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HEALTH INFOR[M-ED]: Black College Females Discuss a Virtual Reality (VR) Platform for Sexual Health Education and Training

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HEALTH INFOR[M-ED]: Black College Females Discuss a Virtual Reality (VR) Platform for Sexual Health Education & Training

by

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of the requirements for the degree of
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DEDICATION

The Man in the Arena

"It is not the critic who counts; not the man who points out how the strong man stumbles, or where the doer of deeds could have done them better. The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood; who strives valiantly; who errs, who comes short again and again, because there is no effort without error and shortcoming; but who does actually strive to do the deeds; who knows great enthusiasms, the great devotions; who spends himself in a worthy cause; who at the best knows in the end the triumph of high achievement, and who at the worst, if he fails, at least fails while daring greatly, so that his place shall never be with those cold and timid souls who neither know victory nor defeat."

– An excerpt from "Citizens in a Republic"
Theodore Roosevelt

This thesis is dedicated to my loving and devoted family, friends, and inspirational guides. To each study participant – who shared of their lives (and allowed me to do the same) - your generous contributions to this research will be forever remembered; thank you.

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ABSTRACT

Background: College settings are likely environments for Black women to contract STIs (including HIV) or experience unintentional/unwanted pregnancies. Effective prevention strategies for this population include dialogue and activities that focus on gender, maturity, cultural barriers, personal strength, and information needs. However, technological advancements (including virtual reality) and innovation are limited in prevention efforts.

Methods: Four 90-minute focus group sessions were conducted in a convenience sample of Black college females (ages 18 years or older) and a research-intensive public institution in the southeast. A series of surveys were distributed during each audio-recorded focus group session. A mixed-method approach to data analysis was based on applications of the Health Belief Model constructs to three principal research questions: (1) Q1: How do Black college females perceive the importance of sexual risk topics? (2) What are the experiences and attitudes of Black college females regarding the use of VR for education and training versus video game entertainment (i.e. "gaming)? and (3) Among Black college females, what sexual risk topics are considered most relevant to a VR education and training platform?

Results: Each of four study cohorts enrolled between 2-6 participants each (n=15). Participant ages ranged from 18-48 ($\bar{x}$=28.6, σ=9.2) years within age groups of 18-24 years (60%, n=9), 25-34 years (26.7%, n=4), and 35 years or above (13.3%, n=2). The majority of participants (86.7%, n=13) were enrolled as full-time students, and resided in various off-campus locations (73.3%;

n=11). Assessments of sexual risk topic importance were reported based on aggregated Survey 1 Lickert scale values. The majority of participants equally viewed the topics of HIV and STI status as important, mostly important, or very important. Other notable concerns include sex with drug/alcohol use, risk of intimate partner violence, and sexual communication (e.g. partners and peers. Despite the lack of formal virtual reality knowledge, the majority of participants reported experience with VF technology via "gaming" (e.g. *SIMS*). They also concluded that a virtual reality platform for sexual health education and training should involve comprehensive approaches to HIV/STI and unintentional pregnancy via use of barrier methods, including birth control, as well as facilitation of sexual communication.

Discussion: This research represents a unique approach to the identification of sexual health risk importance for HIV/STI transmission, as well as unintentional pregnancy, in Black college females. Although a successful demonstration of feasibility, this research is formative in nature – results should be interpreted as preliminary. However, methods and concepts presented in this thesis hold the potential for scientific contribution in prevention research, clinical practice, and other fields of study.

CHAPTER I:

INTRODUCTION

College settings are likely environments for Black women to contract STIs (including HIV) or experience unintentional/unwanted pregnancies (Ferguson et al., 2006; Hou, 2009). Rising HIV infection rates among Black emerging adults (ages 18-34) reflects high probabilities of sexual risk behavior and HIV transmission on US campuses (Hou, 2009; Mongkuo et al., 2012). Emerging data indicate a parallel between HIV disparities in Black college females, and general Black female populations (Bazargan et al., 2000; Brown et al., 2012; Ferguson et al., 2006; Hou, 2009; Mongkuo et al., 2012). There is wide agreement that the society and culture of Black females are integral to understanding HIV risk behavior in this population (Barroso et al., 2014; Ferguson et al., 2006; Gomez, 2011; Morrison-Beedy et al., 2011). With heterosexual intercourse accounting for over 84% of HIV transmission in women (CDC, 2014b, March), risk-reduction strategies for Black college females must include critical dialogue on the dynamics that comprise their sexual engagement.

Consent (active or passive) to multiple/shared partnerships, a predictive variable for HIV/STI infection among all populations, is a noted characteristic of the college environment (Bazargan et al., 2010; Ferguson et al., 2006). Sexual compromise (e.g. impaired or uninitiated condom navigation) may result from a highly exaggerated perception of female-to-male ratios (statistical proportions are nearer to 1.6 females per male) and limited dating availability within

the Historically Black Colleges and Universities (HBCU) environment (El-Bassel, Caldeira, Ruglass, & Gilbert, 2009; Ferguson et al., 2006). However, there is limited literature on the attitudes toward multiple partnerships among Black females at Predominately White Institutions (PWI).

Black female HIV risk behavior, including effective sexual HIV risk assessment, is impacted by the extensive effects of sexual trauma from intimate partner violence (IPV) and sexual coercion/rape (El-Bassel, Caldeira, Ruglass, & Gilbert, 2009; Wingood et al., 2006). Childhood sexual abuse among Black women has been reported as high as 44% (El-Bassel, Caldeira, Ruglass, & Gilbert, 2009). Low self-esteem, conflicted HIV partner communication, and extensive socio-psychological/post-traumatic damage portend greater risk vulnerability (Gomez, 2011; Mittal et al., 2012, Wingood et al., 2006). HIV/STI transmission and other negative health outcomes have also been attributed to gender-based disparities (Wingood, and DiClemente, 2000), including marginalization and economic vulnerability (Gomez, 2011).

Intervention Strategies for Black College Females

Dialogue and activities that focus on gender, maturity, cultural barriers, personal strength, and information needs are effective HIV prevention strategies for this population (Barroso et. al, 2014; Chandler et al., 2013; Danielson et al., 2014; Di Noia, and Schinke, 2007; Gomez, 2011). To address the complexities within Black female sexual risk behavior, intervention strategies often require the use of multiple theoretical frameworks (Barroso et. al, 2014; Chandler et al., 2013; Danielson et al., 2014; Di Noia & Schinke, 2007; Gomez, 2011). Model-based research that explores inter-related mechanisms of Black female HIV risk behavior has resulted in improved HIV prevention efficacy (Di Noia, and Schenke, 2007; Klein, & Card, 2011; Medina,

& Rios, 2011, Wingood et al., 2006), and the identification of new or latent HIV risk behaviors (Bazargan et al., 2012; Danielson et al., 2014; Di Noia & Schenke, 2007; Mittal et al., 2012; Wingood et al., 2006).

Nurturing, supportive social relationships for young adult Black women results in significant improvements in their HIV risk behavior. (Barroso et al., 2014; Chandler et al., 2013; Di Noia & Schinke, 2007; Gomez, 2011). Effective sexual health communication with intimate partners and peers also greatly reduces HIV infection risk among Black college females (Chandler et al., 2013; Gomez, 2011). In the absence of imminent safety concerns, mitigation of unresolved relationship conflicts (e.g. prior sexually coercion) can be achieved through couples-based HIV prevention interventions (El-Bassel, Caldeira, Ruglass, & Gilbert, 2009). *Social Support Theory (SST*) (Cobb, 1976) explains the positive impact of relationships that meet immediate needs (e.g. provide emotional support), as well as promote environmental contexts that facilitate learning and knowledge retention.

Black women are heavily dependent on socio-cultural and environmental support systems (Gomez, 2011). According to Connell (1988), the *Theory of Gender and Power* (TGP) is a socio-political construct that helps shape the role of sexuality in behavior and decision-making. Wingood and DiClemente's (2000) application of this framework in assessment of female HIV vulnerability confer the mitigating effects of gender equality (specifically in the divisions of labor and power) on sexual health risks. Using a sub-cohort from previous research (DiClemente et al., 2004), Wingood and colleagues (2006) also addressed this framework in sexually experienced young adult female victims of gender-based violence. In addition to maintaining original study feasibility, efficacy, and associated risks, findings indicate that this approach

represents a unique opportunity to empower young Black females - a protective factor for HIV risk in this population (Wingood et al., 2006).

Personalized HIV prevention motivation (e.g. self-efficacy, empowerment) exerts the greatest influence on HIV behavioral skills of HBCU students (Mongkuo, Lucas, and Taylor, 2012). These results sharply differ from *Information-Motivation-Behavioral Skills (IMB)* model of AIDS risk behavioral change expected outcomes (Fisher & Fisher, 1992). Arguably a design standard for HIV prevention research, the *IMB* model is one of the most widely utilized frameworks for behavioral modification. Behavioral change preparedness (e.g. motivation for HIV information) does correlate with certain HIV risk predictability in well-researched populations (Bazargan, Kelly, Stein, Husaini, & Bazargan, 2010; Mittal, Senn, & Carey, 2012; Mongkuo, Lucas, & Taylor, 2012). Populations with limited research history do not fully attribute program effectiveness, or the display of unique behaviors, to behavioral preparedness (as the *IMB* model suggests) (Bazargan, Kelly, Stein, Husaini, & Bazargan, 2010; Mittal, Senn, & Carey, 2012; Mongkuo, Lucas, & Taylor, 2012).

Advancing Prevention Research for Black College Females

Prevention research in college and university students continues to gain much-needed attention (Bazargan et al., 2000; Brown et al., 2012; Chandler et al., 2013; Ferguson et al., 2006; Mongkuo et al., 2012). To increase visibility of sexual health risks within their campuses, research initiatives have been launched at both independent and collaborating institutions (El-Bassel, Caldeira, Ruglass, & Gilbert, 2009). However, there is a scarcity of program opportunities that are designed to address the unique challenges of this population's HIV/STI transmission and unintended pregnancy risks.

Black female college students are heavily dependent on the availability of computerized technologies that facilitate information access, programs/activities involvement, knowledge retention, and social support through peer interaction (Chandler et al., 2013; Payton, Kvasny, & Kiwanuka-Tondo, 2014). Incorporating technological advancements, societal interests, and cultural shifts are also important considerations for Black college female HIV prevention and sexual health risk-reduction programs (Barroso et. al, 2014; Chandler et al., 2013; Danielson et al., 2014; Di Noia, and Schinke, 2007; Gomez, 2011).

Virtual reality (VR) platforms that deliver targeted sexual health education and training are not yet implemented in Black college female intervention research. Thus, there exists the potential to expand opportunities for novel investigation of sexual health-related initiatives that address the unique concerns of Black college females. Learning platforms that integrate VR technology may be able to satisfy the technological interests of this population, while simultaneously maintaining (or improving upon) evidence-based practices that are integral to their sexual health. For example, Black females' HIV prevention efficacy is supported by skills training and role-playing exercises for condom use, as well as safer sex negotiation practices (Crepaz et al., 2009). Effective sexual health communication with sexual partners, or peers, also greatly reduces HIV/STI transmission and unintentional pregnancy risks among Black college females (Chandler et al., 2013; Gomez, 2011). Virtual reality simulations that are designed within the context of realistic, communicative environments are among the many capabilities of VR technology. However, there are no existing learning platforms that use these strategies to address sexual health education and training in Black college females.

Purpose and Research Questions

The goal of this project - formally entitled *HEALTH INFOR[M-ED]:* Black College Females Discuss a Virtual Reality (VR) Platform for Sexual Health Education & Training - was to conceptualize the use of VR technology for targeted sexual health education and training in the Black college female population. Specifically, the study sought to answer the following research questions:

Q1: How do Black college females perceive the importance of sexual risk topics?

Q2: What are the experiences and attitudes of Black college females regarding the use of VR for education and training versus video game entertainment (i.e. "gaming)?

Q3: Among Black college females, what sexual risk topics are considered most relevant to a VR education and training platform?

Therefore, I proposed to (a) evaluate relevant sexual risk factors for HIV/STI(s) and unintended pregnancy among Black college female students (b) identify population-specific attitudes toward virtual reality (VR) technology usage in education and training versus "gaming" (c) identify population-specific attitudes, content preferences, and intended use of a conceptualized VR platform that delivers targeted sexual health education and training based on reference video examples that demonstrate VR capabilities.

Theoretical Framework

The *Health Belief Model (HBM*) was the framework employed to investigate sexual health education and training desires for a VR risk-reduction platform specific to Black college females. This study anticipated that intra- and inter-personal factors might affect participation in *HEALTH INFOR[M-ED]* program activities. Prior sexual experiences, personal attitudes toward

sexual health risk seriousness/susceptibility, preferred sexual health education and training content, education delivery methods/learning styles, and study materials were considered.

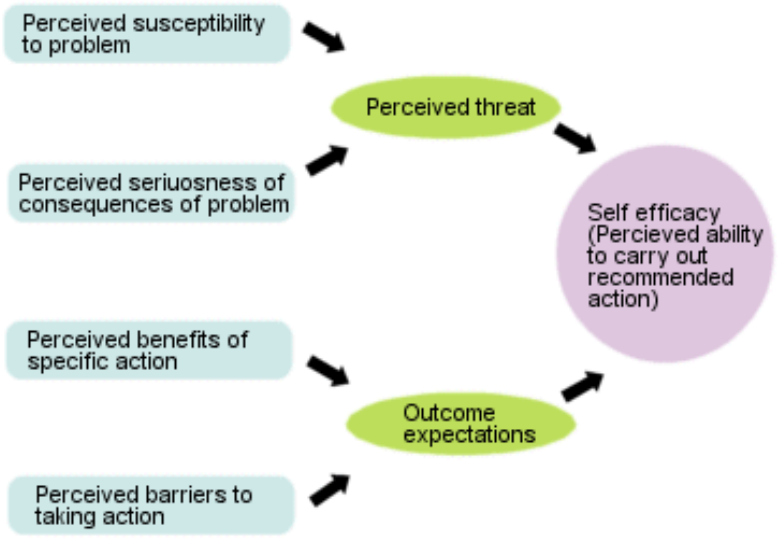

Figure 1: *Health Belief Model*. Adapted from Nutbeam and Harris, 1998. Retrieved from: http://www.ohprs.ca/hp101/mod4/module4c3.htm on June 6, 2015.

CHAPTER II:

RESEARCH METHODOLOGY

Overview

All aspects of this research were approved by the study site's institutional review board (IRB) (See Appendix A1). This exploratory study was implemented by conducting four 90-minute focus group sessions among Black college females (ages 18 years and above) who attended a research-intensive public university in the southeast. To determine risk importance in this population, I evaluated factors for HIV/STI(s) transmission and unintended pregnancy that were identified in prior research (Barroso et. al, 2014; Chandler et al., 2013; Danielson et al., 2014; Di Noia & Schinke, 2007; Gomez, 2011; Klein, & Card, 2011; Medina, & Rios, 2011, Wingood et al., 2006). Additionally, I identified participants' general knowledge, experiences, interests, and purposes for use of VR technology (i.e. "gaming" versus education and/or) training. Furthermore, I identified participant attitudes, content preferences, and intentions toward use of a unique VR platform which they conceptualized in order to serve their sexual health education and training needs. This process was facilitated by providing video demonstrations of VR engagement (e.g. research, education, and training) as references.

Study Design

Population

Inclusion criteria for participation in *HEALTH INFOR[M-ED]* were: a) aged 18 years or older, b) self-identifying Black or African American females, and c) part-time or full-time academic enrollment at a southern research-intensive university. Black college females were targeted because of their significant risk in acquiring HIV and other sexual health-related negative outcomes, as well as the potential impact these study results may have on future sexual health program development in this population.

Recruitment

A recruitment flyer (see Appendix A2) was created to facilitate electronic and in-person recruitment efforts. Participants were recruited via campus electronic advertising (Note-a-Bull and email), correspondence with Black female-specific student organizations (e.g. sororities, student unions), and on-campus flyer/information card distribution. In-person recruitment was conducted by the Principal Investigator, as well as a trained student research volunteer. An eligibility verification script (see Appendix A3) was used as a guide during in-person recruitment. Additional pre-screening questions (See Appendix A4), as well as the pre-determined focus group session schedules, were available during in-person recruitment. Interested participants were able to complete the additional pre-screening questions during in-person recruitment if they chose to do so.

Participants that met eligibility requirements were invited to participate in one of four scheduled focus groups. If they verbally consented, their name and contact information was

collected. The participant was also asked to select their preference(s) for focus group attendance. Preferences for focus group sessions were appointed based upon availability.

Session availability was updated in real time in order to facilitate scheduling of new participants. The participant was also informed that they would be reminded of their focus group appointment: first by email, and then by a telephone call follow-up. As Principal Investigator, I then provided the location for the scheduled focus group; participants were asked to arrive approximately 30 minutes prior to the start of the focus group in order to review and obtain necessary informed consent. The informed consent was also attached in the follow-up email correspondence for participants whose study eligibility has been verified. This allowed the opportunity for review of the consent prior to the scheduled focus group session.

Interested women also had the opportunity to verify study eligibility at a later date, over the phone, by providing their name, contact number, email, and best time at which they can be reached. Follow up telephone correspondence by the Principal Investigator to verify study eligibility from recruitment efforts, or via Note-a-Bull, occurred within one day. An email correspondence was also initiated for participants who were unavailable by phone, or who only provided an email address. The study eligibility verification script was used to guide recruitment via telephone.

Enrollment

At the scheduled focus group session and designated location, I was present to greet and introduced himself to each participant. After all attending participants were in their seats, the Principal Investigator reviewed the entire informed consent document. This review included a brief overview of the study purpose and objectives, potential risks/benefits, confidentiality,

digital audio-recording of the focus group session, and the option to withdraw at any time. Participants were allowed to ask questions about the informed consent, as well as exit the focus group if they chose not to participate. I confirmed that each participant understood the informed consent, and verified this by asking participants to describe concepts within the informed consent in their own words. All consenting participants were then asked to sign and date the informed consent at the same time.

Each participant was assigned a unique study identification number which was used for study reporting purposes. This unique number was affixed to all signed documents (i.e. informed consents, incentive receipts, etc.), as well as eligibility verification documents that contained the participant's personal information. To date, this information is being held in a locked cabinet within an enclosed and lockable room in accordance with Health Information Portability and Accountability Act (HIPAA) and institutional review board (IRB) policies.

Measurements

Additional pre-screening questions. This investigator-derived assessment supported data collection on each participant's age, enrollment status, residence, and previous use of technology (See Appendix A4) was collected prior to session attendance, or immediately after obtaining consent and authorization.

Focus group survey 1. This investigator-derived assessment (see Appendix A5) included a list of sexual health risk factors from previous Black college female HIV/STI and pregnancy risk-reduction studies (Barroso et. al, 2014; Chandler et al., 2013; Danielson et al., 2014; Di Noia & Schinke, 2007; Gomez, 2011; Klein, & Card, 2011; Medina, & Rios, 2011, Wingood et al., 2006). Participants were asked to report the importance of each risk factor on their personal

sexual health based on a 5-point Lickert scale (0=Not Important, 1=Somewhat Important, 2=Important, 3=Mostly Important, and 4=Very Important). The survey was designed as a reference to inform participants during the risk assessment discussion, assist in recall of personal risk factor importance for each participant, and minimize bias or influence of an outspoken subject over other focus group members. Survey 1 responses were also intended to substantiate qualitative findings

Focus group survey 2. This investigator-derived assessment (See Appendix A6) was designed to determine participant interest in virtual reality-based delivery of targeted sexual health education and training, as well as to identify the three most important sexual risk factor topics that each participant felt should be included in such a platform. Participants were asked to report their interest in use of a VR platform for delivery of relevant sexual health information based on a 5-point Lickert scale (0=None/Not Interested, 1=Somewhat Interested, 2=Interested, 3=Mostly Interested, and 4=Very Interested). Participants were also asked to estimate the number of hours for daily engagement with such a program based on a 5-point Lickert scale (0=None/Never, 1=30 minutes, 2=1 hour, 3=2 hours, and 4=More than 2 hours). Rank order for the first (1), second (2) and third (3) most preferred sexual health topics were also requested. Similar to Survey 1, this survey was designed as a reference to inform participants during the discussion for VR risk topic importance, improve recall of VR risk topic importance for each participant, and minimize bias or influence of an outspoken subject over other focus group members.

Procedures

A semi-structured interview guide, as shown in Figure A8, was developed in order to facilitate group discussions. The sessions began with a review of expectations for maintaining privacy and confidentiality, respect for others' opinions, and a reminder that the focus group discussions would be digitally audio-recorded (with the exception of the introductory portion). This was followed by icebreakers to establish group rapport and comfort. Participants were permitted to use their first name, a fictitious name, or remain anonymous. Study subjects were then asked if they had any additional questions. If there were none, the digital audio-recordings and topic discussions commenced. The audio-recordings continued throughout the 0remainder of the sessions, and were only paused for short breaks.

Survey 1 - a list of sexual health risk factors that have been identified in previous Black college female HIV/STI and pregnancy risk-reduction studies - was initially distributed to each focus group member. Once all participants confirmed that they were ready to continue, the focus group began to discuss their survey responses, as well as other personal attitudes and sexual health risk concerns. At the conclusion of this discussion, participants confirmed that they had no additional comments before deciding, as a group, if they required a short break.

Participants then reconvened, and discussed their knowledge, experiences, and purposes for use of VR technology. This discussion was framed within the contexts of using VR technology in video game entertainment as opposed to education and training. This discussion was followed by three video demonstrations that depict usage of VR technology in gaming, research, and educational or training environments (See Table 1). The demonstrations were provided as references in order to help guide participant attitudes and intentions for use of a VR platform in their population-specific sexual health education and training.

Immediately after the video demonstrations, Survey 2 was administered to determine the three most important sexual risk factors that each participant felt should be included in a theorized VR education and training platform. After all participants had completed the survey, they discussed their responses which included attitudes, and intentions toward use of a VR platform for their specific sexual health education and training needs. They were encouraged to use the video demonstrations to help guide the discussion. At the conclusion of the discussion, participants confirmed that they had no additional comments before the focus group session was ended. The digital audio recording was stopped, participant incentives were distributed, and incentive receipts were signed and collected. Participants were required to attend the entire focus group session to receive the cash incentive.

Table 1: Content descriptions of virtual reality demonstration videos

Video Title	Sector	Context/Setting	Relevant Content	Source
NextGalaxy Corp Virtual Reality Promotional Video	Gaming and Entertainment	Review of platform; demonstration of user engagement	Technological capabilities	http://www.nextgalaxycorp.com/home/#video
Virtual Reality Classroom Trains Teachers	Education and Training	Virtual classroom training for Elementary Education students	Active engagement with a virtual classroom; student attitudes toward use of platform	https://www.youtube.com/watch?v=jncMNvMJKDk
Using Virtual Reality to Study Stress and Improve Training	Research	Evaluation of decision-making under simulated, high-stress environments	Investigative purposes; methods for data analysis; outcome expectations	https://www.youtube.com/watch?v=OsWS-B-NLR0

Data Collection

Demographic information (e.g. age, enrollment status, residence/zip code) was collected from each participant either during verification of eligibility or immediately after obtaining

informed consent. Four semi-structured, digitally audio-recorded focus group cohorts were conducted over the span of three weeks. Participant attitudes and content preferences were supported by Surveys 1 and 2.

Ethical Issues and Additional Considerations

Informed consent and authorization was obtained from each study participant prior to the start of each focus group discussion. The consent ensured permission to digitally record and transcribe all focus group content, clip and/or archive any portion of study audio recordings, and include audio segments in dissemination efforts. Confidentiality and privacy protections were also reiterated at the time of each focus group session. During interviews, participants chose to identify themselves as anonymous, and by using their first given name. Discussions about sexuality, sexual risk behavior, HIV/STI infections, or unintentional pregnancies can be a very sensitive subject. Minimal concern for Black college female engagement with a Black male Principal Investigator was quickly dispelled based on the investigator's previous research history with this population. Participant reluctance to share personal thoughts was also addressed through the use of an ice-breaker discussion to establish rapport and facilitate a smooth transition into the primary discussion topic.

Participant bias was a significant consideration for these small-group discussions. The influence of one member's perspective over the remaining group was minimized, in part, due to a review and agreement of guidelines for group conduct. Participants were reminded to be respectful of all shared opinions during the group session. To avoid short-term recall bias (which may occur in the presence/absence of participant bias), subjects completed a small survey prior

to the first and third discussion sections. This mitigated potential influence by more outspoken group subjects, and allowed for a more accurate assessment of each subjects' personal attitudes.

The Principal Investigator transcribed, verbatim, all digitally-recorded audio files into written text. To ensure confidentiality, transcription documents identified participants based on the focus group session number (i.e. "FG1, FG2, FG3, or FG4", and respondent identification number within that focus group session (i.e. "R1, R2, R3…"). Table 2 represents identifiers for focus group sessions, study participation, and individual commentary.

Table 2: Focus group, participant, and respondent identifiers

Focus Group ID	Participant ID	Respondent ID
1	#1	FG1R1
	#2	FG1R2
	#3	FG1R3
2	#4	FG2R1
	#5	FG2R2
3	#6	FG3R1
	#7	FG3R2
	#8	FG3R3
	#9	FG3R4
4	#10	FG4R1
	#11	FG4R2
	#12	FG4R3
	#13	FG4R4
	#14	FG4R5
	#15	FG4R6

No information that would implicate the subjects' identities (i.e. last name, focus group, location, educational institution, etc.), or compromise their confidentiality, were placed on the actual transcripts. Because the subjects' complete identity was not disclosed in any of the

recordings, comments within the recordings cannot be directly ascribed to any individual subject. The Principal Investigator was identified in all transcribed documents as “F” (i.e. Facilitator).

Analysis Procedures

Table 3 depicts this study’s methodological and theoretical approaches to mixed-method data analysis.

Table 3: Study methodology, analysis procedures, and theoretical framework

Research Question	Question Content	Answered via	Analyzed via	Reported as	Health Belief Model Constructs
1	How do Black college females perceive the importance of sexual risk topics?	Survey 1: 5-point Lickert scale	SPSS	Quantitative: descriptive statistics (frequencies)	Perceived threat: perceived susceptibility to problem; perceived seriousness of consequences of problem
		Focus group discussions	Atlas.ti	Qualitative: major themes; sub-themes	
2	What are the experiences and attitudes of Black college females regarding the use of VR for education and training versus video game entertainment (i.e. “gaming)?	Focus group discussions	Atlas.ti	Qualitative: major themes; sub-themes	Outcome expectations: perceived benefits of specific action
3	Among Black college females, what sexual risk topics are considered most relevant to a VR education and training platform?	Survey 2: 5-point Lickert scale	SPSS	Quantitative: descriptive statistics (frequencies)	Outcome expectations: perceived benefits of specific action; perceived barriers to taking action
		Focus group discussions	Atlas.ti	Qualitative: major themes; sub-themes	

Qualitative software (Atlas.ti) was used to analyze all transcribed materials for relevant themes. Common ideas and attitudes were then compiled into major descriptive categories and sub-themes. A code book was developed to guide identification of study themes. Data from the four interviews are presented in aggregate. Statistical analysis software (SPSS) was also used to determine any demographic trends in participation, as well as statistical significance of focus group surveys.

Study interpretations for *HEALTH INFOR[M-ED]* considered personalized sexual health risk assessment in association with degree of individual interest, expectations, and intended use

of a theorized VR education and training platform for sexual health improvement in this population. Assessment of culturally-specific and age-appropriate sexual health content - including relevant HIV/STI transmission, unintentional pregnancy, and sexual communication information - were used to describe educational and training program foci which are preferred by the target population.

Surveys that were distributed during the focus groups were reviewed for errors prior to session dismissal. Reviews of audio recordings were conducted at the conclusion of each focus group session to ensure that the session was captured in its entirety. Issues with recording, comprehension of interview questions, and other concerns were also noted at this time, and resolved prior to the next scheduled focus group session. Digital audio recording are stored on the Principal Investigator's institution-issued and password-protected computer, and networked on a secure server that is backed up each night. All digital audio recordings will be destroyed after the study has been concluded with the IRB (denoted by submission of the final progress report).

CHAPTER III:

RESULTS

This study sought to answer the following research questions:

Q1: How do Black college females perceive the importance of sexual risk topics?

Q2: What are the experiences and attitudes of Black college females regarding the use of VR for education and training versus video game entertainment (i.e. "gaming)?

Q3: Among Black college females, what sexual risk topics are considered most relevant to a VR education and training platform?

Study Participants

Each of four study cohorts enrolled between 2-6 participants each (n=15). Three participants self-identified as African American. The remaining Black female participants further categorized their racial/ethnic background as either Mixed/Biracial (n= 3), African (n=2), or Haitian (n=1). Participant ages ranged from 18-48 ($\bar{x}$=28.6, σ=9.2) years within age groups of 18-24 years (60%, n=9), 25-34 years (26.7%, n=4), and 35 years or above (13.3%, n=2). The majority of participants (86.7%, n=13) were enrolled as full-time students, and resided in various off-campus locations (66.7%; n=10).

Participants were recruited either via electronic advertisement (33%, n=5), personal referral (e.g. friend, roommate) (40%, n=6), or other electronic notification (e.g. email, online) (26.7%, n=4). Only one participant had previous involvement with an HIV prevention

intervention, through this program was not specifically for the Black college female population. Four participants (44%) reported prior use of technology for educational or training purposes, though specific involvement with virtual reality technology was not mentioned.

Results: Research Question 1

Assessments of sexual risk topic importance were reported based on aggregated Survey 1 Lickert scale values. The majority of participants equally viewed the topics of HIV and STI status as important, mostly important, or very important. Major themes of HIV/STI testing and knowledge of HIV/STI status were further described in terms of fairness/honesty with sexual partners, survival, and protection of self and others. Some supporting comments from these women include:

FG1R1: *"The further off you go, not having treatment, the…you know… the worst you chances are in living with the disease. And it's also not fair to put someone at risk like that, so…very important."*

FG1R2: *"It's important, like, to know your status."*

Adapting to the college environment poses common challenges that are experienced by many demographic groups. Impairments or deviations in sexual decision-making from normative principles were notable concerns, as expressed by one participant who also happens to be a parent of teenagers.

FG3R3: *"At my church, you know, we kinda [kind of]… 'prep [prepare] the kids ('cause [because] we see a lot of kids). They're fine as long as [they are] with their parents… they go to church. But then, when they go off to college… 'Hey, I can make my own decisions.' You would think [that] what you put in, stuck. But...situations and circumstances, you know? You might just try something else, or do something else, so...."*

The situations and circumstances to which this participant was referring, and which participants largely agreed upon, included:

1. Sex with drug or alcohol use: Participants agreed that sex with drug or alcohol use is a concern within their college environment. The potential effects of drug and alcohol use on sexual decision-making in Black college women are reflected in the following statements:

> FG2R1: *"There are a lot of things coming out now, and, if you use those things, sometimes you don't really turn into yourself."*
>
> FG3R1: *"The only one that was somewhat important to me was having sex with alcohol use because I'm approaching my twenty first birthday."*
>
> FG4R3: *"You've heard about 'date-rape' drugs and what not...and they put those in alcohol..."*

2. Having sex while depressed or stressed: In describing the stress, anxiety, and other mood variations that occur within the academic setting of Black college females, some participants attributed these characteristics to impaired decision-making and risky sexual behavior. The following statements reflect this assertion:

> FG2R1: *"Cause standards disappear…when you feel lonely."*
>
> FG4R4: *"When people get depressed or stressed, they're looking for a 'fix'."*

3. Risk of intimate partner violence (IPV): Black college females agree that the potential risk of IPV (e.g. physical, psychological, verbal, etc.) within college environment is concerning. Though few participants mentioned that they have been victims, they have observed victimization of peers as described in the statements:

> FG4R1: *"I think, for females in my age group, they easily fall into this situation where… it's a mix of… having sex while depressed or stressed, and being a victim*

of intimate partner violence, because they'll get into these relationships with other individuals who don't necessarily treat them right. And because they're having psychological issues, they don't find a problem with that."

FG3R4: **"***I'm finding that women sort of... will often comply [to partner coercion], because they think they have no other choice but to comply."*

4. Consent (overt or covert) to multiple sexual partners: Black college females also experience limited dating availability in academic program tracts and social networks. Thus, they may be inclined to, or inadvertently enter multiple sexual partner relationships. According to one participant:

FG4R5: *"I feel like you're looking for the same thing in the same pool. That's why you choose them as a sexual partner."*

Participants largely agreed that it was important to collectively discuss correct use of male condoms, female condoms, other contraceptives (e.g. dental dam), and birth control methods. This desire for a comprehensive approach to sexual health and pregnancy risk-reduction is indicated by participants' attitudes toward concomitant use of HIV/STI contraceptives and birth control, as well as limitations in knowledge of oral sex risk behavior and female condom knowledge.

FG3R2: *"I did put that one as 'important' because I don't… I don't use birth control…at all";* **"***What exactly does oral protection entail?"*

FG3R1: *"I don't know what they [female condoms] look like..."*

It was noteworthy that knowledge of correct male condom use was viewed as being of greater importance than that of correct female condom use.

Among Black college women, the importance of sexual communication with partners or health care providers supersedes any discomfort that may occur as a result of initiating such conversations. However, significant cultural emphasis on sexual purity – particularly in young Black adult females – may obscure actual sexual risk-taking behaviors

FG2R1: *"After I got an STI, all doors came open. We're going to talk about everything. So… ain't no [there isn't a] problem anymore. But before, it was one of those… 'um…I'm a virgin'... for many, many years. But my momma was vindicatin' [vindicating] my ass [me], so…"*

FG2R2: *"You get 'the EYE' when they ask you, 'are you sexually active?' in the doctor's office. And I'm like… no, no mamma – of course not. I'm an innocent little creature over here. What you mean?"*

Results: Research Question 2

Though most participants indicated that they didn't know much about the functions or capabilities of virtual reality, there were a few who provided specific technical knowledge.

FG2R2: *"Oh, the Oculus Rift - that's the video thing you put over your head. Cause with, it was made by video gamers for video games and that's what most technology comes from is nerds that want to use it for games, and then people find better ways to use it. But, cause, video games initially you have a computer screen, it's flat, it's 2-D. You see it, and it's like 3-D on the screen? The Oculus Rift is used where you feel like you're in a 3-D environment so you're the first person character instead of playing, like, a third person 'God' kind of sense".*

Table 4. Level of importance, major themes, sub-themes, and relevant comments for sexual health topics among Black college females.

Sexual Health Risks	Study Findings			
	Level of Topic Importance	**Major Themes**	**Sub-Themes**	**Relevant Comments**
Unknown HIV status	Least (n=3); Important (n=3); Very (n=9)	HIV/STI testing; "Know Your Status"	Fairness, survival, protection of self and those you love	**FG1R1:** *"The further off you go, not having treatment, the…you know… the worst you chances are in living with the disease. And it's also not fair to put someone at risk…"* **FG1 R2:** *"It's important, like, to know your status."*
Unknown STI status	Least (n=3); Important (n=3); Very (n=9)			
Having sex with drug use	Least (n=5); Somewhat (n=2); Important (n=1); Mostly (n=1); Very (n=6)	Impaired decision-making; Environment (e.g. parties, clubs, social events)	"Juices", "slip something in drink", approaching drinking age (21 years)	**FG2R1:** *"There are a lot of things coming out now, and, if you use those things, sometimes you don't really turn into yourself."* **FG3R2:** *"…having sex with alcohol use because I'm approaching my twenty first birthday."* **FG4R3:** *"You've heard about 'date-rape' drugs and what not...and they put those in alcohol..."*
Having sex with alcohol use	Least (n=3); Somewhat (n=4); Important (n=5); Mostly (n=2); Very (n=1)			
Having multiple sexual partners	Least (n=5); Somewhat (n=1); Important (n=3); Mostly (n=2); Very (n=4)	Popularity of sexual partners; common circles	College sports players; academic cohorts; exchange of sexual partners	**FG4R**5: *"I feel like you're looking for the same thing in the same pool. That's why you choose them as a sexual partner."*
No use of birth control	Least (n=2); Somewhat (n=1); Important (n=3); Mostly (n=2); Very (n=7)	Simultaneous use of HIV/STI and pregnancy risk-reduction methods	Use of birth control but not condoms	**FG3R2:** *"I did put that one as important because I don't… I don't use birth control…at all."* **FG3R2:** *"I don't know what they [female condoms] look like."*
Incorrect use of male condoms	Least (n=3); Important (n=4); Mostly (n=1); Very (n=7)			
Incorrect use of female condoms	Least (n=5); Somewhat (n=2); Important (n=2); Mostly (n=1); Very (n=5)			
Having sex while depressed or stressed	Least (n=6); Somewhat (n=4); Important (n=3); Important (n=1); Very (n=1)	Anxiety, depression, stress in college	Personal values; academic programs, exams, relationships	**FG2R1:** "*'Cause standards disappear…when you feel lonely."* **FG4R4:** *"When people get depressed or stressed, they're looking for a 'fix'."*
Being a victim of intimate partner violence (with or without sex)	Least (n=4); Important (n=2); Mostly (n=1); Very (n=8)	Types of IPV; sexual manipulation	Physical, psychological, verbal, emotional vulnerabilities	**FG3R4:** *"I'm finding that women sort of... will often comply, because they think they have no other choice but to comply."*
Having unprotected sex (oral, vaginal, or anal)	Least (n=2); Important (n=3); Mostly (n=1); Very (n=9)	Sexual preparation	"Things happen"; lack of comprehensive sex education	**FG3R2:** *"And, what exactly does oral protection entail? I don't...I don't actually know."*
Trouble talking with sexual partner(s) about safer sex	Least (n=2); Important (n=4); Mostly (n=3); Very (n=6)	Sexual communication	Comfort, HIV/STI disclosure, stigma, assumption of infection	**FG2R2:** *"You get 'the EYE' when they ask you, 'are you sexually active?' in the doctor's office. And I'm like… no, no mamma – of course not."* **FG2R1:** *"I found that the more you talk to your health care professional, the easier it is for you to talk to your partner about what your expectations are, and why you have them."*
Trouble talking with health care providers about sexual health	Least (n=5); Somewhat (n=1); Important (n=3); Mostly (n=1); Very (n=5)			

A number of participants also recognized the increased use of virtual reality in current education and training programs.

> FG3R2: "*In education, they're starting to teach them with virtual reality, show them the importance of like, technology. And it's really taking over. So like, using virtual reality for sexual health would be really beneficial, like… it's just something they can connect to because they're so used to it.*"

Despite the lack of formal education and training with virtual reality technology, many participants described VR engagement through the use of games (e.g. *SIMs* series, *Try 4 A Baby,* and *FarmLand*). These discussions were typically initiated via an unprompted response or comment by a single participant. Once other participants were able to recognize their common experiences with virtual reality "gaming", nearly all participants reported having previous exposure to virtual reality technology. According to participants, these games often employed simulated avatar engagement within fictitious environments that resembled real-life scenarios. However, participants also expressed general concerns about virtual reality technology. Specifically, they wanted to know:

> FG2R1: "*What are you going to use it for, when do you use it? How do you use it? What is it? Like, what device program software, whatever, are you going to use to do whatever you're doing?*"
>
> FG2R2: "*What purpose does it serve? What purposes can it serve other than its intended purpose? And how much does it cost?*"

Results: Research Question 3

Participants were overwhelmingly interested in a sexual health-based virtual reality platform (n=14) with the majority indicating that they would use such a program at least 30 minutes per day (n=8). Fewer reported that their daily use of such a program would last 1 hour (n=4) or more than 2 hours (n=2).

Table 5. Participant interest, estimated daily usage, and **s**exual risk topic priorities for a targeted VR-based sexual health platform.

	Study Findings	
	Rank	Level of Interest
Interest in VR Platform		None (n=1); Interested (n=3); Mostly (n=3); Very (n=8)
Estimated daily usage of VR Platform		None (n=1); 30 minutes (n=8); One hour (n=4); More than 2 hours (n=2)
Comprehensive HIV/STI Risk-Reduction	1	n=5
Sexual Contraceptives and Birth Control	2	n=5
Sexual Communication	3	n=3

Participants conveyed a desire for virtual reality-based comprehensive sexual health education that includes HIV and STI, as well as unintentional pregnancy risk determinants. As a few participants stated:

> FG1R1: *"I think it [comprehensive risk reduction] is [important]. Cause then, like, if necessary you can go look up on each specific one individually, if you need to. It should all be included because it's all basically gotten the same way... almost. You know, there's certain things [preventative measures] you gotta [have to] do [implement], and not do, to*

prevent one or the other, but still… they all need to be in there."

Risk causation, subsequent behavior, and outcomes were also mentioned as important elements of a virtual reality platform for sexual health education and training. According to some Black college women:

FG4R1: *"Umm, I put [identified] having sex while depressed or stressed [as important]. And then, I feel like it should be partnered with at risk behaviors in general. But, I feel like having sex while depressed or stressed like, because if you have someone to have sex with while you're depressed or stressed, it's either someone is close to you, and, like, they might feel like you're just using them just to make yourself feel better. Or, you're out using somebody just to make yourself feel better because you're like '(Sigh)…I'm so stressed out, I just need to go release myself'. Or, 'I just got to get away'. 'I'm so depressed, I'm so sad I just want to be with somebody and feel love'. So it's just, like, that can lead to other behaviors that are just not good. So, like, at risk behaviors that may lead to multiple sex partners, that may lead to the STD, STI…whatever you wanna [want to] call it. HIV. So, I just… that needs to be on there."*

FG1R1: *"I put STI risk and STI testing because, with all the different virtual reality training, you can demonstrate outcomes of, like, if you don't do this, this might happen. Like if you're not protected, you can get this, this, and this STIs."*

Generally, sexual communication was viewed as the third most important component in development of a prototype virtual reality sexual education and training platform for Black college females. These attitudes are supported by participant statements that include:

FG2R2: *"I said… 'Trouble talking to sexual partner partners about safer sex', because there are different virtual reality stuff [topics] you could be able to practice talking about*

it so it's less awkward. And, you can handle reactions that you might get in a situation that maybe you didn't think of yourself."

FG3R3: *"I think about my kids, because I have three - 14, 16, and 19. So, just the trouble talking... like, me and my husband just try to be as honest with them, you know... and instruct them just about different things. It's a little eerie. But, you know, when it comes time... you know, not making it taboo or shameful. Like, this is just a normal thing that you have to do."*

Other Results for Discussion

Black college women also agree that improving sexual communication efforts requires involvement of adolescents as well as older adults. The following participant comments reflect this perspective:

FG3R1: *"From what I've seen, coming closer to age with younger people, um... a lot of this is starting late elementary school. I'm talking, like, 9...10 year olds who know about sex… who talk to their friends about sex...who talk to their friends about scenarios they've been in, uh... that were sexual with other young men, or what have you, at school - on the playground."*

FG3R3: *"So, I think, if you can teach whoever this platform is for...you know, 'THIS is how you talk about your sexual health'. And, that would be very helpful, I would think, to anyone in any age, actually. You can't assume just because people are older... they just cross this threshold and they're magically..."Oh, I can talk about anything now'. Like, I don't think that's true at all."*

CHAPTER IV:

DISCUSSION AND CONCLUSION

This research represents a unique approach to the identification of sexual health risk importance for HIV/STI transmission, as well as unintentional pregnancy, in Black college females. In review of study findings, most participants expressed the desire for a comprehensive approach to HIV and STI risk assessment (i.e. testing). Drug and alcohol use were also considered factors that are co-occurring and should be considered a single topic. Moreover, the participants felt that the topic of preventative efforts should comprehensively include barrier methods including male condoms, female condoms, dental dam, other contraceptives, and birth control. It was also agreed that sexual communication should address interactions at both the partner, and the health provider levels.

Topics that discuss HIV and STI statuses were, therefore, condensed into a single risk category (i.e. HIV/STI Status), as were concomitant sexual activity and drug/alcohol use. Similarly, the topic ‘Sexual Contraceptives and Birth Control’ risk category was consolidated from topics that include male and female condom use, dental dam, other available contraceptives, and prevention of unintended pregnancies through various birth control methods. Sexual communication, irrespective of audience, was also consolidated into a single topic area. Priorities for a VR instructional platform were determined based on these adjustments.

Social and cultural normative values appear to contribute significantly to the sexual attitudes of young Black college females. Religiosity, supervision, and perceived levels of parental disapproval for certain behaviors may be protective against early-onset sexual behavior. However, situations within the college environment may obstruct planned sexual decision-making. Inaccurate representation of sexual norm adherence, or placation of a guardian figure (out of fear, or to obtain favorable standing), is a likely barrier to effective sexual communication in the Black adolescent. It may also promote risky sexual behavior in the Black college-aged adult female. Though not expressly mentioned, it is worth considering whether the presence of an influential, supportive male figure in the childhood development of Black girls is protective against sexual risk vulnerability among Black college women.

Black college female students admit that they often experience stress, anxiety, and depression. Mood disorders were identified as sexual risk-promoting factors by a number of participants within each focus group cohort. In reference to depression and stress, respondents agreed that causal relationships between mood and sexual behavior indicate multiple areas of vulnerability. Impaired sexual decision-making may be further complicated by intimate partner violence and multiple sexual partners.

Consistent with research by Wingood, and DiClemente (2000), this study supports the impact of gender-power and economic vulnerability on sexual risk behavior among Black college females. Participants in all focus groups also recognized that there have been recent changes in the socio-cultural and sexual risk climates of Black college females. Black college women who have recently decided to become sexually active after an extended period of time may face additional challenges.

VR platform delivery of targeted sexual health information should include creative learning modalities for comprehensive risk behavior education, causal relationships/outcomes, and assertive sexual communication. Although the idea of virtual reality sex education seems intriguing, Black college females do have some reservations. Black female college students require that VR platform development for sexual health education and training address questions and concerns that involve technological purpose, functions, instructional guides, and costs (e.g. time and financial obligations).

Study Limitations

In review of study design, “in-depth” interviewing is a more appropriate data collection method for this type of study, and should have been conducted instead of focus groups. Although Casey (2000) describes the principle of "saturation of opinions" in determining the number of focus group interviews, the exact number of necessary interviews is not clearly defined (Cheng, 2007). Additionally, focus groups are not normally associated with extensive evaluation of personal opinion (Overlien, Aronsson, & Hyden, 2005) as was the objective of this study. Moreover, Overlien and colleagues (2005) were able to determine the feasibility of "in-depth" focus group interviewing in 5 cohorts of 2-5 participants each (n=11). For this research, validity was somewhat conserved through the use of section surveys which facilitated at-length evaluation of individual attitudes.

The inclusion criteria involved Black/African-American female students above the age of 18 years who were enrolled as either part-, or full-time students at a southern, research-intensive institution. This population was selected in order to more closely represent the general, HIV disparate Black female population. However, participant selection should have also addressed

marital status, parental status and ages of children, previous history of HIV/STI and/or unintended pregnancy, and current (or recent) sexual activity with further gender identification of the primary sexual partner.

The approximate geographical locations of the study institution and each off-campus participant residence (by zip code) are illustrated in Figure 2. As the majority of study participants indicated that they live off-campus, they may be somewhat removed from the degree of sexual influence that is experienced by on-campus residents.

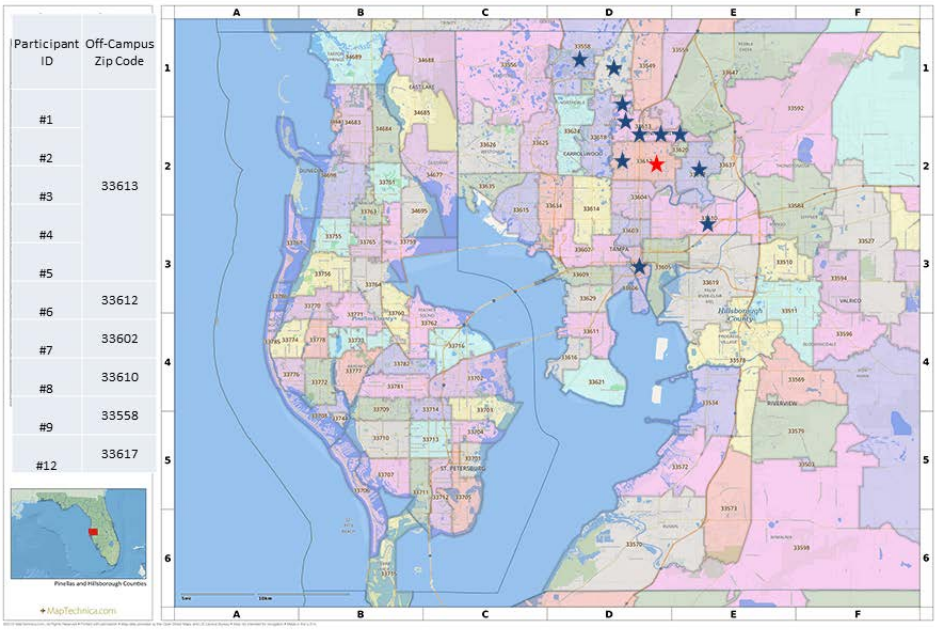

Figure 2. Approximate geographical locations of the study institution (red star) and each off-campus residence (blue stars) by zip code.
Adapted from: http://florida.hometownlocator.com/zip-codes/data,zipcode,33612.cfm

A number of participants also mentioned that they were either married or abstinent. Thus, their personal attitudes to the sexual risk topics discussed in Section I were mostly that of "least important", as the risk assessment was not applicable to their current sexual standings.

Participant selection for unmarried and sexually-active Black female students who had engaged in recent sexual behavior (within 6 months) may have produced study cohorts that more closely resemble the general Black female community. Those who were also parents of adolescents, teenagers, or college-aged adults (ages 18-24 years) should have been explicitly identified during the pre-screening assessment.

The potential influence of parenting styles on sexual risk attitudes could have been further explored during interview probing. Additionally, the study included participants who discussed their development of a negative sexual health outcome. Assessment of prior transmission or pregnancy outcomes may have supported analysis of relationships between personal sexual health risk attitudes and preferred content in a VR-based sexual health education and training platform. The study also assumed that all participants would be heterosexual; however, this characteristic was also not explicitly mentioned as an inclusion criterion.

Subject enrollment was significantly lower than that the 30 subjects which were initially proposed. Electronic campus advertisement was free, but ran on a weekly schedule. Near the conclusion of this study, there were signs that interest was increasing – either from consistent advertisement, or by participant word-of-mouth. The timing of study implementation, which occurred during the Summer 2015 academic term, likely conflicted with students' hectic schedules and limited availabilities. Summer semesters at the participating institution are highly accelerated, and range anywhere from 6-12 weeks in duration (in contrast, Fall and Spring semesters typically run on a 16-week schedule). It is suggested that the study be replicated during those academic sessions

Thorough review of the digitally-recorded audio files exposed investigator bias toward enrolled subjects (and their statements) in the form of agreements, positive affirmations, and

accolades. The potential influence of these comments on subject attitudes is recognized. Methods for impartial interviewing will be re-examined and practiced in advance of future qualitative studies. Inter-rater reliability was not quantified; however this aspect of investigator bias was mitigated through data collection from Surveys 1 and 2. Although measures were taken to enhance participant comfort and honesty – there were no negative consequences for untruthfulness – low response variability could also be attributed to the evaluation of a single platform delivery method, as opposed to offering other education and training methods such as traditional didactic or electronic/distance-learning.

Content within the virtual reality video demonstrations were found to be supportive of the technology; users spoke favorably about the effectiveness and user-friendly nature of their respective platforms. Such promotion may have influenced participant response. It is suggested that impartial demonstrations or education of VR capabilities be implemented in future studies.

Although a successful demonstration of feasibility, this research is formative in nature – results should be interpreted as preliminary. However, methods and concepts presented in this thesis hold the potential for scientific contribution in prevention research, clinical practice, and other fields of study.

Future Implications for Public Health Practice

Creating a virtual interactive platform for targeted sexual health education and training in the Black college female population may contribute to improvements in rates of HIV/STI transmission and unintentional pregnancy. Because students will be intimately involved in program design, colleges/universities (especially HBCUs) may also benefit from knowledge of the socio-cultural dynamics and environmental contexts in which these risks occur. This program

may also serve as a model for other advanced public health education and skill-building within general community settings. Further development of a VR platform for targeted sexual health improvement requires thorough consideration of research program objectives. Modalities for supplemental education and training should also be evaluated for VR platform compatibility.

Successful distribution of a VR platform for targeted sexual health education and training in the Black college female population will require strategic program marketing. Initiatives that target large populations, seek to influence socio-cultural norms, or distribute HIV program information almost invariably require the integration of social media - a preferred outlet for Black college females (Chandler et al., 2013; Medina, & Rios, 2011; Payton, Kvasny, & Kiwanuka-Tondo, 2014).

Social media-based sexual health program dissemination platforms for Black college females are rare. Preferred messages for HIV/STI and unintentional pregnancy prevention in Black college females, those that captivate attention and engage discussion, can assist in development of widespread dissemination efforts. Assessment of technological and logistical requirements for social media-based dissemination platform integration into *HEALTH INFOR[M-ED]* is planned for future program development.

REFERENCES

1. Barroso, J., Relf, M. V, Williams, M. S., Arscott, J., Moore, E. D., Caiola, C., & Silva, S. G. (2014). A randomized controlled trial of the efficacy of a stigma reduction intervention for HIV-infected women in the Deep South. *AIDS Patient Care and STDs*, *28*(9), 489–98. doi:10.1089/apc.2014.0014
2. Bazargan, M., Kelly, E. M., Stein, J. A., Husaini, B. A., & Bazargan, S. H. (2000). Correlates of HIV risk-taking behaviors among African-American college students: the effect of HIV knowledge, motivation, and behavioral skills. *Journal of the National Medical Association*, *92*(8), 391–404. PMID:10992684
3. Brown, C. W., Shepperson, J. T., Gopalan, H., & El-Amin, S. (2012). HIV: facts, fiction, and the impact on behavior of students at an Historically Black College/University. *International Journal of Health Promotion and Education*, *50*(2), 61–67. doi:10.1080/14635240.2012.661964
4. Brown, C. W., Shepperson, J. T., Gopalan, H., & El-Amin, S. (2012). HIV: facts, fiction, and the impact on behavior of students at an Historically Black College/University. *International Journal of Health Promotion and Education*, *50*(2), 61–67. doi:10.1080/14635240.2012.661964
5. CDC. (2014a). *Diagnoses of HIV Infection in the United States and Dependent Areas, 2012.* Retrieved from http://www.cdc.gov/hiv/pdf/surveillance_Report_vol_19_no_2.pdf

6. CDC. (2014b, March). *HIV Among Women* [Fact Sheet]. Retrieved from http://www.cdc.gov/hiv/pdf/risk_women.pdf
7. CDC. (2014c). *Social Determinants of Health among Adults with Diagnosed HIV Infection in 20 States, the District of Columbia, and Puerto Rico, 2010*. Retrieved from http://www.cdc.gov/hiv/pdf/surveillance_Report_vol_19_no_2.pdf
8. Chandler, R., Canty-Mitchell, J., Kip, K. E., Daley, E. M., Morrison-Beedy, D., Anstey, E., & Ross, H. (2013). College women's preferred HIV prevention message mediums: mass media versus interpersonal relationships. *The Journal of the Association of Nurses in AIDS Care : JANAC*, *24*(6), 491–502. doi:10.1016/j.jana.2012.09.001
9. Cobb, S. (1976). Presidential Address-1976. Social support as a moderator of life stress. *Psychosomatic Medicine*, *38*(5), 300–314.
10. Connell, R. W. (1988). Gender and Power: Society, the Person, and Sexual Politics, R.W. Connell. 1987. Stanford University Press. 334 pages. Index. ISBN: 0-8047-1429-0. $39.50. *Bulletin of Science, Technology & Society*. Stanford University Press. doi:10.1177/027046768800800490
11. Crepaz, N., Marshall, K. J., Aupont, L. W., Jacobs, E. D., Mizuno, Y., Kay, L. S., … O'Leary, A. (2009). The efficacy of HIV/STI behavioral interventions for African American females in the United States: a meta-analysis. *American Journal of Public Health*, *99*(11), 2069–78. doi:10.2105/AJPH.2008.139519
12. Danielson, C. K., Walsh, K., McCauley, J., Ruggiero, K. J., Brown, J. L., Sales, J. M., … Di Clemente, R. J. (2014). HIV-related sexual risk behavior among African American adolescent girls. *Journal of Women's Health (2002)*, *23*(5), 413–9. doi:10.1089/jwh.2013.4599

13. DiClemente, R. J., Wingood, G. M., Harrington, K. F., Lang, D. L., Davies, S. L., Hook, E. W., … Robillard, A. (2004). Efficacy of an HIV prevention intervention for African American adolescent girls: A randomized controlled trial. *Journal of the American Medical Association*, *292*(2), 171–179. doi:10.1001/jama.292.2.171
14. Di Noia, J., & Schinke, S. P. (2007). Gender-specific HIV prevention with urban early-adolescent girls: outcomes of the Keepin' It Safe Program. *AIDS Education and Prevention : Official Publication of the International Society for AIDS Education*, *19*(6), 479–88. doi:10.1521/aeap.2007.19.6.479
15. El-Bassel, N., Caldeira, N. A., Ruglass, L. M., & Gilbert, L. (2009). Addressing the unique needs of African American women in HIV prevention. *American Journal of Public Health*, *99*(6), 996–1001. doi:10.2105/AJPH.2008.140541
16. Ferguson, Y. O., Quinn, S. C., Eng, E., & Sandelowski, M. (2006). The gender ratio imbalance and its relationship to risk of HIV/AIDS among African American women at historically black colleges and universities. *AIDS Care*, *18*(4), 323–31. doi:10.1080/09540120500162122
17. *Health Belief Model* (n.d.). Adapted from Nutbeam and Harris, 1998. Retrieved from: http://www.ohprs.ca/hp101/mod4/module4c3.htm on June 6, 2015.
18. Hodder, S. L., Justman, J., Haley, D. F., Adimora, A. A., Fogel, C. I., Golin, C. E., … El-Sadr, W. M. (2010). Challenges of a hidden epidemic: HIV prevention among women in the United States. *Journal of Acquired Immune Deficiency Syndromes (1999)*, *55* (Suppl. 2), S69–73. doi:10.1097/QAI.0b013e3181fbbdf9

19. Hou, S.-I. (2009). HIV-related behaviors among black students attending Historically Black Colleges and Universities (HBCUs) versus white students attending a traditionally white institution (TWI). *AIDS Care*, *21*(8), 1050–7. doi:10.1080/09540120802626196

20. Klein, C. H., & Card, J. J. (2011). Preliminary efficacy of a computer-delivered HIV prevention intervention for African American teenage females. *AIDS Education and Prevention*, *23*(6), 564–576. doi:10.1521/aeap.2011.23.6.564

21. Medina, C., & Rios, D. I. (2011). An alternate HIV preventive strategy: sex scripts in media for women of color. *Social Work in Public Health*, *26*(3), 260–77. doi:10.1080/19371918.2011.531182

22. Mittal, M., Senn, T. E., & Carey, M. P. (2012). Intimate partner violence and condom use among women: does the information-motivation-behavioral skills model explain sexual risk behavior? *AIDS and Behavior*, *16*(4), 1011–9. doi:10.1007/s10461-011-9949-3

23. Mongkuo, M. Y., Lucas, N., & Taylor, A. (2012). The Effects of Motivation and Knowledge on HIV Prevention Behavior among Historically Black College Students : An Application of the Information- Motivation-Behavioral Skills Model. *Greener Journal of Medical Sciences*, *2*(March), 38–44. Retrieved from http://www.gjournals.org/GJMS/GJMSpdf/2012/March/GJMS1213 Mongkuo et al.pdf

24. Morrison-Beedy, D., Carey, M. P., Crean, H. F., & Jones, S. H. (2011). Risk behaviors among adolescent girls in an HIV prevention trial. *Western Journal of Nursing Research*, *33*(5), 690–711. doi:10.1177/0193945910379220

25. Överlien, C., Aronsson, K., & Hydén, M. (2005). The Focus Group Interview as an In-depth Method ? Young Women Talking About Sexuality, *8*(4), 331–344. doi:10.1080/1364557042000119607

26. Painter, T. M., Herbst, J. H., Diallo, D. D., & White, L. D. (2014). Community-Based Program to Prevent HIV/STD Infection Among Heterosexual Black Women. *Morbidity and Mortality Weekly Report (MMWR), 63*(Suppl. 01), 15–25. Retrieved from http://www.cdc.gov/mmwr/pdf/other/su6301.pdf

27. Payton, F. C., Kvasny, L., & Kiwanuka-Tondo, J. (2014). Online HIV prevention information. *Internet Research*, *24*, 520–542. doi:10.1108/IntR-09-2013-0193

28. Wingood, G. M., DiClemente, R. J., Harrington, K. F., Lang, D. L., Davies, S. L., Hook, E. W., … Hardin, J. W. (2006). Efficacy of an HIV prevention program among female adolescents experiencing gender-based violence. *American Journal of Public Health*, *96*(6), 1085–90. doi:10.2105/AJPH.2004.053595

29. Wingood, G. M., & DiClemente, R. J. (2000). Application of the theory of gender and power to examine HIV-related exposures, risk factors, and effective interventions for women. *Health Education & Behavior : The Official Publication of the Society for Public Health Education*, *27*(5), 539–565. doi:10.1177/109019810002700502

APPENDICES

Appendix A1. IRB approval letter

USF
UNIVERSITY OF
SOUTH FLORIDA

RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-7091

5/6/2015

Henry Ross
USF College of Nursing
12901 Bruce B. Downs Blvd. MDC Box 22
Tampa, FL 33612

RE: **Expedited Approval for Initial Review**
IRB#: Pro00021293
Title: HEALTH INFOR[M-ED]: Black College Females Discuss a Virtual Reality (VR) Platform for Sexual Health Education & Training

Study Approval Period: 5/5/2015 to 5/5/2016

Dear Mr. Ross:

On 5/5/2015, the Institutional Review Board (IRB) reviewed and **APPROVED** the above application and all documents outlined below.

Approved Item(s):

Protocol Document(s):

Protocol.v1_revised

Consent/Assent Document(s)*:

Informed Consent.v1_reviewer edits.pdf
HEALTH INFOR[M-ED] Pre-Screening **Granted a waiver

*Please use only the official IRB stamped informed consent/assent document(s) found under the "Attachments" tab. Please note, these consent/assent document(s) are only valid during the approval period indicated at the top of the form(s). **Waivers are not stamped

It was the determination of the IRB that your study qualified for expedited review which includes activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45CFR46.110 and 21 CFR

56.110. The research proposed in this study is categorized under the following expedited review category:

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your study qualifies for a waiver of the requirements for the documentation of informed consent as outlined in the federal regulations at 45CFR46.117(c) which states that an IRB may waive the requirement for the investigator to obtain a signed consent form for some or all subjects if it finds either: (1) That the only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality. Each subject will be asked whether the subject wants documentation linking the subject with the research, and the subject's wishes will govern; or (2) That the research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval by an amendment.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

Kristen Salomon, Ph.D., Vice Chairperson
USF Institutional Review Board

Appendix A2. *HEALTH INFOR[M-ED]* recruitment flyer

HEALTH INF R[M-ED]:

Black female?

18+ years old?

USF UNIVERSITY OF SOUTH FLORIDA

Are you a Black female USF student and at least 18 years old?
Are you interested, or experienced, in virtual reality (VR) technology?

Come join us in a 90 minute group discussion about using VR technology for sexual health education & training!

- Engage with your peers
- Share what's important to your sexual health
- Learn about using VR technology in sexual health education and training

$15 cash, and snacks/water, will be provided to all participants

TO PARTICIPATE IN THIS RESEARCH STUDY, YOU MUST BE:

1. At least 18 years old
2. Black/African-American female
3. Enrolled as either a part-time or full-time student at USF

Henry Ross: Student Investigator / 813.974.0758 / hross1@health.usf.edu

IRB# Pro00021293

Appendix A3. Eligibility verification script

HEALTH INFOR[M-ED] STUDY ELIGIBILITY/PRE-SCREENING SCRIPT

Introduction:

Hello, my name is [_____]. I am a member of the research team at the University of South Florida – Tampa.

We are conducting a research study to identify sexual health risk factors for HIV, sexually transmitted infections (STIs) or unintended pregnancies that are important to you. We also would like to find out if using virtual technology may be helpful in providing you with information or tips for preparing you to deal with certain sexual health risks. Before you can enroll in the study, we need to ask you a few questions to determine if you meet certain requirements to participate. All information discussed will be confidential. You may refuse to answer any question and stop this interview at anytime. I will begin with the questions, would you like to continue?

If participants meet inclusion/eligibility criteria, the research team member should say: You meet the requirements to participate in this study. Would you like to be scheduled to attend your first session?

Yes: May I get your name, telephone number (home and cell), and email address? How would you prefer to be contacted? Available dates to begin sessions at your institution are [Dates] at [Times], which option would be work best with your schedule? Thank you for volunteering to participate in this study, and we will see you at the session scheduled on [Date] at [Time] for approximately 1.5 hours where you will be provided more information and asked to sign a consent form.

Do you have questions for me at this time? If you later decide you have any questions, please contact the research team at ()___. Thank you.

No: Thank you for your time. Please contact us at ()_____, if you change your mind about being a participant in this study. The information we have collected from you today will be kept confidential. I will also remove your contact information from our records. Any paper documents that have your name, telephone number, email address or any other identifying information will be shredded.

If participants do not meet inclusion criteria the research team member could say: I regret to inform you that you do not meet the requirements to participate in this study, but we do want to thank you for contacting us and expressing interest in this project.

Appendix A4. Additional pre-screening questions

HEALTH INFOR[M-ED] ELIGIBILITY VERIFICATION - ADDITIONAL QUESTIONS TO BE ASKED AFTER PRE-SCREENING, AND PARTICIPANT HAS VERBALLY CONSENTED TO STUDY

Questions:

What is your name? _____

What is your telephone number? _____

What is your email address? _____

What is the best time to contact you? _____

How old are you? _____

What is your race? ___

Are you a currently student at the University of South Florida? _____

If yes: Are you a part-time or full-time student?_____

Do you live on-campus, or off-campus? _____

If off-campus: Would you please provide your zip code? _____

How did you hear about this study? ____

Have you ever participated in a HIV prevention program? _____

If yes: Was that program specifically designed for Black college females? _____

If yes: How did you hear about that program? _____

If yes: What was the name of that program? _____

Do you have any experience with using technology or electronics for education or training? _____

If yes: what types of programs did you use? _____

If yes: How long did you use that program? _____

Appendix A5. Focus group survey 1

SEXUAL HEALTH RISKS

One a scale of 0 to 4 where:

0 = least important, 1 = somewhat important, 2 = important, 3 = most important, and 4 = very important

How important are the following sexual health risks to your personal sexual health? Please select one choice for each question, and mark your response with the letter "X"

Sexual Health Risks	0 Least important	1 Somewhat important	2 Important	3 Mostly important	4 Very important
Unknown HIV status					
Unknown STI status					
Having sex with drug use					
Having sex with alcohol use					
Having multiple sexual partners					
No use of birth control					
Having sex while depressed or stressed					
Being a victim of intimate partner violence (with/without sex)					
Having unprotected sex (oral, vaginal, or anal)					
Incorrect use of male condoms					
Incorrect use of female condoms					
Trouble talking with sexual partner(s) about safer sex					
Trouble talking with health care providers about sexual health					

What other sexual health risks, concerns, or interests do you have?

_____

Appendix A6. Focus group survey 2

VR-BASED SEXUAL HEALTH PROGRAM

QUESTIONS	Please circle only one response for each question				
How interested are you in a VR-based sexual health program?	Not interested	Somewhat interested	Interested	Mostly interested	Very interested
How often might you use a VR-based sexual health program (per week)?	Never	30 min	1 hour	2 hours	More than 2 hours

Of these topics, pick the top three that you think should be included in a virtual reality (VR)-based sexual health program.

1 = first choice, 2 = second choice, and 3 = third choice

Sexual Health Risks	Rank 1, 2, or 3	Additional comments or concerns about your choice(s)?
HIV risks and HIV testing		
STI risks and STI testing		
Having sex with drug use		
Having sex with alcohol use		
Having multiple sexual partners		
Risk of unplanned/unwanted pregnancy		
Having sex while depressed or stressed		
Being a victim of intimate partner violence (with/without sex)		
Having unprotected sex (oral, vaginal, or anal)		
Incorrect use of male condoms		
Incorrect use of female condoms		
Trouble talking with sexual partner(s) about safer sex		
Trouble talking with health care providers about sexual health		
Other:		

Appendix A7. Focus group discussion guide

HIV INFOR[M-ED]: Black College Females Discuss a Virtual Reality (VR) Platform for Sexual Health Education &

Training Focus Group Session Guide

Introduction:
Thank you for coming to talk with us today. We appreciate you taking time from your day to help us learn more about keeping young women your age healthy.

My name is Henry Ross; I will be leading this discussion..

This meeting will last around **1 hour and 30 minutes.** We have some drinks and snacks here for you. Bathrooms are located….

We ask that you please turn off your cell phones so you don't get interrupted while we're talking. If you can't turn off your phone for safety reasons, please put it on vibrate only.

Group Guidelines:
Before we start, we need to **agree** on some guidelines to make sure that everyone feels comfortable.

We'll be talking about **private** information in this group, and it's important that you all feel that what you share will not be shared with others. So, please don't share what's been said here with people who are not in the group.

It's important that we show **respect** for each other in the group. We will sometimes disagree with each other and that's normal. We'll ask that you listen to others, even if you disagree. We will also want to hear your views. Also, please try not to speak when someone else is talking.
We want to hear from everyone in the group: you all have something important to add.

We'll ask that you be as **open and honest** as you can in the group. We can learn from each other, and everyone has something valuable to share. Also keep your mind open to other points of views. There is no right or wrong answer(s) to these questions.

You may ask questions. We will try to answer any questions when they are asked, but we may need to wait until the end of group if the answer is complicated or doesn't have to do with the goals of the group.

All group sessions will be audio taped. Your privacy and confidentiality will be protected at all times. Only the research team, including the transcribers, which are people who translate the audio tapings into a written document, will listen to the tapes. Participants may choose to use their first name only or an alias (alternative) name. Please do not use last names of yourselves or others (including people in your lives). Do you have questions about the taping?

Can we all agree to these guidelines?

Because we appreciate you taking the time to help us learn more about what young women your age think, and because we understand you may have expenses as a result of attending, we will be paying each of you $15 for being a part of this group. **PAYMENT** will be provided at the end of the session and each of you will need to sign a receipt.

Preliminary Question:
Let's go around the group and introduce ourselves please include your classification (freshman/sophomore, etc.) and your major. Please use a first name or alias only.

My name is Henry Ross. This study represents my graduate thesis proposal. I also work at the University of South Florida, College of Nursing as a research assistant.

Who would like to go next?

As we mentioned earlier, we will be working together to help the group go smoothly. I will also be taking notes so we don't miss any important information.

PURPOSE AND GOALS:
We are here to learn more about the issues that are important to your personal sexual health. We are also here to hear your thoughts about virtual reality (VR), and how VR might be able to help you learn information or practice skills that you think would improve your sexual health

Some of the things that we're going to be talking about, like sex, can be embarrassing or difficult to talk about. We understand this, and we will help each other to be more comfortable. One more thing about talking about sex—it is very important for group members to feel that their behavior or choices are not being judged. There is a wide range of sexual behaviors. We're all responsible for making our own choices, and in this group we will be accepting of each other's choices. You have the opportunity to learn a lot from each other - as long as members feel comfortable sharing.

Transition I: Important Sexual Health Risks for Black College Females

Directions: I am also passing out a survey, survey 1, with a list of topics. Females like you have mentioned that these topics are important to their sexual health. Research also shows that these topics affect how likely someone like you may become infected with HIV, STIs, or have an unintentional or unwanted pregnancy. You will have a few

minutes

to fill out the survey based on how important each topic is to you, and then we will discuss your choices.

Confirm that everyone has completed the survey before continuing.
Discuss each topic in order of placement.

Who would like to share how important they feel "unintended pregnancy" is to them?

- Prompts: What do you feel this way?
  - Probes include: "Tell us more about that," "Please describe what you mean," "What have some of the others young women experiences been?"
  - Potential digressions…
    - School issues: teachers, classes
    - No boundaries related to novel independence
    - It does not matter if I practice safe sex
    - Dysfunctional guys
    - Religion/morality
    - Lack of role models
    - Clarifying misperceptions
- Ways to refocus and collect thoughts so that participants can be responded to in a sensitive manner should be practiced.
  - Reflect back, rephrase, summarize o We understand that you feel that… o We're hearing you say that…
  - We respect your beliefs regarding religion and morals, however…
  - Some young women have told us that…" "What would you do in that situation?"
  - Imagine you were in a situation where…
  - "How did XXX affect your ability to practice safe sex/avoid pregnancy"
- Summarize and clarify before moving on.

Does anyone have an additional topic that is not on this list?

- Prompts: What is the topic?
  - Probes include: "Tell us more about that," "Please describe what you mean," "What have some of the others young women experiences been?"
- Summarize and clarify before moving on.

That discussion was very helpful. Thank you all for sharing your thoughts. We will take a short break now. Can we agree to return in 5 minutes?

Transition II: Relevance of VR Technology in Black College Females

<u>Introductory questions</u>: ***What do you think about when you hear virtual reality (VR)?***

What do you know about VR? Have you ever used VR technology? Is there a difference between virtual reality for video games and virtual reality for learning? What interests you the most about VR technology? What additional information would you like to

know about VR technology?

Probes include: “Tell us more about that,” “Please describe what you mean,”

- Including all young women: “We find that some young women think…,” “What have some of the other young women experiences been?”
- Potential digressions…
  - Specific video game likes/dislikes
  - Specific education likes/dislikes

- Ways to refocus and collect thoughts so that participants can be responded to in a sensitive manner should be practiced.
  - Reflect back, rephrase, summarize
  - We understand that you feel that…
  - We’re hearing you say that…
  - “Some young women have told us that…”
  - Imagine you were in a situation where…
- Summarize and clarify before moving on.

Directions: I am now going to ask you to watch a few brief clips to see what you think about VR being used in education and training. After we watch the clips, we will move directly into the last discussion for this focus group.

Note: Show video-embedded clips from PowerPoint presentation

Transition III: VR Technology in Black College Female Sexual Health

Directions: Those video clips were shown to give you a chance to see how virtual reality can be used in different types of learning or training, I am now passing out the second survey, survey 2, with the same list of topics that we began with. There are also a few additional questions that we would like for you to answer. For the topics, imagine that there was a virtual reality program that could include your first, second, and third choices for topics to discuss. You can think about the videos you just saw to give you an idea. Please select your first, second, and third choices. For the additional questions, please select only one answer. You will have a few minutes to fill out the survey based on the three most important topics and the additional questions. Then, we will discuss your choices.

Introductory Questions: ***If there could be a virtual reality program like the ones you saw in the videos, what topics should they include? First, let’s talk about your top choices for risk topics that should be used in a virtual reality program. Who would like to start?***

What else interest you about this program? How often do you think you would use this program? How would you want this program to teach you the information you want or need? How would you want to hear about this program? How hard do you think it would be to use this program? Are there any additional topics that you would like to see in the program?

Probes include: “Tell us more about that,” “Please describe what you mean,”

- Including all young women: “We find that some young women think…,” “What have some of the other young women experiences been?”
- Potential digressions…

        - Specific video game likes/dislikes
        - Specific education likes/dislikes
- Ways to refocus and collect thoughts so that participants can be responded to in a sensitive manner should be practiced.

- Reflect back, rephrase, summarize o We understand that you feel that… o We're hearing you say that…
  - "Some young women have told us that…"
  - Imagine you were in a situation where…
- Summarize and clarify before moving on.

Final Questions: ***Is there anything that we didn't talk about today that you think it would be important for use to know? Did we miss anything?***

If you would like the results of this study, let me know when you get your incentive.

CLOSING:

Thank you very much for coming and talking with us today. We are glad that you were willing to share your thoughts and information with us to help other young women. We will be having other opportunities to participate in this study in the future. If you know of other Black or African American college women who are at least 18 years old, and who might be interested in participating, please tell them about it.