlights potential factors that may help to reduce sexually compulsive behavior among MSM, which may consequently decrease risky sexual behavior and HIV transmission.

The current study has many strengths. This is the first study to examine outcome expectancy and sexual compulsivity among MSM living with HIV. In addition, confounding assessment was performed and subsequent adjustments were made for potential confounders. Adjusting for potential confounders helps to account for the effect of other variables in the association between outcome expectancy and sexual compulsivity. Nevertheless, there are some limitations. First, the data is cross-sectional. Therefore, we were unable to determine the temporal sequence between outcome expectancy and sexual compulsivity. Second, sexually compulsive behaviors may be underreported due to social desirability bias. This underreporting may result in underestimates of the “true” association between outcome expectancy and sexual compulsivity. Third, the low Cronbach's alpha values, for the outcome expectancy for condom use and HIV disclosure, which suggest low internal consistency, may have impacted reported estimates. Low alpha values of the independent variable (outcome expectancy) may lead to deviations of effect estimates (β values) from its true size [29].

Conclusions

Prevention and intervention programs geared towards reducing compulsive sexual behavior among MSM living with HIV should focus on outcome expectancies for condom use, HIV disclosure, and negotiation of safer sex practices. Future studies should determine if self-

efficacy is a mediator in the association between outcome expectancy and sexual compulsivity. Longitudinal studies are needed to assess the directional nature of the association between outcome expectancy and sexual compulsivity. Future research should also assess risk or protective factors of sexual compulsivity among women to determine if these associations exist among other populations living with HIV, and also among MSM who do not have HIV. More research should also delve into ways to improve the reliability of the outcome expectancy measures, especially for condom use and HIV disclosure among MSM populations. Future studies with larger samples and with a longitudinal design are needed to determine if the associations found in the current study will be consistent.

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Table 1
Items for Outcome Expectancy Measures for Condom Use, HIV Disclosure, and
Negotiation of Safer Sex Practices

Condom Use	
1	I believe that condoms interfere with sexual pleasure
2	I believe that stopping to put on a condom ruins the moment.
3	I believe that condoms will protect my sexual partner(s) from getting HIV.
4	I believe that using a condom makes me less sexually desirable.
5	I believe that using condoms can be sexy and erotic.
HIV Disclosure	
1	I believe that my partner(s) will reject me if I tell him/her that I am HIV positive.
2	I believe that disclosing my HIV status to my sexual partner(s) will increase my sexual pleasure.
3	I will become better at disclosing my HIV status if I practice what I will say and do.
4	I will feel good about myself if I disclose my HIV+ status to all my sexual partners.
Negotiation of Safer Sex Practices	
1	I believe that my partner(s) will agree to use a condom every time that we have insertive sex (i.e., vaginal or anal sex).
2	I believe that my partner(s) will agree to try mutual masturbation.
3	I believe that my partner(s) will still trust me if I suggest safer sex practices.
4	I will become better at negotiating safer sex if I practice what I will say and do.
5	I will feel good about myself if I successfully negotiate safer sex with my sexual partner(s).

Note: Measures have been partially modified from original Semple et al., version

Table 2
Sociodemographic Characteristics, Outcome Expectancy, and Sexual Compulsivity
among Men who have Sex with Men Living with HIV

Characteristics	N	%	Sexual Compulsivity Mean, SD
Age (Mean, SD)	42.1	11.0	
18-34	92	27.2	35.7, 11.3
35-49	151	44.7	32.5, 10.6
50	95	28.1	30.4, 10.1
Monthly Income			
\$0-\$500	102	30.2	35.7, 11.6
\$501-\$1,000	96	28.4	31.0, 9.9
\$1001	140	41.4	31.9, 10.4
Race/Ethnicity			
Black	180	53.3	33.6, 11.0
White	133	39.4	32.1, 10.6
Other	25	7.4	33.0, 11.1
Education			
Less than high school	35	10.4	34.9, 11.9
Finished high school	79	23.4	33.0, 11.4
Some college	147	43.5	32.5, 10.4
Finished college or advanced degree	77	22.8	32.0, 10.4
Employment			
Yes	103	30.5	32.8, 9.5
No	235	69.5	32.8, 11.3
	Mean	SD	Range
Outcome Expectancy			
Condom Use	13.9	3.3	5-20
HIV Disclosure	11.6	2.3	4-16
Negotiation	16.2	3.2	5-20
Sexual Compulsivity	32.8	10.8	13-65

Table 3
Association between Outcome Expectancy Measures for Condom Use, HIV Disclosure, and Negotiation of Safer Sex Practices and Sexual Compulsivity among MSM Living with HIV

Outcome Expectancy	Crude β	Crude 95% CI	Adjusted β^a	Adjusted 95% CI ^a	Adjusted β^b	Adjusted 95% CI ^b	Adjusted β^c	Adjusted 95% CI ^c
Condom Use	-0.71	-1.05, -0.36	-0.79	-1.13, -0.46	-0.81	-1.16, -0.45	-0.85	-1.20, -0.50
HIV Disclosure	-0.84	-1.34, -0.34	-0.89	-1.38, -0.40	-0.84	-1.35, -0.34	-0.88	-1.37, -0.38
Negotiation of Safer Sex Practices	-0.49	-0.84, -0.13	-0.68	-1.04, -0.32	-0.54	-0.90, -0.18	-0.71	-1.07, -0.35

Note: All estimates and 95% CIs are statistically significant at $p < 0.05$

^a Adjusted for age

^b Adjusted for race/ethnicity

^c Adjusted for age, race/ethnicity, income, education and employment status.