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Substance Use Reporting as a Predictor of HIV Test Rates Among Emergency Department Patients

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Abstract

More than 10 years after the Centers for Disease Control and Prevention recommended routine HIV testing for patients in emergency departments (ED) and other clinical settings, as many as three out of four patients may not be offered testing, and those who are offered testing frequently decline. The current study examines how participant characteristics, including demographics and reported substance use, influence the efficacy of a video-based intervention designed to increase HIV testing among ED patients who initially declined tests offered by hospital staff. Data from three separate trials in a high volume New York City ED were merged to determine whether patients (N=560) were more likely to test post-intervention if: 1) they resembled people who appeared onscreen in terms of gender or race; or 2) they reported problem substance use. Chi-Square and logistic regression analyses indicated demographic concordance did not significantly increase likelihood of accepting an HIV test. However, participants who reported problem substance use (n = 231) were significantly more likely to test for HIV in comparison to participants who reported either no problem substance use (n = 190) or no substance use at all (n = 125) ($\chi^2 = 6.830, p < .05$). Specifically, 36.4% of patients who reported problem substance use tested for HIV post-intervention compared to 30.5% of patients who did not report problem substance use and 28.8% of participants who did not report substance use at all. This may be an important finding because substance use, including heavy alcohol or cannabis use, can lead to behaviors that increase HIV risk, such as sex with multiple partners or decreased condom use.

INTRODUCTION

Despite the increased presence of routine HIV testing in emergency departments (EDs) and other clinical settings, [1, 2] undiagnosed HIV remains a serious public health problem: people unaware of their HIV infection contribute nearly one third of ongoing transmission in the United States. [3] EDs offer important opportunities for HIV testing, diagnosis, and referral to care. [4] EDs also offer key opportunities to provide prevention education to patients who test HIV-negative yet report behaviors that increase risk of HIV infection.

Many EDs serve high-risk populations, [5, 6] including substance users and sexually active high-risk youth, who are less likely to have consistent access to health care, HIV prevention education, and adequate opportunities for HIV testing and re-testing. [7–10]

In EDs nationwide, however, roughly 75 percent of eligible patients are not tested for HIV. [7–9] Research confirms that many are not offered testing, [7] and many patients who are offered testing decline, including those who have recently engaged in behaviors that may increase their chances of contracting HIV. [11–13] The number of patients who decline HIV testing has become especially salient in New York, where State law requires clinical healthcare providers including ED staff to offer HIV testing to all patients aged 13–64 years, with limited exceptions, [14] but far more patients decline testing compared to those who accept. [15] Previous research indicates ED patients frequently decline testing because they do not perceive themselves as at risk for HIV, [12] because they fear being stigmatized if they are diagnosed with HIV infection [16], and/or because they prefer not knowing their status to finding out they have HIV. [11] Additionally, ED staff may not have time to individually counsel all patients about potential risks or available treatments for HIV, or even to approach all eligible patients and offer HIV testing, [7] and many patients decline to report behaviors or circumstances that increase risks of HIV because they fear being stigmatized simply for engaging in discussions of risk. [17]

Increasing HIV test rates among people who inject drugs (PWID) is clearly important as sharing needles can easily spread HIV. [18] Additionally, increasing HIV test rates among non-injection substance using patients is also highly important because in the United States far more HIV diagnoses are currently attributed to sexual contact compared to injection drug use [6, 19] and people who use drugs and/or alcohol before or during sex may engage in sexual behaviors (e.g. condomless anal intercourse) that greatly increase the risk of HIV transmission. [20]

A well-developed computer-based intervention could potentially increase HIV test rates in the ED by discreetly engaging each patient and privately addressing barriers to HIV testing, thereby motivating patients to test. To examine how a technology-based intervention could potentially increase HIV test rates in high volume clinical settings, and to explore how intervention content could be optimized for greatest effectiveness, our team developed the Increase Testing System (ITS), a proprietary tablet-based intervention that integrates video segments with data collection instruments, including an automated substance use screening based on the WHO-ASSIST. [21] All intervention components, including the risk screening and videos, were designed to encourage participants to reflect on their risk behaviors, consider the importance and benefits of HIV testing, and ultimately motivate participants to accept an HIV test.

Using the ITS, our team has conducted a series of trials in which ED patients who declined HIV tests offered by staff upon arrival in the hospital were subsequently randomly assigned to watch different videos configured to examine how specific compositions might influence test rates (e.g. some videos depicted males onscreen, others depicted females; some videos depicted White people while others depicted African American people). [15, 22, 23]

In each of these trials, we established that approximately 30 percent of ED patients who had initially declined HIV tests offered face-to-face at triage ended up accepting HIV test offers at the end of a brief tablet-based intervention (<12 minutes). However, significant differences in HIV test rates did not emerge by video configuration (for example, participants were not more likely to test if they watched videos depicting someone of their own race or gender).

Qualitative interviews indicate trial participants were far more comfortable reporting risk behaviors, including substance use, via tablet computer instead of face-to-face because they did not fear the tablets would judge them the way a person might. [24] This may prove to be an important finding because, although ED patients frequently cite lack of risk as their chief reason for declining HIV testing, prior research has found higher rates of undiagnosed HIV among people who declined HIV testing in EDs compared to those who accepted. [11]

The current manuscript builds upon successful previous studies of technology-based interventions in EDs (e.g., Merchant, [25, 26] Spielberg, [27]) and extends our team's prior research. This present work combines the data sets from three of our prior studies to examine how participant characteristics (including demographic concordance between study participants and the people who appeared in intervention videos; as well as reported substance use) predicted outcomes among a larger sample (N=560) of ED patients who declined HIV tests at triage and then completed an intervention using the ITS platform. Specifically, the current manuscript explores whether patients in all three studies were more likely to test if people depicted in the intervention videos looked like them, and whether patients in the three studies were more likely to test if they reported problem substance use.

Theoretical framework and study rationale

The present study is grounded in both Social Cognitive Theory (SCT) [28, 29] and the Information, Motivation, Behavioral Skills Model (IMB) [30, 31], which inform specific attributes that video-based intervention developers can select to increase the efficacy/effectiveness of materials. According to SCT, people learn vicariously and behavior can be motivated by watching role models address circumstances similar to their own (e.g., deciding whether to test for HIV). Further, intervention effects are enhanced when these models resemble recipients in terms of age, sex, and the problems they face. [29]

Because previous successful HIV prevention interventions based on IMB and SCT used videos depicting community members demographically matched to participants (e.g., Just Like Me: Talking About AIDS, [31] and KEEP IT UP [32]), we hypothesized that a demographically matched video could result in increased HIV testing. At the same time, successful face-to-face interventions (e.g. Jemmott, 2005 [33]) have been shown effective among multiple population groups (i.e. both African American and Latino adolescent girls), suggesting that other ITS components (e.g. a thorough behavioral risk screening that could encourage participants to think about their potential for HIV infection) might enhance intervention effects more than demographic matching. It therefore remained to be determined what would most effectively motivate participants to test for HIV in an ED after interacting with the ITS. Specifically, we were interested in understanding whether someone would be more likely to test for HIV after watching a demographically concordant video, or

if they would be more likely to test after reporting increased behavioral risk (i.e. problem substance use).

Thus, the current manuscript examines two primary research questions:

1. Were participants more likely to test if the people depicted in the intervention video resembled them in terms of gender or race, compared to participants who watched videos in which people did not resemble them in terms of gender or race?
2. Were participants more likely to test if they reported problem substance use compared to participants who did not report problem substance use?

METHODS

Recruitment

In three separate studies conducted from 2012 to 2015, research assistants (RAs) recruited convenience samples of participants in the main treatment areas of a private New York City ED serving more than 130,000 patients per year. The ED serves Upper Manhattan, including the Harlem area, which has one of New York's highest concentrations of HIV. [34]

In all three studies, the intervention was offered to patients during the same ED visit in which they declined testing at triage. Study I recruited 160 patients from June to August 2012 and was designed to examine whether participants would be more likely to accept testing if watching people of their own gender onscreen, or another gender; and whether participants were more likely to test after watching a video which emphasized the benefits of testing for HIV compared to the dangers of not testing. All people depicted in the videos for Study 1 were White. [35] Study II recruited 100 patients in March and April of 2015 and was designed to examine the feasibility of a tablet-based intervention paired with a text message based follow-up protocol (e.g. would participants agree to participate and provide phone numbers to receive follow-up messages). Study II participants were shown a video in which a young African-American male physician spoke about the importance of HIV testing with a young African-American male patient. [22] Study III recruited 300 participants from June to September of 2015 and examined whether participants would be more likely to accept an HIV test after watching a video of an African-American male physician or an African American community member who discloses he is HIV positive onscreen. [23, 24]

RAs did not track the number of patients who were invited to participate in Study I but declined. In Study II the enrollment rate for eligible patients was 48.5 percent, and in Study III the enrollment rate for eligible patients was 41.5 percent.

Study procedures were approved by all governing institutional review boards. All three studies used the same measures to record participant demographics and used the same automated screening to measure substance use. The resulting three data sets were combined into a single data set for the current study.

Participants were eligible to participate in the studies if medical records indicated they: declined an HIV test offered at triage; were aged 18 years or older; and were not known to

be HIV positive. Patients were excluded from the studies if they were: a prisoner; classified by ED staff as in most urgent need of medical care or experiencing a severe psychological problem; intoxicated; unconscious; or otherwise unable to provide written consent in English.

Procedures and study materials—RAs were instructed to approach all eligible patients after the patients' initial consultation with a physician. If a patient was too ill, unwilling, or otherwise unable to participate the RA thanked the patient for their time. All those who were eligible and chose to participate provided written informed consent. Participants did not receive compensation to complete the tablet-based intervention. All intervention software was designed by the PI and then developed using proprietary code. A detailed description of the software and the development process has been published previously. [36] After providing consent, participants in all three studies used handheld tablet computers to complete the automated substance use screening, watch an educational video about the importance of HIV testing, and respond to the onscreen offer of an HIV test (participants had the option of clicking "yes" or "no" following the offer). RAs provided headphones to ensure participants could hear the video dialogue and to protect participant privacy.

Measures

The automated risk screening separately asked study participants about their use of tobacco, alcoholic beverages, cannabis, cocaine, amphetamines, inhalants, sedatives or sleeping pills, hallucinogens, and opioids. Items were adapted from a validated measure. [21] If participants reported using a specific substance within the past three months, the screening then asked if using the substance led to legal or financial trouble; if a friend or relative had expressed concern about their use of the substance; and if they had tried but failed to control or cut down their use of the substance. All three studies included the same automated substance use screening and then showed participants brief videos depicting physicians and patients discussing the importance of HIV testing, explaining how the tests work and how to interpret results, and then demonstrating a rapid oral HIV test.

Statistical analyses

Variable definitions—Age was operationalized categorically: participants indicated which of the following six categories they belonged to: 1) 18–24 years old; 2) 25–34 years old; 3) 35–44 years old; 4) 45–54 years old; 5) 55–64 years old; or 6) 65+ years old. Gender was also operationalized as a categorical variable, with participants indicating whether they identified as either male or female. Gender concordance was established when a participant's gender matched the gender of the people appearing onscreen in a video: for example, a male participant watching males onscreen or a female participant watching females onscreen. Race was operationalized categorically as well, according to whether or not participants self-identified as African American (as noted above the majority, 54%, of our sample identified as "Black or African American"). This enabled us to examine whether African American participants were more or less likely to test when watching African American people onscreen, or when watching White people onscreen. In addition, this design enabled us to examine whether people who did not identify as African American were more or less likely to test when watching African American people onscreen.

A new variable was created to record problem substance use. If a person reported that: the use of a substance had led to legal or financial trouble; a friend or relative expressed concerns about a person's substance use; or they had tried but failed to cut down or quit using a substance, the participant was categorized as reporting problem substance use. It should be noted that our analyses looked at three categories of participants: those reporting problem substance use, those reporting no problem substance use (but reporting some substance use), and those reporting no substance use at all.

Data treatment and analysis—The screening was designed to minimize missing data by requiring participants to respond to all questions. Participants were given the option not to answer any question by clicking a button labeled “skip this question.” This response was recorded in the database as a deliberately skipped question, and not as missing data.

Descriptive statistics were used to describe critical sample characteristics. Odds ratios and corresponding 95% confidence intervals were computed to determine whether participants were more likely to test if they watched a video in which the people onscreen were demographically concordant with the patient in terms of race (African American patients watching African American people in the video) or in terms of gender (e.g. female patients watching onscreen females), and whether participants who reported problem substance use were more likely to test post-intervention compared to participants who did not report problem substance use. Chi-Square tests were used to study the relationship between likelihood to test for HIV and problem substance use. A multivariable logistic regression analysis was subsequently conducted to determine if problem substance use is a significant predictor of participant willingness to be tested for HIV, while treating participant gender, race, and age as covariates. We tested main effects and two-way interactions in our multivariable logistic regression analyses.

RESULTS

Descriptive sample characteristics

Participants (N=560) were 65 percent female. Fifty-four percent (n=299) identified as Black or African American, including 16.4 percent (n=92) Black Latino and 36.8 percent (n=206) Black non-Latino. Thirty-one percent (n=174) identified as White, including 13.4 percent (n=75) White Latino, and 17.7 percent (n=99) White non-Latino. The age distribution of the participants was roughly comparable to the age distribution of patients in the overall ED population, 18–24 years old: 38.1% (n=214); 25–34 years old: 26.9% (n=151); 35–44 years old: 15.5% (n=87); 45–54 years old: 8.7% (n=49); 55–64 years old: 7.7% (n=43); 65+ years old: 2.7% (n=15).

The total number of participants who agreed to test for HIV after completing an ITS intervention was 174 (32.3%). In each study, fewer than five percent of participants failed to complete the entire intervention and respond to all questions. Fewer than three percent of participants declined to answer any questions about substance use. Given the extremely low rate of missing data, we chose to not include a participant with missing data for a given item in our analyses if they were missing data for that particular variable. Please note that we have noted any sample size deviations throughout our presentation of study results.

Bivariate analyses

Odds ratios (OR) and corresponding 95% confidence intervals were used to identify factors associated with an increased likelihood to test for HIV. ORs specifically indicated that no significant differences in HIV test rates emerged among participants who watched a video that was gender concordant compared to participants who watched a video that was not gender concordant (OR = 0.957 (95% CI: 0.923, 1.042)). ORs also did not indicate female participants were more likely to test after watching females onscreen compared to female participants who watched males onscreen. Likewise, males who watched males onscreen were not more likely to test compared to male participants who watched females in a video (see Table 2).

Similarly, significant differences in HIV test rates did not emerge among participants by race (OR = 0.984 (95% CI: 0.966, 1.133)). Participants who reported their race as Black or African American were not more likely to test for HIV when watching African Americans in a video compared to Black or African American participants who watched videos depicting White people (OR = 0.928 (95% CI: 0.779, 1.104)). In addition, participants who did not report their race as African American were not less likely to test when watching a video that depicted African American people (OR = 0.847 (95% CI: 0.441, 1.627)).

Given the operationalizing of the substance use reporting construct in this study (*problem substance use* versus *no problem substance use* versus *no substance use*), Chi-Square tests were used to specifically study the relationship between likelihood to test for HIV and problem substance use. A Chi-Square analysis indicated participants who reported problem substance use (n = 231) were significantly more likely to test for HIV in comparison to participants who reported either no problem substance use (n = 190) or no substance use at all (n = 125) ($\chi^2 = 6.830$, $p < .05$). Specifically, 36.4% of patients who reported problem substance use risk tested for HIV post-intervention compared to 30.5% of patients who did not report problem substance use and 28.8% of participants who did not report substance use at all.

Multivariable analyses

A multivariable logistic regression analysis subsequently indicated problem substance use to be a significant predictor of testing for HIV, while treating participant gender, race, and age as covariates (see Table 3). The odds of testing for HIV were 1.32 times higher (95% CI 1.05, 1.66) for participants who reported problem substance use compared to those who did not report problem substance use or any substance use (Wald statistic = 5.549, $p < .05$). It should be noted that the two-way interactions were not found to be statistically significant and thus Table 3 presents the main effects for this analysis.

DISCUSSION

Although we had initially hypothesized that participants would be more likely to test for HIV if they watched a video in which the people onscreen looked more like them in terms of race or gender, our analyses indicate otherwise. The finding that demographic concordance

was not a predictor of testing suggests other factors influence testing outcomes more than the appearance of the people in the video.

Just as Jemmott and colleagues [33] found that their intervention was not less effective among teenage Latinas although it had originally been designed for teenage African American girls, the efficacy of our intervention does not seem to vary based on participant demographics. Further, as Jemmott et al. found in an additional study that the effects of an HIV risk reduction intervention did not vary due to the race and/or gender of the facilitator, or the participants' gender, or the gender composition of an intervention group, [37] it appears the efficacy of the ITS does not vary as a function of demographic concordance between video and viewer.

Our team has posited for some time that elements of the ITS other than the video may play a key role in participants' decisions to test for HIV post-intervention. [15] Indeed, the finding that participants who reported problem substance use were significantly more likely to accept an HIV test offered via ITS supports this idea. It remains unclear whether participants who reported substance use were more aware of their possible HIV risk and were, therefore, more receptive to intervention content, or whether the substance use screening encouraged participants to reflect on their risk and thus motivated participants to re-consider HIV testing after initially declining. Accordingly, it may also emerge that administering the substance use screening at the start of the intervention, prior to displaying a video, serves as an *advance organizer* [38] focusing participant attention on specific elements of the intervention, including a video that addresses potential increases in HIV risk associated with substance use. It is also possible that participants engaging in problem substance use already perceived themselves at greater risk for HIV infection, and may have been more likely to test even without the substance use screening. Although all participants initially declined HIV testing offered by ED staff, some may have responded to other parts of the intervention, or simply to the second offer of an HIV test, or to the offer of an HIV test via computer instead of a person.

Given these new findings it may be worth exploring how intervention content can, in accordance with SCT and IMB, be made more relevant and appropriate to individual participants by address reported risk behaviors (i.e. people who report problem alcohol use could see videos describing how alcohol use before sex can potentially increase HIV risk) or other types of strategies that could be readily facilitated by technology-based interventions.

As noted in the Introduction both SCT and IMB posit that intervention content should be made relevant to target populations. Our team and others had previously explored how intervention videos could be made more relevant via demographic concordance between recipients and the people depicted onscreen. It now appears the perceived relevance of our intervention may have been increased for participants who recognized problematic nature of their substance use. Again, participants who reported that substance use led to legal, social, or financial problems; or that they had tried and failed to quit using a particular substance; or that a close friend or relative had expressed concern were significantly more likely to accept an HIV test at the end of our intervention even though they had all initially declined testing when offered at triage. It is conceivable that this acknowledgement of substance use risk

coincided with an increase in participants' perceived relevance of the ITS before it displayed an intervention video and regardless of the demographics of people depicted onscreen.

This may have very strong clinical and public health significance. As described in the Introduction, the overwhelming majority of new HIV diagnoses are now attributed to sexual contact, and people with histories of problem substance use, including heavy drinking and marijuana smoking, may engage in sexual risks that increase their chances of HIV infection (i.e. having condomless sex with an increased number of partners). [20] If we can develop interventions that encourage people to report behavioral risk, and then encourage people to reflect on how their HIV risk may increase the relevance of HIV screening, we may be able to consistently increase HIV testing among those most at risk, even if they initially decline HIV tests when offered by clinical staff.

The self-contained, computer-based nature of the ITS also appears to address stigma that may prevent people from disclosing their risk behaviors in face-to-face situations, [17] which has been a longstanding limitation of interventions that screen for substance use. In multiple qualitative interviews, participants told us they were more comfortable reporting substance use and other behavioral risks to the ITS compared to a person, because they did not fear a computer would judge them the way a person might.

LIMITATIONS

One limitation of the current analysis is that the three prior studies were not designed to systematically balance demographic concordance in terms of ethnicity and age. Although proprietary algorithms were used to dynamically assign equal numbers of participants to each treatment group by gender and race, participants were not randomized by ethnicity (e.g. Hispanic or non-Hispanic), or by age. In addition, participants may have had sexual risks (i.e. sex with multiple partners) which would not be measured by the substance use screening.

Another limitation is the ITS, did not specifically ask about injection substance use versus noninjection substance use (e.g. oral or intranasal consumption). Newer versions of our substance use screening have been designed to ask more detailed questions about injection use.

It remains to be seen whether the ITS, or a similar intervention, can be routinely administered in EDs and other clinical environments, but our finding that more than 95 percent of participants responded to all questions and completed the entire intervention is indeed encouraging.

CONCLUSION

The current study shows the ITS can facilitate self-reporting of substance use, including problem substance use, in a large, high volume, ED setting. The study also shows a statistically significant relationship between reporting problem substance use, and accepting an HIV test, among a sample of ED patients who initially declined HIV testing offered by hospital staff. At this point it remains unknown whether the current findings are

generalizable to other EDs or additional healthcare settings. Continued research is warranted. Further, the study shows the ITS can consistently increase HIV test rates among reluctant patients by approximately one third. Routinely delivering similar interventions to patients in healthcare settings may help identify undiagnosed HIV among high risk populations who otherwise might not be reached.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table I:

Sample Characteristics by Individual Study and Overall

Characteristic	Frequency Distribution (Study 1) n = 160	Frequency Distribution (Study 2) n = 100	Frequency Distribution (Study 3) n = 300	Frequency Distribution (Across 3 Studies) N = 560
Gender	Female: 65% (n = 104) Male: 35% (n = 56)	Female: 66% (n = 66) Male: 34% (n = 34)	Female: 64.7% (n = 194) Male: 35.3% (n = 106)	Female: 65.2% (n = 363) Male: 34.8% (n = 196)
Race/Ethnicity	Black: 45% (n = 72) - Black Latino: 16.2% (n = 26) - Black non-Latino: 28.8% (n = 46) White: 39.3% (n = 63) - White Latino: 15.6% (n = 25) - White non-Latino: 23.8% (n = 38)	Black: 46% (n = 46) - Black Latino: 16% (n = 16) - Black non-Latino: 30% (n = 30) White: 29% (n = 29) - White Latino: 13% (n = 13) - White non-Latino: 16% (n = 16)	Black: 60.5% (n=181) - Black Latino: 16.7% (n = 50) - Black non-Latino: 43.5% (n = 130) White: 27.4% (n = 82) - White Latino: 12.4% (n = 37) - White non-Latino: 15.1% (n = 45) <i>N = 299*</i>	Black: 53.4% (n = 299) - Black Latino: 16.4% (n = 92) - Black non-Latino: 36.8% (n = 206) White 31.1% (n = 174) - White Latino: 13.4% (n = 75) - White non-Latino: 17.7% (n = 99)
Age	18–24 years old: 21.3% (n = 34) 25–34 years old: 29.4% (n = 47) 35–44 years old: 22.5% (n = 36) 45–54 years old: 12.5% (n = 20) 55–64 years old: 12.5% (n = 20) 65+ years old: 1.8% (n = 3) <i>N = 160</i>	18–24 years old: 100% (n = 99) 25–34 years old: 0% (n = 0) 35–44 years old: 0% (n = 0) 45–54 years old: 0% (n = 0) 55–64 years old: 0% (n = 0) 65+ years old: 0% (n = 0) <i>N = 99*</i>	18–24 years old: 26.8% (n = 80) 25–34 years old: 34.8% (n = 104) 35–44 years old: 17.0% (n = 51) 45–54 years old: 9.7% (n = 29) 55–64 years old: 7.7% (n = 23) 65+ years old: 4.0% (n = 12) <i>N = 299*</i>	18–24 years old: 38.1% (n = 214) 25–34 years old: 26.9% (n = 151) 35–44 years old: 15.5% (n = 87) 45–54 years old: 8.7% (n = 49) 55–64 years old: 7.7% (n = 43) 65+ years old: 2.7% (n = 15) <i>N = 559*</i>
Gender Concordance	Gender concordance experienced by 50% (n = 80) of the participants <i>N = 160</i>	Gender concordance experienced by 34.3% (n = 34) of participants <i>N = 99*</i>	Gender concordance experienced by 35.3% (n = 106) of participants <i>N = 300</i>	Gender concordance experienced by 36.7% (n = 220) of participants <i>N = 559*</i>
Race Concordance	Race concordance experienced by 38.8% (n = 62) of participants	Race concordance experienced by 46% (n = 46) of participants	Race concordance experienced by 60.7% (n = 182) of participants	Race concordance experienced by 51.8% (n = 290) of participants
Problem Substance Use	Reported problem substance use: 42.7% (n = 67) No reported problem substance use: 34.4% (n = 54) No reported substance use at all: 22.9% (n = 36) <i>N = 157*</i>	Reported problem substance use: 37.4% (n = 37) No reported problem substance use: 41.4% (n = 41) No reported substance use at all: 21.2% (n = 21) <i>N = 99*</i>	Reported problem substance use: 43.8% (n = 127) No reported problem substance use: 32.8% (n = 95) No reported substance use at all: 23.4% (n = 68) <i>N = 290*</i>	Reported problem substance use: 42.3% (n = 231) No reported problem substance use: 34.8% (n = 190) No reported substance use at all: 22.9% (n = 125) <i>N = 546*</i>
	Accepted HIV Test: 34.2% (n = 53)	Accepted HIV Test: 30.3% (n = 30)	Accepted HIV Test: 31.9% (n = 91)	Accepted HIV Test: 32.3% (n = 174)

Characteristic	Frequency Distribution (Study 1) n = 160	Frequency Distribution (Study 2) n = 100	Frequency Distribution (Study 3) n = 300	Frequency Distribution (Across 3 Studies) N = 560
Acceptance of HIV Testing	Declined HIV Test: 65.8% (n = 102) <i>N</i> = 155*	Declined HIV Test: 69.7% (n = 69) <i>N</i> = 99*	Declined HIV Test: 68.1% (n = 194) <i>N</i> = 285*	Declined HIV Test: 67.7% (n = 365) <i>N</i> = 539*

*Please note that this sample size represents the number of participants we had available data for on this item.

Table II:Percent Accepting HIV Testing by Gender Concordance (N = 539^{*})

Characteristics of Viewer/Video	Accepted HIV Test PostIntervention (n, % of all those who accepted test (n = 174))	Declined HIV Test PostIntervention (n, % of all those who declined test (n = 365))	Odds Ratio (95% CI)	Total (n, % of entire sample (N = 539))
Females watching Females (<i>Gender Concordance</i>)	n = 21 (12.1%)	n = 31 (8.5%)	OR = 1.478 (95% CI: 0.823, 2.657)	n = 52 (9.6%)
Females watching Males	n = 98 (56.3%)	n = 215 (58.9%)	OR = 1.478 (95% CI: 0.823, 2.657)	n = 313 (58.1%)
Males watching Females	n = 11 (6.3%)	n = 16 (4.4%)	OR = 1.478 (95% CI: 0.823, 2.657)	n = 27 (5.0%)
Males watching Males (<i>Gender Concordance</i>)	n = 51 (29.3%)	n = 117 (32.1%)	OR = 1.478 (95% CI: 0.823, 2.657)	n = 168 (31.2%)
Total (N, % of entire sample)	N = 174 (32.3%)	N = 365 (67.7%)		N = 539 (100%)

^{*} Please note that this sample size represents the number of participants we had available data for on this item.

Table 3:

Multivariable Logistic Regression Results

Source	<i>B</i>	<i>SE B</i>	Wald Statistic	<i>P</i>	Odds Ratio	95% Confidence Interval
Problem Substance Use	0.277	0.118	5.502	0.019*	1.320	1.05, 1.66
Participant Gender	0.171	0.193	0.789	0.374	1.187	0.814, 1.731
Participant Race	0.191	0.184	1.073	0.300	1.210	0.843, 1.737
Participant Age	0.009	0.066	0.020	0.887	1.009	0.887, 11.149