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C-SAFE: A Computer-Delivered Sexual Health Promotion Program for Latinas

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Introduction

Project SAFE (Sexual Awareness for Everyone) is a clinic-based, group level sexual health promotion program originally developed for Latina and African-American women aged 15-24. The intervention consists of three sessions, each lasting three to four hours, and is based on a hybrid theoretical framework combining elements from the AIDS Risk Reduction Model and social cognitive theory (Shain et al., 1999). The curriculum includes presentations, discussions, role-plays, games and videos and seeks to promote abstinence, mutual monogamy, correct and consistent condom use, full compliance with STI treatment protocols, and reduction in the number of sex partners (Shain et al., 1999, 2002, 2004). The developer further encouraged participants in the original efficacy trial to attend five optional monthly support groups post-intervention. An evaluation conducted between 1996 and 2000 in San Antonio, Texas with women aged 14 to 45 (m=21) who tested positive for one or more STIs demonstrated that SAFE participants, in comparison to those in control condition, reported higher levels of monogamy, fewer new sex partners, less unprotected sex, and increased compliance for STI treatment protocols (Shain et al., 1999, 2002, 2004).

Based on these findings, Project SAFE is part of the Centers for Disease Control and Prevention's Compendium of Evidence-based Interventions and Best Practices for HIV Prevention (Centers for Disease Control and Prevention, 2014), and in 2002, Sociometrics Corporation developed a replication kit as part of a National Institute of Allergy and Infectious Diseases (NIAID) supported project to facilitate HIV prevention program dissemination and implementation (Card, Benner, Shields, & Feinstein, 2011; Solomon, Card, & Marlow, 2006). Yet, despite the original program's efficacy, practitioners have reported implementation

challenges due to the intervention's length, outdated video content, required facilitation skill levels, lack of Spanish language materials, and replication kit costs. At the same time, CDC funding for HIV-related behavioral intervention implementation has generally privileged programs in the Diffusion of Effective Interventions (DEBI) library over those which are only listed in the Compendium (see Feldman, Silapaswan, Schaefer, & Schermele, 2014 for a history of the DEBI program).[1] As a result of these dynamics, as of early 2016, providers had purchased only 20 replication kits from Sociometrics since program materials became available in 2002, and only one since 2009.

Seeking to better meet the needs of frontline providers and expand program utilization in Latina communities, the investigators developed English and Spanish language versions of C-SAFE, a computer/tablet-delivered version of the original face-to-face SAFE program[2]. We situate C-SAFE within a recent wave of effective computer-delivered sexual health programs for diverse populations (Bailey et al., 2010; Noar, 2011; Noar & Willoughby, 2012), including adolescents (Kiene & Barta, 2006; Lightfoot, Comulada, & Stover, 2007), young gay men (Mustanski et al., 2013), adult gay men/MSM (Bowen, Horvath, & Williams, 2006; Davidovich, De Wit, & Stroebe, 2006; Lau, Lau, Cheung, & Tsui, 2008), and African-American women

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[1] There are currently 34 evidence-based behavioral programs in the DEBI library, compared to 98 in the Compendium. Some agencies (e.g., SAMHSA, Office of Adolescent Health) have included Compendium interventions on their lists of supported programs for particular initiatives, and state and local health departments may use their own resources to support non-DEBI, evidence-based programs. We know of no consolidated national data on program usage and selection dynamics at the level of individual evidence-based programs from the Compendium.

[2] C-SAFE is an interactive computer/tablet-delivered application that (1) does not require an Internet connection to use, and (2) does not involve synchronous or asynchronous interaction with other users or health educators. We use the term "computer/tablet-delivered" to situate C-SAFE within the many overlapping terms used to describe digitally-based health promotion programs and activities. The broadest of these terms is "eHealth," the use of digital information and communication technologies to support health, health promotion, and health-care delivery. MHealth is the subset of eHealth activities that use mobile information and communication technologies (e.g. mobile phones, tablets), while "online" refers to programs that use the Internet regardless of the device in question.

(Billings et al., 2015; Klein & Card, 2011; Klein, Lomonaco, Pavlescak, & Card, 2013; Wingood, Card, et al., 2011). In a 2009 meta-analysis (Noar, Black, & Pierce, 2009) of twelve computer-delivered interventions that presented positive behavioral findings from randomized control trials, all reported increased condom use among program participants (d=0.259, 95% CI 0.201 to 0.317; 12 RCTs), and a smaller number reported reductions in the frequency of sexual behavior (d=0.427, 95% CI 0.251 to 0.602; three RCTs), incidence of sexually transmitted disease (d=0.140, 95% CI 0.035 to 0.245; three RCTs), and number of sexual partners (d=0.422, 95% CI 0.116 to 0.728; two RCTs) (Noar, Black, & Pierce, 2009). These positive findings in diverse populations suggest that computer-delivered interventions might be similarly effective in reducing sexual health risk in Latina populations, whose computer and Internet use has increased significantly in recent years (Pew Hispanic Center/Pew Research Center, 2013). Computer- and mobile-delivered programs such as C-SAFE also offer a cost-effective way for providers to (1) deliver behavioral-based interventions given the decrease in governmental funding for face-to-face HIV behavioral interventions that has accompanied the now dominant "treatment as prevention" paradigm (McNairy & El-Sadr, 2014), (2) engage clients who may not have the time or interest to participate in multi-session, face-to-face programs, and (3) reach their Spanish-speaking clients.

C-SAFE product development occurred in three distinct stages from 2009-2015 through National Institute on Minority Health and Health Disparities (NIMHD) Phase I and II Small Business Innovation Research (SBIR) grants (R43 MD005189-01A1 and R44 MD005189-02). In the first development phase, we began by conducting a full review of the original Project SAFE intervention and mapping the curricular framework, individual activities, and content in need of updating (e.g., statistics, videos, discussion of new prevention technologies). Next, we

drafted English language storyboards for several activities and created a short, computer-delivered demonstration that illustrated the basic functionalities and overall feel of the C-SAFE application. We then shared these materials with a focus group of 18 to 29-year old Latinas in the San Francisco Bay Area to obtain their impressions on content, images, overall style, narrators, video actors, and activity formats.

In our second development phase, we built on this feedback from the target community and finalized our design palate, created additional activity storyboards and video scenarios, programmed a 75-minute prototype for one of the three planned C-SAFE sessions, and conducted usability testing on the prototype session with 20 Latinas in the San Francisco Bay Area. The usability testing revealed that most participants preferred a two rather than three session format and wanted to be able to watch the program on mobile devices as well desktop computers. During this same period, we began developing the Spanish-language version of C-SAFE. As with the English-language version, we first drafted Spanish language storyboards for several activities, programmed a short, Spanish language computer-delivered prototype, and shared these materials with a focus group of Spanish-speaking Latinas from the San Francisco Bay Area. Nearly all focus group participants thought that both the Spanish- and English-languages versions of SAFE would be more compelling if they included a series of telenovela-style videos focused on women's relationships and sexual health decision-making. Accordingly, we revised our storyboards to incorporate telenovela-style video content and contracted a Latino-owned production company to ensure that all C-SAFE videos captured the cultural specificities of Latina communities.

In our final development phase, we used Adobe Flash with Flex to program the complete C-SAFE intervention in English and Spanish versions. After a final round of usability testing of

these products with 10 Latinas, we finalized C-SAFE and created apps for computer and mobile device delivery. The resulting C-SAFE application condenses a nine to twelve hour long, group level intervention into a two-hour long program and follows the same trajectory of the face-to-face intervention, with the first session focusing on HIV/STI epidemiology and transmission, and the second on sexual communication and condom-use self-efficacy with partners. Each session combines audio narration in accessible language (including slang), visual presentations, interactive components (e.g., drop and drag, list creation, scroll over pop-ups), several games (e.g., *loteria* card matching, show your salsa steps), and a series of telenovela-style videos (see Table 1) [insert Table 1 here]. Participants may also stop at any point, resume where they left off, and if they desire, repeat already completed activities.

Methods

In 2014-2015 the investigators conducted a two-arm, randomized control trial to test the preliminary efficacy of C-SAFE in reducing behavioral risks and promoting sexual health, with the goal of adding another Latina-focused program option to the CDC's Diffusion of Effective Behavioral Interventions (DEBI) library (Centers for Disease Control and Prevention, n.d.). Mirroring the research design of the original Project SAFE evaluations (Shain et al., 1999, 2002, 2004), we hypothesized that, relative to the control condition, women in the C-SAFE condition at a six-month follow-up would report (1) less unprotected sex and fewer new STIs, (2) more monogamous relationships, (3) fewer sexual partners, (4) positive changes in theorized psychosocial mediating variables associated with protective sexual behaviors (i.e., attitudes toward STIs, condom self-efficacy, overall mental health, and sexual communication skills), and (5) increased compliance with STI treatment protocols improvements for those with an STI diagnosis at baseline.

Measures & Statistical Analyses

Behavioral Outcomes

The primary behavioral outcomes were (1) number of sex partners in the past 30 days, (2) number of sex partners in the past six months, (3) condom use at last sexual encounter, (4) never used condoms (by vaginal sex, anal sex, and all sex), (5) currently have an STI, and (6) currently in a monogamous relationship.

Psychosocial Mediators

Psychosocial mediators were derived from the intervention's underlying theoretical framework and a review of the literature on HIV and women of color in the United States. All constructs, excepting the condom use-self-efficacy scale (see below), were assessed using scales with satisfactory psychometric properties from previous evaluations of SAFE (Shain et al., 1999, 2002, 2004) and the SiSTA/SiHLE/WiLLOW HIV prevention trilogy for African-American women and its AMIGAS Spanish-language version (Braxton, Lang, Sales, Wingood, & DiClemente, 2007; Braxton et al., 2007; DiClemente et al., 2004; DiClemente RJ & Wingood GM, 1995; Klein & Card, 2011; Klein et al., 2013; Wingood, Card, et al., 2011).

Knowledge, STI Attitudes & Condom Use Self-Efficacy

An eight-item index (α =.401) measured HIV/STI transmission knowledge (e.g., "women can spread HIV to males during unprotected sex," "not using enough lubricant (like K-Y jelly) can cause a condom to break," "sexually transmitted infections (STIs) put people at great risk for HIV infection or infection with new forms of the virus") (Wingood, DiClemente, et al., 2011). Seven questions assessed participants' attitudes about how catching an STI makes them feel (e.g., "angry at the man who gave it to you," "stupid for trusting him," "just part of life") (Shain et al., 1999, 2002, 2004). Condom self-efficacy (α =.899) was assessed with the 28-item condom

use self-efficacy scale (CUSES) (Dilorio, Maibach, O'Leary, & Sanderson, 1997), with higher

scores indicating greater self-efficacy in using condoms correctly.

Partner Communication and Mental Health

Six yes/no questions assessed women's ability to negotiate safe sex practices with their partners

(e.g., "declined to have sex with your partner because you weren't in the mood", "asked your

partner to use a condom," "declined to have sex because your partner didn't want to use a

condom"). A 4-item scale addressed women's actual sexual communication behaviors with their

partners, with higher scores indicating more communication on HIV/STI risk reduction practices

($\alpha =.895$) (Klein et al., 2013; Wingood, Card, et al., 2011; Wingood, DiClemente, et al., 2011).

Women's perceptions of their everyday mental health was assessed by the number of days in the

past month in which the participant (1) felt their mental health was not good, (2) was sad, blue or

depressed, and (3) felt worried, tense, or anxious, as well as (4) the 20-item Center for

Epidemiological Studies Depression Scale depression scale ($\alpha =.904$) (Radloff, 1977), (5) the 27-

item Generalized Self-Efficacy self-esteem scale ($\alpha =.847$) (Tipton & Worthington, 1984), and

(6) an 18-item coping scale ($\alpha=.773$) (Folkman & Lazarus, 1998). Higher scale scores indicate

greater levels of depression, self-esteem, and coping.

User Satisfaction

Participants completed a separate, 20-item user satisfaction survey immediately after viewing C-

SAFE or reviewing the sexual health brochures. The instrument included Likert-like scale

questions on program quality (i.e., overall design, ease of use, usefulness of information,

potential to help people lower their sexual health risks) and experiences with the program or

brochures (i.e., enjoyment, held attention, clarity of presentation). Open-ended questions

addressed overall impressions, likes and dislikes, new information learned, and suggestions for improving the program or brochures.

Statistical Analyses

Statistical analyses occurred in three phases. We first calculated descriptive statistics for sociodemographic variables, mediators and sexual behaviors. Next, we conducted bivariate analyses to assess differences between conditions, using *t* tests for continuous variables and χ^2 for dichotomous variables. We then constructed linear, logistic, and negative binomial regressions to assess C-SAFE intervention effects at the six-month follow-up. Variables for which differences between study conditions were statistically significant ($p < .05$) and which were hypothesized to be linked to behavioral and psychosocial outcomes were included as covariates in the models. For continuous outcomes (i.e., scale measures for condom self-efficacy, depression, self-esteem, and coping), we constructed separate linear multiple regression models and calculated mean differences, percent relative change (i.e., difference between the adjusted means for the intervention and control conditions divided by the adjusted mean for the control), and the corresponding 95% confidence intervals and p-values. For count variables (i.e., number of sex partners in past 30 days and past six months, and number of days in past 30 days mental or physical health not good), we constructed separate negative binomial regression models and calculated adjusted means, likelihood ratios, and the corresponding 95% confidence intervals and p-values. For dichotomous outcomes (i.e., currently have an STI, condoms at last time sex, never used condoms – vaginal sex, never used condoms – anal sex, never used condoms – all sex, and yes/no STI attitude questions), we constructed multiple logistic regression models and calculated adjusted odds ratios, 95% confidence intervals, and corresponding p-values. In addition, we conducted subgroup analyses based on age (under 24, under 30), recruitment site, and perceived

partner non-monogamy to see if hypothesized outcomes might vary based on these characteristics Analyses were made using SPSS Statistics 23.

Outcome Study Sites and Procedures

The C-SAFE outcome study was conducted at (1) a women's health program at a multiple office family health clinic in Southern California, and (2) a several health clinics in Orange County, Florida affiliated with the state's Office of Community Health. All of these clinics provide comprehensive sexual health services, including HIV/STI testing, contraception, and pre-natal care. These sites were selected with the intention of capturing some of the diversity of Latinas in the United States – Mexican and some Central American women from the Southern California clinics, and Cuban, Puerto Rican, and Dominican women from the Florida clinics. Sociometrics and the Orange County Health Department's Institutional Review Board reviewed and approved all study protocols, data collection instruments and recruitment materials prior to study initiation.

At each site, clinic staff screened women who were seeking services and self-reported the two inclusion criteria – identification as Latina and 18 to 34 years old. These selection criteria reflect the actual practices of practitioners who have purchased replication kits, which include implementing SAFE with (1) women in the late 20s and early 30s, and (2) women seeking sexual health services, and not just those with an STI diagnosis (see also Advocates for Youth, 2016; ChildTrends.org, 2012 for examples of the dissemination of SAFE for young women at risk for STIs but who may not have STI diagnoses). Study staff randomized eligible participants into either the control group or intervention group. Control condition participants received the clinic's standard of care plus printed brochures providing information on sexual health, partner communication, condom use, and STIs, and intervention condition participants watched the C-SAFE intervention in one sitting. All participants completed a baseline assessment, a user

satisfaction survey immediately post, and a follow-up assessment six months after. Respondents had the option of using Spanish or English as their preferred language for both conditions and received $75 to complete the intervention or control condition and $50 for the follow-up survey.

Findings

In total, 321 women provided informed consent and enrolled in the study. One hundred sixty-four (51.09%) were randomly assigned to the C-SAFE condition, and 157 (48.91%) were assigned to the control condition. Two hundred seventy-eight participants completed the six-month follow-up assessment, with an 86.0% retention rate for C-SAFE participants and an 87.3% retention rate for control participants. We observed no differences in sociodemographic characteristics between the 278 participants retained in the study at follow-up compared to the 43 women unavailable for the follow-up assessment.

Study participants ranged in age from 19 to 34 (M= 27.15, SD = 4.525). At baseline about 1/3 were single (37.3%), 1/3 were married or with a long-term partner (31.3%), and another 19.8% had a boyfriend. About half (51.0%) had at least one child (M= 1.92). In terms of education, 18.7% reported having less than a high school diploma, 25.3% a high school diploma, 26.8% some college, 6.2% a 2-year degree or completed vocational program, 10.8% a college degree, and 4.1% had completed post-graduate work. About half reported current employment (24.1% full-time and 25.3% part-time), and participants had a wide range of household income levels – over half were below or near the poverty level (14% earning <$6,000; 15.2% $6,000-12,000; 10.9% $12,001-17000; and 16.3% $17,000 – 23,000), 19.1% had incomes between $23,001 – 45,000, and 12.8% had incomes over $45,000. Linguistically, 12.1% reported speaking only Spanish, 15.2% more Spanish than English, 29.3% both Spanish and English equally, 32.8 more English than Spanish, and 10.5 percent only speaking English. On average,

participants described themselves as having "good" to "very good" overall health on a 5-point Likert-like scale (M = 3.28, SD = 0.895, where 1 = "poor", 3 = "good", 5 = "excellent"). Respondents reported 4.2 days/month (SD = 7.425) when their physical health was not good, 7.4 days/month when their mental health was not good (SD = 9.304), and 9.7 days/month when they did not get enough rest (SD = 10.103).

About three-quarters of participants currently had a male sexual partner at baseline (74.2), and 90.8% of these women reported that this was the only partner with whom they have sex. However, 13.7% of women in relationships indicated that their partner "is having or has had sex with other women during their relationship", and another 20% reporting that they did not know if this was the case. Regarding condom use and sexual health, 35% of respondents reported always using condoms, about one-quarter (23.7%) reported ever having had an STI, and 6.6% reported having an STI at the time of their baseline survey. The most common reported STIs were chlamydia (65.6% of those reporting ever having had an STI), warts/HPV (24.6%), and genital herpes (16.4%), and five participants (1.8%) reported being HIV-positive. In terms of attitudes toward how catching an STI makes them feel, 60.2% of women reported that it made them angry at the man who gave it to them, 59.0% felt stupid for trusting him, 65.3% felt shame /embarrassed/dirty, 67.7% disappointed at themselves for not using protection, and 32.8% felt it was just part of life.

Statistically significant differences at the $p \leq .05$ level between the intervention and control conditions were observed for four theorized mediating variables: (1) "number of sex partners in last 30 days", "2) "used alcohol or drugs during last sex," (3) "fear making changes in sexual behavior because of fear of upsetting a man you really like," and (4) "condoms feel uncomfortable/irritate your or your partner's skin." These variables were included as covariates

in the final regression analyses.

There were no observed statistically significant differences between C-SAFE and control participants on any of the variables within three hypothesized sexual behavior outcome domains: (1) less unprotected sex (condom last time; condoms for vaginal sex, anal sex, and all sex); (2) monogamy (only has sex with one partner, thinks partner has sex with other women); and (3) fewer sexual partners (in last 30 days, in last six months), and there were insufficient numbers of participants with an STI at baseline (n=22) to assess compliance with STI treatment protocols. [insert Table 2 here]. Fewer control participants reported having an STI at the six-month follow-up (2.55% v. 6.71%, p = .052), but this finding is likely spurious given the relatively low levels of STIs reported by the sample and the extremely large confidence interval associated with this result. This possibility is supported by the actual number of women reporting STIs at baseline and the six-month follow-up – for C-SAFE participants, this number was basically unchanged (12 at baseline and 11 at post), whereas for women in the control condition there was a marked decline that seems unlikely to be linked to having received the control condition (11 at baseline and 3 at post).

Nor were there any significant differences between C-SAFE and control condition participants on theorized mediating psychosocial variables such as condom-self efficacy, sexual communication with partners, attitudes toward STIs, coping, or self-efficacy. There was, however, one statistically significant finding on a psychosocial mediating variable – SAFE participants reported fewer days when their mental health was not good (adjusted mean of 5.56 days versus 8.15 days for control participants, p = .020). Participants in the C-SAFE condition also reported statistically significant differences in their assessment of "how well the information was presented" (on a scale of 1 = "poor" and 5 = "excellent", C-SAFE = 4.45 v. control = 4.25, p

= .053), "how clearly were the topics presented (C-SAFE = 4.56 v. control = 4.27, p = .002),

"overall, would you say you learned something new today" (C-SAFE = 95.1% v. control =

79.3%, $X^2 < 0.001$), with "how would you rate the content in terms of usefulness to Latinas"

approaching significance (C-SAFE = 4.50, control = 4.31, p = .058).

Discussion

Our findings suggest that the computer-delivered version of SAFE resonates with the target

population and may have positive effects on overall mental health. Less clear is why there were

no significant differences between C-SAFE and control condition participants on sexual

behaviors, attitudes toward STIs, and condom self-efficacy variables. It may be that our study

lacked sufficient power to capture such changes, although in several similarly scaled outcome

studies of other computer-deliver interventions, we found statistically significant behavioral

changes among African American women of similar relationship profiles (Klein et al., 2013;

Wingood, Card, et al., 2011). Another possible factor affecting intervention efficacy may be

delivery modality – a two-hour long computer-delivered program may have less impact than a 12

hour, multi-session group level intervention with similar content. However, a growing body of

research reports positive behavioral outcomes from similar length and shorter computer-

delivered programs in diverse populations (Noar et al., 2009; Noar & Willoughby, 2012).

Perhaps the lack of behavioral findings in the C-SAFE outcome study relates to its six-month

follow-up – in two recent meta-analyses of computer- and phone-delivered sexual health

promotion programs (Bailey et al., 2010; Noar et al., 2009), only four studies included follow-

ups of six months or greater, and these found that length of follow-up was negatively correlated

with effect size. It is also possible that SAFE and C-SAFE may be more effective with women

who have just received an STI diagnosis, as was the case in the two SAFE efficacy trials, rather

than C-SAFE's inclusion of women seeking STI services regardless of their ultimate diagnosis. Because only 6.6% of our sample reported having an STI at baseline, we lacked sufficient data to assess differential outcomes between women with an STI versus women receiving STI services who did not receive an STI diagnosis.

Another factor behind the different outcomes of the SAFE and C-SAFE outcome studies may be implementation delivery. Like many evidence-based programs, the original Project SAFE program seeks to engage women during a "teachable moment" (Lawson & Flocke, 2009), in this case, receiving a positive STI result. The actual program is then administered to small groups of women within several weeks of their STI diagnoses. In contrast, the video-based Voices/Vozes and Safe in the City evidence-based programs (Centers for Disease Control and Prevention, n.d.) conduct an intervention within the teachable moment of the time spent in the waiting room before a clinic visit. Because we wanted to ensure that women in the C-SAFE outcome study watched the entire program, our C-SAFE outcome study mirrored the all-in-one Vozes/Safe in the City clinic visit model rather than the multi-session SAFE model. It may be that a two-hour long computer-delivered intervention is simply too long for such a single session teachable moment.

A final factor that may help explain the lack of behavioral outcomes in the C-SAFE outcome study is the extent to which intervention framing resonates with participants. Many first-wave, evidence-based HIV prevention interventions, including those targeting Latino/a communities (e.g., SAFE, ¡Cuídate!, SEPA), are grounded within psychosocial frameworks that focus on individual decision-making in the face of HIV risk, such as the Theory of Reasoned Action, the Theory of Planned Behavior, Social-Cognitive Theory, and the AIDS Risk Reduction Model (see Althoff et al., 2014 for a metanalysis of behavioral interventions to reduce risky

sexual behaviors and STIs among Latinas). These programs present HIV as a very severe health

risk that participants should make great efforts to avoid contracting. However, recent studies in

MSM communities have demonstrated that effective HIV treatments, and more recently, the

availability of Pre-Exposure Prophylaxis (PrEP), are often linked to decreased concern about

HIV infection and increased risk behaviors (Calabrese, Earnshaw, Underhill, Hansen, &

Dovidio, 2014; Chen, 2013; Grov, Whitfield, Rendina, Ventuneac, & Parsons, 2015; Rowniak,

2009). Whether similar dynamics are occurring in Latina populations remains to be seen, as there

are no published studies on this topic, but it seems reasonable to posit that HIV treatment

optimism and the availability of PrEP might diminish the resonance of HIV risk avoidance

messaging among Latinas as well.

In response to such shifts in the HIV prevention landscape, a growing number of

efficacious HIV prevention programs are situating behavioral change models within more

holistic approaches that address the structural factors shaping HIV vulnerability and overall

sexual health. An example of such a structurally grounded, sexual health program for Latinas is

AMIGAS, a culturally tailored version of the popular, cognitive theory-based SiSTA program

(Wingood et al., 2011). Like SiSTA, AMIGAS positions HIV prevention within gender and

racial/ethnic empowerment in the face of multiple intersectionalities. In its first module, C-SAFE

also situates HIV/STI prevention within the context of Latina lives, but it does not include the

extended reflections on gender hierarchies, racism, and empowerment that are central to more

holistic interventions like AMIGAS and the SiSTA/SiHLE/WiLLOW trilogy. Given the

preliminary efficacy of the two-hour long, computer-delivered versions of the

SiSTA/SiHLE/WiLLOW trilogy (Klein & Card, 2011; Klein et al., 2013; Wingood, Card, et al.,

2011) compared to the lack of positive behavior outcomes in the C-SAFE study, it may be that

longer computer-delivered interventions have greater efficacy when they delve more deeply in the structural contexts that shape women's lives and sexual health. Only the continued development and evaluation of multiple interventions designed specifically for Latinas will enable us to understand more fully the complex dynamics between delivery modalities, theoretical frameworks and individual motivations and the ways in which they can promote sexual health at individual and community levels.

Table 1. Comparison of Project SAFE and C-SAFE Activities

Project SAFE Activity	C-SAFE Activity
Session 1, Activity 1: Introductions Session 1, Activity 2: Purpose	Welcome to Project SAFE, "Meet the Gals" (video introduction of group facilitator and women in a SAFE workshop)
Session 1, Activity 3: Disproportionate Prevalence of STIs/AIDS in Minority Communities	Multimedia presentation on HIV/AIDS & Latinas in the U.S." Think About It" (reflection activity). Presentation and video of workshop women discussing factors shaping Latinas & HIV/STI – economics, clinic avoidance, culture, and religion.
Session 1, Activity 4: Dissipate Myths	Interactive "Myth or Fact" Game (user decides which methods of acquiring HIV are true or a myth).
Session 1, Activity 5: How People Get STIs and AIDS	Multimedia presentation on sexual transmission, basic prevention tips, and "loteria" (lottery) game on STI/HIV risk levels.
Session 1, Activity 6: The Importance of Your Partner's Other Partners	Interactive Activity: "You and Ramon," animated chart depicting how Ramon's and the participant's sexual experiences translate into a larger sexual history than spans nearly 100 people. Multimedia discussion of the importance of knowing your sexual partners and their sexual history.
Session 1, Activity 7: How Do We Decide Who Is Safe?	Personality type and stereotype activity: User decides who seems safe, followed by review of why you cannot tell who is safe by their personal characteristics.
Session 1, Activity 8: Understanding STIs and Session 2, Activity 2: What Prevents STIs & AIDS	Review of specific STIs and how to prevent their transmission. Presentation on HIV as an STI and HIV tests. Interactive "Spin the STI Wheel" game: User lands on an STI and learns more about it. Telenovela video of a woman's experience of having gotten an STI multiple times from her partner.
Session 2, Activity 3: Partner Information	"Think About It" activity: user thinks about her relationships. Multimedia presentation on relationships, "Relationships" game, "Exploring Relationships Patterns" video (workshop women). "What do you want in relationships?" interactive activity.
Session 3, Activity 2: Sexual Communication	"Introduction to Salsa Dancing" activity: Explains how sexual communication and negotiation is similar to learning to dancing. "Salsa Dancing" game: User negotiates each step of a sexual encounter until dance is complete.
Session 2, Activity 4: Condom Use-How to Use a Condom	Video of health educator Andrea demonstrating correct condom use. Condom basics presentation, "Condom Line Up" game: Interactive review of correct condom use steps. Video of workshop women practicing putting on condoms on penis proxies.
Session 2, Activity 3: Communication About Condom Use Session 2, Activity 4: Condom Use	Presentation on ways of getting past barriers to condom use and "Communication Strategies" video. "Excuses and Comebacks" game: Interactive review of correct condom use steps for correct condom, "If He Says/You Can Say" communication role-play activity.
Session 3, Activity 7: Unsafe Sex Triggers	Video of workshop women discussing their own unsafe sex triggers. "What Are Your Triggers" exercise. Telenovela video part 2, showing one of the workshop women experiencing an emotional trigger. Interactive review quiz.
Session 3, Activity 5: Role Playing with Male Co-Facilitator	Video demonstration of communication role-play (women in workshop and male facilitator).
Session 3, Activity 2: Sexual Communication Session 2, Activity 3: Communication About Condom Use	Multimedia presentation on sexual decision-making. "Key Questions" Game. Video presentation on checking your partner for sexual health before sex. Multimedia presentation on starting communication, "Having the Talk" sexual negotiations activity, including videos about negotiation experiences from each workshop member. Third installment of telenovela focused on one woman's story of communication.
Session 3, Activity 8: Brief Review of All Sessions	Review of all sessions.
Session 2, Activity 8: Bottom Line: Losing Our Lives Session 3, Activity 9: Goal Setting	"Precious" exercise: Viewers think about three precious things to visualize the impact of contracting HIV on family, friends, and their quality of life. Empowerment videos: Each workshop participant describes how she feels more empowered due to the information learned. "Think About It" activity: Goal setting and empowerment. Closure video by workshop facilitator.

Table 2
C-SAFE Findings: Outcome and Mediating Variables

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Variable	Unadjusted mean (SD)/Percentages		Adjusted Means (95% CI)[a,] (Negative Binomial Regressions)		Adjusted[a] Mean Difference (D) (Linear Regressions)	% Relative Change (95% CI)[b] (Linear Regressions)	Odds/Likelihood Ratio (95% CI)[c] (Logistic and Negative Binomial Regressions)	Test statistic[d]	P
	C-SAFE (I)	Control (C)	C-SAFE	Control					
Sexual Behaviors	.								
# sex partners past 30 days	.94 (.89)	.93 (1.30)	.99 (.67, 1.47)	1.08 (.70, 1.67)	NA	NA	.92 (.62, 1.37)	.92	.680
# sex partners past 6 months	1.59 (3.30)	1.34 (3.04)	1.69 (1.17, 2.44)	1.89 (1.26, 2.84)	NA	NA	.89 (.61, 1.30)	.89	.553
Condom last time	42.6%	48.8%	NA	NA	NA	NA	.778 (.34, 1.76)	.778	.546
Never used condoms, vaginal sex	32.5%	33.8%	NA	NA	NA	NA	.985 (.57, 1.69)	.985	.957
Never used condoms, anal sex	41.7%	40.8%	NA	NA	NA	NA	.885 (.51, 1.53)	.885	.661
Never used condoms, all sex	38.0%	38.9%	NA	NA	NA	NA	.983 (.57, 1.70)	.983	.952
Condom Self-Efficacy Scale	103.30 (20.63)	107.61 (23.52)	NA	NA	-3.30 (-9.43, 2.82)	-3.00 (-18.03, 5.39)	NA	1.134	.288
Currently Have an STI	6.71%	2.55%					6.235 (.39, 39.64)	6.235	.052
Monogamy									
Only have sex with this partner	88.18%	92.55%	NA	NA	NA	NA	.319 (.04, 2.41)	.319	.268
Thinks or not sure if partner has sex other women	29.10%	38.76%	NA	NA	NA	NA	.661 (.36, 1.22)	.661	.185
STI Attitudes									

Catching STI makes me feel angry at partner	49.02%	69.34%	NA	NA	NA	NA	.165 (.02, 1.19)	.165	.069
Catching STI makes me feel angry disappointed	62.00%	69.34%	NA	NA	NA	NA	.432 (.09, 2.09)	.432	.297
Catching STI makes me feel stupid for trusting him	52.02%	68.75%	NA	NA	NA	NA	.557 (.13, 2.33)	.557	.422
Catching STI make me feel ashamed	44.00%	70.82%	NA	NA	NA	NA	.379 (.08, 1.67)	.379	.198
Catching STI makes me feel worried about effects on my body	60.00%	79.17%	NA	NA	NA	NA	.345 (.06, 1.95)	.345	.229
Make me feel worried about effect on baby	39.13%	41.67	NA	NA	NA	NA	.365 (.08, 1.70)	.365	.201
Catching an STI make me feel STIs are just part of life	24.29%	22.92%	NA	NA	NA	NA	1.828 (.39, 8.62)	1.828	.446
Psychosocial Mediators									
Depression Scale	34.08 (12.56)	35.91 (12.36)	NA	NA	-3.10 (-6.60, .40)	-8.63 (-24.98, 1.51)	NA	1.966	.163
Coping Scale	61.24 (11.49)	61.56 (11.40)	NA	NA	.58 (-2.48, 3.64)	.94 (-6.50, 9.55)	NA	.139	.710
Self-Esteem Scale	21.38 (4.58)	20.87 (4.95)	NA	NA	.61 (-.60, 1.81)	2.92 (-3.47, 10.48)	NA	.988	.322
# days mental health not good past 30 days	5.32 (8.04)	5.92 (8.82)	5.56 (4.11, 7.53)	8.15 (5.82, 11.40)	NA	NA	.683 (.50, .94)	.683	.020

a Adjusted by covariates: corresponding baseline variable, "number of sex partners in last 30 days," "used alcohol or drugs during last sex," "fear making changes in sexual behavior because of fear of upsetting a man you really like," and "condoms feel uncomfortable/irritate your or your partner's skin."

b % Relative change (RC) = [D/C * 100 %] and 95 % Confidence Interval around the % relative change

c Adjusted odds ratios and likelihood ratios calculated with the control comparison condition as the referent (OR = 1.0)

d Test statistics listed consist of F for continuous variables and Exp(B) for count and categorical variables

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