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Escape expectancies and sexualized substance use among gay, bisexual, and other men who have sex with men

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Escape expectancies and sexualized substance use among gay, bisexual, and other men who have sex with men

ABSTRACT

McKirnan's Cognitive Escape Theory (1996) is often characterized by the hypothesis that drugs are used during sex by gay, bisexual, and other men who have sex with men (gbMSM) to relieve internal cognitive conflict over safe-sex norms and sexual desire. We examined how McKirnan's Cognitive Escape Scale (CES) is related to other widely used constructs relevant to sexualized substance use with hopes of better situating the theory within the evolving landscape of HIV-prevention. Associations between CES and trait anxiety, depression, treatment optimism, sexual altruism, sexual sensation seeking, and self-perceived risk for HIV transmission/acquisition were tested. Mediation analyses tested whether associated psychological measures mediated the effect of CES on the proportion of events in which participants reported co-occurrent substance use and condomless anal sex. Results indicated that CES is associated with higher sexual sensation seeking, treatment optimism, trait anxiety, and perceived likelihood of HIV transmission/acquisition. Mediation analyses suggest that CES is related to but operates independently of treatment optimism, sensation seeking, and trait anxiety. Nevertheless, the intersection of HIV-related worries and substance use expectancies are clearly more nuanced than is widely reported is discussions on cognitive escape.

Introduction

McKirnan's (1996) cognitive escape theory argues that the association between substance use and sexual risk emerges from: (a) conflict between sexual needs and cognitive restraint (which itself may be motivated by HIV-related worry and anxiety), (b) an individual's desire to cognitively disengage (or escape) from the cognitive load born by dissonant feelings, and (c) the awareness or belief that certain environments or intoxicants will facilitate this disengagement (McKirnan, Ostrow, & Hope, 1996, 2001; Nemeroff, Hoyt, Huebner, & Proescholdbell, 2008; Wells, Golub, & Parsons, 2011). However, since the development of McKirnan's cognitive escape theory, the emergence of antiretroviral-based treatment as prevention and pre-exposure prophylaxis have significantly changed the risks associated with sexual behaviour among gay, bisexual, and other men who have sex with men (gbMSM; Card, Armstrong, et al., 2017; Card, Lachowsky, Cui, Carter, et al., 2016; Grant et al., 2010). Furthermore, as research of substance use among gbMSM has improved, it has become increasingly clear that substance use is not universally associated with increased risk-taking (Card, Lachowsky, et al., 2018). Cognitive escape theory thus raises several important questions about the individuals who use drugs as a means of escape.

Acknowledging that social norms and risk perceptions have significantly changed since cognitive escape theory was developed (Card, Armstrong, et al., 2017; Lachowsky et al., 2016), an assessment of how cognitive escape theory relates to other contemporary psychosocial measures is needed (Berry & Johnson, 2018; Melendez-Torres & Bourne, 2016). For instance, understanding that cognitive escape is driven by cognitive conflict and normative dissonance

(McKirnan et al., 1996; Sinha, 2008; Teva, Bermúdez, & Buela-Casal, 2010), and understanding its relationship to other mental health conditions, such as anxiety and depression, may help identify strategies for addressing any risks that might be associated with sexual behaviour or substance use. Likewise, understanding how sensation seeking contributes to cognitive dissonance with sexual safety norms may help us better contextualize sexually-motivated escape behaviour within the broader literature (David, McMahon, Luthar, & Suchman, 2012; Kalichman & Rompa, 1995) – particularly so since research on sexual sensation seeking suggests that it is generally associated with reduced concern for HIV risk (Crawford et al., 2003). Similarly, understanding how other attitudes towards risk, such as those measured by O’Dell’s (2008) Sexual Altruism scale and Van de Ven’s (2000) HIV Treatment Optimism scale (Van de Ven, Crawford, Kippax, Knox, & Prestage, 2000) would likewise provide needed context to understand the cognitive stressors experienced by those engaging in escape-motivated behaviour.

The present study aims to address these themes by: (i) identifying the independent and adjusted factors associated with cognitive escape using bivariable and multivariable regression and (ii) determining whether selected psychosocial measures mediate the association between cognitive escape and the co-occurrence of event-level substance use and condomless anal sex (measured by proportion of events with co-occurrence) using multi-level mediation analyses.

Methods

Participants for this study were recruited using respondent-driven sampling (RDS) between February 2012 and February 2015 as part of the Momentum Health Study. Seeds were selected through community partners and asked to recruit up to 6 eligible individuals who (1) identified as a man, (2) reported sex with another man in the past six months, (3) lived in metro Vancouver, (4) were 16 years or older, and (5) were able to complete a study questionnaire in English. Eligible recruits were in turn asked to recruit more individuals into the study until the final sample size was reached. All participants provided written informed consent prior to completing a computer-administered questionnaire and meeting with a study nurse at our downtown study office. The protocol took approximately two hours (90 h for survey, 30 min for nursing visit). Participants were compensated \$50 CAD for completion of the study protocol and \$10 CAD for each participant they recruited into the study. To incentivise participation from higher income populations, participants could buy raffle tickets for a \$2000 CAD travel voucher or \$200 CAD Apple gift card for \$10 CAD per ticket. The Momentum study received ethical and scientific review from the Harmonized Research Ethics Boards of the University of British Columbia, Simon Fraser University, the University of Victoria, and the Public Health Agency of Canada (#H11-00691).

Cognitive escape

As our primary outcome of interest, we administered McKirnan’s 12-item Escape Motivation Scale, a validated scale that examines how much substance use around sex might be related to

sexual risk taking. Scored from 1 (Strongly disagree) to 4 (Strongly agree), the value of each item was summed to create final scale scores which ranged from 12 to 48.

Other psychosocial measures

The Hospital Anxiety and Depression Scale (Snaith, [2003](#)) assessed severity of symptoms of trait anxiety (e.g., “Worrying thoughts go through my mind”) and depression (e.g., “I feel as if I am slowed down”) using two subscales. The HADS-anxiety subscale has recently been shown to perform similarly to the subscale of the Trait Anxiety Subscale of the State-Trait Anxiety Inventory (Zingano et al., [2019](#)). The Sexual Sensation Seeking Scale (Kalichman et al., [1994](#)) was used to assess sensation seeking motivations for sexual behaviour (e.g., “the physical sensations are the most important thing about having sex.”). The Sexual Altruism Scale (O’Dell, Rosser, Miner, & Jacoby, [2008](#)) assessed “other-centered motivations” for gbMSM’s HIV-prevention behaviour. The HIV Treatment Optimism-Scepticism scale (Van de Ven et al., [2000](#)) measured attitudes toward HIV therapies and associated risk perceptions (e.g., “A person with undetectable viral load cannot pass on the virus”) using a 12 item scale.

Demographics and behavioural factors

Participants provided their age, ethnicity, sexual orientation, relationship status, annual income, education, self-perceived HIV status, and self-perceived lifetime risk of acquiring or transmitting HIV.

Event-specific sexual behaviour and substance use

Event-level individual and partner substance use (within 2 h prior to or during sex) of alcohol, marijuana, EDD, poppers, and other drugs was assessed for a participant’s most recent sexual experience with up to five of their most recent sexual partners, over the last 6 months. Event level injection drugs use was likewise assessed. Specific sexual behaviours during each of these baseline events was also reported, including whether or not they engaged in any condomless anal sex at the event level. This event-level data was collected by allowing participants to list five of their most recent partners and then collecting event level data about the most recent sexual event with each partner. Only events in the past six months were considered. If participants listed fewer than five partners in the past six months (regardless of how many partners they actually had), they only provided information about the most recent sexual event with the partners listed.

Period prevalent sexual health

Participants reported whether they engaged in any condomless anal sex in the past six months and whether they used serosorting, strategic positioning, withdrawal, consistent condom use, or viral load sorting strategies to reduce their risk of getting or transmitting HIV during anal sex. (Card, Lachowsky, Cui, Carter, et al., [2016](#); Card, Lachowsky, Cui, Sereda, et al., [2016](#)).

Participants were also asked whether they had ever been tested for any sexually transmitted infections.

Period prevalent substance use behaviour

Any use in the past six months (P6M) of alcohol, tobacco, cannabis, erectile dysfunction drugs (EDD), poppers, crack, cocaine, crystal methamphetamine, speed, gamma-hydroxybutyrate (GHB), benzodiazepines, ecstasy, ketamine, mushrooms, lysergic acid diethylamide (LSD), heroin, codeine, oxycodone, steroids, and nitrous oxide was measured. Latent class analysis (Lanza, Collins, Lemmon, & Schafer, 2007) was conducted for all drugs used in the past six months by more than 30 men. A six-class solution was identified representing: “assorted drug use,” “club drug use,” “street drug use,” “sex drug use,” “conventional drug use,” and “limited drug use.” More details about this analysis are reported elsewhere (Card, Armstrong, et al., 2018a), including longitudinal analyses assessing the stability of latent classes (Card, Armstrong, et al., 2018b). Class assignments were made using the maximum-probability assignment method (Petersen, Bandeen-Roche, Budtz-Jørgensen, & Larsen, 2012).

Data analysis

Descriptive analyses

Descriptive and exploratory regression analyses were conducted in SAS (v.9.4., Cary, NC) Mediation analyses were conducted in R (v.3.3.2). Descriptive frequencies and proportions were calculated for each categorical variable and median values with interquartile ranges were calculated for each continuous variable.

Multivariable regression analysis

To identify the independent and adjusted factors associated with cognitive escape, we conducted a linear mixed model with random intercepts for RDS chain (to control for lack of independence introduced by using chain-referral recruitment). The final model was constructed using a backwards selection technique by initially including all variables of interest with univariate p -values ≤ 0.20 (Maldonado & Greenland, 1993; Mickey & Greenland, 1989; Sun, Shook, & Kay, 1996). One-by-one, the variable with the highest type III p -value was omitted until the Akaike Information Criterion was optimized.

Mediation analyses

After identifying key psychometric variables associated with cognitive escape, we assessed whether these variables mediated the association between cognitive escape and the proportion of baseline events in which participants reported any concurrent condomless anal sex and substance use. Participants who reported only one event were excluded from these secondary analyses to minimize polarizing bias introduced by potentially atypical events. For each psychometric variable identified in the regression analyses, we conducted a multilevel mediation analysis

(MacKinnon, 2008). In doing so, zero-inflated binomial regression models with random effects for RDS correlation were used to model the relationship between cognitive escape and the proportion of events in which participants reported concurrent substance use and condomless anal sex (Long, 1997). Mediator models did not include additional confounding factors as we did not have hypotheses for what factors might confound these psychometric variables. The Monte Carlo Method for Assessing Mediation (MCMAM) was used test for mediation in each model (Selig & Preacher, 2008).

Results

Descriptive statistics for the sample, stratified by dichotomized median Cognitive Escape Scale scores, are provided in [Table 1](#). In total 774 participants were recruited; Of these, 602 provided at least two events with substance use and sexual behaviour information available. These 602 participants were included in our mediation analyses as we required at least two events per participant in order to calculate the proportion-based outcome. For the multivariable model, a total of 2,683 events were reported by the 735 participants in this analysis (24 did not report any events). Of these 2,683 events, 506 (20.2%) events included neither substance use nor condomless anal sex, 225 (9.0%) events included condomless anal sex but not substance use, 1084 (43.3%) events included substance use but not condomless anal sex, and 690 (27.5%) events included both substance use and condomless anal sex. For descriptive purposes, Supplemental Table S1 shows the response frequencies for each Cognitive Escape Scale item and Supplemental Table S2 shows the proportion of events in which participants report concurrent substance use and condomless anal sex. **Table 1.** Descriptive statistics for the Momentum Health Study, stratified by median Cognitive Escape Scale (CES) scores ($N = 759$) ([Table view](#))

	CES \leq 29		CES $>$ 29	
	<i>N</i>	(%)	<i>N</i>	(%)
<i>Age</i>	32	(25.0–47.0)	34	(27.0–46.0)
<i>HIV- status</i>				
Negative	325	(77.9)	220	(64.3)
Positive	92	(22.1)	122	(35.7)
<i>Sexual identity</i>				
Gay	357	(85.6)	285	(83.3)
Bisexual	31	(7.4)	40	(11.7)

	CES ≤ 29		CES > 29	
	<i>N</i>	(%)	<i>N</i>	(%)
Other	29	(7.0)	17	(5.0)
<i>Ethnicity</i>				
White	317	(76.0)	259	(75.7)
Asian	44	(10.6)	29	(8.5)
Indigenous	16	(3.8)	31	(9.1)
Latin American	21	(5.0)	14	(4.1)
Other	19	(4.6)	9	(2.6)
<i>Annual income</i>				
< \$30,000	257	(61.6)	216	(63.2)
\$30000 to \$59999	104	(24.9)	93	(27.2)
\$60000 and over	56	(13.4)	33	(9.6)
<i>Current relationship status</i>				
Single	251	(60.2)	215	(62.9)
Monogamous	60	(14.4)	26	(7.6)
Open	74	(17.7)	79	(23.1)
Married	27	(6.5)	17	(5.0)
Other	5	(1.2)	5	(1.5)
<i>Education</i>				
High school education or less	85	(20.4)	88	(25.7)
Greater than High School Education	332	(79.6)	254	(74.3)
<i>Perceived risk of HIV transmission / acquisition</i>				
Very unlikely (less than 10%)	220	(52.8)	132	(38.6)
Unlikely (11–39%)	151	(36.2)	141	(41.2)

	CES \leq 29		CES > 29	
	<i>N</i>	(%)	<i>N</i>	(%)
Somewhat likely (40–60%)	38	(9.1)	51	(14.9)
Likely (61–89%)	2	(0.5)	13	(3.8)
Very likely (more than 90%)	6	(1.4)	5	(1.5)
<i>Substance Use Latent Class Assignment</i>				
Limited Drug Use	184	(44.1)	105	(30.7)
Conventional Drug Use	126	(30.2)	75	(21.9)
Club Drug Use	40	(9.6)	29	(8.5)
Sex Drug Use	34	(8.2)	54	(15.8)
Street Drug Use	27	(6.5)	53	(15.5)
Assorted Drug Use	6	(1.4)	26	(7.6)
<i>Seroadaptive Strategies</i>				
Consistent condom use	265	(63.9)	153	(45.0)
Strategic positioning	105	(25.3)	117	(34.4)
Anal Sex Avoidance	204	(49.2)	143	(42.1)
Sero-Sorting	152	(36.6)	150	(44.1)
Viral-Load Sorting	60	(14.5)	77	(22.6)
Any STI testing EVER	366	(89.3)	325	(95.9)
HADS-Anxiety ($\alpha = 0.83$)	7 (4.0–9.0)		9 (6.0–11.0)	
HADS-Depression ($\alpha = 0.79$)	3 (1.0–5.0)		4 (2.0–7.0)	
Treatment Optimism ($\alpha = 0.82$)	24 (20.0–27.0)		26 (23.0–30.0)	
Sexual Altruism ($\alpha = 0.91$)	3.5 (3.0–3.8)		3.4 (2.8–3.8)	
Sexual Sensation Seeking ($\alpha = 0.73$)	30 (27.0–32.0)		32 (30.0–36.0)	
Number of anal sex partners, P6M	4 (2.0–15.0)		5 (2.0–19.0)	

Italics indicate Median and Q₁-Q₃ reported for Continuous Variables; HADS = Hospital Anxiety and Depression Scale; CES = Cognitive Escape Scale.

Table 2 shows the univariate and multivariate associations between each explanatory factor and Cognitive Escape Scale scores. Cognitive escape was positively associated being HIV-positive, being Indigenous (vs. White), greater perceived risk of HIV transmission, higher trait anxiety scores, higher treatment optimism scores, higher sexual sensation seeking scores, and self-reported street drug use or sex drug use. Factors negatively associated with cognitive escape included increasing age and identifying as a sexual orientation other than gay or bisexual (vs. gay). **Table 2.** Univariate and multivariate associations with Cognitive Escape Scale (CES) scores ($N = 759$). ([Table view](#))

	Unadjusted β (95% CI)	Adjusted β (95% CI)
<i>Age</i>	-0.01 (-0.05, 0.03)	-0.07 (-0.11, -0.03)
<i>HIV-positive</i>	2.96 (1.86, 4.05)	1.88 (0.70, 3.05)
<i>Sexual identity (vs. Gay)</i>		
Bisexual	1.97 (0.27, 3.67)	0.75 (-0.75, 2.25)
Other	-1.45 (-3.53, 0.63)	-2.66 (-4.44, -0.88)
<i>Ethnicity (vs. white)</i>		
Asian	-1.17 (-2.86, 0.52)	0.43 (-1.08, 1.94)
Indigenous	2.90 (0.84, 4.97)	2.72 (0.96, 4.49)
Latin American	-0.4 (-2.75, 1.96)	0.73 (-1.29, 2.76)
Other	-0.87 (-3.48, 1.74)	-0.67 (-2.99, 1.66)
<i>Annual income (vs. < \$30,000)</i>		
\$30000 to \$59999	-0.01 (-1.16, 1.14)	Not Selected
\$60000 and over	-2.01 (-3.58, -0.44)	
<i>Current relationship status (vs. Monogamous)</i>		
Married	0.75 (-1.77, 3.28)	Not Selected

	Unadjusted β (95% CI)	Adjusted β (95% CI)
Single	2.82 (1.25, 4.40)	
Other arrangement (partially open)	1.11 (-3.38, 5.59)	
Open	2.63 (0.81, 4.45)	
<i>More than high school education</i>	-1.47 (-2.65, -0.29)	Not Selected
<i>Perceived risk of HIV transmission / acquisition</i>		
Very unlikely (less than 10%)	Ref	Ref
Unlikely (11–39%)	2.02 (0.98, 3.07)	1.07 (0.12, 2.01)
Somewhat likely (40–60%)	2.90 (1.32, 4.49)	0.99 (-0.44, 2.41)
Likely (61–89%)	8.45 (4.96, 11.93)	3.69 (0.56, 6.82)
Very likely (more than 90%)	2.32 (-1.73, 6.36)	2.19 (-1.47, 5.85)
<i>Substance Use Latent Class Assignment</i>		
Limited Drug Use	Ref	Ref
Conventional Drug Use	1.56 (0.38, 2.73)	0.47 (-0.61, 1.55)
Club Drug Use	2.67 (0.95, 4.39)	0.96 (-0.65, 2.58)
Sex Drug Use	5.92 (4.35, 7.5)	2.27 (0.74, 3.80)
Street Drug Use	5.35 (3.72, 6.99)	3.10 (1.52, 4.68)
Assorted Drug Use	6.28 (3.87, 8.69)	1.79 (-0.47, 4.06)
<i>Seroadaptive Strategies (Yes vs. No)</i>		
Consistent condom use	-2.79 (-3.77, -1.82)	Not Selected
Strategic positioning	1.37 (0.3, 2.45)	Not Selected
Anal Sex Avoidance	-1.02 (-2.01, -0.03)	Not Selected
Sero-Sorting	0.98 (-0.02, 1.98)	Not Selected
Viral-Load Sorting	2.57 (1.30, 3.84)	Not Selected

	Unadjusted β (95% CI)	Adjusted β (95% CI)
Any STI testing EVER	2.21 (0.36, 4.06)	Not Selected
HADS-Anxiety ($\alpha = 0.83$)	0.43 (0.31, 0.54)	0.3 (0.19, 0.41)
HADS-Depression ($\alpha = 0.79$)	0.53 (0.38, 0.67)	Not Selected
Treatment Optimism ($\alpha = 0.82$)	0.34 (0.25, 0.43)	0.17 (0.08, 0.25)
Sexual Altruism ($\alpha = 0.91$)	-2.04 (-2.79, -1.29)	Not Selected
Sexual Sensation Seeking ($\alpha = 0.73$)	0.64 (0.53, 0.74)	0.45 (0.34, 0.55)
Number of anal sex partners, P6M, per 10	-0.003 (-0.004, -0.001)	Not Selected

Bolded values indicate $p < 0.05$; HADS = Hospital Anxiety and Depression Scale; CES = Cognitive Escape Scale

Supplemental Table Tables S3, S4, and S5 shows the mediation analyses assessing whether HADS-Anxiety Subscale scores, Treatment Optimism-Skepticism Scale scores, or Sexual Sensation Seeking Scale scores mediate the association between Cognitive Escape Scale scores and the proportion of sexual events during which participants reported engaging in concurrent substance use and condomless anal sex. These analyses demonstrated that trait anxiety had a suppressive effect on the association between cognitive escape and event-level sexualized substance use. Meanwhile, treatment optimism and sexual sensation seeking had mediating effects on this relationship. Treatment optimism mediated 40% of the total effect and sexual sensation seeking mediated 35% of the total effect. The suppression effect of trait anxiety indicates that the association between cognitive escape and the proportion of events in which participants reported concurrent substance use and condomless anal sex increased by 8% when accounting for the negative association between trait anxiety and the proportion of events in which individuals reported concurrent substance use and condomless anal sex. In other words, a lower proportion of the events reported by men with higher trait anxiety included substance use and sexual risk – causing the strength of association the primary outcome and explanatory factor to increase, rather than decrease – thus indicating that trait anxiety has a suppressant effect on the outcome.

Discussion

Primary findings

In the present study we found that cognitive escape was associated with higher levels of trait anxiety, treatment optimism, and sexual sensation seeking. We then evaluated whether these factors, being of particular interest to researchers studying sexualized drug use among gbMSM, mediated the effect of cognitive escape on the proportion of event-level sexual encounters in which participants reported concurrent condomless anal sex and substance use. These primary findings, as well as other results from our analyses, provide important insights into McKirnan's cognitive escape theory (McKirnan et al., [1996](#)).

We first note consistencies between our findings and the existing literature. In several respects, we provide possible convergent validity of the cognitive escape theory. Indeed, trait anxiety, sexual sensation seeking, HIV-positive serostatus, and one's perceived risk of HIV transmission/acquisition were independent correlates of cognitive escape – suggesting that cognitive escape is the product of conflict between HIV-related worry (either of acquiring or transmitting) and needs for sexual stimulation. However, complicating this straight-forward interpretation of cognitive escape, we also find that McKirnan's Cognitive Escape Scale was positively associated with treatment optimism – a measure which is characterized by positive outlooks regarding one's ability to prevent HIV transmission, acquisition, morbidity, and mortality using antiretroviral therapies (Van de Ven et al., [2000](#)). With this in mind, we should note that if escape-related sexualized substance use primarily emerges as the result of anxiety, stress, and worry about HIV-acquisition (Nemeroff et al., [2008](#)), then we might have expected to find an inverse relationship between cognitive escape and treatment optimism. Furthermore, we might expect to see that trait anxiety partially mediates the association between cognitive escape and event-level sexualized substance use. Simply put, this was not the case with either expected finding. Instead, trait anxiety had a suppressive effect – likely indicating that those with high levels of trait anxiety are not escaping normative expectations for safe-sex but avoiding risky behaviour. It is worth noting, however, that trait anxiety may not capture the same cognitive processes that are relevant to the mechanisms that might drive escape-related behaviours. Unfortunately, our data did not include a measure of event-level anxiety making it difficult to conclude exactly what role anxiety leading up to sexual events might play in shaping these events. Nevertheless, we see at the univariate level that cognitive escape is negatively associated with sexual altruism: an important finding given that altruistic attitudes towards safe sex are typically associated with higher levels of risk avoidance (Card, Lachowsky, et al., [2017](#); O'Dell et al., [2008](#)). These findings suggest that McKirnan's cognitive escape measure may not exclusively capture general anxieties and worries regarding HIV – though it remains possible that anxiety leading up to sexual events (i.e., State anxiety) may yet play an important role. Providing some additional context to these findings, our mediation analyses show that cognitive escape is strongly associated with sexualized substance use and our regression analyses shows

that it is associated with a heightened perception of lifetime risk for HIV acquisition/transmission – though with this second finding it is unclear whether this perceived risk is driven by an understanding of the risks associated with their behaviour or by overly cautious worry about HIV. In any case, the emergence of novel HIV prevention strategies, such as Pre-Exposure prophylaxis (PrEP), may prove to further reduce worries about HIV (Jenness et al., [2017](#)). If true, this would increase the extent to which this measure captures worries other than those related to HIV.

In any case, our findings suggest that it may very well be the case that drugs are used as a “releasing mechanism” by individuals hoping to escape stress and bring about positive emotional and sexual experiences (McKirnan, Houston, & Tolou-Shams, [2007](#); Vicioso, Parsons, Nanin, Purcell, & Woods, [2005](#)) – regardless of whether these stressors are rooted in worries about HIV. In other words, McKirnan’s cognitive escape scale appears to capture participant’s expectancies regarding substance use and measures the extent to which individuals might understand the intoxicating effects of drugs. Thus, gbMSM may in fact use drugs as a mean to achieve desired levels of sexual arousal, performance, and satisfaction (Melendez-Torres & Bourne, [2016](#)). When interpreted in this way, McKirnan’s Cognitive Escape Scale becomes very applicable to other theories of sexual performance and cultural performativity which position drugs within the wider context of gay men’s social and sexual experiences (et al., [2018a](#); Melendez-Torres & Bonell, [2017](#)). Making room within cognitive escape theory for social expectations (i.e., Expectations about sexual or other social performances) and the cognitive load they impose helps to illuminate how individuals strategically use drugs as a means to meet social expectations as well as to cope with other sources of anxiety.

Limitations

This study is not without limitations. First, we should note that we cannot compare our scale scores or averages to those in McKirnan’s original version because we opted for a four-point, rather than five-point, Likert-type scale by removing the middle response option (i.e., “neither”) – which was deemed uninformative in the questionnaire development stage of our study. Second, we should note that our measure of anxiety (i.e., The HADS scale), captured self-reported trait anxiety which may or may not reflect the state that drives escape-related behaviour leading up to anticipated sexual behaviour. Third, we note that the proportion of events is a crude measure for sexualized drug use – especially when collected retrospectively across multiple partners during a 6-month window period. Fourth, we have suggested that the escape motive scale might relate to some characteristics of social conformity (i.e., Some individuals with high expectancies use drugs as a means of meeting performative expectations for social and sexual behaviour), therefore we should acknowledge that the measure itself is subject to social desirability bias with an unknown direction of effect. Fifth, a variety of sampling biases may be at work in shaping our sample. This includes the use of honoraria to incentivise participation. Sixth, we note that PrEP

uptake during this time period was low during this study (Mosley et al., [2018](#)) as it was not covered by provincial drug formulary during baseline recruitment and did not become available until 2018. Seventh, our mediation approach is considered in the context of Barron and Kenney's four step mediation process which recommends the use of Sobel's Z-test. The interpretations of these mediation approaches have been increasingly criticized for over-simplifying the nature of mediation and its strict interpretations of causal effects (Zhao, Lynch, & Chen, [2010](#)).

Conclusions

Despite these limitations, our study provides an updated analysis of McKirnan's sexual escape theory in the Treatment as Prevention (TasP) era and has aimed to contextualize it within contemporary literature examining substance use and sexual behaviour among gay and bisexual men. Given that our findings do support an escape motivation for substance use, clinical therapies should address individual stressors, including minority stresses specific to gbMSM, and provide coping techniques that may relieve the need for substance use. Such approaches may include the use of medications (e.g., Antidepressants), social supports (e.g., Group work), and other holistic measures as part of standard harm reduction and substance use treatment. Further, substance use related interventions should recognize the diverse motives for substance use that gbMSM exhibit.

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