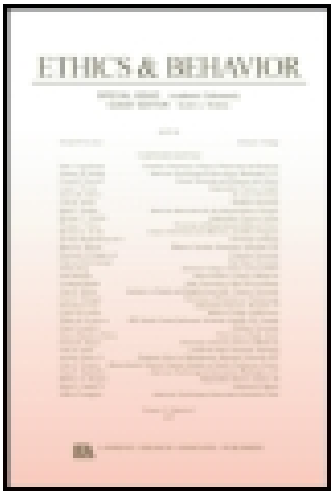

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Risks and Benefits of Text-Message-Delivered and Small-Group-Delivered Sexual Health Interventions Among African American Women in the Midwestern United States

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Interventions to decrease acquisition and transmission of sexually transmitted diseases among African American women using text messages versus small-group delivery modalities pose distinct research risks and benefits. Determining the relative risk–benefit ratio of studies using these different modalities has relied on the expertise of investigators and their institutional review boards. In this study, African American women participated in focus groups and surveys to elicit and compare risks and benefits inherent in these two intervention delivery modalities, focusing on issues such as convenience, privacy, and stigma of participation. Some risk/benefit variables were implicated in willingness to participate the two intervention modalities.

Keywords: sexual health interventions, HIV/STIs, text messaging, mHealth, risk/benefit assessment

A critical component of the United States' HIV/AIDS strategy to reduce the number of infections is to "intensify HIV prevention efforts in communities where HIV is most heavily concentrated" (White House Office of National AIDS Policy, 2010). Such prevention efforts are particularly urgent for African American women. The Centers for Disease Control and Prevention (2014) estimates that one in 32 Black women in the United States will be diagnosed with HIV in her lifetime. The incidence of HIV among Black women is approximately 20 times higher than White women

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and five times higher than Hispanic/Latina women. Heterosexual contact remains the most common reason for new infections among African American women (Centers for Disease Control and Prevention, 2014). These race and gender disparities in HIV infections persist despite the pioneering efforts of culturally based individual or small-group behavioral interventions aimed at African American women such as Sisters Informing Sisters on Topics about AIDS (SISTA; DiClemente & Wingood, 1995), Sisters Informing Healing Living and Empowering (DiClemente et al., 2004), and Sister to Sister (Jemmott, Jemmott, & O'Leary, 2007). Innovative intervention efforts that can better reach African American women are thus essential.

New communication technologies using mobile phones (e.g., text messaging) is a promising new medium of intervention delivery in health research, also known as Mobile Health or "mHealth." The most recent data from the Pew Internet and American Life Project indicate that use of text messaging has skyrocketed in recent years, with 80% of all adults using cell phones for sending or receiving text messages in 2012, and 80% specifically among African Americans, 80% among all women, and 97% among all adults 18 to 29 years of age (Duggan & Rainie, 2012). Mobile phone technology represents a nearly ubiquitous form of communication among minority populations. Although African Americans are just as likely to use mobile phones for texting as Whites, they may use text messaging more often. The Pew Internet and American Life Project also estimates that African Americans send and receive text messages more frequently ($M = 70.1$/day, $Mdn = 20$/day) than non-Hispanic Whites ($M = 31.2$/day, $Mdn = 10$/day; Smith, 2011). Several studies suggest that text-message-based HIV interventions in traditionally hard-to-reach populations may be especially impactful for minority and other higher risk young adults. In one sample of urban women recruited from a sexually transmitted infection (STI) clinic (87% African American), cell phone use was nearly universal. Seventy-nine percent of the sample reported using text messaging, and 60% responded favorably to receiving health information via cell phones or the Internet (Samal et al., 2009). Using text messaging to dispense information and resources for STIs, HIV, and pregnancy prevention was also effective at reaching high-risk, predominantly African American adolescents in San Francisco (Levine, McCright, Dobkin, & Klausner, 2008). As more communication is taking place through cell phone technology, texting promises to be an HIV intervention medium that eliminates the burden of scheduling and travel on participants and providers, increasing cost-effectiveness and sustainability.

Although the aforementioned projects have used mobile phones to disseminate information about sexual risk, knowledge is insufficient to enact behavior change without teaching necessary skills, such as condom negotiation and communication (Otto-Salaj et al., 2008; Pulerwitz & Dworkin, 2006). Meta-analysis of HIV and STI prevention interventions for African American women indicate that including skills training and role-playing in condom negotiation and communication is associated with greater efficacy (Crepaz et al., 2009). Studies are already under way by other researchers to deliver skills-based intervention content using text messaging for female African American adolescents that include components of communication techniques to ensure safer sex, adapted from the Be A Responsible Teen intervention (Cornelius, Cato, St. Lawrence, Boyer, & Lightfoot, 2011; Cornelius & St. Lawrence, 2009; Wright, Fortune, Juzang, & Bull, 2011). This work illustrates potential participants' willingness to engage in this type of intervention and highlights the barriers to traditional small-group-based interventions (e.g., scheduling, no-shows), which are also are unable to reach large numbers of participants. This work has not yet evaluated participant perspectives on ethically relevant issues surrounding text-message-based intervention efforts, although qualitative research suggests that convenience may be a distinct advantage of text-message-based intervention dissemination, whereas interactions

with other people may be a distinct advantage of a face-to-face intervention (Cornelius et al., 2012). This work also suggested that participants anticipated sharing what they learned with their friends, potentially by forwarding messages to friends.

Labrique and colleagues suggest a framework for discussing the ethical issues specific to mHealth research using mobile devices, including text messaging, related to interventions for people living with HIV, highlighting the importance of scientific validity, fair participant selection, and favorable risk–benefit ratios (Labrique, Kirk, Westergaard, & Merritt, 2013). As just reviewed, many scientifically valid HIV prevention interventions exist for African American women, and some are being evaluated when delivered via mobile devices; however, the ethical principles related to risk–benefit ratio in the use of these mobile interventions have not been well studied.

The benefits to researchers of a text-message-based intervention are clear. Text messaging is a widespread technology used in populations vulnerable to STIs and HIV, is convenient, allows researchers to truly reach participants "where they are," and is potentially more cost-effective than traditional interventions. However, as Labrique et al. (2013) discussed, the need to safeguard participants' privacy is of particular concern in mHealth research, given the potentially sensitive nature of the content to be delivered, potential intrusiveness of communications, and researchers' inability to guarantee confidentiality within text message communications. Text messaging provides a written record of a participant's participation in the intervention, and researchers cannot guarantee that the actual participant has control over their phone at any given time, or that phones are not shared among several people. Many researchers have suggested built-in privacy and confidentiality safeguards including limiting times when communications will be sent, allowing participants to choose when communications will be sent, use of encryption software, passwords on mobile devices, and context-specific contingency plans for accidental disclosure of private information, potentially as an adverse event (De Costa et al., 2010; Heron & Smyth, 2010; Labrique et al., 2013; Luxton, McCann, Bush, Mishkind, & Reger, 2011; Mbuagbaw, Thabane, Ongolo-Zogo, & Lang, 2011; Perera, 2012).

The privacy and confidentiality risks inherent to mHealth research may give Institutional Review Boards (IRBs) pause, as participating in HIV-prevention interventions may be stigmatizing (Sengupta et al., 2010), as well as sexual behaviors themselves, due to gender norms in the African American community potentially stressing women's sexual passivity (El-Bassel, Caldeira, Ruglass, & Gilbert, 2009). However, the ethical principle of "respect for persons" maintains that participants should be free to make these decisions for themselves in the context of informed consent. In addition, the principle of "equity" indicates that all populations should have the opportunity to experience the benefits as well as burdens of research. In addition, risks assessments by IRBs are often impressionistic as opposed to quantifiable, and the Code of Federal Regulations gives no guidelines for establishing risks and benefits. Collecting quantifiable data on participants' perceptions of risks and benefits can ensure equitable access to the beneficial aspects of research (Fisher, 1999, 2004, 2011; Slomka, Ratliff, McCurdy, Timpson, & Williams, 2008).

In response to this need, we conducted a two-phase study designed to measure participants' perceptions of the risks and benefits of a text-message-based sexual communication intervention and a traditional small-group intervention, both based on an evidence-based intervention designed for young adult African American women. To examine these issues within African American young adult women, we chose the SISTA intervention as a template for the hypothetical intervention in which participants would be asked to imagine themselves participating, which was particularly developed for African American young adult women and contains specific content

regarding building skills for condom negotiation and communication. Study 1 was designed to qualitatively identify themes reflecting young African American women's ethically relevant attitudes toward participating in group-based versus text-message-based interventions, with particular focus on privacy and confidentiality concerns. These themes informed the content of an assessment instrument constructed for use in Study 2. Study 2 was designed to quantitatively assess similarities and differences in perceived risks and benefits between the two types of interventions and to determine the extent to which these risks and benefits predicted young African American women's willingness to participate, and their preferences for participating, in intervention trials using the different delivery modalities.

STUDY 1

Method

Participants

African American women between the ages of 18 and 25 were recruited from the waiting room in an inner-city Health Department STI clinic. This clinic serves uninsured and underinsured residents and provides STI and HIV testing, condoms, and risk reduction counseling. Drug use among the clinic population is high, with estimated 32% of clients disclosing marijuana use, and many clients using multiple drugs, including cocaine and methamphetamines (O. Oyervides, personal communication, September 27, 2012). Potential participants were approached by research staff and asked if they would be interested in participating in a research project about perceptions of sexual health programs. Thirty-four eligible participants gave informed consent and provided contact information. When enough participants consented, a focus group time was scheduled. Research assistants attempted to contact and schedule all women who provided informed consent, but due to inability to reach some women and scheduling conflicts, 12 women participated in one of three focus groups. The first focus group consisted of two women, and the second and third focus groups consisted of five women each. Mean age was 21 (range = 18–25). All participants owned their own cell phone. Three participants had children—two participants had one child, and one had three children. Seventy-five percent indicated that they were in a romantic or sexual relationship, 44% of whom indicated a serious relationship and 56% a casual relationship. All procedures were approved by the Medical College of Wisconsin IRB. Focus groups lasted between 45 and 90 min, and participants were compensated with a $30 stipend for their time and travel expenses.

Procedures

Each group began with the facilitator (the first author) guiding participants through a PowerPoint storyboard of the group-based intervention. The facilitator then used a focus group guide to facilitate discussion about that intervention. Participants were asked about their overall perception of the intervention, why they would feel comfortable or uncomfortable participating in the intervention, and what they perceived as the risks and benefits of participating. Probes were used to further explore concerns regarding privacy, comfort, personal benefits of participating, benefits to the researchers, benefits to their community, and whether the benefits of participating

outweighed the risks. Next, the facilitator guided participants through a PowerPoint storyboard of the text-message-delivered intervention. The same initial queries and probes were used to gauge participant perspectives on the intervention, using the focus group guide. Finally, participants were asked to compare the two intervention modalities in perceived risks and benefits and confidentiality and privacy protections using the focus group guide. Focus groups discussions were audio-recorded.

Materials

We developed two storyboards in PowerPoint software using pictures and sounds describing "scenes" of the interventions. These storyboards guided participants through what they would experience as part of a text-message-based or group-based intervention and asked participants to imagine themselves as participating in the intervention. All participants were exposed to the group-based intervention, then the text-message-based intervention. To develop the content of the storyboards for both intervention modalities, we used Session 3 of SISTA, the Center of Disease Control and Prevention's evidence-based intervention manual developed specifically for African American women. Session 3, entitled "Assertiveness Skills Training," teaches effective communication by first learning to distinguish aggressive, nonassertive, and assertive communication styles followed by role-playing different situations that would call for assertive communication for negotiating with a partner for safer sex.

The group-based intervention storyboard describes a researcher approaching a prospective participant at the STI clinic, asking if she would be interested in participating in a program for African American women about how to more effectively communicate with sexual partners, explaining that she would be expected to come to one session at the STI clinic to take part in discussions and activities with other women who have agreed to take part in the program, gathering contact information from her, and then calling a week later to let the participant know when to come to the session. The storyboard describes the participant arranging for child care and transportation if necessary for the session. Next the storyboard shows conversations among five African American women and an African American program facilitator. Speech bubbles are used to illustrate the facilitator guiding the participants through the activities, using the scripts provided in the SISTA manual. Responses to the facilitator from the participants in the storyboard were developed in collaboration with a colleague who had observed and recorded multiple SISTA sessions. First, the facilitator describes aggressive, assertive, and nonassertive communication styles; describes a hypothetical scenario between a man and woman in a couple; and provides examples of how the woman could react in the three different styles. Additional hypothetical scenarios were then presented to the participants in the storyboard, who are asked to respond, and the group was then asked to identify the communication style and provide feedback about the extent to which an assertive communication style was used. The group was also asked to discuss potential conflicts they might have with male partners. Participants in the storyboard are then asked to plan to have a conversation about safer sex with their partners using assertive communication styles. The storyboard then shows a participant asking a question that initiates a short conversation about cheating, and the participants leaving the session. Finally, content on the storyboard explains that the storyboard included only examples of how the conversation among the women might go but that every group discussion would be somewhat different depending on the composition of the

group. The storyboard then prompts focus group participants to think about the good and bad things they would feel and think about participating in this type of group intervention.

The text-message-based storyboard begins the same way, with the researcher approaching a prospective participant and explaining that she will receive a set of text messages twice a day with tips on how to better communicate with sexual partners, that she will be asked to briefly respond to each set of text messages, and that she can choose when she would like to receive the text-messages during the day. The storyboard then goes through the twice-a-day text-message sets, with examples of what the participant might be doing when she receives the messages (e.g., getting ready for work, doing the dishes, getting ready to go out with a boyfriend, sleeping, taking care of children). In some instances, the participant immediately reads the messages and responds; in others, she does not read or respond to them, and reminder messages are sent after 1 hr. The content of the text messages and the potential responses from the participant are based on the same scripts and responses from the group-based storyboard, although abbreviated consistent with the nature of text messaging. Text messages described the different communication styles, presented relevant scenarios, and asked participants to text back how they would respond to the scenarios. Feedback is then given the next day about the communication style they used and encouraged an assertive communication style. Finally, the storyboard explained that it included only examples of how the participant might respond, but that participants might respond differently, and then asked participants to think about the good and bad things they would feel and think about participating in this type of program.

Analysis

Focus group recordings were transcribed verbatim. The initial thematic coding tree was based upon questions included in the focus group guide and collaboration between the first and second authors, consisting of broad content areas such as convenience, participation benefits and risks, and confidentiality and privacy protections. Transcripts were read multiple times by the first author, and more refined themes emerged from repeated mentions in the data as subcategories that emerged and from discussions with the second and third authors. Quotes were chosen to summarize main themes.

Results

Benefits of Text and Group Modalities

Major themes surrounding the benefits of participating in each of the two modalities revolved around the convenience and ubiquity of text messaging versus the ability to learn from others like oneself in the group intervention format

Convenience. Many participants highlighted the difference in convenience between the two modalities: “So texting is just more convenient and it’s faster and easier, and then you can’t be late for text messages.” Participants also reinforced the idea that text messaging is ubiquitous, and perhaps a better way of reaching people. One participant indicated that she would always be able to receive text messages: “Right like, I text at work, so it’s like ok, I text at work, I text at school, bathroom.” This was seen as a clear advantage of the text-message-based intervention

compared to the group-based intervention: "I would [be] very comfortable it's more confidential it's more convenient because your phone is always with you most of the time unless you lose it or forget it somewhere. It's easy."

Several participants cited potential barriers to participating in the group-based intervention as practical concerns such as transportation difficulties, scheduling around other responsibilities like work or school, and for some, the need for childcare:

> If they are not in daycare, and it's like after I get off of work, or going to school, or going straight home to get my kid, or whatever the case might be. I think it would be hard 'cause to find somebody else to watch their kid and then people sometimes already don't watch other people's kids especially if it's a nice day, or if you are not paying them.

Another participant indicated that the benefit of participating (including potential financial incentives for participating) in the group-based intervention would be offset by the financial cost of childcare: "And you could be doing this stuff [taking care of children] yourself, instead you are paying somebody else to do it so you can be gone for 2 hours."

Learning from others. Participants identified two benefits of the group intervention consistent with the SISTA rationale for the development of these types of interventions. One benefit was the ability to learn from others' experiences. Learning from others' experiences, especially in learning ways to react to the role-play scenarios presented in the intervention storyboard, was seen as a particular benefit: "If the people who have more experience [participate], they would give you more insight of the situation that may occur." However, the benefit of learning from others was often discussed in relation to the inherent potential privacy risks of the group-based modality and is elaborated upon in the following discussion of risks and modality preferences.

Research Risks

Themes associated with risk concerns revolved around the possibility of discomfort discussing socially sensitive issues, fear of social stigma, and privacy concerns.

Discomfort discussing socially sensitive topics. Participants indicated that they felt that, in their community, sex was not a topic that was often discussed openly, which could cause discomfort in the group-based intervention: "They could feel embarrassed or just kind of avoid the whole topic of the sex . . . [or] they may have like personal issues and just try and forget about it and put in the background." One risk that participants saw specifically associated with the group-based intervention was the potential for the discussion of sexual topics to be upsetting when discussed with a group, especially for potential participants who may have experienced sexual violence:

Participant 1 [P1]: Sometimes some people are not ready to talk about that maybe they are traumatized or maybe they went through some issues or maybe they are just not ready for that right now. It's not like they don't need to know the information, they do . . . , but sometimes other people might just have problems with that, they feel uncomfortable or they are just not ready to go through that stage for what their past experience might have been especially if it just happened to them.

Participant 2 [P2]: It's a lot of people that have been, you know, abused or something like that that need to talk about it, because sometimes that can make a person who has been abused, that could make a person go towards sex . . . and make them come to be like that, but they shouldn't be talking about that. . . .

P1: In an open discussion, I don't think so, not in an open discussion with a lot of people.

In other words, participants explained that people's comfort with discussing sexual topics may stem from the possibility of a history of violence or trauma or general lack of readiness, which should take priority over the need to learn communication and STI or HIV risks even though they considered that women who have been abused may be particularly likely to engage in sexual risk behaviors. Participants indicated that this was an advantage of the text-message-based intervention: "Like if a person don't really talk as much and, or if they really, you know, respond better by writing things down, then it's easier for them to do a text messaging besides them being in a group that's talking."

Group social stigma. The biggest risk that participants perceived in the group-based intervention was the risk of being judged by others due to their sexual experiences, which might also lead participants to disengage with the group intervention:

> They might not want to express themselves because of what people will judge them by especially when you are young and people judge you as fast, being a ho, or not carrying yourself like a young lady should be carrying yourself.

Participants described how the process of discussing sexual topics in a group, although beneficial in learning from others, carries a risk of "exposure." As one participant explained,

> It's just in a special group with all females even though they don't know each other they can, they can open up, but not too much to where they just expose themselves to strangers, but I think it will be good to happen.

Community social stigma and privacy. The idea of "exposure" was applied to the other members of the group-based intervention and to exposure of personal information to others in the community outside of the group. Concerns regarding social stigma went beyond experiences within the intervention group to the risks of others knowing that one was participating in an HIV prevention intervention. This was of specific concern for the group format modality due to the lack of anonymity. A recurring theme was that the city in which the research took place was seen as a "small town," where what one said in the group intervention would likely be circulated among the community.

P1: I'd be kind of concerned cause [this city] is a small place.

P2: Yeah that's what I heard.

P3: I feel like after we talk about it here, run to your friends and talk about it and your friends likely to know somebody that know me and get back to me and stuff. I kind of not want that person to be in my business or know what I have been through and stuff like this.

In one focus group, the participants discussed how even agreeing to take part in the intervention might lead to judgment if their friends outside the group found out they were participating:

P1: I mean [friends] just be like 'it's dumb,' but they don't really have a good reason why it's dumb. . . . 'Why you are going there?'
P2: Even though you bring it up to your friends they are going to see you different and they will start to judge you and you can have a fear of losing your friends just over something like that. . . . They will judge you and stop talking to you."

One participant discussed how having to find childcare, in addition to being a practical barrier to the group intervention, might also lead to questions from friends or others in her community:

> I've got to go pay this girl to watch my kids so I can come here for 2 hours. [And she might say], 'What is this really about?' . . . 'What do you have to do that is so important that you have to leave your child with me for 2 hours?' . . . That's when the judging comes in.

Privacy fears were not as salient for the text message modality. Many participants mentioned that they locked their phones with passwords. Participants did, however, see the potential for misunderstandings if the text messages were seen by a romantic partner: "Unless you have an obsessive boyfriend or girlfriend and . . . they are clueless and jump to conclusions and think it's from someone else. Especially if you [have] trust issues, that's all you think: 'Who was that?'" For the most part, however, participants were not overly concerned with others seeing the study text messages, even sexual or romantic partners: "I don't have to worry about nobody going through my phone but if I had that type of boyfriend that goes through it and he's not an understand[ing] person then I would delete it."

Modality Preferences

Many participants indicated both risks and benefits to both interventions, without a clear preference for modality, whereas others expressed clear preferences:

F: What did you like more about the [group-based intervention] than the [text message-based program]?
P1: You actually got to hear other people's opinions. . . . To hear other people's judgments on it. And you might not want to be judged, but you are not really getting judged, like I said, [it's] hearing other people's opinions. So I like the group thing better than the texting. And the texting [is] convenient but the group thing is, you know, hearing how other people think and how everybody has their own opinion.
P2: Well I like the [group-based] way better as well 'cause you get to collaborate and see people different viewpoints of the subject but the second one is more convenient in my case. Both is good to me.

Participants who preferred the text-message-based intervention indicated that it was more convenient and more private, allowing them to avoid feeling stigmatized: "Because I don't have worry about nobody in my face judging you or I'm telling my situation about some[thing] private and you all are looking at me different." In addition, some participants felt as though the ubiquity and convenience of text messaging might contribute to more benefit to the community overall:

F: How much do you think your community and people like you could benefit from the intervention [using text messages].
P1: They could benefit a lot 'cause everybody texts nowadays I think.

P2: They text more than they talk yeah. . . . Like if you do the group nobody is going to come.
P1: They would rather text than come.

Discussion

In summary, the major benefit of the group-based intervention was the ability to talk with and learn from others who may have had similar experiences and could provide real-world examples for negotiating sexual safety. The benefits of the text-message-based intervention revolved around the convenience and ubiquity of text messaging, avoidance of negative social judgments by group members, and greater privacy protections afforded by passwords and personal control of the mobile phone. The weight participants gave to these concerns seemed to drive their modality preferences, or contributed to seeing equal merit in both. These results were somewhat surprising, as we expected greater levels of concern with privacy of cell phones and security of confidentiality within this modality due to the concerns raised within the research community. In response to the discussion of the simultaneous risks and benefits of sharing personal and perhaps sensitive information with others in a group-based intervention, one focus group participant spontaneously suggested building a chat room feature into the text-message-based intervention, which would allow for participants to share experiences and insights while still preserving their anonymity.

Participating in the intervention was seen as a potentially stigmatized behavior, and within the group-based intervention, sexual experiences were seen as potentially stigmatizing as well. There is precedent for considering the impact of stigma in intervention implementation, as Sengupta and colleagues described various ways that HIV stigma is conceptualized and how this may affect implementation of interventions in rural communities (Sengupta et al., 2010). Stigma is often characterized as a multifaceted construct, including enacted stigma, which deals with the behaviors of others, and felt stigma, which deals with one's own expectations of others' negative reactions (Herek, 2007; Van Brakel, 2006). More specifically, enacted stigma is similar to discrimination, or how others treat one differently due to the stigmatizing attribute. Perceived or felt stigma involves the fear of such negative attitudes or behaviors from others and how this may affect individuals' actions as a result of this fear. Our results indicated that potential participants in interventions (perhaps regardless of modality) may experience community-level felt stigma, or fears of judgment from others, and anticipated enacted stigma, or negative consequences such as dissolution of friendships due to participating in a sexual health intervention. Within the group-based intervention specifically, potential participants may also experience group-level felt stigma due to what they might share with the group members about their sexual experiences. The effects of stigma played out in the group-based intervention because of a lack of anonymity. This lack of anonymity not only included the possibility of knowing other participants within the intervention group but also extended to the community beyond through individuals sharing information learned about others within the group. Therefore, our quantitative study included several measures of these stigma-related risks in addition to benefits of convenience and learning and sharing with others, owning a cell phone, and other practical consideration.

STUDY 2

The goal of Study 2 was to develop and administer a questionnaire constructed from focus group themes that could generate quantitative data on predictors of willingness to participate in sexual

health interventions and modality preferences for group versus text-messaging interventions for enhancing sexual negotiation skills. A central theme of Study 1 results concerned the stigmatized nature of sexual topics in general, as well as programs or interventions designed to address sexual topics specifically, which especially impacted the perceived risks of participating in the face-to-face, group-based intervention. We therefore aimed to capture several facets of the stigmatizing nature of participating in sexual health interventions, both within the group itself and within the larger community, including anonymity (or lack thereof), felt stigma of participating in the intervention, anticipated enacted stigma as a result of participating in the intervention, and comfort with sexual topics discussed in the intervention. The complementary benefit of the group-based intervention, however, emphasized the ability to learn from others, echoing results of previous research (Cornelius et al., 2012). These constructs, along with convenience and other practical considerations such as transportation, childcare, mobile phone use and privacy, formed the focus of the Study 2 assessment. Therefore, the first author wrote questions to encapsulate these constructs, informed by language used in the focus groups, and were shared with the second author to check for face validity.

We hypothesized that participant assessments would parallel focus group preferences endorsing greater convenience in the text-message-based intervention, more concerns with stigma-related concepts in the group-based intervention, and greater endorsement of the benefit of sharing experiences regarding the group-based intervention. We hypothesized that willingness to participate in the group-based intervention would be predicted by the risks encompassing privacy (or lack thereof) within the intervention group, as well as felt and anticipated enacted stigma associated with participating in the intervention from friends and the community, and potential discomfort with discussing sexual topics (both within the group and in general); benefits of sharing and learning from others in the group; and practical considerations of transportation, childcare difficulties, and anticipated enjoyment of the intervention. We hypothesized that willingness to participate in the text-message-based intervention would be predicted less by constructs related to stigma and more by overall convenience and anticipated enjoyment of the program, as well as cell phone use and privacy. Finally, we hypothesized that variables that significantly predicted willingness to participate in the interventions would also predict intervention preference. Exploratory analyses also examined the acceptability of a chat room feature added to the text message-based intervention.

Method

Participants

African American women ($N = 102$) between the ages of 18 and 25 were recruited from the same STI waiting room as in Study 1 to complete a survey using Audio Computer Assisted Self Interviewing technology. Procedures for recruitment and eligibility criteria were the same as Study 1 but expanded to include posters and cards distributed to clients in the waiting room with a study phone number to call if interested, and some potential participants were screened over the phone and scheduled for a time to complete the survey at the clinic. No contact information was gathered from participants, as participants completed the survey immediately after providing informed consent or were scheduled immediately after screening and provided informed consent during their scheduled time.

Procedures

All stimuli and measures were presented using Audio Computer Assisted Self Interviewing technology. Participants first answered demographic variables and assessments of cell phone use. Next, participants were presented with the storyboard of either the group or text-delivered intervention just described. Participants then completed measures referring to that intervention. Next, the second storyboard was delivered, followed by measures referring to that intervention. Measures included items asked of both interventions, and items unique to each modality. Order of presentation and the associated items was randomly assigned, and both storyboards were narrated. Finally, participants completed general questions about both interventions, including preference for intervention modality. Surveys lasted between 45 and 60 min, and participants were compensated with a $20 stipend for their time and travel expenses. All procedures were approved by the Medical College of Wisconsin IRB.

Measures

Demographics. Participants were asked to indicate age, race, ethnicity, monthly income, if they had children, and if so how many.

Cell phone variables. To assess *cell phone use*, participants were asked if they owned their own cell phone; if so, if they had a contract or a prepaid/pay-as-you-go plan; and if they had a smartphone. *Text message use* was assessed by asking, "If you had to guess, how many texts do you usually send in a day?" (open-ended).

General risk–benefit questionnaire. A 25-item questionnaire was constructed drawing on the focus group themes and participant statements. For all variables using multiple items, averages across items were calculated and used in analysis. Items were responded to using 5-point Likert-type scales with response anchors *not at all, somewhat*, and *very* (with a few exceptions indicated next). Using the same items described in this section, one part of the questionnaire was devoted to the group-based intervention and the other part to the text-message-based intervention. The questionnaire was presented to participants immediately after the appropriate storyboard was presented and began with the instructions, "Please think about the program that was just described to you and answer the following questions specifically about that program."

Lack of social privacy was assessed with five questions about how likely various groups would find out what the participant said or texted during the time they participated in the program: "someone you didn't know," "someone in your neighborhood," "a friend of yours," "your boyfriend or sexual partner," "your parents or family members." *Felt stigma* was assessed with five questions asking how uncomfortable participants would be if the aforementioned five groups of people found out about what the participant said or texted during the program. *Anticipated enacted stigma* was initially assessed with three questions asking how much friends would think participating in the program (a) would be a good use of time (reverse scored), (b) would be unusual or "weird," or (c) would "judge" participants for participating in the program (response anchors on 1-to-5 Likert scale: *not at all, somewhat, a lot*). However, reliability analysis indicated that the first question was negatively and nonsignificantly associated with the other two variables for the face-to-face scale and was dropped from both scales to maintain consistency

across modality. *Comfort with sexual topics in the intervention* was assessed with four questions: "How much would talking/texting about sexual experiences be personally difficult for you?" (reverse scored), "How comfortable are you with talking/texting about sexual experiences in general?" "How comfortable would you be to tell the truth about your sexual attitudes and behaviors during the program?" and "How comfortable would you be expressing yourself and sharing your experiences in the program?" *Convenience* was originally assessed with two questions: "How difficult would it be for you to make time in your schedule to participate in the program?" (reverse scored) and "How convenient would it be for you to participate in the program?" However, these two items were not significantly correlated; therefore, only the latter question was retained for analyses. *Benefit of sharing experiences* was assessed with two questions: "Talking/texting about my sexual experiences would be something I could benefit from" and "Talking/texting about by sexual experiences would be something that I just wouldn't want to do" (reverse scored), with response options *strongly disagree, disagree, neither agree nor disagree, agree*, and *strongly agree. Teach others* was assessed with three questions about how likely participants would be to share what they learned from the program with their friends, family members, and boyfriend or sexual partners. *Enjoyment of the intervention* was assessed with two questions: "How much would you enjoy learning about the different types of communication styles in this way?" and "How much would you enjoy role-playing the different communication styles in this way?" (response anchors on 1-to-5 Likert scale: *not at all, somewhat, a lot*).

Items specific to the group-based intervention. Twelve additional items were developed to assess group specific experiences and were asked only after the presentation of the group-based storyboard. *Lack of anonymity* was assessed with four questions asking how likely participants would know someone in the small, face-to-face group, that the other participants would know people in their neighborhood and would talk to other people about what was said in the group, and how uncomfortable they would be if that happened. *Group comfort* was assessed with two questions: "How likely is it that you would share your experiences in the group?" and "How comfortable would you be with discussing your sexual experiences in the group?" *Shyness* was assessed with one question: "How comfortable are you talking in groups of people you don't know, in general?" *Learn from others* was assessed with agreement with three statements about how much participants would enjoy, benefit from, and learn from other women in the group sharing their experiences with response options *strongly disagree, disagree, neither agree nor disagree, agree*, and *strongly agree. Childcare difficulties* was assessed with one question: "How difficult would it be for you to arrange for someone to watch your children while you participated in the program?" This question was asked of all participants, even those who did not report having children of their own, as participants may still be responsible for younger members of their families. *Transportation difficulties* was assessed with one question: "How difficult would it be for you to arrange for transportation to participate in the program?"

Items specific to the text message-based intervention. Four additional items were developed to assess text-message-specific experiences and were presented only after the text-message-based storyboard. *Intrusiveness* was assessed with two questions: "How much would receiving the text messages bother you?" and "How likely would you be to ignore the program's texts?" *Texting privacy* was assessed with one question: "How likely is it that someone else would read the program texts and respond themselves?" *Comfort with texting about sexual topics in*

general was assessed with one question: "How comfortable are you with texting about sexual experiences in general?"

Willingness to participate and modality preferences. Two questions indicated level of interest and comfort in participating in each of the interventions (1–5 Likert scales with response anchors *not at all, somewhat*, and *very*). These were averaged to obtain a score on *Willingness to participate in the intervention*. Preference for intervention medium was measured with the forced-choice dichotomous outcome question: "Which program would you prefer to participate in if you could only pick one?" ("Face-to-face in a small group" or "With text messaging").

Chat room variables. To conduct exploratory analyses regarding the potential addition of a chat room feature to the text-message-based intervention, variables were included to gauge participants' interest in such a chat room feature, as well as potential correlates of interest in the chat room based on the risks and benefits suggested. Correlates assessed included how much participants anticipated that they would be honest in talking about their sexual experiences, how much they could learn from other people in the chat room, how much they would enjoy listening to others' sexual experiences in the chat room, how much others would be judging them in the chat room, and the likelihood that someone in the chat room would figure out who they were.

Results

Data Analysis Plan

First, variables that were asked of both types of modality were compared using paired t tests. Next, bivariate associations of willingness to participate in each of the interventions were assessed with correlations with variables assessed of each modality, as well as the modality-specific variables. For the dichotomous variable of phone ownership, a between-subjects t test was used to assess association with willingness to participate. Those associations significant at the $p < .05$ level were retained for linear regression analyses predicting willingness to participate in each of the interventions. Variables remaining significant in the linear regressions were used in a logistic regression to predict dichotomous intervention preference. Descriptive analyses of interest in a chat room feature were assessed, and interest was correlated with hypothesized associated variables.

Demographic and Phone Use Data

Participants were, on average, 21 years old (range = 18–25). All participants indicated Black/African American race except one, who did not provide an answer to race, although all participants had been previously screened for Black/African American race. Participants were allowed to check multiple categories for race, and 5% also indicated White, 2% indicated American Indian/Alaska Native, and 2% indicated Native Hawaiian/Other Pacific Islander. In addition, 4% indicated Hispanic or Latina ethnicity. Slightly less than half (42%) had children. Of those, most had one or two children (60% and 22%); the range was up to five children. Almost one third (34%) indicated no monthly income, which was the modal response (M = \$553/month, Mdn = \$500/month). The majority of participants (89%) owned their own mobile phone, and

of those, 25% had a contract with their mobile phone carrier, and 67% owned a smartphone. Participants varied in their text message use, with estimates of number of text messages sent in a day ranging from three to 100,000, including six participants who reported sending 1,000 or more messages a day. Among those who reported fewer than 1,000 sent messages per day, the median number was 80 ($M = 124.58$, Mode = 100)

Differences Between Modalities

Means and standard deviations for each variable (by intervention modality where appropriate) are provided in Table 1, as well as reliability estimates for scales. Paired *t* tests used to compare perceptions of the risks and benefits of participating in the two intervention modalities are also presented in Table 1. The perceived benefit of sharing experiences with others was greater for the

TABLE 1
Means, Standard Deviations, and Cronbach's Alpha or Correlations Between Items for Risk/Benefit and Intervention-Specific Variables, With Paired *t* tests Comparing Risks, Benefits, and Willingness Between Intervention Modalities

	Group-Based M (SD)	*Group-Based* α/r[a]	*Text-Message-Based M (SD)*	*Text Message-Based* α/r[a]	t
General risk/benefit variables					
Felt stigma	1.97 (1.03)	.84	2.01 (1.07)	.87	*ns*
Anticipated enacted stigma	2.12 (1.10)	.47	2.06 (1.12)	.61	*ns*
Lack of social privacy	2.17 (.98)	.79	1.98 (.97)	.83	2.07*
Comfort with sexual topics in the intervention	3.86 (.88)	.65	3.74 (.97)	.73	*ns*
Sharing experiences	3.56 (.94)	.25	3.37 (.85)	.02	2.29*
Teach others	3.37 (1.02)	.61	3.28 (1.06)	.61	*ns*
Convenience	3.12 (1.22)	—	3.19 (1.22)	—	*ns*
Anticipated enjoyment of the intervention	3.75 (1.06)	.47	3.73 (1.05)	.36	*ns*
Willingness to participate in the intervention	3.71 (1.19)	.73	3.92 (1.10)	.70	−1.75†
Group-based intervention variables					
Lack of anonymity	2.68 (.89)	.62			
Group comfort	3.32 (1.11)	.34			
Learn from others	3.94 (.89)	.86			
Shyness	2.82 (1.23)	—			
Transportation difficulties	2.02 (1.23)	—			
Childcare difficulties	1.89 (1.22)	—			
Text message-based intervention variables					
Intrusiveness			1.92 (1.12)	.66	
Texting privacy			1.85 (1.19)	—	
Comfort with texting about sexual topics in general			2.82 (1.24)	—	

Note. All variables measures on 5-point scales.

[a]Correlations were calculated between items on the two-item scales: Anticipated Enacted Stigma, Sharing Experiences, Anticipated Enjoyment of the Intervention, Group Comfort, Intrusiveness.

†$p < .10$. *$p < .05$.

group-based intervention, and the lack of social privacy was endorsed more in the text-message-based intervention. There were no other significant differences between risks and benefits of the two interventions. In terms of willingness to participate in the interventions, there was a trend toward significance for higher willingness in the text-message-based intervention than the group-based intervention. In addition, participants were nearly equally split in preference for intervention medium, with 56% of participants preferring the text-message-based intervention, $\chi^2(1, N = 101) = 1.67$, *ns*.

Willingness to Participate in the Group-Based Intervention

See Table 2 for significant correlations with willingness to participate in the group-based intervention. Demographic variables of age and having children were not significantly associated with willingness to participate in the group-based intervention. Monthly income (log transformed to adjust for skew) was significantly correlated with willingness to participate in the group-based intervention. Risk/benefit variables significantly correlated with level of willingness to participate in the group-based intervention included convenience, the likelihood of teaching others, comfort with sexual topics in the intervention, anticipated enjoyment of the intervention, perceived benefit of sharing experiences in the intervention, group comfort, being able to learn from others, felt stigma, and difficulty with transportation. Difficulty with childcare was marginally significantly correlated with willingness to participate. Of interest, those who had children reported only marginally higher levels of difficulty with childcare ($M = 2.09$, $SD = 1.17$) than those who did not ($M = 1.63$, $SD = 1.63$), $t(99) = 1.88$, $p = .06$. Monthly income (log-transformed) and the significant risk/benefit variables were entered simultaneously into a linear regression predicting

TABLE 2
Significant Correlations With Willingness to Participate in the Group-Based Intervention and the Text Message-Based Intervention

	Willingness to Participate in the Group-Based Intervention r*(100)*	*Willingness to Participate in the Text Message-Based Intervention* r*(101)*
Monthly income (log-transformed)	.22*	*ns*
Convenience	.38***	.38***
Teach others	.32**	.36***
Comfort with sexual topics in the intervention	.43***	.60***
Anticipated enjoyment of the intervention	.71***	.67***
Sharing experiences	.47***	.39***
Felt stigma	−.35***	*ns*
Group comfort	.49***	—
Learn from others	.46***	—
Transportation difficulties	−.27**	—
Childcare difficulties	−.19†	—
Comfort with texting about sexual topics in general	—	.31**
Intrusiveness	—	−.32**
Texting privacy	—	−.26*

†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

TABLE 3
Linear Regressions Predicting Willingness to Participate in the Group-Based Intervention[a] and the Text Message-Based Intervention[b]

	R^2	*F Change*	*β*	t
Group-based intervention	.64	15.97***		
Monthly income			.15	2.14*
Felt stigma			−.20	−2.53*
Group comfort			.12	*ns*
Comfort with sexual topics in the intervention			−.05	*ns*
Sharing experiences			.08	*ns*
Learn from others			.09	*ns*
Teach others			.07	*ns*
Convenience			.14	1.97†
Transportation difficulties			.02	*ns*
Anticipated enjoyment of the intervention			.49	5.45***
Text message-based intervention	.62	16.37***		
Comfort with sexual topics in the intervention			.36	3.46***
Comfort with general texting about sexual topics			−.04	*ns*
Sharing experiences			−.002	*ns*
Teach Others			.02	*ns*
Convenience			.21	2.94**
Intrusiveness			−.08	*ns*
Texting privacy			.05	*ns*
Own phone			−.10	*ns*
Anticipated enjoyment of the intervention			.41	4.99***

[a]Durbin-Watson = 2.03. [b]Durbin-Watson = 1.93.
†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

willingness to participate in the group-based intervention. The full model R^2 explained 64.0% of the variance (adjusted $R^2 = .60$) in willingness to participate, and ranges of tolerance (.50–.87) and variance inflation factor (1.27–2.02) were acceptable. Beta values indicated that income, felt stigma, and anticipated enjoyment of the intervention continued to significantly contribute to willingness to participate when other variables were held constant; see Table 3. There was also a trend toward significance for convenience.

Willingness to Participate in the Text Message-Based Intervention

See Table 2 for significant correlations with willingness to participate in the text-message-based intervention. Degrees of freedom differ based on one participant with missing data. Demographic variables of age, having children, and monthly income (log transformed) were not significantly associated with willingness to participate in the text-message-based intervention. Participants who owned their own phone reported higher willingness to participate ($M = 4.00$, $SD = 1.05$) than those who did not ($M = 3.05$, $SD = 1.27$), $t(100) = 2.78$, $p < .001$. Number of text messages sent per day (log transformed to adjust for skew) was not associated with willingness to participate. Risk/benefit variables significantly correlated with willingness to participate in the text-messaging intervention included teaching the material to others, comfort with sexual

topics in the intervention, anticipated enjoyment of the intervention, convenience, comfort with texting about sexual topics in general, benefit of sharing experiences with texts, intrusiveness, and lack of texting privacy. The significant risk/benefit variables, along with owning one's own phone were entered simultaneously into a linear regression predicting willingness to participate in the text-message-based intervention. The full model R^2 explained 61.8% of the variance (Adjusted $R^2 = .58$) in willingness to participate, and ranges of tolerance (.38–.81) and variance inflation factor (1.18–2.63) were acceptable. Beta values indicated that comfort with sexual topics in the intervention, anticipated enjoyment of the intervention, and convenience continued to significantly contribute to willingness to participate when other variables were held constant; see Table 3.

Modality Preference

Income (log transformed), felt stigma in the group-based intervention, comfort with sexual topics in the text message-based intervention, and the difference between anticipated enjoyment and convenience of the two intervention modalities were used to predict dichotomous intervention preference. The model was not statistically significant.

Chat Room Interest

Even though a chat room feature was not included in the storyboard presentation of the text-message-based intervention, exploratory analysis indicated a moderate level of interest in this feature ($M = 2.92$, $SD = 1.35$ on a 5-point Likert scale), and level of interest was significantly correlated with how much participants anticipated that they would be honest in talking about their sexual experiences, $r(101) = .34$, $p < .001$; how much they could learn from other people, $r(101) = .34$, $p < .001$; enjoyment in listening to others' sexual experiences, $r(101) = .29$, $p < .01$; and how much others would be judging them, negatively, $r(101) = –.20$, $p < .05$; but did not correlate with likelihood someone in the chat room would figure out who they were, $r(101) = .004$, *ns*.

Discussion

Among young African American women at risk for STIs, there was not a clear preference for intervention modality used to deliver intervention content regarding sexual safety negotiation, as approximately equal numbers of participants indicated a preference for the face-to-face, group-based intervention as did for the text-message-based intervention. In addition, participants did not significantly differ in terms of willingness to participate in the two intervention types, although trends in the data suggest the possibility of greater willingness for the text-message-delivered intervention. Direct comparisons of the different risks and benefits of both interventions somewhat confirmed hypotheses generated from the qualitative phase. The group-based intervention demonstrated greater benefit in the experience of sharing sexual experiences with others, but less social privacy. However, potential differences in felt and anticipated enacted stigma suggested by qualitative data were not confirmed in quantitative data, suggesting that participating in either

intervention could be equally stigmatizing, but these effects may be more likely in the group-based intervention given the lack of privacy inherent in face-to-face groups. Also, surprisingly, the text-message-based intervention was not seen as more convenient.

Regarding the group-based intervention in particular, some of the hypothesized risks (decreased convenience, transportation and childcare difficulties, lack of comfort with discussing sexual topics in a group, lack of comfort in the group, and felt stigma) and benefits (being able to share sexual experiences in a group, teaching others what was learned in the intervention, learning from others in the intervention, and enjoyment of the intervention) suggested by the qualitative data were implicated in willingness to participate. Of interest, income may factor into willingness to participate in group-based interventions, potentially due specifically to costs (as opposed to, or in addition to, the inconvenience) of childcare or transportation. Other risks expected to be associated with willingness to participate in the group-based intervention (the lack of social privacy, anticipated enacted stigma, lack of anonymity, and shyness) were not. These findings suggests that although the group-based medium of intervention delivery may be less private, only the level of discomfort with this lack of privacy, or felt stigma, will drive willingness to participate in these types of interventions, in addition to practical concerns of childcare and transportation. Despite the many significant correlations between risks and benefits with willingness to participate in the group-based intervention, regression analysis suggested that income, felt stigma, and anticipated enjoyment may particularly influence one's decision whether to participate in a face-to-face, group-based intervention, with possible effects of convenience.

Many of the hypothesized risks of the text-message-based intervention suggested by the qualitative research were associated with willingness to participate (lack of comfort with texting about sexual topics in general and within the intervention, intrusiveness, someone else seeing and responding to the intervention texts), as well as many hypothesized benefits (convenience, enjoyment of the intervention, sharing sexual experiences through texts). Also, unsurprisingly, women who owned their own phone were more willing to participate in a text-message-based intervention. These findings suggesting that issues of stigma are not a factor in willingness to participate in a text-message-based intervention except to the extent that the intervention text messages themselves may be too intrusive or read by others. Again, although many hypothesized risks and benefits correlated significantly with willingness to participate in the text-message-based intervention, regression analysis suggested that how much participants believe they will enjoy the intervention, how comfortable they are with texting about their sexual experiences within the intervention, and how convenient the intervention is perceived may particularly influence one's decision whether to participate in a text-message-based intervention. Finally, although some risks and benefits were implicated in how willing potential participants would be to participate in either a group-based or text-message-based intervention, surprisingly none of these hypothesized risks or benefits were implicated in a choice of intervention modality.

Participants in the qualitative phase of the research suggested a chat room feature of the text-message-based intervention. Even though a chat room feature was not included in the storyboard presentation of the text-message-based intervention, exploratory analysis indicated a moderate level of interest in this feature. Interest may be determined by perceptions of being able to learn from others' experiences and not feel judged.

GENERAL DISCUSSION

Both qualitative and quantitative results indicated that mHealth interventions can be more convenient for participants and mitigate the greater risk of potential social stigma associated with face-to-face interventions. However, the risks and benefits associated with participating in a group-based intervention did not dissuade half of potential participants from choosing that intervention delivery medium over a more private text-message-based delivery medium. Yet, without a forum for discussion among participants, text-message-based interventions may lack the important benefit of sharing sexual experiences with others that provide critical, real-world examples of sexual negotiation. Building more interactive technological tools such as chat rooms that are accessible by mobile phones or phone applications participants can download directly onto smartphones may be the solution to balance this mix of risks and benefits.

It should be mentioned that in the first session of the traditional, face-to-face SISTA intervention participants agree upon "ground rules" for the group to follow, including maintaining the confidentiality of other participants outside of the group sessions, which was not presented in the storyboards in either the quantitative or qualitative phase and was discussed only in one focus group of the qualitative phase. These ground rules may mitigate the potential participants' perceived risk of lack of social privacy and may limit the external validity of this research as related specifically to the SISTA intervention or similar interventions that establish such ground rules. Future researchers could consider including these ground rules in the informed consent process. When discussed in the focus group in Study 1, however, participants still expressed ambivalence and uncertainty if such rules would be followed by all participants, indicating that establishment of ground rules may not assuage concerns of this perceived risk.

Other potential limitations include the lack of counterbalancing for order in presentation of storyboards in Study 1, as all participants were exposed to the group-based intervention storyboard first (although order was counterbalanced in Study 2). Also, it is possible that some of the Study 1 participants may also have participated in Study 2, as previous participation was not included in eligibility screening for Study 2. Finally, storyboards in both studies presumed that the participants would not know each other; however, many SISTA facilitators may seek out groups of friends to participate together. Although this may presumably mitigate some of the discomfort with sharing personal information, our qualitative findings indicate that friends' stigmatizing attitudes toward participating in discussions around safer sex may contribute to recruitment challenges, or may even exacerbate discomfort with sharing sexual attitudes and experiences. Researchers interested in delivering interventions within small groups should be thoughtful about whether to recruit participants who do not know each other, or within social networks depending on the intervention content, the degree of stigmatization of behaviors discussed, and the heterogeneity of attitudes toward sexual topics within friendship groups.

Although IRBs may be wary of interventions delivered using nontraditional modalities, respect for persons dictates that well-informed potential participants have the right to weigh the risks and benefits themselves. However, to ensure the highest level of informed consent, researchers need to be well versed in the risks and benefits associated with not only the modality of the intervention, and the content itself, but how these may interact. For example, our research suggests that although felt stigma may be experienced just by participating in sexual health interventions, the lack of anonymity inherent in a face-to-face intervention enhances the importance of this risk. Therefore, including information within informed consent procedures regarding the ground rules that will be discussed in the intervention allows participants to make a more fully informed

decision, even though it cannot completely prevent risks. Our research also shows that direct participant perspectives are necessary to fully maximize risk and benefit ratio, incumbent to all researchers in order to conduct ethically sound research in accordance with the principle of beneficence. In particular, the potential privacy and confidentiality risks of mHealth often cited by researchers were not particularly salient to the potential participants, yet the importance of being able to learn from others, was reiterated by our participants as a direct benefit that should be considered in mHealth interventions. Again, these are considerations that can be included in informed consent procedures, which ensure respect for persons by relying on potential participants' autonomy.

Use of nontraditional technologies for intervention delivery also raises the issue of sustainability and dissemination. With shrinking budgets, community-based organizations, AIDS Service Organizations, and local health departments may be looking for ways to increase the reach of interventions, which may include use of technologies to deliver existing interventions. Therefore, our research has implications not only for potential participants of SISTA and other sexual health interventions but also for other interventions aimed at decreasing future transmission risks of people living with HIV, increasing engagement in medical care, and antiretroviral medication adherence, which also carry threats of stigma for participating. Intervention developers interested in harnessing the ubiquity of technology for delivery of intervention content need to be conscious and sensitive to the potential for distinct risks and benefits of intervention medium, even if intended content is quite similar. Although these results indicate that such risks and benefits, at least in reference to text messaging, would not affect preference for intervention medium, they may affect how willing participants would be to participate if not given a choice. Therefore, when adapting interventions for technological dissemination, even if content is quite similar, formative research is necessary. Alternatively, when developing interventions specifically designed for use with new technologies, formative research should also include consideration of the potential unique risks and benefits of its use, as technology use still occurs within social contexts of friendships and communities.

CONCLUSIONS

As technology continues to develop and change rapidly, elicitation research specifically probing for particular risks and benefits inherent in the intervention modality itself, and the interactive effects of modality and content can increase successful uptake by potential participants and is necessary for ethically sound research. Although IRBs may be wary of interventions delivered using nontraditional modalities, as the inherent risks cannot be eliminated, respect for persons dictates that well-informed potential participants have the right to weigh the risks and benefits themselves, and this type of research can ensure the inclusion of the necessary components of informed consent and provide guidance on the best ways to maximize benefits and minimize risks.

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