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SAAFE: Sexually Active Adolescent Focused Education Mobile Based Game to Promote Healthy Sexual Practices

CFAR Behavioral and Community Science Core mHealth Panel:
Innovative mobile applications for HIV/STI programs and research

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SAAFE: Sexually Active Adolescent Focused Education

A Mobile Based Game to Promote Healthy Sexual Practices

- improve young adults' perceptions of sexual health risks
- increase young adults' motivation to adopt specific protective factors (including getting testing for STIs and HIV)
- increase young adults' adoption of specific protective sexual health practices

Interactive, role-playing game has 8 technological components:

- Pre-Game Assessment:
 - Records participant's responses to questions about their knowledge about and perception of risk of acquiring an STI/HIV, likelihood they will adopt specific protective behaviors in the future (i.e. use a condom); and motivation to get screened
- Risk scenarios:
 - Generates scenarios to allow participants to interact via role-playing. Different risk scenarios demonstrate and show impacts of decisions made by the participants as they work through each scenario
- Mini games:
 - Creates additional mini games that allow participants to play to gain additional points as well as learn about STIs during game plan.
- Customization of characters:
 - Allows for participants to customize their characters based on rewards and achievements in the game. The features such as attractiveness and other qualities of the characters will also change over time in addition to the customizations based on rewards and achievements. One example would be the attractiveness of the character would increase based on the benefits of healthy choices (e.g. condom use, testing, abstinence, etc.) made in the game.

Interactive, role-playing game has 8 technological components:

- Database:
 - Provides access to location for participants to locate potential testing facilities that participants, if interested, could find. Designed to be location specific and factor in important local elements, such as local parental consent laws.
 - Second database will provide information on care. Will tie to specific locations to provide relevant information that benefits the participants if they express an interest in testing or seeking additional care.
- Usability metrics:
 - Provides in-game metrics on quantitative usability including duration of play, repeated play, sharing, and other metrics to assess system acceptance and usability
- Post-Game Assessment:
 - Records the participant's responses to questions about their knowledge of HIV/STI, perception of risk of acquiring an STI/HIV, likelihood they will adopt specific protective behaviors in the future such as link to testing and linkage to care; and intent to get screened and linked to care after playing the game
- Data Transfer and Local Data Store:
 - Provides a means for SAAFE to securely transmit through the internet, using SSL encryption, participant information collected in the Local Data Store to a central database.
 - Local Data Store: provides a secure repository for participant information

Phase 1

- Focus Groups
 - Created to gather input in the development of the SAAFE game
 - Recruited six African American (3 male and 3 female) youth ages 15-21
 - Conducted 4 hour-long focus groups over the course of the development process
- Pilot Testing

Phase 1 Focus Group Findings

Gaming Habits

- Types of games played varied by interest, but all stated they played video games daily.
- Did not spend significant amounts of money on mobile games.
 - Willing to pay \$.99-\$1.99 for a mobile game; most games were downloaded for free using Google Play.
 - More likely to purchase a game if it was popular and all of their friends were playing it.
- Participants generally played mobile games for 15-20 minutes at a time, however, they would play up to two hours in order to win or finish.
- Boys were more likely than girls to play games continuously and for longer periods of time.

Phase 1 Focus Group Findings

Sexual Health Topics

- Focused on their experiences with sexual health education.
 - Reported received information from books, health care providers, older siblings/relatives, and parents.
 - Stated did not seek sexual health information from the friends “as they were going through the same things.”
 - Some received text alerts with information for teen moms and sex education.

Phase 1 Focus Group Findings

Sexual Health Topics

- Participants offered information on where their peers engage in sexual behaviors.
 - Participants reported that peers would engage in sexual activity at a variety of locations including parties, the train, and playgrounds.
 - Especially true for oral sex and casual sex.
- Discussed STI/HIV risk perception.
 - Participants reported that their friends knew their risks of contracting a STI, but some friends did not care in the moment, especially when alcohol or drugs were involved.
- Participants also provided local slang terms for sexual behaviors to aid in the authenticity of language in the game.

Phase 1 Focus Group Findings

Game Concept and Scenario Design

- Presented 4 choices for possible game scenarios:
 - Storybook American Idol/Rap
 - Role-playing get into the NBA game
 - Dating Simulation game
 - Game of Life board game
- Which do you think they chose?

Phase 1 Focus Group Findings

Game Concept and Scenario Design

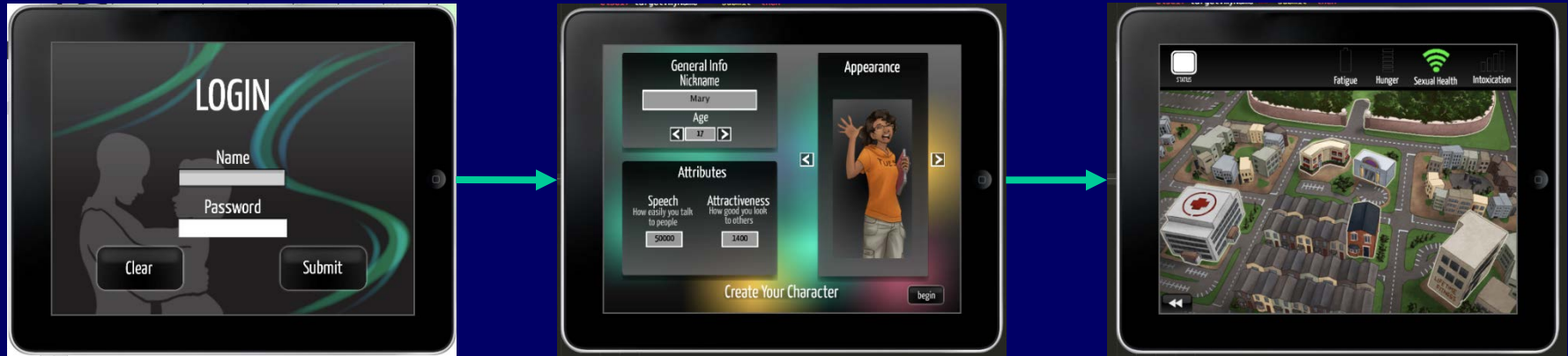
- Chose Dating Simulator Game!
 - Wanted to be able to create their own character, make decisions, and have a game that simulated real life situations.
- Research team presented several mini games that would be embedded in the game play to keep adolescents engaged.
 - Participants liked the idea of all the mini games, included STI Shooter, Condom Run, and Fact Pop.

Phase 1 Focus Group Findings

Character Design

- Presented several character options from various sources including popular cartoons, comics, and media sources.
 - Served as a guide for character design development
 - Participants provided significant feedback regarding the character choices.
- Participants chose characters that:
 - Looked realistic and not cartoonish
 - Reflected their own ages

SAAFE Game – Character Profile



- Dating Simulation Game built using focus group from target population
 - Different types of games including Dating Simulation were provided as option
 - Focus Group decided on this type of game
- Utilizing terms and character design, the target population can relate
 - Focus Group helped select and design characters
- Create your profile including factors important to dating:
 - Attractiveness
 - Speech

Phase 1 Focus Group Findings

Scene Design and Character Navigation

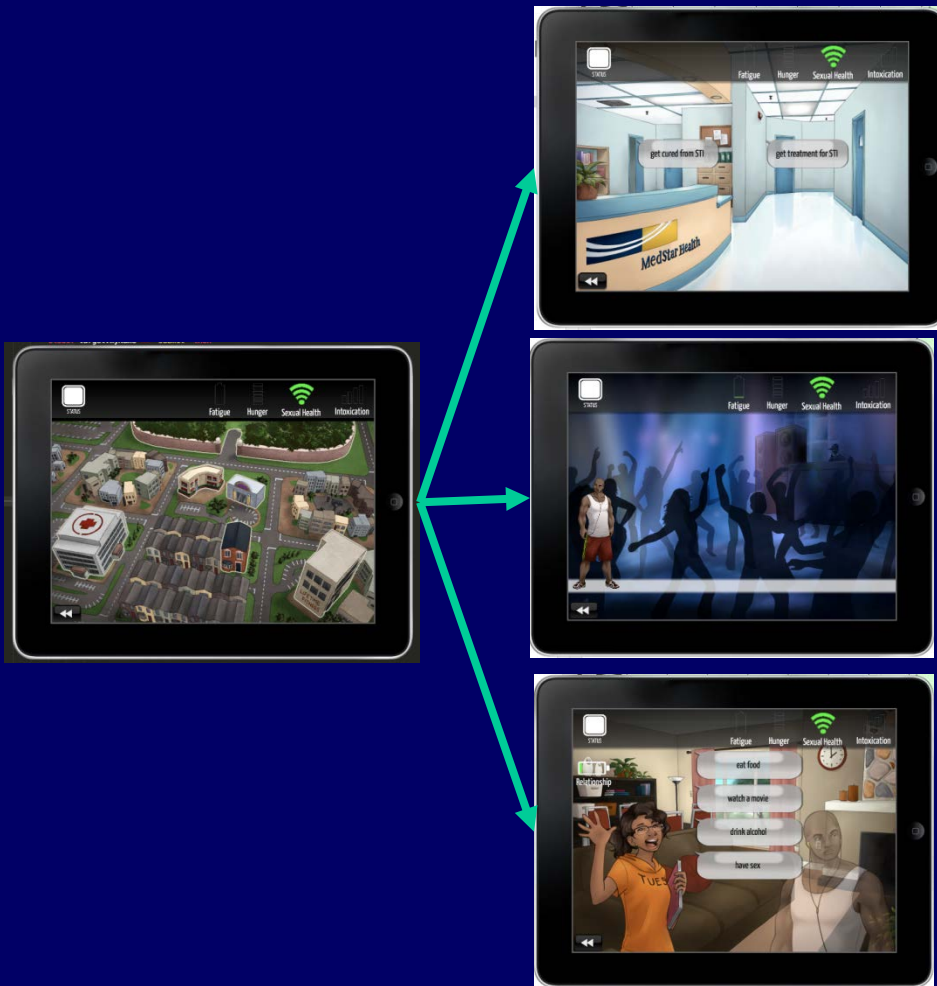
- Based on 2 focus groups, developed game characters and a storyboard
- Presented for additional feedback which included:
 - Appearances:
 - Characters should have different body types/skin tones
 - Neighborhood should look like theirs
 - Health clinic should look like the real hospital
 - Scenarios and dialogue options:
 - Participants provided feedback on how characters would approach a potential date or partner.
 - Participants discussed specific language and dialogue that they use in their everyday lives. They also provided location specific dialogue.

Phase 1 Focus Group Findings

Game Play

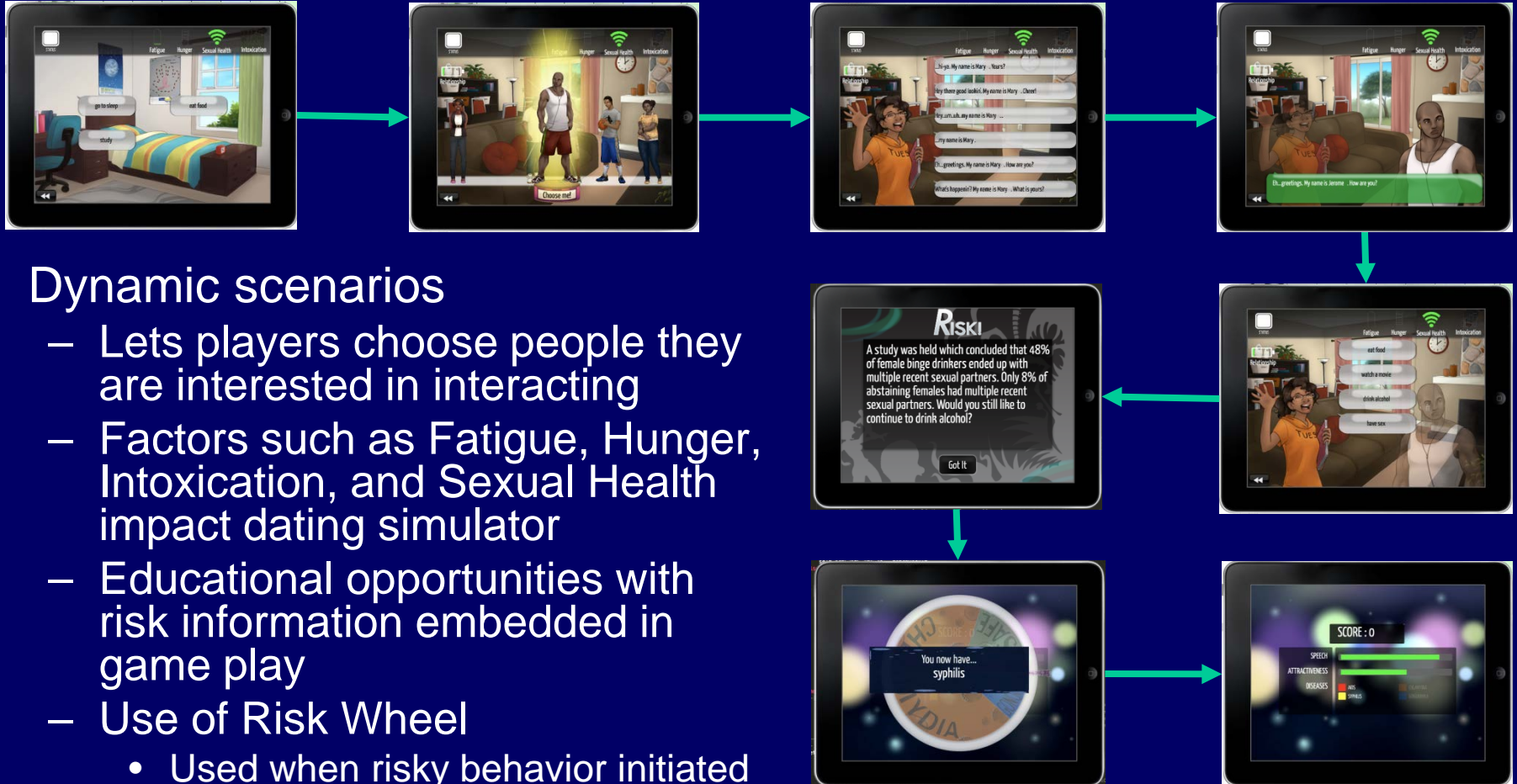
- Overwhelmingly, stated they enjoyed playing the game and felt that they could see themselves “getting caught up” in playing the game for a long period of time.
- Loved the mini games
- Areas for improvement
 - Biggest criticism was that there was not enough sexual health knowledge in the game.
 - Educational “pop ups” only occurred when participants made specific choices.
 - Game instructions too long and should come before they choose their character.
- Incorporated this feedback to make improvements to the SAAFE game before pilot testing commenced.¹⁴

SAAFE Game - Interactions



- Multiple locations for interactions
- Multiple scenarios for interactions
 - Home
 - School
 - Gym
 - Dance Club
- Present risk situations for sexual behavior and acquiring STIs

SAAFE Game – Embedded Risk Education and Calculator



- Dynamic scenarios
 - Lets players choose people they are interested in interacting
 - Factors such as Fatigue, Hunger, Intoxication, and Sexual Health impact dating simulator
 - Educational opportunities with risk information embedded in game play
 - Use of Risk Wheel
 - Used when risky behavior initiated by player
 - Based on population data for STI

SAAFE Game – Mini Games



STImon – A game similar to Simon which was popular in 1980's. Goal is to remember and match color patterns



aSTIroids – A game similar to the Asteroids shooting game but instead of shooting asteroids, players shoot different STI virus



Condom Run – A driving game to reach store for condom. Object is to avoid obstacles in road



Fruit STI – A cute shooting game design to keep female players engaged

- Mini Games embedded
 - Designed to keep players engaged
 - Results of mini games impacts score and interactions in dating simulator

SAAFE Game – Mini Game Example



Condom Run – A driving game to reach store for condom. Object is to avoid obstacles in road



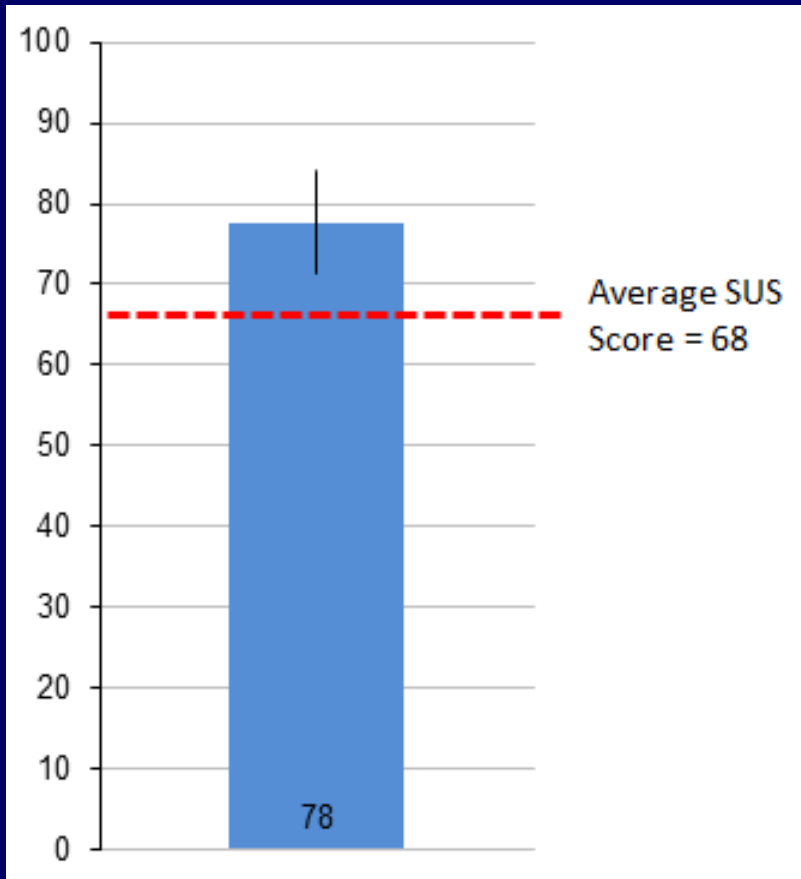
Instructions for the mini game provided



Results were either success in reaching store (Condom Bought) or failure to reach the store (Condom not purchase)

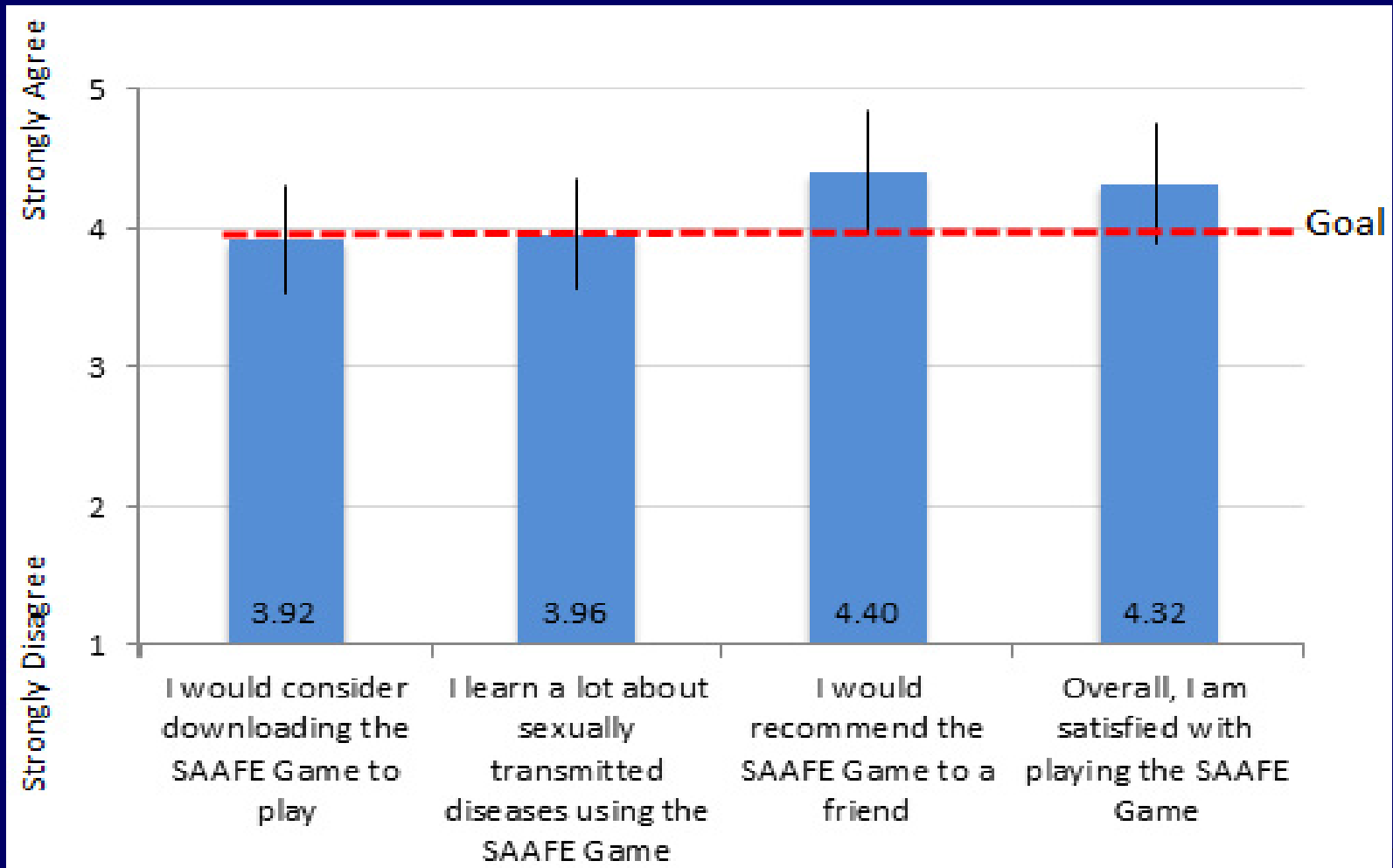
- Condom Run Mini Game
 - Mini Game presented when player engages in risky sexual activity
 - Instructions on how to play the game
 - Results of completing mini game control whether a condom was available

System Usability Scale (SUS)



- Measure of perceived usability
- Most common questionnaire used in assessing system usability.
- N=23
- Average SUS score of 77.7
- At the 82nd percentile with error bars of 90% confidence intervals.
 - Error bars show the most likely range for the population SUS score.

Pilot Participants' Feedback on the Game



Phase 2

- Plan to enhance SAAFE's functionality and features (e.g., social media, videos, and referral services)
- Improve interactivity and modeled scenarios in the game
- Conduct a large, 2-site study of Adolescent African Americans to measure outcomes

Ethical Issues and Practical Applications

SAAFE: Sexually Active Adolescent Focused Education

- Addresses a major public health concern – specifically, HIV prevention interventions for urban and rural minority adolescents and how to improve positive sexual health beliefs and practices.
- If successful, the study will have significant impact by informing health care practitioners on leveraging theory-driven, evidence-based gaming approach to improve health outcomes in HIV/STI prevention, intervention and, in the future, other related areas, such as decreasing rates of other STIs.