"Is Your Man Stepping Out?" An Online Pilot Study to Evaluate Acceptability of a Guide-Enhanced HIV Prevention Soap Opera Video Series and Feasibility of Recruitment by Facebook Advertising

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Love, Sex, and Choices *(LSC) is a 12-episode soap opera video series developed to reduce HIV risk among at-risk Black urban women. We added a video guide commentator to offer insights at critical dramatic moments. An online pilot study evaluated acceptability of the Guide-Enhanced LSC (GELSC) and feasibility of Facebook advertising, streaming to smartphones, and retention. Facebook ads targeted high-HIV-prevalence areas. In 30 days, Facebook ads generated 230 screening interviews: 84 were high risk, 40 watched GELSC, and 39 followed up at 30 days. Recruitment of high-risk participants was 10 per week, compared to seven per week in previous field recruitment. Half the sample was Black; 12% were Latina. Findings suggest GELSC influenced sex scripts and behaviors. It was feasible to recruit young urban women from a large geographic area via Facebook and to retain the sample. We extended the reach to at-risk women by streaming to mobile devices.*

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Key words: *entertainment education, Facebook advertising, HIV prevention, smartphones, streaming soap opera videos, women*

There is a compelling need to expand the reach of effective health promotion interventions (Centers for Disease Control and Prevention [CDC], 2014b). Computer-based interventions have compared favorably to human-facilitated interventions in HIV prevention (Noar, Black, & Pierce, 2009), substance use (Carroll et al., 2008), and general health promotion (Portnoy, Scott-Sheldon, Johnson, & Carey, 2008). Interventions delivered on Internet-based platforms increase usability and scale-up (Noar, 2011), increasingly important where the costs of facilitator-led groups challenge implementation, and when stigma challenges in-person attendance.

Love, Sex, and Choices (LSC) is an engaging 12-episode soap opera video series developed to reduce

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JOURNAL OF THE ASSOCIATION OF NURSES IN AIDS CARE, Vol. 26, No. 4, July/August 2015, 368-386
http://dx.doi.org/10.1016/j.jana.2015.01.004

HIV risk in young, adult Black women (Jones, Hoover, & Lacroix, 2013). LSC narratives portray four women facing archetypical relationship dilemmas involving high-risk situations. Based on formative research (Jones, 2006, 2008), sexual health promotion messages of relationship communication, HIV testing, and consistent condom use skills are woven into familiar high-risk sex scripts to model new behaviors in situational and emotional contexts. The LSC heroines transform self-behavior through awareness of their values, choices, and potentials (Jones et al., 2013).

Further evaluation of LSC through focus groups indicated that an additional mechanism was needed to reinforce health promotion messages and to offer insights at key moments in the story. Viewers experience heightened emotion during the story and identify with LSC characters. However, for meaningful behavior change, critical reflection and new understanding are needed (Gesser-Edelsburg & Singhal, 2013). Contemporary urban women's sex scripts promote unprotected sex to fulfill relationship needs (Emmers-Sommer & Allen, 2005; Jones, 2006; Jones & Oliver, 2007) and to hold onto the relationship, and show trust and intimacy (Bell, Atkinson, Mosier, Riley, & Brown, 2007; Jones & Gulick, 2009). The Guide-Enhanced LSC (GELSC) was, therefore, produced by adding a peer video guide to the end of LSC episodes to provoke viewers to question their own sex scripts and consider their own need for change. An epilogue, such as that conveyed by the video guide, is an important technique in entertainment education to help interpret and emphasize key messages (Kawamura & Kohler, 2013; Sabido, 2004).

Streaming the GELSC video series to reduce HIV risk takes advantage of pervasive smartphone use (Pew Research Internet Project, 2014a), high interest in multimedia video entertainment (Purcell, 2013), and video streaming capabilities. Recruitment and retention of Black women in online HIV prevention research remain understudied, although Internet access on mobile devices is highest among African Americans, particularly among young adult Black women (Smith, 2014). The original LSC had been evaluated in a randomized controlled trial (RCT; Jones et al., 2013; Jones & Lacroix, 2012) in an urban sample of young, predominately Black women who had been screened and identified as high risk. While the videos in that RCT were streamed to smartphones, the phones had been provided to the participants and recruitment and data collection were conducted at the sites. In contrast, for the pilot study reported here, the new GELSC episodes were streamed to women's own smartphones or computers and recruitment and data collection were conducted online. Ninety-eight percent of African Americans ages 18 to 29 years access the Internet (Smith, 2014); 75% of African American adults and 74% of all adults with Internet access have annual incomes of less than $30,000 USD (Smith, 2014), and nearly all adults ages 18 to 29 years (89%) with Internet access use a social networking site (Pew Research Internet Project, 2014b). Due to the popularity and reach of Facebook among young adult Black women (Duggan & Smith, 2013), advertisements for our study were placed on Facebook.

The purposes of our pilot study were to ascertain the feasibility of Facebook advertising on smartphones and computers and online procedures consisting of obtaining consent, eligibility screening on smartphones by audio computer-assisted self-interview (ACASI), verification procedures, streaming and tracking GELSC viewing, and retention at 1 month when preliminary outcome data on risk and HIV testing were obtained. The pilot study assessed acceptability of the GELSC using evaluation criteria.

Background

Importance of HIV Prevention Among Black Women

Black women with heterosexual HIV transmission comprise the fourth largest category of all new HIV infections in the United States (CDC, 2014b). The HIV incidence for Black women is 20 times that of White women, and nearly five times that of Latinas (CDC, 2014a). Black women are no more likely to have unprotected sex or multiple partners than White women (Tillerson, 2008), but are more likely to have male sex partners at higher HIV risk (CDC, 2014a; Friedman et al., 2014). Higher HIV prevalence in Black communities is attributed to stigma, and structural and racial disparities (CDC, 2014a). These data point to the importance of prevention, early identification, and access to treatment.

Unprotected sex with HIV-infected men accounts for 84% of HIV transmission in all women (CDC, 2014b), and 87% of transmissions to Black women (CDC, 2014a). In a three-city study, awareness that a male sex partner was high risk was not associated with condom use; however, main partner status was (Ober et al., 2011), signifying the importance of relationships when designing interventions to lower HIV sexual transmission. Unprotected sex with men often occurs in the context of the high value women place on relationships, for reasons that include emotional connection (Bell et al., 2007; Jones & Oliver, 2007). Therefore, it is a concern when pervasive urban sex scripts promote unprotected sex to secure relationship needs (El-Bassel, Caldeira, Ruglass, & Gilbert, 2009; Emmers-Sommer & Allen, 2005; Jones & Oliver, 2007). Sex scripts are commonly understood expectations for sex behavior (Gagnon & Simon, 2005).

Development of the original 12-episode LSC soap opera series was grounded in a framework of Sex Script Theory (Simon & Gagnon, 1986) and Power as Knowing Participation in Change Theory (Barrett, 2010). The series models how women become more powerful as they make intentional choices to engage in higher power sex scripts. A more complete discussion of the theoretical framework is available (Jones, 2006; Jones et al., 2013; Jones & Oliver, 2007). The clinical trial evaluating LSC on women's HIV sex risk behavior was conducted with 238 high-risk, mostly Black women, ages 18 to 29 years, in the urban Northeast (Jones et al., 2013; Jones & Lacroix, 2012). The comparison group received 12 weekly, text-based HIV prevention messages. Risk behavior was statistically significantly decreased from baseline to 3 and 6 months post-baseline ($p < .001$; Jones et al., 2013). The LSC video group demonstrated 19% greater reduction in risk behavior than the comparison HIV prevention text group, although the magnitude of the difference was not statistically significant (Jones et al., 2013).

From Immersion in the LSC Storyline to Emergence of New Insights via the Video Guide

Key to an effective video intervention is that viewers identify with and are emotionally involved with characters (Igartua, 2010). Evaluations of LSC indicated that viewers had identified with characters, wanted the series to continue, and wanted their friends to watch (Jones & Lacroix, 2012). However, subsequent focus groups determined that viewers needed greater emphasis to identify important health promotion messages because they had become so immersed in the storyline. High levels of identification and trust for characters and story can serve to reinforce viewers' own patterns of behavior (Gesser-Edelsburg & Singhal, 2013). However, when trusted story characters expose viewers to new or oppositional messages, viewers are provoked to question their own patterns of behavior and to feel emotions they might otherwise ignore, a process by which new insights can be revealed (Gesser-Edelsburg & Singhal, 2013). The objective of the new guide addition was to provoke a new way of understanding the drama. At the end of episodes, the guide speaks directly to the viewer and comments on the lead character's choices and behavior. For example, the lead character, Toni, believes her partner is having sex with another woman and remarks, "As long as he comes home to me" (Jones & Roth, 2013). The guide observes,

> Toni, we understand. Mike comes home to you every night. Is that enough? I remember when I used to wait for my man to change, when I was the one who needed to change. Both Toni and Valerie (the other woman) … want to be loved, to be a family, have intimacy and a real connection … And Mike's not giving either one what she wants. (Jones & Roth, 2013)

Here, the guide is helping viewers identify what Toni really wants and not to pursue the default sex script.

Extending the Reach of Interventions With Mobile Access and Facebook Advertising

Most adults in the United States (90%) own a cell phone, and more than half (58%) of all adults have smartphones (Pew Research Internet Project, 2014a). Among 18- to 29-year-old African Americans, 56% own a smartphone (Smith, 2014). Across demographics, smartphone ownership is highest among 18- to 29-year-olds (Pew Research Internet Project, 2014a; Smith, 2014). Although smartphone

ownership increases with income, nearly half (47%) of those with incomes of less than $30,000 USD own smartphones (Smith, 2014). These data imply a high potential to reach young adult urban Black women with HIV prevention videos on their own smartphones or computers.

Overall, 73% of African American Internet users and 96% of African Americans ages 18 to 29 years use a social networking site (Smith, 2014). With a global user base of more than one billion monthly active accounts (Facebook, 2014), Facebook is, to date, the most popular social networking site (Pew Research Internet Project, 2014a), particularly among Black women in this age group (Duggan & Smith, 2013). Researchers have leveraged pervasive access to social networking sites by advertising online. Use of online recruitment approaches on social networking sites has demonstrated promise in diverse fields of study (Fenner et al., 2012; Graham, Milner, Saul, & Pfaff, 2008; Morgan, Jorm, & Mackinnon, 2013; Ramo & Prochaska, 2012; Rosser, Oakes, et al., 2010b), including banner ads to target smoking cessation (Graham et al., 2008) and to reduce HIV risk among men who have sex with men (MSM; Rosser, Oakes, et al., 2010b). Facebook ads have been effective in recruiting young adult smokers into a study on substance use (Ramo & Prochaska, 2012) and to recruit low-income women into an online nutrition program (Lohse, 2013). Respondent-driven sampling has been conducted using seeds on Facebook as a recruitment approach (Bull, Levine, Schmiegec, & Santellid, 2013). In addition to Facebook advertising, Facebook pages have been utilized to communicate, deliver interventions, and reduce attrition (Mychasiuk & Benzies, 2012).

Facebook ads are displayed to users whose profiles match the selected inclusion criteria of zip code, age, gender, and interest (Facebook, 2014; Fenner et al., 2012). Ads are viewed repeatedly whenever Facebook users log on to Facebook until a daily ad budget is met. This approach can reach a broad representative distribution of a target population (Fenner et al., 2012) or reach a population that may be less accessible for onsite data collection. However, there is a concern that individuals could attempt to register several times or offer fake identities. Efforts to verify the identity of a potential research participant require a mixed approach of automated methods and phone contact (Jones & Lacroix, 2012; Rosser et al., 2009; Rosser, Hatfield, et al., 2010a).

We describe results of a pilot study to test the feasibility of online protocols and Facebook advertisements to recruit predominately young urban Black women at high HIV risk and to evaluate the acceptability of the GELSC. We addressed the following research questions:

1. Will the online protocols to consent, screen for high risk, secure data, stream the 12-episode video to smartphones and computers, and retention protocols demonstrate feasibility as measured against performance matrices?
2. Is it feasible to advertise on Facebook to reach and recruit young adult, urban, Black women at high risk for HIV into an online HIV prevention study?
3. Will the video guide addition to LSC episodes be acceptable?
4. Will viewing GELSC demonstrate a trend toward a decrease in unprotected sex with high-risk partners and an increase in HIV testing?

Methods

The GELSC Intervention

The authentic LSC situations, characters, and story development were based on focus group content analysis and the aforementioned theoretical framework. The series was filmed by a professional filmmaker. There were casting calls and actor auditions. The principles of reducing HIV risk were communicated through archetypal characters that navigated high-risk situations and built trajectories toward more powerful ways of relating (Jones, 2006). The series was divided into 12 15- to 20-minute episodes.

The GELSC introduced the addition of a guide who was a contemporary young Black woman. Participants might identify with the delivery style of one guide over another. The GELSC begins with a brief video to introduce four guides and their background stories. Participants selected one of the four guide personas (each performed the same script)

and watched the 12-episode GELSC series inclusive of the chosen guide. Guide personas were: (a) Chic guide is confident, takes care of herself; (b) Professional guide is upwardly mobile, believes in her abilities to advance; (c) Urban guide understands what it takes to survive; and (d) Socially aware guide believes in her ability to provoke change to advance the community. The guide personas were developed from focus groups and entertainment education literature, and scripted during 6 months of weekly discussions with representatives of the target population, the principal investigator, project director, filmmaker, co-director, and an HIV educator. A prototype of the four guide choices was created for the first seven episodes as a test of concept. The original LSC and GELSC prototypes were shown to two different focus groups, and feedback indicated enthusiastic support for the guide addition. Substantive feedback was implemented. Additional focus groups provided support for the full 12-episode GELSC.

Measures Taken to Protect Confidentiality When Advertising on Facebook

Institutional review board approval was obtained after regular consultation with the Director of the Office of Information Security at Northeastern University and discussions with a scholar on Internet ethics and security at the Center for Information Policy Research at the University of Wisconsin. Northeastern University Institutional Review Board approval required that the team develop a protocol to address privacy concerns posed by advertising on Facebook. These concerns are associated with the potential risk to participant confidentiality, mainly exposing one's identity as a research participant. Facebook users may not fully understand the security and privacy features associated with their Facebook account profiles (Zimmer, 2010). If clicking an ad directs participants to an HIV prevention Web site, interest in an HIV prevention study may inadvertently become known to other Facebook friends or to Facebook tracking. Facebook (similar to some other Web sites) tracks cookies, Internet history, and usage beyond the Facebook environment. A cookie is a message given to a Web browser (for example, Internet Explorer) by a server. A person's Web browser stores the message and sends it back to the server each time the browser is sent to that server (Beal, 2014a). Browsing, purchasing, and search terms are contained in a user's Web browser cache and "scraped" by Facebook to build user profiles associated with user's Facebook identity. Therefore, a series of measures were needed to protect privacy.

One measure was to create the Facebook ad in the name of the *Women's Project*. Clicking the ad on a smartphone directed potential participants to our *Women's Project* Facebook page. Our Facebook page explained that the goal of the study was to increase awareness of how relationships affect women's health. From the Facebook page, those interested in the study clicked a link that sent them from our Facebook site to our Secure Sockets Layer (SSL)-protected *Women's Project* landing page. The SSL is a protocol for sending private documents over the Internet. It does so by encrypting the file (Beal, 2014b). The landing page is a page on the study team's server. The landing page featured the recruitment flyer that described a study about women's relationships with male partners and sexual health (see Figure 1). From a computer, clicking the Facebook ad sent those interested directly to this landing page. From the landing page, a link redirected all potential participants to the SSL-protected study Web site for a full description of the study and informed consent (Figure 1). Consents, surveys, and the intervention were accessed on this Web site, housed on a private Northeastern University server. These measures ensured that all data were housed on the secured study Web site with no connections to Facebook, and that potential data cookies sent back to Facebook did not carry HIV-related information.

A reminder was also placed on the Facebook page for interested participants to periodically review and update their Facebook privacy settings and activities that might be seen on their timelines. When a user "likes" a page or clicks on an advertisement, the owner of the page or advertisement can view information that the Facebook user has made public on her profile. Participants were not required to like the Facebook page, although many did. Personal information was not collected from the Facebook page or from those who liked the study Facebook page.

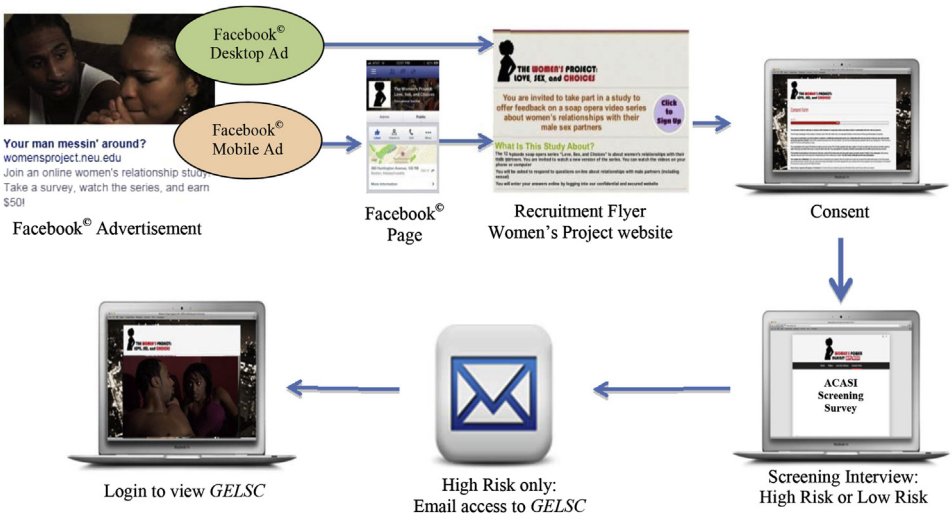

Figure 1. Measures taken to protect privacy when advertising on Facebook. ***Note:*** **GELSC = Guide-Enhanced *Love, Sex, and Choices*.**

Recruitment Procedure using Facebook Advertisements

By targeting demographic criteria such as age, gender, location, and various interests, researchers can post ads that appear on the Facebook pages of users whose data meet these criteria. Data fitting these criteria are located in a person's status, posts, comments, or the pages they like. The term *ad reach* indicates the potential number of individuals on Facebook who will meet the criteria terms during a week (Facebook, 2014). Selected criteria terms used in our pilot study were those that would boost the potential ad reach.

The Facebook ads were launched for 30 days. Eligibility criteria were urban women, 18 to 29 years of age, in a sexual relationship with at least one man in the previous 3 months; hence, the ad targeted women in this age range whose Facebook profiles indicated interest in relationships with men. Zip codes were selected to reach women in predominately Black neighborhoods in cities in Massachusetts and New Jersey with high HIV prevalence. Interest terms included: sex, pregnancy, love, relationships, and STD. A $50-per-day advertising budget was allocated. Facebook ads were limited to a 25-character headline and a 90-character text description and image. The team monitored ads during the 30-day campaign, creating new ad headlines, text, and photos, and retaining those that yielded high responses. Photos of GELSC characters with their partners were featured (Figure 1). Identical ads were placed on smartphones and computers.

The term *conversion* refers to an action that a person takes on a Web site, such as adding items to a shopping cart or viewing a Web page (Facebook, 2014). Advertisers can add a pixel (JavaScript code) onto Web pages and then track these conversions back to Facebook ads. Conversion tracking was activated on the recruitment flyer, consent, and screening interview Web site pages to determine the point at which participants were lost. We do not report conversion tracking here because it was initiated 1 week into the pilot study.

The Facebook Ad Manager provides data on daily reach, impressions, click-through rate, and cost per click. *Daily reach* is the number of Facebook users who see the ad. Facebook users may see the same ad more than once; therefore, *impressions* refers to the total number of times the ad is shown on Facebook. The *click-through* rate is the number of users who see the ad and click. *Cost per click* is the total ad cost divided by the total number of clicks (Facebook, 2014).

Consent and Screening Interview to Determine Level of HIV Risk

Clicking the ad and the link to the recruitment flyer led potential participants to the consent page. On the consent page, calls and e-mails were encouraged for questions about the study. Consent for this confidential study was indicated by clicking approval. This led to the ACASI screening interview to determine level of risk. The ACASI screening interview was accessible on smartphones, tablets, or computers. The program used in our study was SurveyGizmo, a Health Insurance Portability and Accountability Act-compliant secured-browser-based survey software that was integrated into the Women's Project Web site. A screening algorithm used in previous studies by the team (Jones, 2012; Jones et al., 2013; Jones & Lacroix, 2012) was applied to categorize level of HIV risk based on participant responses. To increase the validity of self-reported data, several key functions were implemented. An audio component for each instruction, question, and response choice was available by clicking an audio icon. As the audio played, the associated text was highlighted. For items referring to the previous 3 months, a calendar was shown to enhance recall. Respondents were able to enter information for up to five sex partners and to provide a pseudonym for each. The pseudonyms were piped in to provide a context for recalling partner-specific sex behavior. Further details are available concerning the screening ACASI (Jones, 2012; Jones & Lacroix, 2012). Participants were eligible to participate in the study if they were categorized as high risk, meaning having unprotected vaginal or anal sex with a high-risk partner, defined as a partner perceived to engage in risk behaviors, or if they had unprotected sex with more than one partner. Targeting women at high risk is consistent with a high impact approach to HIV prevention (CDC, 2011). Further, our previous research (Jones, 2008; Jones et al., 2013) indicated highest appeal and identification with characters and stories among women who had had similar experiences.

Those categorized as high risk were contacted by phone to verify identity, upon which, they were provided a link to the 12-episode GELSC series. Participants were given 7-day access to watch all 12 episodes and complete an evaluation (Figure 2). Viewing time was tracked to determine how many times each episode was watched (Jones & Lacroix, 2012).

Automated and Manual Procedures to Verify Participants

An automated protocol was applied to the database to search for duplicate e-mail addresses, phone numbers, and usernames, allowing only those with unique names and numbers to join the study. However, it was common for participants to have the same Internet Protocol address when sharing a device with friends or family, or when logging on at a public place, such as a library. Therefore, a manual review of the database was also needed. The project director also phoned to verify identity with questions, such as *Do you know anyone else participating?* and *Have you participated before?*

Once verified, participants were sent an e-mail with a link to the study Web page to view the short introduction to the four guides. Once the guide was selected, participants were directed to Episode 1. Upon completion of each episode, a code appeared. Participants entered this code before they could advance to the next episode. Entering this code provided data that indicated the episode was watched in its entirety. In addition, a time stamp provided data on the frequency and length of viewing each of the 12 episodes. If incomplete, participants were phoned and invited to watch the missing episode(s).

Evaluation of GELSC

On completing the series, an e-mail was sent with a link to an evaluation survey. The evaluation survey elicited views on the guide, video series, Facebook ad, Facebook page, and the device used to access surveys and videos, as well as open-ended questions about the participant's experience. Once complete, participants were sent a $30 gift card. If the evaluation was not completed, a maximum of three reminders were sent. If there was no response, access to GELSC was removed after 10 days.

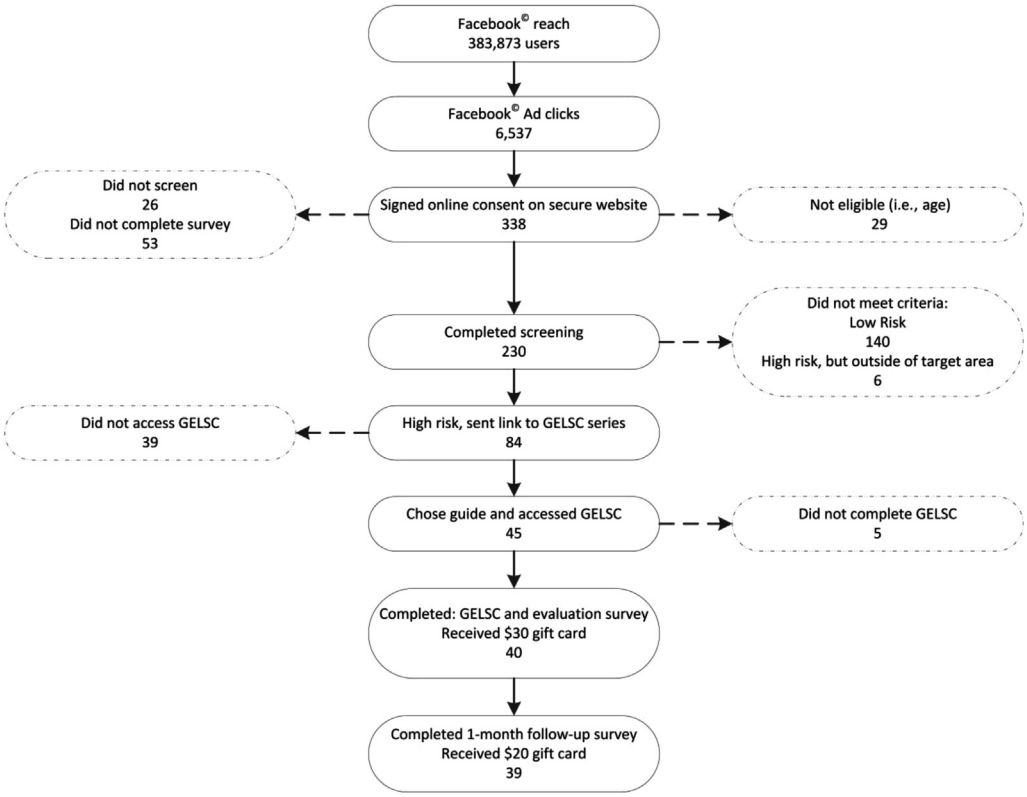

Figure 2. Online Facebook ad recruitment, progression through the pilot study, and retention. ***Note:*** **GELSC = Guide-Enhanced *Love, Sex, and Choices*.**

1-Month Follow-up Survey

Thirty days after viewing Episode 12, participants were sent an e-mail with a link to complete a short follow-up survey that required approximately 10 minutes. Items concerned the number of sex partners, sex behaviors, and HIV testing during the previous 30 days. If the link wasn't accessed in 24 hours, a reminder was sent. Upon completion, participants were sent a $20 gift card. The total compensation for participation was $50.

Data Analysis

Descriptive statistics of means, medians, standard deviations, frequencies, percentages, correlations, and chi-squared tests were performed to answer the research questions. Data were analyzed using the Statistical Package for Social Scientists (SPSS), version 22 (IBM, Armonk, NY). In addition to the screening, evaluation, and follow-up surveys on SurveyGizmo, analysis included data from the Web site dashboard, video player, Google Analytics, and Facebook. Data from the Facebook Ad Manager were: daily reach, impressions, click-through rate, and cost per click. Aggregate data from Facebook ads were: age, location, and gender. Data on the Facebook page activity were: number of Facebook page likes, new posts, click on links, and shared posts.

Results

Sample Characteristics

Of the 230 individuals who completed the screening interview, 90 were high risk and 140 were low risk. There were no statistically

significant differences in level of risk (high or low) by race (Black, White, and other; $p = .08$), state (Massachusetts or New Jersey; $p = .65$), or age ($p = .90$). There was a small but statistically significant difference in mean highest level of education ($p = .04$), with 13.6 years for high risk versus 14 years for low risk. Among the 90 who screened in as high risk, as shown in Table 1, no statistically significant differences in substance use, sex risk, or demographics were found between those who participated in the study and those at high risk who did not participate, except that those who participated were more likely to have more than one partner (1.6 vs. 1.3). The difference in unprotected anal sex with a high-risk partner approached statistical significance ($p = .054$), with greater frequency among nonparticipants.

The final sample of 40 high-risk participants had a mean age of 23.1 years ($SD = 3.0$). Half ($n = 20$) were Black and nearly one-third ($n = 12$, 30%) were Latina; five were White. Most were employed outside the home ($n = 31$, 77.5%) and 12 (30%) received public assistance. Median highest level of education was 13 years ($M = 13.6$), with 53.6% having 13 or fewer years of education, and 20.2% having a 12th grade education or less. Fifteen (37.5%) had children, and 24 reported using a form of birth control. Average age of first sexual intercourse was 16.3 years (SD ± 2.3).

Recruitment and Participant Progression Through the Study

In response to question 1, results indicated that the online protocols for consent, screening for high risk, data security, streaming the 12-episode video to smartphones and computers, and retention demonstrated feasibility for a larger trial, as described below. As shown in Figure 2, after clicking the ad and redirecting to the flyer, of 6,537 who clicked on the ad, 338 completed consents. After consenting, 26 did not go on to screen, 53 did not complete screening, and 29 did not meet the age criteria. Of the remaining 230 who completed screening, 140 were low risk; six resided outside the target areas. The remaining 84 (36.5%) were high risk and from the target geographical areas. Of these, roughly half ($n = 45$, 53.6%) began watching the soap opera series, 40 (47.6%) viewed the full series, completed the evaluation survey, and received a $30 gift card. Of the five who started but did not complete watching, three viewed the first five episodes; two watched one episode. Of the 40, all but one ($n = 39$) returned at 1 month to complete the follow-up survey and receive a $20 gift card (Figure 2). The average time to complete the 12 episodes was 2 days, viewing an average of 7.5 episodes per session. Fourteen (35%) watched between 10 p.m. and 5 a.m.

The screening interview correctly differentiated low from high risk according to the algorithm. Security procedures were followed (Figure 1) with no adverse incidents.

Evaluating Videos on Smartphones

Only four participants found video quality to be poor on their devices, whereas 33 found good to excellent quality on their devices; three couldn't decide. Most ($n = 31$, 77.5%) used WiFi to watch the videos. Nearly all ($n = 36$, 90%) felt a sense of privacy while viewing on their devices; 37 (92.5%) stated they would participate again using their own devices (smartphone, tablet, or computer). No technical difficulties were encountered during video streaming to the extent that the quality of participation was deterred.

Recruitment by Facebook ads. In response to question 2, results supported the feasibility of advertising on Facebook to reach and recruit young adult, urban Black women at high risk for HIV into an online HIV prevention study. The ads also reached and involved Latinas in the targeted zip code area. The ads that received the highest clicks were those that featured a couple. Examples of open-ended comments about reasons for clicking the ad were, "I have a feeling that my husband might be cheating on me and it's ironic this ad popped up" and "I have experienced my boyfriend stepping out of our relationship and I wanted to see how other women dealt with it …". The ads with the highest number of clicks featured a headline, "Your man stepping out" (Figure 1).

Facebook recruitment ads ran for 30 days. The Facebook ads on desktops reached a much larger audience than on mobile devices (309,213 compared

Table 1. Baseline Comparison of High Risk Participants and Non-Participants ($N = 84$)

Variable	Participants $n = 40$ (47.6%) Mean ± *SD* or *n* (%)	Nonparticipants $n = 44$ (52.4%) Mean ± *SD* or *n* (%)	*p*-Value (*t*-Test or χ^2)
Demographic characteristics			
Age	23.1 (±3.0)	23.3 (±3.4)	.76
Age at first sexual intercourse	16.3 (±2.3)	15.9 (±2.4)	.51
Years of education completed	13.6 (±1.6)	13.6 (±1.5)	.98
Race			.77
White	5 (12.5%)	9 (20.5%)	
African American/Black	20 (50.0%)	22 (50.0%)	
Latina	12 (30.0%)	10 (22.7%)	
Asian	2 (5.0%)	1 (2.3%)	
Middle Eastern	0 (0.0%)	1 (2.3%)	
Other	1 (2.5%)	1 (2.3%)	
Employed outside the home	31 (77.5%)	29 (65.9%)	.25
Receiving some type of public assistance	12 (30.0%)	10 (22.7%)	.46
Children	15 (37.5%)	19 (43.2%)	.60
Currently using birth control	24 (60.0%)	24 (54.5%)	.62
State			.12
New Jersey	24 (60.0%)	21 (47.7%)	
Massachusetts	16 (40.0%)	19 (43.2%)	
Other	0 (0.0%)	4 (9.1%)	
Substance use in previous 3 months			
Alcohol before or during sex	25 (62.5%)	24 (54.5%)	.46
Drugs before or during sex	12 (30.0%)	9 (20.5%)	.31
HIV/STD testing behavior			
Ever had an HIV test	31 (77.5%)	33 (75.0%)	.79
HIV test last 3 months	18 (45.0%)	16 (36.4%)	.43
Have had an STD last 3 months	3 (7.5%)	4 (9.1%)	.80
Number of sex partners in previous year	2.9 (±1.8)	2.6 (±1.8)	.52
Sex behavior in previous 3 months			
Number of sex partners in previous 3 months	1.6 (±0.8)	1.3 (±0.5)	.03*
1 partner	23 (57.5%)	35 (79.5)	
2 partners	12 (30.0%)	7 (15.9)	
3 partners	4 (10.0%)	2 (4.5%)	
4 partners	1 (2.5%)	0 (0.0)	
Had unprotected sex with 2 partners[a]	10 (25%)	8 (18.2%)	.45
Had UVS with a high-risk partner[b]	40 (100%)	43 (97.7%)	.50
Had UAS with a high-risk partner	3 (7.5%)	10 (22.7%)	.05
Perceived partner risk			
Sex with other women	38 (95.0%)	43 (97.8%)	.13
Sex with men	9 (22.5%)	5 (11.4%)	.17
Injected drugs	5 (12.5%)	11 (25.0%)	.15

Note: STD = sexually transmitted disease; UVS = unprotected vaginal sex; UAS = unprotected anal sex.
*$p < .05$.
a. One participant who completed the pilot had unprotected sex with 3 partners.
b. One participant had UVS with a partner, but partner risk was not ascertained.

to 74,660, respectively); however, roughly five times as many clicked on the ad from a mobile device (5,393 clicks) compared to a desktop (1,144 clicks). Therefore, in terms of cost, on desktops: 309,213 saw the ad an average of 10.6 times and generated 1,144 clicks costing $639.69, or $0.56 per click. The mobile ads reached 74,660 users who viewed the ads an average of 3.0 times and yielded 5,393

clicks for a cost of $869.79 at $0.16 per click. The average cost per completer was $37.74 (total ad cost/40 participants). Recruitment of 40 HIV high-risk participants in a 30-day period equated to 10 per week.

As shown in Table 2, 17 (42.5%) participants expressed some privacy concerns when they clicked the Facebook ad. However, after clicking the ad and reviewing the consent on the Women's Project Web site, most (90%) felt comfortable participating in the study, and nearly all (n = 38) trusted that their responses online were confidential.

Facebook page activity. Facebook page activity was generated by those clicking the ad on mobile devices and then directed to the Facebook page. Mobile ad clicks sent 2,053 users to explore the Women's Project Facebook page to view photos, such as posts or pictures, share the Facebook page on their newsfeeds, or comment on posts or pictures. Although not elicited in the study, there were 185 new page likes from those who clicked on the ad, 23 shared the Facebook page on their own timelines, and 297 people liked posts on the page; 1,725 viewed pictures posted to our page during the 30 days.

Evaluation of GELSC

Only two participants did not like the guide appearing at the end of episodes, 39 (97.5%) liked what she said, all (n = 40) felt the guide emphasized important messages, and 37 felt she added to the experience (92.5%). Thirty-two participants (80%) described the guide as the type of friend they would like to talk with, and an additional eight responded *maybe* (20%); 30 (75%) thought the frequency of the guide was good, and five wanted her to appear more often.

The LSC had important effects on viewers concerning sex behavior, with 36 (90%) indicating that watching GELSC would make it more likely that women would ask partners to use a condom. Remarkably, 22 (55%) responded to the more difficult question that, after watching GELSC, they would leave a partner who wouldn't use condoms, and an additional 13 (32.5%) indicated that they might leave (Table 3). Most (n = 33, 82.5%) believed GELSC would change a woman's attitude about having sex when she didn't want to, and an additional five responded *maybe*. Most felt that, after watching GELSC, women would be more likely to get HIV tested (n = 36, 90%), and 30 wanted the series to continue.

GELSC Effect on Sex Risk Behavior

Question 4 asked whether viewing GELSC would demonstrate a trend toward a decrease in unprotected sex with high-risk partners and an increase in HIV testing. Whereas baseline behavior was reported for the previous 3 months, for this pilot study, data on sex behavior were collected at 30 days post viewing.

Baseline sex risk data. At baseline (see Table 1), all participants had had unprotected vaginal sex with a high-risk partner in the previous 3 months (the inclusion criteria). Three (7.5%) had had unprotected anal sex with a high-risk partner. Ten (25%) had unprotected sex with multiple partners. Almost all (n = 38, 95%) thought that their partners had sex with other women; nine (22.5%) believed he had sex with men; and five (12.5%) believed that he injected drugs. Most had had one partner (n = 23, 57.5%) or two partners (n = 12, 30%) in the previous 3 months. Many (n = 25, 62.5%) used alcohol before or during sex, and less than one-third (n = 12, 30%) used drugs before or during sex. Most (77.5%) had ever had an HIV test (n = 31), and 18 (45%) had been HIV tested in the previous 3 months.

30-day follow-up. At 30-day follow-up (see Table 3), 18 participants (46.2%) had fewer sex partners than at baseline, including seven who no longer had a sex partner. While all reported unprotected sex with a high-risk partner at baseline, 30 days later, 27 (69.2%) were not having unprotected sex with a high-risk partner. At follow-up, 74% (n = 29) felt that GELSC helped them to talk more openly with their partners about using condoms, 17 (43.6%) had had an HIV test during the previous 30 days, 27 (69.2%) had discussed HIV testing with their partners, and 12 (30.8%) reported that their partners had been tested.

Table 2. Evaluation of Facebook and Guide-Enhanced *Love, Sex, and Choices* ($N = 40$)

Question	Response Choices				
	Definitely No *n* (%)	**Don't Think So *n* (%)**	**Maybe *n* (%)**	**Probably *n* (%)**	**Definitely Yes *n* (%)**
Were you ever concerned about your privacy when you decided to click on the Facebook Ad?	14 (35.0)	9 (22.5)	5 (12.5)	5 (12.5)	7 (17.5)
Did you feel comfortable participating in this study?	1 (2.5)	0 (0.0)	3 (7.5)	5 (12.5)	31 (77.5)
Although the study team followed strict confidentiality protocols, did you trust that your responses to the online surveys were confidential?	0 (0.0)	0 (0.0)	2 (5.0)	9 (22.5)	29 (72.5)
Were you concerned that your activity on the Women's Project Facebook page would appear on your newsfeed?	20 (50.0)	9 (22.5)	2 (5.0)	2 (5.0)	7 (17.5)
Did you become a fan (Like) of our Facebook Page?	17 (42.5)				23 (57.5)
Have you "Liked" other pages on Facebook that dealt with relationships and or health issues?	15 (37.5)				25 (62.5)
On what device did you first see the Facebook Ad?					
Computer	20 (50.0)				
Phone	18 (45.0)				
Tablet	2 (5.0)				
	No, and I won't in the future		No, but I will in the future		Yes
Did you share the Women's Project Facebook page with your friends?	5 (12.5)		29 (72.5)		6 (15.0)
LSC Series	Definitely No	Don't Think So	Maybe	Probably	Definitely Yes
Were the stories realistic?	1 (2.5)	0 (0.0)	4 (10.0)	5 (12.5)	30 (75.0)
Do you think that watching the videos could help raise a woman's awareness about her choices?	0 (0.0)	1 (2.5)	0 (0.0)	7 (17.5)	32 (80.0)
Do you think that watching the videos could help a woman to become involved in making sure her choices happen?	0 (0.0)	1 (2.5)	3 (7.5)	11 (27.5)	25 (62.5)
Could you relate to the characters?					
No, I could not relate to any of the characters	1 (2.5)				
I don't know if I could relate to any of the characters	2 (5.0)				
I could relate to some of the characters	15 (37.5)				
I could relate to many of the characters	8 (20.0)				
I definitely related to most or all the characters and their problems	14 (35.0)				
	None Would	A Few Would	I Don't Know	Many Would	Most or All Would
Do you think your friends might like to see the videos?	3 (7.5)	5 (12.5)	11 (27.5)	13 (32.5)	8 (20.0)

(*Continued*)

Table 2. (*Continued*)

Question	Response Choices				
	Definitely No *n* (%)	**Don't Think So** *n* (%)	**Maybe** *n* (%)	**Probably** *n* (%)	**Definitely Yes** *n* (%)
The Guide					
Did you like having your guide talk about things at the end of the episodes?	0 (0.0)	2 (5.0)	6 (15.0)	3 (7.5)	29 (72.5)
Did you like what she was saying?	0 (0.0)	1 (2.5)	5 (12.5)	1 (2.5)	33 (82.5)
Would you describe her as the type of friend that you would like to talk with?	0 (0.0)	0 (0.0)	8 (20.0)	2 (5.0)	30 (75.0)
Did she emphasize important messages?	0 (0.0)	0 (0.0)	2 (5.0)	4 (10.0)	34 (85.0)
Did she add to the experience of watching *Love, Sex, and Choices*?	1 (2.5)	2 (5.0)	3 (7.5)	6 (15.0)	28 (70.0)
Sex Risk Behavior					
Do you think the videos you watched could make it more likely that a woman will ask her partner to use a condom?	0 (0.0)	2 (5.0)	2 (5.0)	12 (30.0)	24 (60.0)
Do you think the videos could help a woman decide to leave a man who won't use condoms?	0 (0.0)	5 (12.5)	13 (32.5)	11 (27.5)	11 (27.5)
Could the videos you watched change a woman's attitude about having sex when she does not want to?	0 (0.0)	2 (5.0)	5 (12.5)	11 (27.5)	22 (55.0)
Do you think the videos could help a woman learn how to handle herself in a tough situation with a male partner who wants to have unprotected sex when she doesn't want to?	1 (2.5)	3 (7.5)	6 (15.0)	9 (22.5)	21 (52.5)
Do you think that after watching the video women will be more likely to get HIV tested?	0 (0.0)	2 (5.0)	2 (5.0)	9 (22.5)	27 (67.5)
Would you want the video series to continue?	2 (5.0)	1 (2.5)	7 (17.5)	5 (12.5)	25 (62.5)

Note: LCS = *Love, Sex, and Choices*.

Discussion

The purposes of this pilot study were to test the feasibility of online procedures that included running ACASI and streaming a 12-episode video series to diverse mobile devices, evaluating retention at 1 month, testing feasibility of Facebook advertising, and assessing acceptability and effect of the GELSC. Given the significance of HIV prevention in young adult Black women, Facebook ads targeted zip codes in predominately Black communities with high incidence of HIV. In the target period of 30 days, half the sample was Black and nearly one-third were Latina. The findings suggested that a full trial could be conducted online with Facebook advertising to recruit Black women at high risk and to stream an HIV prevention video intervention to participants' personal smartphones and computers. The intervention also appealed to at-risk Latinas, suggesting the need for their inclusion in a follow-up study.

Of note, our sample had a relatively high level of education when compared to the previous RCT conducted in the community at data collection sites. In that study (Jones et al., 2013), the mean highest grade was 12.18 (median = 12), with 62% reporting a 12th grade or lower education. In our pilot study, the highest median level was 13, with only 20% at high school or less. These findings could lead to

Table 3. 30-Day Follow-up After Viewing GELSC (n = 39)

Question	Responses
Number of sex partners from baseline to follow-up[a]	
Increased	2 (5.1%)
Unchanged	19 (48.7%)
Reduced (7 had no partners)	18 (46.2%)
Unprotected sex with a high-risk partner in the previous 30 days	
No	27 (69.2%)
Yes	12 (30.8%)
Do you feel that watching *Love, Sex, and Choices* helped you to talk more openly with your partner about using condoms?	
Not applicable	2 (5.1%)
Definitely not	1 (2.6%)
Don't think so	3 (7.7%)
Maybe	4 (10.3%)
Probably	6 (15.4%)
Definitely yes	23 (58.9%)
Have you had HIV testing in the previous 30 days?	
Yes	17 (43.6%)
No	22 (56.4%)
Since you completed watching GELSC have you talked with your partner about HIV testing?	
Yes	27 (69.2%)
No	6 (15.4%)
Not applicable	6 (15.4%)
Has your partner been HIV tested in the past 30 days? (n = 32)	
Yes	12 (37.5%)
No	13 (40.6%)
I don't know	7 (21.9%)

Note: GELSC = Guide-Enhanced *Love, Sex, and Choices*.
a. Baseline pilot data were for the previous 3 months. Post GELSC pilot data are reported for 30 days merely to evaluate trends.

the conclusion that those who completed high school and 1 year of college were more likely to be on Facebook and to be interested in the study than those with high school completion or less. However, in our study, no difference in education was shown between participants and nonparticipants. Further, data from the Pew Internet Research Project (2014b) have indicated that 72% of Internet users who use social networking sites have a high school education or less, suggesting that it is feasible to advertise on Facebook to reach those with a high school or less education in this target age range (18 to 29 years). The implication for a larger study is to implement strategies on Facebook advertising to increase the reach to those with lower formal education status. Since the completion of our study, Facebook now allows advertisers to set audience criteria to various education levels, including *some high school* and *in high school.*

Recruitment of women engaging in unprotected sex with high-risk partners was at a rate of 10/week, comparing favorably to the previous RCT recruiting a sample with similar inclusion criteria at data collection sites at roughly 7/week (Jones et al., 2013; Jones & Lacroix, 2012). However, the distinct advantage to onsite recruitment is that a high-risk sample can be purposefully recruited in neighborhoods and venues where HIV incidence is relatively high (Hodder et al., 2010; Jones et al., 2013). In comparison, Facebook more broadly targeted zip codes with high HIV prevalence, thereby casting a wider net, but one that may also capture subgroups who do not respond to conventional recruitment (Graham et al., 2008), and conceivably, at lower cost (Parsons, Vial, Starks, & Golub, 2013). A larger study is needed to evaluate whether subgroups that otherwise might not participate by traditional recruitment approaches can be attracted to an online study. Additionally, online recruitment spiked on weekends, holidays, and during inclement weather, times that would be difficult to recruit onsite.

Similar to other studies (Rosser, Oakes, et al., 2010b), a combination of phone calls and automated reminders was necessary to retain participants, to verify identity, and to screen out duplicates. The consenting procedure was effective. Programmed ACASI algorithms were successfully executed, and videos streamed to diverse smartphones, tablets, and computers, with the majority recruited and watching on smartphones. Although more ads were seen on computers, roughly five times as many clicked the ad on a smartphone (5,393) compared to a computer (1,144), lending support to the utility of Facebook advertising on smartphones. The GELSC intervention reached at-risk women at times and places that were convenient to them, many watching after midnight.

Facebook tracks clicks in the Facebook platform (Mychasiuk & Benzies, 2012). Similar to other studies, we addressed this problem by redirecting

participants to a secured study Web site (Fenner et al., 2012; Lohse, 2013). As seen in Table 2, a sizable number ($n = 17, 42.5\%$) had some concern about privacy when they clicked the Facebook ad. However, after reviewing the consent on the Women's Project Web site, 90% felt comfortable participating, and all but two trusted that their online responses were confidential. Online recruitment may offer a subjective sense of privacy when answering sensitive questions responding in settings of one's own choosing (Ramo & Prochaska, 2012). Given the measures followed in our study, there was a high level of comfort with online participation.

There is a concern that Facebook advertising may yield a biased sample, reaching only those on Facebook (Kapp, Peters, & Oliver, 2013). However, Parsons and colleagues (2013) considered this to be a strength. They targeted high-risk participants with banner advertising on dating service Web sites and on Craigslist, and determined there were differences in substance use, seropositive status, condom use, and age, between online and field comparisons of MSM. They concluded that although Internet-based samples likely overestimated the levels of sexual risk in the broader MSM population, these sites could be an ideal venue to access high-risk populations for behavioral interventions. Ramo, Hall, and Prochaska (2010) reached a similar conclusion. Results of our pilot study suggest that women, particularly Black and Latina women at high risk for HIV, can also be reached by social networking, particularly on Facebook.

Initial findings suggest that online recruitment is cost effective compared to on-the-ground field recruitment, particularly when accounting for staff time (Parsons et al., 2013; Ramo, Rodriguez, Chavez, Sommer, & Prochaska, 2014), and that Facebook ads may be cost effective compared to other Internet marketing (Ramo & Prochaska, 2012; Ramo et al., 2014). Ad costs for the 230 individuals who completed the screening interview were $6.56 (all denominations reported as US dollars), higher than the cost of $4.28 in a study involving a survey of adolescents and substance use that recruited by Facebook ads (Ramo & Prochaska, 2012). However, in that study, the peak for clicks occurred at 3 months, with a rise in clicks as the campaign grew. Cost comparisons between studies is difficult because the published cost criteria vary (i.e., cost per click, cost per completer), as do length of exposure to the ad, the topic, study design, length of involvement, and population characteristics. By example, $8.80 per eligible consenter to a yearlong study was reported in a smoking cessation campaign using Facebook (Ramo et al., 2014), and $20 per completer in an Australian health-related survey (Fenner et al., 2012). In our study, the cost per high-risk completer, defined as completed consent, screening, and viewed the 12-episode intervention ($n = 40$), was $37.74, similar to a nutrition study using Facebook ads of $39.92 per completer (Lohse & Wamboldt, 2013). A low percentage that clicked the ad completed the study (40 completers of 6,537 clicks*100 = 0.61%). Higher click-through rates are associated with ads that run for periods longer than 30 days (Ramo & Prochaska, 2012; Ramo et al., 2014). With extended exposure, we anticipate a higher completion rate.

A great deal of consideration is needed for ad creation and targeting strategies (Kapp et al., 2013). Some ads yielded more clicks than others, so ad headlines and photos were changed often. Ads showing couples and referring to men stepping out were most popular, yielding the most clicks.

There is a cost concern when participants use their data plans to stream videos. Results indicated that the majority (77.5%) used WiFi to stream episodes; therefore, data charges were not incurred in places with WiFi access, for example, homes, coffee shops, libraries, or schools.

Evaluation of Video and Guide on Scripts and Risk Behaviors

The GELSC had important effects on viewers concerning sexual behavior, with 90% indicating that watching GELSC would make it more likely that women would ask partners to use a condom, and most believed GELSC would change a woman's attitude about having sex when she didn't want to. At follow-up, 74% felt that GELSC helped them talk more openly with their partners about using condoms. Nearly all of our participants would be more likely to have an HIV test, and 30 wanted the series to continue. These findings suggest a direct influence of GELSC on movement toward more powerful sex scripts, the theoretical framework of this intervention. The 30-day follow-up suggested reduction in the

number of partners and unprotected sex with high-risk partners. There were 17 (43.6%) who went for HIV testing during the previous 30 days, the majority (69.2%) discussed HIV testing with their partners, and nearly one-third reported that their partners had been tested during this period.

Limitations

The purposes of our pilot study were limited to testing online procedures and assessing acceptability of the new video guide. This was a convenience sample. There were unequal time periods between baseline and postintervention assessment; therefore, only a trend toward risk reduction could be observed. Further, data were self-reported, although multiple measures were taken to increase reliability of responses using ACASI.

Conclusion

The soap opera in the genre of entertainment education is a promising approach to reduce HIV risk behavior (Gilbert et al., 2008; Moyer-Guse, Chung, & Jain, 2011) in urban women of color (Jones et al., 2013). Storytelling can promote behavior change (Storey & Sood, 2013), but the study of the mechanisms of effect is still young (Cardey, Garforth, Govender, & Dyll-Myklebust, 2013), and entertainment education concepts of effective film are not yet well integrated into HIV prevention science. Identification with characters and stories is essential, but not enough to provoke behavior change (Gesser-Edelsburg & Singhal, 2013). Unprotected sex in young urban women is often a scripted approach to hold onto relationships (Jones, 2006). The GELSC peer video guide mobilizes viewers' heightened emotion and identification by offering insights at critical moments to provoke a new way of understanding and drawing inferences from the drama. The results suggest the GELSC influenced participant sex scripts with a trend toward reduction in behavior. Further testing in a larger trial is forthcoming. The GELSC shows how characters chose more powerful sex scripts that may involve leaving their partners or staying and effecting condom use and HIV testing. The GELSC can be a component of an overall comprehensive approach to HIV prevention in women. By streaming GELSC to mobile devices and computers, we extend the reach to at-risk women and their social networks.

Key Considerations

- Guide-Enhanced *Love, Sex, and Choices* (GELSC) approaches HIV prevention by weaving sexual health promotion messages into familiar, high-risk sex scripts.
- Identification with soap opera characters and emotional involvement with stories are key elements of successful entertainment-education. The GELSC peer video guide mobilizes viewers' heightened emotions and identification by offering insights at critical moments to promote new understanding.
- It is feasible to recruit via Facebook and retain young urban women from a large geographic area.
- A great deal of consideration is needed for Facebook ad creation and targeting strategies.
- There is a potential risk of exposing one's identity as a research participant when using Facebook to advertise for a study.
- The GELSC can be a component of an overall comprehensive approach to HIV prevention in women. By streaming GELSC to mobile devices and computers, the reach to at-risk women and their social networks is extended.

Disclosures

The authors report no real or perceived vested interests that relate to this article that could be construed as a conflict of interest.

Acknowledgments

Love, Sex, and Choices (LSC) was filmed with funding from the Healthcare Foundation of New Jersey. The LSC clinical trial was funded by the National Institute of Nursing Research (R01NR010860).

Development of the guide character addition was supported by a grant from Macy's Foundation. This pilot study was conducted with internal funding from Northeastern University. We acknowledge with appreciation the assistance of both the Director of the Office of Information Security at Northeastern University, Mr. Mark Nardone, and the Director of Human Subject Research Protection, Nan C. Regina; and to Dr. Michael Zimmer, Associate Professor, School of Information Science, Director, Center for Information Policy Research at the University of Wisconsin-Milwaukee. Finally, we extend our gratitude to the participants in this study.

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