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The potential of alcohol “heat-of-the-moment” scenarios in HIV prevention: A qualitative study exploring intervention implications

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Abstract

Scenarios simulating real-world risk situations have proven effective for substance use intervention methods and could potentially prove useful as an HIV-prevention method. This study explored qualitatively the development and use of such “in-the-moment” methods. We interviewed 97 moderate-drinking women (50% Caucasian) after participation in an experiment requiring that they project themselves into a risky-sex scenario. Most participants (58%) reported experiencing the scenario as a reflective tool characterized by two primary themes: (a) increased awareness of risk; and (b) contemplation of behavior change. Findings suggest that “in-the-moment” methods depicting real-world risk situations and providing opportunities to reflect about behavioral choices and subsequent outcomes could prove a useful adjunct to HIV/AIDS-prevention interventions. Such methods could potentially augment existing prevention protocols.

Keywords

HIV prevention; women; scenarios; sexual risk taking; alcohol

HIV remains a persistent and significant health threat to U.S. women. The proportion of AIDS diagnoses that were women increased from 7% in 1985 to 25% in 2008 (Centers for Disease Control and Prevention [CDC], 2011) and women accounted for one quarter of all new HIV cases in 2009. Sixteen percent of new infections among women occur in adolescents and young women (13–24 year-olds); 85% are attributed to heterosexual contact; and women of color are the majority (64% African-American, 16% Hispanic/Latina) (CDC, 2011). Among factors contributing to women’s vulnerability to infection via unprotected heterosexual intercourse, both macro-level factors such as gendered power dynamics and micro-level factors such as alcohol use have been implicated. Micro- and macro-level factors should not be divorced from each other. Micro-level factors take place in the context of larger societal factors, and macro-level factors do not take away from the fact that actions are performed by individuals (Cockerham, 2005; Factor, Kawachi, &

Williams, 2011) Despite the effectiveness of existing prevention interventions, HIV/AIDS and other sexually transmitted infections continue to create significant burdens for women and their communities. Exploration and development of innovative methods capable of boosting the effectiveness of existing prevention/intervention strategies remain warranted.

One underdeveloped domain has been exploration of strategies keyed to the recognition that risk outcomes often occur within the context of acute visceral states. These states, such as alcohol intoxication and sexual arousal, can compromise rational decision-making processes thereby undermining risk-averse choices. The present study explores the possibility that “Heat-of-the-Moment” (HOTM) scenarios – which simulate high risk casual sexual encounters and activate acute visceral states – pose potentially viable methods for enhancing women’s understanding and insight about the dynamics and dangers of sexual-risk-taking encounters generally and alcohol-involved encounters specifically¹. If HOTM scenarios can function credibly in this way as impactful learning tools, then they may offer novel methods for supplementing existing interventions.

Existing HIV Prevention Interventions

Among efforts to understand and prevent women’s HIV infections, two epistemological approaches have been especially influential. First, the vulnerability paradigm (reviewed and critiqued in Higgins, Hoffman, & Dworkin, 2010) emphasized that women were more susceptible than men to HIV infection both for biological reasons and due to socio-cultural and structural inequalities. It fostered a transition from gender-neutral to gender-specific intervention approaches (Dworkin & Ehrhardt, 2007). Focusing on gendered power dynamics and economic inequities, the vulnerability paradigm was instrumental in fueling prevention interventions aimed at empowering women to negotiate more effectively for condom use. Several HIV prevention strategies (e.g., Project FIO – the Future Is Ours (Ehrhardt, et al., 2002); SISTA (Wingood et al., 2006) have drawn from more gender sensitive theories such as the Theory of Gender and Power (Connell, 1987). Second, rational choice models emphasized intrapersonal cognitive factors, such as knowledge, attitudes, intentions, and self-efficacy. Such models – for example, the Health Belief Model (Rosenstock, Strecher, & Becker, 1994), the Theory of Reasoned Action (Fishbein, Middlestadt, & Hitchcock, 1994), and Information, Motivation, Behavior (Fisher, Fisher, & Harman, 2003) – fueled interventions successful at imparting accurate knowledge, attitudes favorable to sexual safety, and effective behavioral skills.

Both epistemological approaches and their derivative interventions have made use of hypothetical scenarios and role plays as instructional devices in teaching women to negotiate

¹It is important to note that not all risky sexual encounters that result in unprotected intercourse can be characterized as heat of the moment situations. This may be especially true for economically disadvantaged women of color with primary partners whom they feel pressured to please because of gendered power dynamics and economic factors. Under such circumstances, heat of the moment factors presumably are less influential in determining sexual safety outcomes. However, among women who are less disadvantaged educationally and economically and who are actively seeking casual dating and sex experiences, structural factors are less likely to be the sole determinant of such decisions. Among participants in our samples (moderately heavy drinkers between 21–30 years of age, who are inconsistent condom users, who currently are sexually active, and who currently do not have a primary exclusive partner), focus groups with ethnically diverse women and ethnically diverse men have revealed that the “we should have used a condom, but did not” encounters prototypically are associated with substance use and high sexual arousal and are attributed to heat of the moment factors. In fact, among the condom use resistance strategies men report, aiming to get the woman so aroused that she will forego condom consideration is a common tactic (Davis, et al., in press).

safer sex and improve problem solving and communication skills (DiClemente, et al., 2004; DiClemente & Wingood, 1995; Ehrhardt, et al., 2002; Kelly, et al., 1994). However, in emphasizing structural factors and cognitive factors, respectively, these two approaches and the hypothetical scenarios and role plays they inspired have at least three noteworthy limitations. First, both the vulnerability paradigm (summarized in Higgins, Hoffman, & Dworkin, 2010) and rational choice models (e.g., Eifler, 2004) presumed a cost-benefit calculus motivated solely by disease avoidance and were thereby less attentive to competing goals such as sexual pleasure. Second, they do not consider the wider range of important contextual, emotional, and social “real-world” factors that influence women’s sexual behavior, such as desires to experience sexually flattering social interactions. Third, previous efforts have not incorporated activation of the visceral arousal states that many women are likely to encounter in real life situations, specifically sexual arousal and acute alcohol intoxication. To address these limitations, HOTM scenarios are crafted to increase realism and to accurately depict an actual situation that the participant has been in or views as possible. For example, a prototypic real-world HOTM encounter may involve being moderately intoxicated, very sexually aroused and expecting to engage in penile-vaginal sexual intercourse, then discovering that there is no condom available. Most interventions (see Crepaz et al., 2009 for a review) do not address HOTM encounters in ways that realistically simulate the influential contextual factors at play.

Heat-of-the-moment scenarios

HOTM scenarios have been most fully developed in controlled laboratory experiments evaluating the effects of alcohol and other situational factors on sexual risk taking (e.g., George et al., 2009) and sexual assault resistance (e.g., Norris et al., 2009). The scenarios are developed from qualitative data used to write a realistic scenario that reflects the experiences and normative behaviors of the target population. The scenario is extensively pilot-tested and qualitative interviews are conducted to assess the realism of the scenario and to ensure that women are able to successfully project themselves into the sexual situation as the protagonist. In HOTM scenarios, the participant or protagonist experiences a highly-eroticized sexual situation with a potentially high-risk partner. Alcohol experiments have shown significant increases in physiological and self-reported sexual arousal (e.g., George et al., 2009) among participants in response to these scenarios, reflecting their validity at evoking real-world sensations. Furthermore, the use of qualitative methods to develop and refine the scenarios increases the likelihood that the participant will experience them as more realistic and immersive. HOTM scenarios seem likely to provide a more realistic experience for the participant than role plays are designed to. Unlike role plays, which consist of having an individual practice a set of skills in simulated interactions that mimic the natural environment (Bellack, Mueser, Gingerich, & Agresta, 1997; Liberman, DeRisi, & Mueser, 1989), HOTM scenarios allow participants to experience physiological changes that occur in the moment while experiencing sexual arousal, intoxication, or both; and then see, first hand, how these visceral in the moment states influence decision-making.

HOTM scenarios may have strategic utility in incorporating social factors into HIV-prevention interventions. Research and theory indicate that individuals who are in “hot” states (e.g., sexual arousal) often underestimate how much their behavior is influenced by

their affective state; and when individuals are not affectively aroused, they do not fully appreciate their own feelings and behavior in “hot” states (Loewenstein, 1999). HOTM scenarios might be a viable method for enhancing women’s insight and understanding about the dangers of risk-taking encounters and the unique nature of risk susceptibility in alcohol-involved encounters; and as a result increase understanding and awareness of personal risk. An HOTM scenario, coupled with relational skills interventions that teach women to identify the influence of arousal on decision-making, and provides skills for negotiating safer sex and for problem-solving ways in which to handle risky partners or situations, has the potential to be a powerful HIV-prevention intervention.

Alcohol and Women’s Sexual Risk Taking

Evaluating the roles of situational factors in sexual risk taking, Cooper (2010) concluded that alcohol use is one of the strongest known contextual determinants of sexual risk behaviors such as unprotected vaginal intercourse. Despite earlier ambiguity in cross-sectional and event-level data about the nature of alcohol’s role, it is now well established through longitudinal surveys (e.g., Cooper, 2010) and rigorous experiments (e.g., see reviews by Hendershot & George, 2007; Rehm, Shield, Joharchi, & Shuper, 2012) that alcohol can and does have a causal impact on women’s sexual risk behaviors. Rates of alcohol consumption by women in the U.S. are substantial. NIAAA statistics indicate that 60% of women have had at least one drink in the past year, 21% of these women averaged 3 or more drinks per day, and 14% averaged one monthly instance of heavy episodic drinking. Similarly, a recent Gallup poll of representative U.S. households indicated that 64% of women drink (Saad, 2012). Furthermore, a substantial proportion of women drinkers report drinking before sex, especially unprotected sex (Hutton, McCaul, Santora, & Erbeling, 2008; Yarnall, et al, 2003). Thus, development of intervention tools tailored to this particular type of risk could potentially be an important innovation.

Present Study

The purpose of this article is to present qualitative findings from a community sample of women aged 21 to 30 who reported high-risk sexual activity and moderate social drinking. These qualitative data describe participants’ experiences of a HOTM scenario as part of a laboratory experiment simulating a heterosexual encounter, where alcohol was administered to half of the participants. After presenting the data on participants’ experiences of the scenario, we describe how these HOTM scenarios could potentially be used as part of an HIV-prevention intervention for high risk heterosexual women. The article concludes with a discussion of the possibilities created through the use of scenarios and implications for sexual-risk reduction among women.

The research summarized in this article is not hypothesis driven and is not aimed at evaluating the effects of alcohol, per se. This article was driven by exploratory data obtained from participants who were part of a larger experimental study investigating the effects of alcohol intoxication, sexual assault history, contextual relationship factors, and racial/ethnic background on decisions to have unprotected sex during an HOTM protocol. The results of the larger experiment are being reported elsewhere (George, et al., under review; Masters et

al., in press). In brief, after being randomly assigned to either an alcohol (target peak blood alcohol content (BAC) = .10, n = 47) or control condition (no alcohol, n = 50), participants were randomly assigned to read one of two eroticized HOTM scenarios. After completion of the experiment proper, participants then participated in a follow-up interview after acute intoxication had declined by more than half (BAC < .045). The qualitative interview data being reported are not designed to evaluate alcohol effects, but to instead explore the research questions of whether HOTM scenarios pose potentially viable methods for enhancing women's understanding and insight about the dynamics and dangers of sexual-risk-taking encounters generally and alcohol-involved encounters specifically. Potential themes that might emerge are that HOTM scenarios can have utility in functioning to increase awareness of risk and promote contemplation of behavior change.

Methods

All aspects of the study were approved by the University of Washington Human Subjects Division institutional review board prior to data collection (HSD#:32690-G).

Recruitment and Screening

All participants in the qualitative study were drawn from the larger group of women recruited for the parent study. Potential participants responded to advertisements looking for "female social drinkers" by calling into the laboratory and being screened over the phone. The eligibility criteria consisted of: a) being between the ages of 21 and 30; b) having had penile-vaginal sexual intercourse with a man without a condom in the last 12 months; c) reporting one or more additional STI-risk behaviors in the last 12 months, such as a first-time partner or multiple partners; d) consuming between 5 and 40 drinks per week; and e) reporting a binge-drinking episode (4+ drinks in 2 hours) at least once in the last 12 months. Individuals were excluded if they reported a history of/current problem drinking or adverse reactions to alcohol, and/or having a health condition or taking medication contraindicated with alcohol consumption. Eligible participants were told that they would be randomly assigned to consume either nonalcoholic drinks in the control condition or consume alcoholic drinks in the BAC = .10² condition and that they would be paid \$15 per hour. Eligible participants were then scheduled for a one-time appointment at the laboratory.

Qualitative Participants

A purposive sample of women was recruited for the qualitative study (Creswell, 1998). Due to HIV's disproportionate impact on African-American women and Latinas, referred to collectively here as women of color, it was important to make sure these women's voices

²The following points are useful in placing our choice of target dosage in perspective for readers unfamiliar with alcohol research methods. First, experimental evidence (e.g., see meta-analysis by Rehm et al., 2011) and illustrative multiple-dose experiments (e.g., George et al., 2009) has clearly established that alcohol exerts a causal impact on sexual risk taking and that this effect appears to become evident at a BAC of about .05 and becomes stronger as the BAC rises to .10 (the highest level tested to date under controlled experimentation). As a comparison point, recall that nationally .08 is the legal limit for driving, thus indicating that BACs at and above this level are universally understood to impair judgment. Second, experimental studies conducted in the field have shown that drinkers in bars express greater risky sex intent at BACs above .08 (MacDonald et al., 2000, study 2). Third, non-experimental survey data – which are largely retrospective and essentially address the question "does alcohol's established causal impact manifest in the real-world and what context factors moderate it" – have provided support (albeit inconsistent) for alcohol generating increasing riskier judgments at BAC's at this level and above (e.g., see review by George & Stoner, 2000; Hendershot & George, 2007).

were heard in the interviews. Therefore, all participants (including Native American and Alaskan Native, Hawaiian and Pacific Islander, and Asian women) who identified as women of color were selected for an interview. For each woman of color interviewed, the subsequent Caucasian participant randomized to a matching alcohol condition was also selected for an interview.

Formative data was obtained from a sample of 97 women who identified as moderate drinkers. In general, participants reported behaviors placing them at high risk for future sexually transmitted infections (STIs) (See Table 1). Fifty percent of participants were Caucasian, 19% Multiracial, 13% African-American, 10% Asian, 2% Native Hawaiian/Pacific Islander, 2% Native American, and 4% “other”. Of the total sample, 10% identified their ethnicity as Hispanic or Latina. The average age of the participants was 25 years (range 21 to 31 years old). Eighty nine percent (89%) were single, and 94% had no children. A total of 96% had at least a high school education ($n = 95$) and 36% were current students. Most (67%) had annual household incomes of less than \$41,000.

Procedures

Pre-experimental instructions and initial procedures—Participants came to the laboratory for a scheduled appointment after being screened over the phone. All participants were told to abstain from eating or drinking caloric beverages for three hours prior to their appointment. After completing informed consent, participants took a urine pregnancy test to ensure alcohol was not administered to women who were pregnant, and their weight was taken for alcoholic beverage calculations. In addition, breathalyzer readings were done for each participant to ensure that all participants had a baseline blood alcohol concentration (BAC) of zero. All participants were informed that they may (experiment) or may not (control) receive alcohol. Participants then completed a set of background questionnaires in a private room via computer. The questionnaires covered topics such as personality, sexual history, alcohol and drug use, sexual and physical victimization, and ethnic identity.

Beverage administration—Consistent with extensive laboratory studies investigating the effects of acute alcohol intoxication on sexual behavior and sexual risk taking (e.g., see reviews by George & Stoner, 2000; Hendershot & George, 2007; Rehm et al., 2012), the experimental alcohol administration paradigm used for this study followed the National Institute on Alcohol Abuse and Alcoholism (NIAAA) Recommended Council Guidelines on Ethyl Alcohol Administration in Human Experimentation (NIAAA, 2005). As such our inclusion and exclusion criteria were developed to follow these guidelines and include safeguards to make sure that alcohol is not administered to alcohol naïve individuals, populations at risk for alcohol dependence or already alcohol dependent, underage drinkers, women who are pregnant, and women who have not experienced a similar level of intoxication at least once in the past year.

Following the completion of the questionnaires, participants were randomly assigned to either an alcohol (target peak BAC = .10, $n = 47$) or control³ condition (no alcohol, $n = 50$). Controls were yoked to an existing alcohol participant and completed the same number of breath samples over the same period of time (Giancola & Zeichner, 1997; Schacht, Stoner,

George, & Norris, 2010). Alcoholic dosage was determined by weight and gender (1.0 ml/kg (Friel, Logan, O'Malley, & Baer, 1999) and beverages consisted of five parts cranberry juice to one part 190 proof alcohol. Control beverages replaced the one part alcohol with an equal amount of cranberry juice. Beverages were divided into three cups, and participants were timed to ensure that they took four minutes to finish each cup, for a total of twelve minutes. Immediately following completion, breath tests were taken every four minutes until participants reached a criterion BAC of .070 to ensure that participants would be on the ascending alcohol limb while reading the scenario, and would reach the target peak BAC of .10 as they finished the scenario. Once participants reached the criterion BAC, they began reading the risky-sex scenario.

Sexual risk-taking scenario—After beverage administration, participants were randomly assigned to read one of two eroticized scenarios (approximately 1,645 words) in their private room on the computer. Each scenario described a sexual encounter with a desirable male, “Michael”. The scenario was written in the second person so that the participant could project herself into the story as the protagonist. The protagonist’s drinking in the story [wine vs. water] matched the drinking condition (alcohol vs. control) the participant had been assigned during beverage administration in the laboratory, and participants were instructed to project themselves into the story at their current level of intoxication. Michael was consistently portrayed as drinking alcohol in both versions to control for the protagonist’s drinking.

It is important to underscore that the scenario was developed from qualitative data gathered during two focus groups, each made up of 12 women who had met the same eligibility criteria for the other phases of the study. A researcher trained in conducting focus groups led discussions using a qualitative guide that was developed by the research team. The focus group guide questions included 4 main questions: a) What determines relationship potential in a male, and how sex enters into various types of relationships; b) What are the factors involved in a woman being interested in sex with a man; c) How does a typical sexual encounter progress and what does a typical sexual encounter involve; and d) How do women initiate discussions about condoms during a sexual situation. Formative data gathered from the discussions was used to write a realistic and arousing erotic scenario that reflected the experiences and normative behaviors of the target population. The scenario and background measures were then pilot-tested with 22 participants. Qualitative interviews were conducted with each participant to assess the realism and arousability of the scenario and to ensure that women were able to successfully project themselves into the sexual situation as the protagonist.

³For readers unfamiliar with alcohol research methods, it is also important to note that the comparison condition here was not a placebo condition (where participants expect to receive alcoholic drinks, but actually receive non-alcoholic drinks); but was instead a standard no-alcohol control condition (where participants expect to receive non-alcoholic drinks, and actually receive non-alcoholic drinks). That is, participants in the control condition were not led to “expect” that their drinks contained alcohol. Instead, they underwent a standard no-alcohol control condition, in which participants are told that they would be treated identically as participants in the alcohol condition, except that their drinks will contain only juice – that is, no alcohol. Extensive research has shown that a placebo condition is an appropriate comparison control condition for low dosage alcohol conditions (e.g., see review by George, Gilmore, & Stappenbeck, 2012). However, placebo conditions are not viable as an experimental control condition when it is being compared to a high dosage alcohol condition, as was the case in this project. Specifically, it is not possible to credibly convince someone they have received a very high dosage of alcohol, in the face of consuming drinks devoid of alcohol.

In the scenario, the protagonist and Michael have crossed paths before in social situations. Michael was always seen with different girls and was portrayed as being very sexually desirable with language such as “every time you touched each other, you could feel an overwhelming physical attraction.” Although the protagonist and Michael don’t know each other very well, they go home together one night after dancing at a club and have sex with a condom, even though the protagonist is taking oral contraceptives. The sex is described as being amazing, and the protagonist is excited that Michael has been texting her since he left her apartment. The story picks up on a night soon after their first encounter when the protagonist and Michael are meeting up for dinner.

Once the characters are at dinner, the waiter brings over the drinks appropriate to the assigned drinking condition of the participant. After dinner, the protagonist and Michael decide to go to Michael’s apartment, where they began kissing and touching. Sexual activity became progressively more heated until both characters were undressed and approaching intercourse. Erotic descriptions such as “the feel of his bare hands on your skin is electric”, were used to increase the participant’s sexual arousal. Michael gets up at one point to look for a condom, only to come back to tell the protagonist he couldn’t find one. The explicit, eroticized foreplay and sexual activity continue a while longer before the conclusion of the scenario, when Michael says, “I really want to make love to you, but I’ll do whatever you want. Do we have to stop now?”

At this point, the depending variables measured arousal (from 1 (not at all sexually aroused) to 7 (extremely sexually aroused); $M=5.8$, $SD = 1.6$), intentions to continue sexual activity, condom negotiation and self-efficacy, and in-the-moment thought listings. Upon completion of the scenario and dependent measures control participants were either interviewed or debriefed and paid for their time. Per NIAAA guidelines participants who received alcohol stayed in the lab under our supervision until their BAC fell to .03%, at which point they were debriefed and paid for their time. All alcohol participants were aware of their BAC level during debriefing, as they were breathalyzed regularly to monitor the BAC descent. Those alcohol participants who were selected for an interview, began the interview once their BAC fell to .045% so that the interview would not increase the amount of time the participant needed to stay in the lab but would be conducted after the participant was feeling mostly sober.

Post-experiment Interview—The interview was developed as a tool to explore participant experiences in the laboratory and with the scenario, and to explore barriers to laboratory participation among African-American women. Since some of the interview questions asked about sensitive topics such as ethnicity, participants who were women of color were interviewed by a woman of color. Research staff members were trained in qualitative interviewing techniques and conducted the interviews in private rooms. Participants took part in a 30–60 minute semi-structured interview that explored four key areas (1) realism of the scenario and the situation presented in the text (e.g., How typical would it be for the events that occurred in the story to happen to you/women that you know/your friends?); 2) factors influencing the participant’s decisions regarding interactions with Michael (e.g., What factors influenced the decisions you made regarding your interactions with Michael?); 3) the usefulness of the current research for the participant and others (e.g.,

How is this type of research useful for you/your friends?); and 4) the comfort of the participant with drinking alcohol and reading through sexually-explicit material in a laboratory setting (e.g., What was it like to drink alcohol in this environment?).

Data Analysis—A team of six researchers (three Caucasian women and three women of color) analyzed the data thematically to yield a detailed and complex account of the data (Braun & Clarke, 2006). To begin, three research team dyads (each with one Caucasian and one woman of color researcher) independently analyzed the first 20 interviews by reading the transcripts and coding the data into categories that “summarize and systemize the content of the data” (e.g., Michael is a player, realistic situation) (Wilkinson, 2000, p.434).

Then each dyad met to develop clusters of meaning by removing overlapping and repetitive statements and organizing statements into meaning units (e.g., scenario realism, laboratory experience) (Moustakas, 1994). These meaning units were then organized into themes (e.g., responses to sexual situation, alcohol influence). Finally, the three dyads met as a group to develop a thematic framework (Ritchie & Spencer, 1994). These steps were completed a second time with the next 20 participants to further refine the thematic framework, from which the research team analyzed the remaining transcripts. Each transcript was coded by two researchers. Instances of disagreement on thematic codes were resolved with discussion. The team refined the thematic framework throughout the analytic process by identifying new themes and expanding existing ones. Finally, participants were grouped into categories according to racial and ethnic identity and experimental condition (control and alcohol) to facilitate within and between group comparisons. Because of the large amount of data obtained from the interviews, the qualitative software Atlas.ti version 6 was utilized to help with data management.

One theme that all researchers noted as emerging organically in the interviews was that of “reflection” or “insight”; participants reported instances of recalling and analyzing their past sexual behaviors after reading the scenario. Participants were coded as having experienced “reflection” or “insight” if they brought up how reading the scenario resulted in thoughts, caused them to think about their own past behaviors in similar situations, and/or how the scenario would help guide their future behaviors in sexual situations. Within the theme of insight/reflection two subthemes were identified. The results reported in this article focus on this theme of reflection and insight. Participants who did not mention thoughts about using the scenario as a reflective tool were not coded as having experienced reflection or insight and are not included in the results.

Results

The majority of the women interviewed (62%, $n = 60$) reported experiencing the scenario as a reflective tool. Most of these reflections were focused on participants’ own experiences and were driven by the questions about sexual behavior and potential HIV exposure asked in the background measures as well as the scenario, into which they projected⁴ themselves in the laboratory. The participants’ experience of the scenario as a reflective tool had two primary themes: (a) increased awareness of risk; and (b) contemplation of behavior change. As outlined previously in the methods, the scenarios are written using focus group data of

women relating their dating and sexual encounter experiences. These scenarios were then extensively piloted tested with altogether different women. This extensive scenario development procedure allows for a very detailed interaction between the male and female characters and aids in making more abstract ideas seem realistic. Because the scenarios reference actual realities of similar women, female respondents experience engagement of both cognition and affect.

Experiencing the Scenarios as a Reflective Tool

Participants perceived specific personal gains as being a direct result of reading the scenario, contemplating decisions made in the scenario, and exploring how these decisions were similar to or different from ones made in the past.

1. Increased Awareness of Risk—Among those participants who experienced the scenario as a reflective tool, 36% stated that they obtained knowledge about personal risk behaviors that facilitated exploration of a number of areas: personal boundaries, relationship choices, decision-making, and lifestyle choices.

It makes you reflect. Makes me think that most of the scenarios I have are more serious than I have made them so I shouldn't have taken them so nonchalantly. It kind of makes me think. You have to ask yourself, do I really want to be one of the numbers in Michael's life or do you want to be the #1 in someone else's life. Michael is really just anything – something that is not really that special – so why not do better? (Black woman, age 22 – alcohol)

The scenario along with the personal questions that are asked in the background measures administered during the laboratory experiment, were seen as providing a new opportunity to consider situations and consequences that the women rarely, if ever, discuss with others or reflect on personally.

A lot of it was things you already know, but to have it on the screen you're like wow that happened. It makes your history more realistic. Help you feel more comfortable with your sexuality and past, especially if you are Asian, and you don't talk about it [sexual experiences] with other people. (Hawaiian/Pacific Islander woman, age 27 – control)

⁴Generally, participants are very successful at this projection protocol. We know this from the following sources: (1) In numerous published studies (both experimental and qualitative) from our labs using projection protocols involving sexual assault resistance (rather than sexual risk), the evidence for successful projection is highly robust based on post experimental ratings of “realism” and “typical of real life” and post-experimental interviews (Masters et al., 2006) in which participants describe the success of their projection experience. (2) In a method paper by an independent research team, successful projection was also evident in protocols involving sexual assault resistance (Noel, et al., 2008); (3) In projection protocols involving sexual risk (as is the case here), there are now more than half a dozen studies published from our labs and the evidence for successful projection is highly robust based on post experimental ratings of “realism” and “typical of real life.” (4) In three published studies from our labs involving sexual risk, evidence of successful projection was not limited to self-report, but was augmented by physiological indicators of sexual-genital response (e.g., George et al., 2009). In those studies, both subjective and physiological indicators of sexual arousal showed that participants had projected successfully and, accordingly, exhibited moderate to high levels of arousal. (5) On the crucial underlying issue of external validity or correspondence between projection protocol behavior and real-world behavior, we have found that indeed participants' behavior in the lab correlates with past behavior in life and with intended future behavior in life (Kajumulo et al., 2009; Norris et al., 2010). (6) Finally, on a more general point about the correspondence between lab and real-world data, the truism that laboratory behavior has low external validity has been largely vanquished empirically, best exemplified by an extensive analysis of effects sizes from over 38 lab-vs.-field study pairs across a wide range of behaviors (Anderson, Lindsay, & Bushman, 1999).”

More than half of the participants (54%, $n = 52$) reported experiencing insights on the cognitive and behavioral effects of alcohol. Of the women reporting insights on the effects of alcohol, 16 (34%) were in the control condition and 36 (72%) were in the alcohol condition. For women in the alcohol condition, these insights came not only from the scenario, but from breathalyzer results and the time it took to sober up (descend to a .03 BAC after reaching an average .10 BAC). One third of the participants who reported insights on the effects of alcohol described gaining knowledge about how alcohol intake impairs their judgment and decision-making. While some of the women had previous knowledge about the effects of alcohol, the actual experience of impairments to judgment and decision-making was eye-opening.

It made me realize that alcohol does play a huge role in how you interact with the opposite sex. It's useful. Definitely made me realize what a big impact alcohol has on how you act in certain situations, and how it contributes to all the bad decisions you've made. (Caucasian woman, age 23 – alcohol)

These cognitive and behavioral alcohol insights were not restricted to women in the alcohol condition. A number of participants in the control condition ($n = 13$) reported experiencing insights regarding the effects of alcohol intoxication on their decision-making and behaviors. These women reported that the scenario provided a contrast to sexual encounters in the past where drinking was involved and gave them a new perspective on the effects of alcohol on their behaviors in these situations.

A lot of women don't really think that drinking and one night stands are a big issue but when you are here in the room and have time to think about the issue, even without drinking, you can look at it more clearly and see how you would respond and if alcohol would affect that response. (multiracial woman, age 24 – control)

It makes you realize what you know or don't know, like about the number of sex partners you've had, and the number of drinks you usually have, etc. Really puts everything in perspective. It makes people more aware of what they're doing sexually and how much alcohol you have when you have those types of experiences. (Caucasian woman, age 21 – control)

It made me more aware of how you're behaving by drinking. How much, how often, how fast...this is stuff I don't think about when I am being social and out with my friends. (Korean-American woman, age 23 – control)

Women in the alcohol condition ($n = 19$) also reported experiencing insights into the physiological effects of alcohol. These women described gaining knowledge about their own drinking habits and how their personal drinking behaviors and patterns influence their level of intoxication and feelings of drunkenness. These women were struck by the discordance between feelings of intoxication in the laboratory and feelings of intoxication in social settings.

It makes you think about how you don't notice how drunk you are when you are out on a date or in a bar so it is interesting to think how drunk I might be getting after two or three drinks and not even noticing it. (Latina multiracial woman, age 26 – alcohol)

The breathalyzer was definitely interesting, I didn't think the drink was that strong but I blew so high so it gave me an awareness of my intoxication. (Caucasian woman, age 22 – alcohol)

Women (n = 8) also experienced the scenario as a wake-up call. One Hawaiian/Pacific Islander woman (age 23, control) said, "It made me think about my experiences. To remind me to be careful. To think about what I'm doing in that situation." Others saw the scenario as providing an opportunity for personal evaluation. A multiracial woman (age 29, alcohol) said, "I think this is useful because women can re-evaluate themselves. They can think about how they would do things in the future."

For others the experience changed their perceptions about sexual interactions and sexual partners. These women walked away from the scenario thinking differently about sexual encounters.

I learned about myself and it was like ughh – the way I answered the questions. I was like "Oh god" when asked about the number of people I have had sex with and whether or not I used condoms and all the stuff about my sexual partners like have they been with other people, do they use condoms or drugs. You usually don't think about those things and it made me feel like I have to stop to think. Extremely useful! Participating for me definitely I'll be thinking about things differently. (multiracial woman, age 24 – alcohol)

2 Contemplation of Behavior Change—For many of the women (n = 28), the scenario increased the importance of reducing their personal STI risk when engaging in heterosexual sex. One Asian woman (age 22, control) said, "[I am] a lot more aware of STDs. Before, [I] only thought about pregnancy." The scenario also served as a condom promoter. One multiracial woman (age 23, control) said, "It made me more aware that I should use condoms more. I guess in the heat of the moment you should have the sense to carry condoms with you."

In general, participants felt that the scenario made the reality of STIs more salient and highlighted how their behaviors placed them at greater risk.

I did find it personally beneficial because I don't use a condom and haven't for years so to think more about using one is something I should particularly think more about and the questions made me think. It is a useful tool to step back and think more about how you view yourself and really analyze yourself and the decisions you make. (multiracial woman, age 25– alcohol)

Maybe I should use a condom more. Every time I go out drinking, I will have this experience pop into my head. Maybe think about some of the questions that were asked today. I know that drinking may make me think less clearly and so I'll think about that when I make my decisions next time (when drinking). (Black woman, age 28 – alcohol)

For some of the participants (n = 6), the scenario confirmed the progress that they have made in reducing risky sexual behaviors. The participants perceived the scenario to be providing support and affirmation for sustaining these behaviors.

It makes me sit back and think about my actions in certain situations. It made me realize where I am at now. Knowing this keeps me on the same track. It also made me realize that I was making different decisions when I was younger. They weren't smart decisions. (multiracial woman, age 29 – control)

Participants (n = 17) discussed how the scenario and the questions asked in the background measures prepared them to make better choices and decisions in the future. Many of these women gained insight into their in-the-moment responses while intoxicated. As one Asian woman (age 26, alcohol) stated, "It helps shed more insight into sexual behaviors and thought processes during these interactions with men, especially when under the influence. Knowing how you would respond and being aware is helpful and can be good to prepare you to make smarter choices or avoid risky situations in the first place." The scenario acted as a preparatory tool for women in the control condition as well. As one Caucasian woman (age 26, control) explained, "Something a lot of my friends deal with is how they act when they are drunk and the decisions they make, especially sexually. It makes you be more aware of things and what to do about them." Generally, women saw the scenario as an educational tool that facilitated awareness about sexual behaviors and high-risk behavior and provided the opportunity to prepare for similar situations in the future.

This study will help educate women about their sexuality and sexual practices. So the next time that I encounter a situation like this, I will be more likely to think about the choices that I made today. (Black woman, age 23 – control)

In addition to preparing them to make better choices, participants (n = 6) believed that the scenario would facilitate future communication with female friends about STIs and reducing risky sexual behaviors. For some women, the scenario provided an opportunity to raise concerns about safer sex and discuss ways to promote safe behavior with friends and roommates. For these women, their responses to the scenario were seen as assisting them in supporting other women in their efforts to increase safer sexual practices. As one Caucasian woman (age 22, alcohol) explained, "It's good because I can share them (my responses to the scenario) with my roommates and we can figure out what the universal safe zone is." Others saw the scenario as a means to promote awareness about risk behaviors among sexually active women.

It could also encourage females to talk to each other and say, "You better not get yourself in a situation where you just lay down with someone." (multiracial woman, age 29 – control)

Discussion

This report described the attitudes and perceptions held by a diverse sample of high-risk young women toward an eroticized sexually explicit HOTM scenario. The study revealed that the scenario provided women with an opportunity to reflect on past behaviors in sexual encounters, offered insight into how they behave in high-risk situations and presented

information they could use to prepare for future high-risk situations and to engage other women in safer sex conversations. Interestingly, women in both the control and the alcohol conditions reported experiencing the scenario as a behavioral risk-reduction⁵ tool, suggesting that, because the scenario in both conditions involved drinking venues and a drinking man, it had relevance for their real life experiences. As noted above, participants in both the control and alcohol condition read a scenario describing a sexual encounter with a desirable male. The protagonist's drinking in the story [wine vs. water] matched the drinking condition (alcohol vs. control), however, in both conditions Michael's sexual desirability, the eroticized foreplay and sexual activity remained constant. As such, participants in either condition read a highly eroticized story which could have led to sexual arousal. Women in the control condition could potentially compare their experience in the lab to similar situations wherein they had been drinking alcohol and identify the impact on behavior. This makes sense, given that all participants were moderate drinkers and, for many, the scenario helped put their drinking and sexual behavior into perspective, allowing for insight into how drinking might impact sexual decision-making.

Overall, participants in this study experienced the scenario as a reflective tool that increased their awareness of risk. The scenario provided the women with a virtual mirror allowing them to step back and view decisions and behaviors and consider the potential outcomes. When HOTM stories are read and experienced, a self-exploration occurs that can lead to insight into one's behavior. Several women reported having already begun to make personal behavioral changes with the intention of decreasing their HIV/STI risk. In their cases, the scenario served as reinforcement for those behavioral changes and provided motivation to continue making safer sex decisions. When the women were provided with time to reflect on the choices they made in the scenario, these choices highlighted the need to be more prepared and to plan for future high-risk situations. Women were often surprised at their behaviors in the story, even when they had engaged in the very same actions in the "real world". The cognitive dissonance created by the scenario may lead to increased preparedness when high-risk situations are again encountered in the real world.

The participants also viewed the scenario as realistic and were easily able to project themselves into the story as the protagonist. The acute visceral states created in the laboratory – of being acutely intoxicated and sexually aroused – constitute a face valid representation of the alcohol involved sexual encounters in the real world; and thus, may offer an additional learning tool to tradition hypothetical scenarios and role plays. A major concern for any HIV prevention intervention program is whether participants are able to take what they learn from the program and apply this knowledge to their lives beyond the intervention experience. Interventions are needed that will address sustained sexual behavior change for at-risk adult heterosexual women. Those interventions with more real-world applicability may have the potential to sustain long term behavior change. By creating high levels of sexual arousal and experiential engagement – similar to those experienced in a real-life situation – HOTM scenarios may provide a means to increase the realism of prevention interventions. The insight offered by HOTM scenarios highlights the motivational force of

⁵although more women in the experimental condition reported changes over and above the women in the control group ($t(51) = 10.7$, $p < .0001$)

“hot” states and may influence women to take measures to avoid or prepare for future “hot-state” situations.

Participants perceived an increased ability to make better choices in the future as a result of the scenario. Scenarios could be utilized in prevention interventions to present and model additional sexual risk-reduction strategies such as outercourse (non-penetrative sexual activities), refusal of unsafe sex, and leaving a relationship where protected sex is not feasible. A meaningful scenario intervention may influence behavior change by allowing participants to practice specific skills with behavioral “rehearsals” and explore alternative solutions to the problem or risky behaviors.

A focus on increasing motivation and creating scenarios embedded with approaches to do so might facilitate female participants’ movement through the stages of change. Scenarios may be particularly useful in moving women along the first three stages of behavior change (Prochaska, 2008). By increasing awareness HOTM scenarios may move women from Precontemplation to Contemplation. Insight into the connection between intoxication, sexual arousal and past risky behavior may assist in making a commitment to make change and facilitate planning to take action in the next month (Preparation). The effectiveness of scenarios might be improved by incorporating skills building around realistic goal setting, focusing on the pros of behavior change and developing plans to cope with both personal and external pressures that may lead to risky behaviors. HOTM scenarios may increase the effectiveness of existing interventions that seek to increase personal responsibility for sexual decision-making and sexual assertiveness by providing increased insight into areas where skills are needed (i.e., communication, condom use and cognitive coping skills) along with the tools to improve these skills. Furthermore, HOTM scenarios provide a persuasive method for demonstrating the powerful influences that visceral states, such as sexual arousal, can play in the moment of risk decision-making. As such, HOTM scenarios can provide a method for more persuasively emphasizing the value of risk precautions (e.g., easy condom availability), which reflect accurate cognizance of such non-rational visceral influences.

The inclusion of HOTM scenarios in existing and future HIV prevention interventions to address the sexual transmission of HIV in women has not been explored. Increasing the realism of existing role plays and scenarios through incorporating real life experiences such as sexual arousal may increase the effectiveness of HIV prevention interventions. Given the success of this method in mental health and substance-use interventions (Leukefeld, Godlaski, Clark, Brown, & Hays, 2002; Marlatt & Gordon, 1985), there is reason to explore the use of scenarios as an HIV-prevention intervention among women.

Finally, it is important to note our HOTM scenarios are not mere “hypotheticals,” i.e., simplistic vignettes of stereotypic encounters portrayed using “barebone” scripts and scenes. Such hypotheticals have been justifiably critiqued as unrepresentative of real life and thus as having limited intervention utility. Creating our HOTM scenarios required intensive attention to methodological considerations as recommended by Noel et al., (2008). This time- and labor-intensive enterprise involved a three-step scenario development process involving (1) use of focus groups utilizing direct input and feedback from women to insure

that scenario content represented women's realistic encounters, (2) pilot testing to insure that scenarios evoked successful projection of oneself into the encounter and activated the necessary visceral states (sexual arousal and emotional engagement), and (3) full scale experimentation to insure that the scenarios retained their verisimilitude and impact under conditions of acute intoxication and among a wide sampling of women. The qualitative data reported in this paper demonstrate the success of these time- and labor - intensive endeavors for producing scenarios "that matter" by effectively representing real life experience and, therefore, promising applicability for intervention development.

Limitations

The results of this study should be viewed in light of its limitations. First, the interview was not developed to assess the utility of HOTM scenarios as an HIV-prevention intervention. The interview was developed as a tool to explore participant experiences in the laboratory and with the scenario, and to explore barriers to laboratory participation among African-American women. Because of this, participants may have been less likely to provide more specific feedback on perceived benefits of the scenario. Second, the eligibility requirements for participation in the laboratory experiment limited participation to moderate-drinking women who have sex with men aged 21 to 30, who reported high risk-sexual activity in the past year. While this is a population of great importance in STI prevention, the results presented in this paper may not be generalizable to high-risk women not meeting the study's eligibility criteria. Third, participants self-selected to participate in a laboratory experiment which required beverage administration and several hours of the participant's time – this may have excluded women with full-time jobs and women with children. Fourth, our results may be influenced by social desirability and some participants may have answered questions based on their desire to be perceived as good study participants. Last of all, there was no measurement of motivations to change prior to or following the participants' reading of the scenario. As such, we are unable to assess the scenario's impact on motivation for change.

Implications

Results from this study have several HIV-prevention intervention implications. There is a need to incorporate social and structural factors that impact the lives of women into HIV-prevention interventions. To increase effectiveness, HIV prevention must take place at multiple levels. As such, it is important to utilize tools such as HOTM scenarios which might provide a method to include real-world situations that promote insight and reflection and could lead to a commitment to make behavior change. The personal knowledge and growth reported by women in this study may lead to both short- and long-term suppression of high-risk behaviors and the adoption and maintenance of HIV prevention behaviors. HOTM scenarios may be important components of HIV interventions for women as they have the ability to add context to behavior change and uptake and adherence to biomedical HIV prevention (i.e., PrEP, PEP, & microbicides).

Future prevention interventions could use a combination of risk reduction (Marlatt, 1996) and motivational techniques to impact participants' readiness to change (Miller & Rollnick, 1991). The awareness of the connection between arousal and behavior provided by HOTM

scenarios might be particularly important in assisting participants to articulate reasons for change (i.e., avoiding heavy-petting situations when condoms are not available). In addition to reflecting on and incorporating motivational principles, future interventions might include effective and brief learning components. Interventions utilizing HOTM scenarios could provide unique learning opportunities that include a focus on the importance of arousal on decision-making and effectively regulating arousal (George et al., 2009). This could be integrated with existing effective strategies and might include: feedback on personal risk, emphasis on personal responsibility for change; provision of clear advice to change; provision of a menu of change options, demonstrated empathy, and encouragement for participants' self-efficacy and optimism for change (Miller & Rollnick, 1991).

Conclusion

The use of HOTM scenarios to tell a story is an impactful learning tool. Although it has proven effective in substance use interventions, it is currently underutilized in HIV prevention even though it could prove to be an extremely promising tool. In the HIV prevention literature, a focus on relational skills has proven to be an effective HIV-prevention approach for women (Darbes, Kennedy, Peersman, Zohrabyan, & Rutherford, 2002; Mize, Robinson, Bockting, & Scheltema, 2002; Exner, Seal, & Ehrhardt, 1997; Wingood & DiClemente, 1996). Scenarios provide an opportunity to focus on how real-world factors (i.e., arousal) might impact relational skills necessary for implementing safer sex within a sexual relationship.

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Table 1

Participants Demographics

Characteristics	% of participants (n)
Race / Ethnicity	
White	49.5 (48)
Multiracial	18.6 (18)
African American	13.4 (13)
Asian	10.3 (10)
Native Hawaiian /Pacific Islander	2.1 (2)
Native American	2.1 (2)
Other	4.1 (4)
Annual Income	
Less than \$10,999	19.6 (19)
\$11,000 – \$20,999	17.5 (17)
\$21,000 – \$30,999	18.6 (18)
\$31,000 – \$40,999	11.3 (11)
\$41,000 – \$50,999	10.3 (10)
\$51,000 – \$60,999	7.2 (7)
More than \$61,000/year	15.5 (15)
STI History	
Prior STI diagnosis	40.2 (39)
Chlamydia diagnosis	18.6 (18)
Gonorrhea diagnosis	4.1 (4)
Herpes diagnosis	7.2 (7)
HPV diagnosis	14.4 (14)
Drug Use	
Recreational Drug* Use Ever	87.6 (85)
Marijuana Past Year	91.8 (89)
Ecstasy Past Year	28.9 (28)
Cocaine or Crack Past Year	21.6 (21)
Hallucinogens Past year	25.8 (25)
Narcotics Past Year	23.7 (23)
Amphetamines Past Year	16.5 (16)
Tranquilizers Past Year	14.4 (14)
Barbiturates or Quaaludes Past Year	9.3 (9)
Sexual Risk Factors	
No condom during last sexual intercourse	61.9 (60)
Know or suspect a male partner having sex w/ others	42.3 (41)

* Recreational Drug use is defined as use of any substance that is not prescribed by a Dr. for a specific condition