

# ***Risky Business: Young Adults' Sexual Attitudes and their Impact on Intervention Effectiveness***

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## **Abstract**

Sexually transmitted infections (STIs) disproportionately affect youth under the age of twenty-five. This study will identify how certain sexual attitudes held by young adults impact the effectiveness of interventions aimed at increasing safe sex. We coded these attitudes with the Sociosexual Orientation Index (SOI), and ran regression analysis of pre-survey data obtained from 321 female college students residing in Central Pennsylvania. We hypothesize that the higher the SOI, the less effective the intervention. The findings will provide information to potentially improve the design and targeting of intervention content to reduce risky sex.

## **Introduction**

One of the most prevalent health issues facing young adults in the United States is sexually transmitted infections (STIs). STIs disproportionately affect youth between the ages of 15 and 24. These youth contract 50 percent of new STI cases (CDC, 2014). The spread of sexually transmitted infections is associated with risky sexual practices such as sex without protection, especially with multiple partners. To combat STIs, intervention programs have been developed to reduce the risky sexual behaviors. In turn, researchers have attempted to assess the effectiveness of these programs (Noar, 2008; Smoak, Scott-Sheldon, Johnson, Carey, & SHARP research team, 2006; Tanzosh, 2010). However, few studies have considered how differences between people may impact the effectiveness of these interventions. By examining the main effect of sexual attitudes on likelihood of risky sex and whether these attitudes moderate the impact of an established intervention program the present study aims to bridge this gap.

As mentioned earlier, intervention to combat youth risky sexual behaviors is an important part of combating STIs. These programs aim to educate the youth about safe sexual behaviors. Educating the youth about safe sex and the possible consequences of risky sexual behavior would help to decrease the amount of risky sexual behaviors. However, the effect intervention programs have is not necessarily equal for every individual that goes through the program. Various cultural, environmental, and biological factors influence the effectiveness of interventions. Identifying the relationship between these factors will potentially be used to improve the way safe-sex interventions are designed. My study will be examining one of these factors. Before elaborating on a particular hypothesis, I will present literature on interventions

and the sexual attitudes of the youth that affect the likelihood of engaging in risky sexual behavior.

The individual factor considered here is youth sexual attitudes. Sexual attitudes have been measured with the Sociosexual Orientation Index. Specifically, the SOI measures how willing an individual is to have sex outside of the confines of a relationship (Simpson & Gangestad, 1991). Individuals who scored higher on this scale tend to have what is known as an unrestricted sociosexual orientation. People who had an unrestricted sociosexual orientation have a higher tendency to have more sexual partners, have more one night stands and were more likely to be accepting of sexual activity outside of a committed relationship (Simpson & Gangestad, 1991). This behavior would be consistent with risky sexual behaviors as more partners would facilitate acquiring a STI. The findings of this study were replicated by a study by Penke & Asendorpf (2008). Using both the revised version of the SOI and the original SOI, individuals who were classified as unrestricted had a negative correlation to measures of attitudes toward commitment, such as staying with one partner and willingness to stay with one partner (Penke & Asendorpf, 2008). Another interesting finding revealed that unrestricted attitudes differed for men and women and between those that were and were not in a relationship. Those involved in a relationship had more restricted desires than those that were not (Penke & Asendorpf, 2008). This had more of an effect for women than it did for men (Penke & Asendorpf, 2008). Men, however, had more unrestricted attitudes when involved in a relationship (Penke & Asendorpf, 2008). This seemed to show that women's attitudes about sex seem to complement the idea of being in a committed relationship and only wanting to have sex with the person in the relationship with them. On the other hand, men seemed to be more accepting of the idea of having sex outside of a relationship and thinking about sex with other people even if they were in a relationship. This is consistent with the idea of risky sex and wanting to have sex with multiple people.

Gender influences sexual attitudes, especially when considering relationship involvement. This idea was also supported by Jackson & Kirkpatrick (2008) who found scales that correlated with the SOI (short-term mating orientation scale, long-term mating orientation scale). In this study, the short-term mating scale measured that those who were looking for mates in the short term had way more sexual encounters than those who had long-term mating strategies for both men and women. As with the previous study, men scored much higher for more sexual encounters than women when they had a short-term mating strategy.

#### Differences in Sociosexuality: Genetics

In addition to gender, some researchers are turning towards genetics to better understand different sexual attitudes and behaviors. From this perspective, where individuals fall on the spectrum between restricted vs. unrestricted sexual attitudes is substantially influenced by genetics (Bailey, Dunne, Kirk, Zhu, Martin, 2000). Evidence to support the importance of genetic- in contrast to family-based (i.e., shared family) influences was revealed by a study by Bailey, Dunne, Kirk, Zhu & Martin (2000). This study compared monozygotic and dizygotic male and female twins. The purpose of comparing these different types of twins was to see if genetics or shared environment made a more significant contribution to sociosexuality (Bailey, Dunne, Kirk, Zhu, Martin, 2000). In addition to genetic and shared environmental influences, which are those shared by siblings in the same household (such as parenting), these models also estimated the influence of unshared environmental influences, such as those that differ between siblings. The full model observed if genetics have an impact on the sociosexuality of men and

women. The best fitting model did not find sex differences in the etiology of sociosexuality. The findings were that the monozygotic twins had a stronger intra-pair correlation, indicating strong genetic influences and no significant shared environmental influences. In the full model, genetic influences accounted for nearly 50% of the variance in sociosexuality for both men and women, with nonshared environments accounting for the remainder. This supported that claim that genetics have a significant impact on sociosexuality variability.

### Interventions to Reduce Risky Sexual Behavior

Interventions reduce the adverse consequences previously mentioned and have been proven to reduce risky sexual behavior. A meta-analysis by Noar (2008) found that interventions reduced the chance of risky sexual behavior by 28%. Additionally, the amount of sexual partners decreased by 15% in this study (Noar, 2008). Further demonstrating intervention effectiveness, condom use increased by about 34% and unprotected sex decreased by 32% (Noar, 2008).

Another meta-analysis conducted by Smoak, Scott-Sheldon, Johnson, Carey, & SHARP research team (2006) also found results that supported that interventions do make an impact. The interventions that saw an increase in the correct way to utilize a condom also saw a decrease in sexual partners and encounters (Smoak, Scott-Sheldon, Johnson, Carey, & SHARP research team, 2006).

An intervention, the Safer Sex Party, has been shown to be an effective intervention (Tanzosh, 2010). The Safer Sex Party is a peer intervention program where the educators are trained students. In the program methods of protection are covered through illustrations along with how to approach a partner about having safe sex and how risky sex can put them at risk for various infections including HIV (Tanzosh, 2010). The Safer Sex Party was found to be very effective reducing risky sexual behaviors in a study by Tanzosh (2010). Individuals who indicated that they rarely or never made use of protection before the intervention indicated that they would be either not sure, likely or very likely to use protection in the future following the intervention (Tanzosh, 2010). Additionally, the program had a positive effect on individuals who indicated that they were not thinking about being tested for HIV before the intervention. 23.4% of those who indicated that answer initially, reported that they were considering being tested after the intervention (Tanzosh, 2010).

As previous work by Smoak, Scott-Sheldon, Johnson, Carey, & SHARP research team (2006) has shown, interventions have been shown to reduce sexual risk behavior. But similar to the general prevention field, it is important to consider whom they work more for and why. As previously mentioned, sexual attitudes regarding short-term or unrestricted could affect its success. In other words, if an individual has an unrestricted or short-term mating orientation it is likely that the intervention may be effective for them but not as effective for someone who had a restricted or long-term mating strategy. This is what the present study aims to examine.

Given the previous literature, I will hypothesize that the Safer Sex intervention will be effective in reducing risky sex. As shown by Tanzosh (2010), the intervention was effective in reducing behaviors that would be considered unsafe sexual practices. Therefore, in the study, I am predicting a similar outcome.

Additionally, I predict that higher scores on the SOI will be correlated with risky sexual behavior. The previously mentioned literature found that those who scored higher had a tendency to have more sexual partners. This is correlated with unprotected sex rates. As a result, I predict these individuals will have a higher likelihood of also engaging in other risky sexual behaviors that may not be directly measured by the SOI.

Lastly, the intervention will have less of an effect on those with an unrestricted sexual attitude. Given the substantial heritability of sociosexuality (Bailey, Dunne, Kirk, Zhu, Martin, 2000), the intervention may be less successful among those individuals who show a strong genetic influence toward less restrictive sexual behavior. This is the most important hypothesis because it would imply that the individuals most at risk are not getting the same benefits that their peers who do not have the same sociosexual orientation.

## **Methods**

### Participants

The participants involved were 321 undergraduate freshman and sophomore female students at The Pennsylvania State University.

### Design

The study design was a randomized pre and posttest study with groups. The subjects participated in an experiment in which sessions were split into groups that had as many as 25 individuals in one of two intervention programs: The Safer Sex Party and Stress Less. The comparison group took part in the Stress Less Intervention. This intervention was peer taught, and focused on teaching the students about the nature of stress and how to cope with it, specifically strategies for getting rid of it and ways to recognize good and bad methods of coping. The other intervention, The Safer Sex program, was also peer taught, and focused on what kinds of behaviors put them at risk for STIs, how to protect themselves, and how to approach their partners about safe sex. Information about each session and how the program ran were collected as well.

Regardless of what condition participants were in, they received a pretest and a posttest assessment. The pretest was included to see what the participants' sexual habits were like before the intervention. It also asked demographic information such as age, ethnicity/race, sexual orientation, and current relationship status. It collected information about contraceptive use, age of the beginning of puberty, and STIs. Finally, an index called the Sociosexual Orientation Inventory (SOI), which measures willingness to engage in sex inside of a relationship as well as outside of one, was included. The posttest was very much the same except for questions that were included about a high risk sexual scenario.

### Procedure

Before the onset of the study, participants were made aware that the study would involve DNA collection and that they would either attend a safer sex intervention or a stress intervention. Participants could not pick which intervention in which to participate. They were made aware of this fact. Instead, participants would sign up through a given link. They would not be aware of which intervention they would be in until they arrived. The Principal Investigator would decide which sessions would be experimental and which would be control sessions before the participants were given an opportunity to sign up so that it would be more randomized. There was a minimum of two sessions a week, one that was experimental and one that was control.

Upon arrival, participants were required to check-in. They were provided with additional information about the study and given an opportunity to ask questions. After signing a consent form, they were given a pretest marked with a unique research ID number. When the participants were done filling out the pretest, the participants were given a DNA kit. This kit came with a

cotton swab and a test tube that the Principal Investigator (PI) would use to collect the DNA of the participants. These tubes had the same numbers as the participants' survey numbers. The DNA collection would follow the procedure of using cotton to do multiple cheek swabs which the PI oversaw. The cotton would then be placed in the tube and collected by the PI. The intervention program would then occur. Following the conclusion of the program, the posttest survey was completed by the participants. Participants were then debriefed and had a chance to ask any other questions they may have had. Finally, participants were compensated with a gift card from DowntownStateCollege.com.

### Measures

The SOI measures willingness to have sex in and out of a relationship. Specifically, the SOI has items it measures like "overt sexual behavior". These questions cover "frequency of sex in the past month, number of lifetime partners, number of partners in the past year, number of partners desired, number of partners foreseen, and number of one night stands" (Simpson & Gangestad, 1991). Sample questions included "How many times have you had sex in the past month"?, and "With how many different partners have you had sex in your lifetime"?. (Simpson & Gangestad, 1991). There is a "covert behavioral" measure which asks, "frequency of sexual thoughts, and frequency of sexual fantasy" (Simpson & Gangestad, 1991). The answers from the frequency of sexual thoughts were measured on a 9-point scale (Simpson & Gangestad, 1991). Answers ranged from 1 (virtually never) to 9 (almost all of the time) (Simpson & Gangestad, 1991).

The answers from the frequency of sexual fantasies section were measured on an 8-point scale from 1 (never) to 8 (at least once a day) (Simpson & Gangestad, 1991). "How frequently do you think about sex?" and "How often do (did) you fantasize about having sex with someone other than your current (most recent) dating partner"?. would be examples from these sections (Simpson & Gangestad, 1991).

Lastly, a final section consists of attitudinal items that measure the willingness of the participants to engage in sexual activity outside the confines of a relationship. This final section was measured on a 9-point scale from 1 (strongly disagree) to 9 (strongly agree) (Simpson & Gangestad, 1991). Sample questions from here include: "Sex without love is OK", "I can imagine myself being comfortable and enjoying causal sex with different partners" (Simpson & Gangestad, 1991). Individuals who scored higher on this scale tend to have what is known as an unrestricted sociosexual orientation. Scoring higher on this meant that they had a higher tendency to have more sexual partners, have more one night stands and were more likely to be accepting of sexual activity outside of a committed relationship (Simpson & Gangestad, 1991). Five SOI items were reverse-scaled for uniformity, SOI 6,7, 9,13,14. A reliability test revealed a Cronbach's Alpha of .912. This high score indicated high reliability. A scale was then created from the questions that made up the SOI.

### High Risk Sex Scenario

As mentioned earlier a scenario was used in the posttest. This scenario was used to create a stimulated mood for the participants. This stimulated mood was meant to simulate the feelings a participant would encounter if they actually experienced that situation. This was to test their decision-making skills for these types of situations in real life after the intervention program. In the scenario, a man named Michael approaches the participant at a party. Afterwards, they go out on a date and return to Michael's house. At Michael's house the pair start to kiss and things

progress until Michael announces that he does not have a condom. Participants are then asked questions about how they would react in that situation.

### Analysis Framework

To test if the sex intervention was effective in reducing risky sex, linear regression analyses will be run. Linear regression will reveal if there was an association between the sex intervention and the outcome variables which were the questions related to the vignette. The sex intervention will be run with a scale that was created out of the outcome questions, MIKE1-9.

The second hypothesis, that individuals who scored higher on the SOI would have a higher tendency to engage in risky sexual behavior, will also be tested by utilizing linear regression. The scale was run against the outcome variables, the vignette questions. The same outcome scale will be used from the previous hypothesis. Additionally, a subscale will be created for the outcome variables after running a factor analysis. We will take the most significant of each component (out of 2) to create two subscales. The first subscale will be made up of MIKE 1,2,3,4,8 and the second subscale will be made of MIKE 1,2,4,5,7. These subscales will each be run against the SOI scale.

The final hypothesis that the intervention would not be as effective for participants with an unrestricted sexual attitude will also be tested with linear regression analyses. This would reveal if there was an interaction between the two. The condition, the total scale for the SOI, and an interaction variable between the two will be run against the outcome scale.

## **Results**

The results for the first hypothesis, revealed that the Safer Sex intervention was found to be ineffective as the p-value was insignificant (p-value=.109). This means that there was no difference in responses on the outcome scale between the groups in the Safer Sex intervention and the Stress Less intervention. The intervention was not effective in reducing sexual behavior.

For the second hypothesis, the linear regression revealed a significant relationship between the SOI scale and the outcome scale (p=0.00). It had a positive correlation, (.438) meaning the higher the score on the SOI, the more likely the participant was to make riskier decisions on the outcome scale. Significant results were also found for the outcome subscales. Subscale 1 was significant with a p-value at 0.00 and correlation of .457, and Subscale 2 was also significant with p-value of 0.00 and correlation of .427.

The final linear regression tested the last hypothesis and combined the condition, the SOI, and the variable meant to measure an interaction between them. As expected given the above findings, this analysis did not find a relationship between the intervention and the outcome scale. In other words, the intervention had no impact of whether or not participants made risky decisions. There was still a significant relationship between the SOI and the total outcome scale ( $p < 0.00$ ). The magnitude of the associations was largely unchanged from the findings revealed in model 2 analyses above. Overall outcome association was .438, the first subscale had an association of .471, and subscale 2 had an association of .431. Most importantly for the purpose of hypothesis three, the interactions between intervention status and SOI scores were not significant ( $p = .958$ ). Interaction results with both outcome subscales were also non-significant, with p-values of .776 for subscale 1 and .916 for subscale 2. These results are evidence that the intervention was no less effective for individuals with an unrestricted attitude. Even though the SOI had a significant relationship with the outcome, the fact there was no interaction between the

intervention and the SOI indicates that the scores on the SOI do not moderate the effect of the intervention.

## **Discussion**

Only one of the three hypotheses was supported. The findings supported Hypothesis Two, that higher SOI scores would predict greater likelihood of risky sexual behaviors, as indicated by participants' responses to the scenario. The findings did not support Hypothesis One, that The Safer Sex Intervention would be effective in reducing risky sex, as participation in The Safer Sex Party vs. Stress Less was not related to risky sex likelihood. Findings also did not support Hypothesis Three, that SOI scores would moderate the effectiveness of the intervention in changing likelihood of risky sex. In terms of the findings supporting the second hypothesis, it should be noted that association between sexual attitudes and likelihood of risky sexual behaviors was quite strong ( $B = .438$ ).

### Impact of Findings

The impact for these findings is very important. The fact that the intervention was not effective is a huge issue. The intervention needs to be redesigned that so that it can be effective in reducing risky sexual behavior. After all, young adults need an intervention that works. When redesigning the interventions, sexual attitudes should be taken into account since it had such a strong relationship to the likelihood of risky behavior.

### Limitations

There are limitations worth mentioning. First, the results may not be able to be generalized to many populations. Given the fact that most of the participants were Caucasian, these results may be more applicable to them than other groups. However, most of the Penn State campus fits that profile, so results are relevant to a large portion of Penn State students, and likely other majority ethnicity students at similar institutions. Second, the majority of the participants were heterosexual, meaning that we cannot assume these results apply to other sexual orientations. Finally, no men were included in the study. Findings from the previous studies found that men were more likely to behave or have attitudes consistent with an unrestricted orientation (Penke & Asendorpf, 2008; Jackson & Kirkpatrick, 2008). Given these findings, it is clear that risky sexual practices are not just a female issue and that men need interventions just as much, if not more than women.

### Recommendations for Further Study

For further study, it may be beneficial to include a diverse population of participants in terms of race/ethnicity as well as sexual orientation. This would allow us to see if the results are consistent across other groups of people. Additionally, having a follow-up survey would be a great addition to measure if the intervention made a difference in the real world instead of just through a vignette.

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