

Evaluating a Transformational Health Game to Influence Perceptions of the Condoms-as-Evidence Policy

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Abstract

Objective: Some countries treat carrying condoms as evidence of prostitution, commonly referred to as “condoms-as-evidence” policy/practice. This policy has deleterious outcomes on the health and safety of sex workers worldwide. This study evaluates the impact of a simulation game that advocates against the policy in an effort to increase advocacy attitudes and intentions against condoms-as-evidence policies and practices.

Materials and Methods: A between-subjects randomized experiment ($N=70$) was conducted to evaluate the effectiveness of the intervention game relative to a pamphlet. The game, *Cops & Rubbers*, is a simulation-based tabletop game situating participants in the role of a sex worker trying to balance competing financial, safety, and health-related goals. The research for and development of the pamphlet was funded by Open Society Foundations to highlight the impact of the condoms-as-evidence policy and elicit advocacy efforts.

Results: Although the game elicited similar levels of advocacy attitudes toward the pamphlet, it elicited significantly higher advocacy intentions than the pamphlet. Conflicting results were witnessed in psychological reactance.

Conclusion: The present results demonstrate the utility of games as an advocacy tool for health and human rights among a polarizing topic such as sex worker advocacy. These results have both practical utility and research implications. From a practical standpoint, we demonstrate that the game can increase advocacy intentions and tangibly contribute to human rights and health issues. Furthermore, these results have the potential to inform novel game design strategies to influence persuasive outcomes in transformational games.

Keywords: Games, Advocacy, HIV, Attitudes, Reactance

Introduction

IN MOST COUNTRIES AROUND the world sex work is designated as a criminal activity. One frequently utilized deterrent strategy is referred to as the condoms-as-evidence policy/practice, where laws or practices are advanced to designate condoms as evidence of prostitution.¹ This policing practice is common throughout the world: in the United States, 52% of sex workers report that they decided not to carry condoms to avoid problems with the police, in Namibia, 50% of sex workers report police destroying their condoms, in Russia 80% of sex workers report police taking their condoms.² Advocacy groups internationally are petitioning to repeal condoms-as-evidence policies and practices, which represent both a violation of human rights and a callous threat

to public health. For example, recent legislation in the United States was passed in California, banning condoms-as-evidence practice by law enforcement. However, this practice still exists in many states, and banning it is a priority issue for the American Civil Liberties Union (ACLU) in protecting sex workers' rights.³

Problematically, the enforcement of condoms-as-evidence policy has dangerous health and human rights implications. Over 37 million people worldwide are living with HIV.⁴ Condoms have been proven to significantly reduce the risk of HIV transmission through sexual exposure, and global health organizations including the World Health Organization, United Nations Population Fund, and United Nations Programme on HIV/AIDS (UNAIDS) continue to request the accelerated promotion of condoms in AIDS prevention and

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care programs.² However, in many countries, police carry out legal and illegal searches of sex workers, confiscating or destroying condoms even when they are not engaging in sex work.^{5,6} In many cases, prosecutors argue that the possession of condoms is sufficient evidence of prostitution. This treatment of condoms as contraband forces people to make choices between safeguarding their health and avoiding arrest.

In 2012, Open Society Foundations (OSF) released its report, "Criminalizing Condoms," which documents these practices in six countries and identifies their consequences on sex workers' lives, including their vulnerability to HIV.² The report launched alongside *Cops & Rubbers*, a simulation-based game developed for OSF and designed to raise awareness for the harmful influence of enforcing condoms as evidence.⁷ The game simulates the real-world consequences of using condoms as evidence of prostitution. By role playing a marginalized sex worker, players experience the first-hand difficulties this population endures because of condoms-as-evidence policies and practices. This social impact game serves as an alternative advocacy tool and interactive demonstration of these policing practices that can elicit empathy and advocacy for those who suffer because of this policy.

The use of games as a communication platform for social change is a growing movement with the introduction of the terms "serious," or "transformational," games to describe games that are not designed solely for entertainment purposes.⁸ Transformational games can be an effective tool to address difficult or controversial topics. For example, *One Night Stan* is a card game designed to help Black women reduce their chances of contracting HIV, which successfully increased self-efficacy and intentions to use condoms and ask partners to get tested.⁹ *Term on the Tides* is a simulation game for sex education that increased confidence to identify sexual risk behavior.¹⁰ Similarly, *PlayForward* teaches crucial skills to prevent HIV and demonstrate the importance of condoms, dangers of drugs and alcohol, and how peers influence risk decision making.¹¹

This study adds to the literature by investigating whether interventional games can be used to move beyond individual HIV protective behaviors to influence perceptions on policy. Little formal research addresses the impact games can have on changing attitudes or eliciting prosocial behavior toward real-world issues. As a result, humanitarian organizations and their partners may be hesitant to use games as advocacy tools, despite the fact that games provide unique experiential learning opportunities that are not available through other types of media. Considering this, the present study incorporates a randomized experimental design to evaluate the effectiveness of using the *Cops & Rubbers* game as an intervention to increase advocacy efforts against the condoms-as-evidence policy. The game was designed with the intention of increasing empathy for sex workers by policymakers and law enforcement particularly in African countries, where condoms-as-evidence policies are common, to increase empathy for sex workers.^{12,13} Here we expand previous applications to assess the game as an advocacy tool among a U.S. sample. Specifically, we compare the game with a standard-of-care control, a brochure developed by OSF detailing the deleterious outcomes of the condoms-as-evidence policy.

Serious games and role taking

Serious games allow participants to take the role of a particular game character and make decisions within the

game as this persona, based on a previously assigned personality and gaming goal. The theoretical concept underlying this process is called role taking, where players adopt an empathetic stance toward a character and adopt the character's point of view.¹⁴ This cognitive activity requires the player to perceive some similarity between oneself and the character, with similar values and goals. The term role taking has been used interchangeably with perspective taking and identification, and is a crucial component to widely used models depicting the process through which exposure to entertainment messages can impact outcomes, including the extended elaboration likelihood model and the entertainment overcoming resistance model.^{15,16} The perceptual, cognitive, emotional, and motivational outcomes of role taking are also commonly applied to experiences with games and game characters.^{17,18}

The experience of role taking in this manner has multiple benefits, including reducing the likelihood of psychological reactance, and increasing story-relevant attitudes and intentions.^{17,19,20} First, narratives can reduce psychological reactance, or the belief that one's autonomy is being challenged by the person or organization making the persuasive attempt.^{21,22} This is thought to function through the fact that narrative structure helps to obscure underlying persuasive intent, reducing any reactance that may arise through message exposure.¹⁵ This could be particularly important in the context of sex work advocacy, a controversial issue that may elicit reactance from much of the audience. Considering this, the following hypothesis is proposed:

H1: Playing the game will result in reduced psychological reactance compared with reading the pamphlet.

If the game can overcome reactance the audience is likely to perceive regarding sex work advocacy, game play should likewise result in more favorable attitudes and intentions toward story-relevant outcomes. Indeed, a recent meta-analysis showed that playing games elicits game-consistent attitudes and beliefs about a variety of health topics.²³ Similarly, games are a proven strategy to increase a variety of health-related intentions.²⁴⁻²⁶ Although these relationships have been witnessed in multiple contexts, they have seen comparatively little study in the context of advocacy. Thus, the following hypotheses are proposed:

H2: The game will elicit more favorable attitudes toward abolishing the condoms-as-evidence policy than the pamphlet.

H3: The game will elicit higher intentions to act compared with the pamphlet.

Materials and Methods

This study describes a randomized experiment to test the impact of the simulation-based game *Cops & Rubbers*, a tabletop and digital advocacy game. Participants in this study played the tabletop version. A between-subjects randomized experiment was designed, comparing the game with a standard-of-care control pamphlet presently used by OSF to educate people about the condoms-as-evidence policy. This study was approved by the institutional review board at the authors' university.

Participants and procedure

This sample consisted of undergraduate students ($N=70$) at a mid-sized southeastern university in the United States. All participants received course extra credit. On average, participants were female ($n=64$), ~21 years old (mean [M]=20.69, standard deviation [SD]=2.53, range=18–35), and White (40%). Other races and ethnicities included Hispanic/Latino (21.4%), Asian/Pacific Islander (20%), African American/Black (12.9%), and those who reported “other” (5.7%).

Before data collection, a random number generator was used to assign game play sessions to either the control or intervention condition. All data collection took place in a laboratory on campus. Participants provided informed consent after reading through the informed consent document and agreed to participate in the study by clicking “next” on the screen. Next, they completed a brief pretest survey measuring demographics, engaged with either the tabletop version of the game or standard-of-care control pamphlet, and completed the remainder of the survey items in the post-test survey. Participants in the pamphlet condition read the materials alone, whereas participants in the game condition played the game with one another. The 36-page pamphlet took participants ~15–20 minutes to read, and game play took ~20–30 minutes, depending on the size of the group. All study participation occurred on the same day and study procedures were approved by the institutional review board at the University of Miami.

Stimuli

Supported by the OSF, *Cops & Rubbers* advocates for sex worker rights by eliciting support against policies that criminalize condoms.⁷ The game was designed with broad international appeal to reflect policing practices in countries such as Kenya, Namibia, South Africa, Zimbabwe, Russia, and the United States, including quotes and experiences from actual sex workers in these countries. Game play does not take any specific cultural or national perspective, but cultural aspects are included in the artwork: the backs of cards are adorned with abstractions of flags from the countries highlighted in the Criminalizing Condoms report. In-game experiences were based on the same research source as this report. The control condition is the 36-page Criminalizing Condoms report. Both the game and the pamphlet are available online.^{7,13}

Measures

All variables were measured on a 7-point scale. The psychological reactance scale consisted of eight items measuring two dimensions of reactance: perceived threats to autonomy (four items, $M=3.12$; $SD=1.83$; $\alpha=0.94$) with a sample item “the game threatened my freedom to choose” and the affective dimension of reactance, anger (four items, $M=3.72$; $SD=1.86$; $\alpha=0.94$) with a sample item “I felt annoyed while playing the game.”²⁷ Attitudes were initially measured with a modified nine-item scale, however, one item was removed to increase reliability from 0.69 to 0.79 ($M=5.65$; $SD=1.04$).²⁸ Sample items included “if condoms as evidence policy are in place, it would be bad/good,” The intention scale was an index consisting of 10 items designed to gauge intentions of performing a variety of advocacy

behaviors, including “I would sign a petition to end the condoms as evidence policy” ($M=5.08$; $SD=1.18$; $\alpha=0.92$). A single item indicator of religiosity, “how important is religion to you?”, was entered as a covariate in a follow-up analysis ($M=4.50$; $SD=2.03$).

Results

See Figure 1 for differences between study conditions for all study hypotheses. H1 stated that the game will reduce psychological reactance compared with the pamphlet. Two independent sample t -tests were conducted to compare both cognitive and affective dimensions of reactance among participants in game condition and pamphlet condition. Results revealed that cognitive reactance was higher in the game condition ($n=31$; $M=4.22$; $SD=1.81$) than in the pamphlet ($n=36$; $M=1.98$; $SD=1.06$), and this difference was statistically significant with a large effect size, $t(66)=6.06$, $P<0.001$; Cohen’s $d=1.54$. The inverse was observed when comparing conditions on the negative emotion subscale of reactance, where the pamphlet ($n=36$; $M=4.16$; $SD=1.78$) elicited significantly greater negative emotions ($n=33$; $M=3.24$, $SD=1.86$) than the game and the effect size was moderate, $t(67)=-2.11$, $P=0.040$; Cohen’s $d=-0.51$. These findings offer mixed support for H1.

H2 suggested that the game would result in more favorable attitudes toward abolishing the condoms-as-evidence policy, however, there was no statistically significant difference between conditions at $t(66)=-0.793$, $P=0.430$; Cohen’s $d=-0.19$. Thus, H2 was not supported.

H3 predicted that the game would elicit significantly higher intentions to act than the pamphlet. To assess this hypothesis, we conducted an independent sample t -test with intervention condition as the predictor variable and intentions as the dependent variable. Results revealed that the game condition resulted in higher intentions ($n=33$; $M=5.35$; $SD=1.08$) than the pamphlet condition ($n=36$; $M=4.84$; $SD=1.23$), and this difference was marginally significant, $t(67)=1.81$, $P=0.074$, Cohen’s $d=0.437$. Although marginally significant, the effect size was moderate, suggesting a legitimate difference between condition membership and intentions. To probe this difference, we conducted a one-way analysis of covariance with intervention condition as the independent variable (IV) and intentions as the dependent variable (DV) while controlling for gender and religiosity. This analysis was specified to see whether intervention condition was still a meaningful predictor of intentions after including two known predictors of sex worker advocacy perceptions. These covariates were selected as there are gender differences in perceptions of sex work²⁹ and gaming,³⁰ and religiosity may function as a polarizing belief influencing sex work advocacy intentions.³¹ Results demonstrate that even after controlling for gender [$F(1, 65)=5.03$, $P=0.028$] and religiosity [$F(1, 65)=4.92$, $P=0.030$], the game condition elicited significantly higher intentions than the pamphlet condition, $F(1, 65)=9.90$, $P=0.005$; $\eta_p^2=0.12$.

Discussion

This study evaluated the impact of the health and social advocacy game *Cops & Rubbers* on reducing psychological reactance and increasing favorable attitudes and advocacy

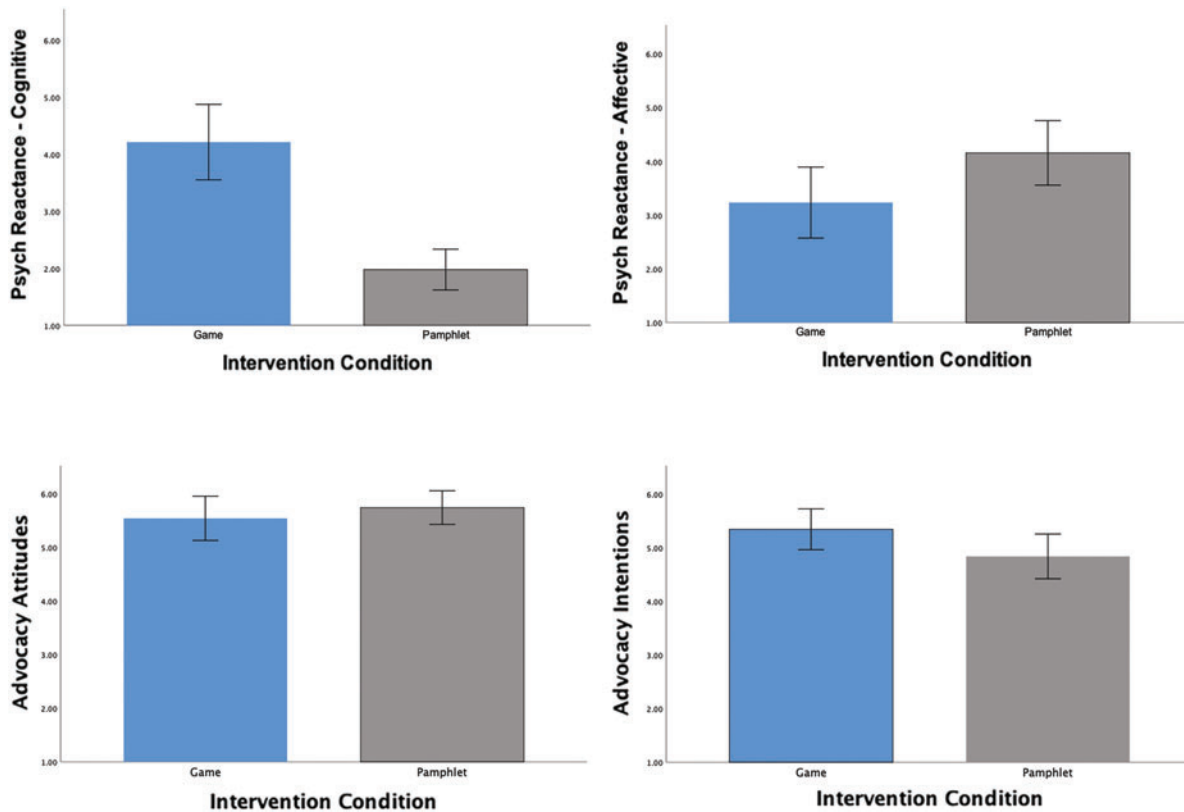


FIG. 1. Bar charts comparing the two intervention conditions (game vs. pamphlet) on all outcome variables. *Note:* Whiskers denote 95% confidence intervals. Color images are available online.

intentions. Interesting and unexpected findings emerged, wherein the pamphlet and the game elicited different types of psychological reactance, similar attitudinal outcomes, and the game was more effective in eliciting advocacy intentions. First, the cognitive dimension of reactance was higher among those who played the game, and the affective dimension was higher among those exposed to the pamphlet. Although unexpected, upon reflection these results make sense. *Cops & Rubbers* was designed purposefully to limit players' choices within the game, in an effort to frustrate players as they experience the real-world lack of options that are perceived by many sex workers in their interactions with law enforcement. In short, the game was designed to elicit perceived threats to autonomy among players to experience the totality of role taking in this situation. This runs counter to the majority of persuasive messages, which attempt to avoid eliciting reactance. However, the fact that the game resulted in higher advocacy intentions suggests that this may be an effective strategy for future research to explore, especially considering that previous research has found that anger directed at a specified target can be a successful persuasive strategy.³²⁻³⁴ Considering this, it makes sense that participants would report that their freedom to choose was restricted, but not experienced anger as a consequence. In contrast, participants in the pamphlet condition experienced significantly higher levels of anger, which may have explained comparatively lower advocacy intentions.

The game and the pamphlet elicited similar levels of attitudes, suggesting that playing an entertainment game can have the same impact as reading through a pamphlet on the

issue. However, the game did result in higher advocacy intentions than the pamphlet. This is an interesting development, as it suggests the game is functioning to influence outcomes in different ways than traditional persuasive messages, which principally influence intentions and behavior through changes in attitudes. One reason for the success of the game over the pamphlet may have been the influence of psychological reactance. The pamphlet elicited higher levels of the emotional dimension of reactance, anger, which may have limited the subsequent advocacy intentions. Another possible explanation for the ability of the game to increase advocacy intentions is role taking. *Cops & Rubbers* puts the player in the role of a sex worker, where discrimination and prejudice are faced firsthand by the players. This is a powerful experience of identification that is unlikely to arise from reading a pamphlet.

This study also has distinct applications to sex work advocacy interventions as well as applied HIV prevention campaigns. It demonstrates that an advocacy game can be equally as effective at influencing attitudes as reading a lengthy pamphlet and may in fact be more effective in influencing advocacy intentions. Although interventions among sex workers are relatively common,^{35,36} little research exists examining the impact of advocacy research of this kind targeted toward the public. Changing public perceptions can have distinct impacts on sex worker stigmatization, which in turn can positively impact health outcomes for sex workers. Stigma can affect the well-being and health of marginalized groups such as sex workers who undergo verbal and physical abuse that leads them to conceal their identities, withdraw from social networks, and become less

likely to seek health care.^{37,38} Legalizing and normalizing sex work are a tangible step to reduce stigma and increase health outcomes among sex workers.

Given the game's potential to increase audience awareness and advocacy intentions against this policy, it can also help educate health and human rights advocates, law enforcement, and policymakers on the problematic nature of condoms-as-evidence policies. This game has been previously used by OSF to train both police officers and health advocates across multiple countries, but until now this point has not been experimentally evaluated for its effectiveness. The present results demonstrate the utility of this game as an advocacy intervention tool that may engender attitude change among the general population that can lead to real-world health and safety outcomes for sex workers.

Limitations and future research

One limitation is that this investigation was conducted among a largely female convenience sample of university students and may not generalize beyond this population. Another limitation is that the data are cross-sectional in nature, so the long-term effects of each intervention type are unclear. Future research in this area should expand evaluation to a general sample of adults, who may be less resilient to attitude change on a controversial issue such as sex worker advocacy than undergrad students. Subsequent research should also explore these relationships longitudinally. Future research can also benefit from developing a more nuanced measure of psychological reactance. For instance, current measures of psychological reactance are unable to distinguish between reactance toward the advocated behavior and reactance toward the stimulus message or source. In this case, the game was designed to elicit anger to motivate behavior change, but current measures of reactance do not distinguish between targets of anger. Finally, future research should further explore how games, particularly advocacy games that purposefully elicit and direct reactance toward a particular source, can impact persuasive outcomes.

Conclusion

This study attempted to determine whether and how a game designed to increase advocacy efforts against the condoms-as-evidence policy compares with a professionally designed pamphlet. Results revealed that the game elicited similar levels of attitudes and significantly increased advocacy intentions compared with the pamphlet. Interesting contrasts from psychological reactance generated from role taking within the game have the potential to inform novel game design strategies to influence persuasive outcomes in transformational games.

Author Disclosure Statement

Carcioppolo, Shata, Yang, and Zhuo declare that they have no conflicts of interest.

Tran holds authorship rights to the game Cops and Rubbers and may receive royalties from its sale.

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