



2008

Increasing Condom-Related Behavioral Intentions, Motivation, and Willingness via Social Ties in Advertisements

Marylee Richardson '08
Illinois Wesleyan University

Follow this and additional works at: https://digitalcommons.iwu.edu/psych_honproj



Part of the [Psychology Commons](#)

Recommended Citation

Richardson '08, Marylee, "Increasing Condom-Related Behavioral Intentions, Motivation, and Willingness via Social Ties in Advertisements" (2008). *Honors Projects*. 121.
https://digitalcommons.iwu.edu/psych_honproj/121

This Article is protected by copyright and/or related rights. It has been brought to you by Digital Commons @ IWU with permission from the rights-holder(s). You are free to use this material in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/ or on the work itself. This material has been accepted for inclusion by faculty at Illinois Wesleyan University. For more information, please contact digitalcommons@iwu.edu.

©Copyright is owned by the author of this document.

Running head: CONDOM USE AND ADVERTISING

Increasing Condom-related Behavioral Intentions, Motivation, and
Willingness via Social Ties in Advertisements

Marylee Richardson

Illinois Wesleyan University

Abstract

Although researchers have identified factors associated with increased condom use, STI prevalence rates are still high, and condom use rates are still low. Various advertising techniques have been implemented to increase condom use, but these techniques are largely self-focused. Based on research in exercise adherence and cognitive interdependence, this study used advertisements targeting social ties to increase condom use. One hundred forty-seven Illinois Wesleyan University students viewed one of six critical advertisements-- a self-focused condom advertisement, a relationship-focused condom advertisement, a friendship-focused condom advertisement, a self-focused sunscreen advertisement, a relationship-focused sunscreen advertisement, or a friendship-focused sunscreen advertisement. Participants then completed measures regarding their critical product-related attitudes, intentions, motivations, and willingness. Results indicated that the social-tie condom advertisements increased motivation and willingness to use condoms more than comparable social-tie sunscreen advertisements increased motivation and willingness to use sunscreen. This suggests that social-tie condom advertisements could increase condom use, especially during impulsive sexual interactions.

Increasing Condom-related Behavioral Intentions, Motivation, and Willingness via Social Ties in Advertisements

“You can’t row without the right paddle,” Trojan Man advises a couple trying to have a romantic moment in a rowboat during a Trojan brand condom commercial. While Trojan Man was Trojan’s humorous superhero advertising campaign in the late 1990s, other condom companies have used different approaches. For instance, a Durex brand condom print advertisement features a picture of a boy’s bed. On the nightstand next to the bed are pictures with shocked expressions and text reading, “Have the sex you tell your friends you have.” Additionally, organizations such as CBS Corporation, Viacom, and the Henry J. Kaiser Family Foundation have used still other campaigns to promote safe sex through public service announcements (PSAs). Together, these three organizations have created the Know HIV/AIDS campaign, which urges people to fight ignorance regarding HIV/AIDS by telling viewers, “Protect yourself. Get tested.”

Despite these advertising campaigns for condoms and PSAs advocating safe sex, sexually transmitted infection (STI) prevalence rates are still problematic. For example, approximately 19 million new cases of STIs occurred in the United States in 2000, and of those, about 48% were among people aged 15-24 (Weinstock, Berman, & Cates, 2004). In addition to general STI prevalence rates, HIV/AIDS prevalence rates are also troublesome. As of 2005, an estimated 39 million people were living with HIV/AIDS worldwide. Also that year, there were an estimated 4.1 million new HIV infections and about 3 million deaths due to AIDS globally (The Joint United Nations Programme on HIV/AIDS, 2006). Just in the United States, there were approximately 40,000 new AIDS diagnoses in 2005 (Centers for Disease Control and Prevention, 2007). Finally, of the estimated 39 million people living with HIV/AIDS, about 30% are between

the ages of 15 and 24, and more than half of all new HIV infections worldwide occur in people under the age of 25 (The United Nations Children's Fund, UNAIDS, & World Health Organization, 2002). In people aged 15-24, these HIV infections occur at the approximate rate of 6,000 per day (United Nations Population Fund, 2005).

Despite having high prevalence rates of STIs, adolescents and young adults use methods of protecting against STIs infrequently and have particularly low rates of condom use. For example, researchers found that approximately one-third of sexually active college students did not use any form of protection against STIs during the previous year. Additionally, more than one-half of college students reported only using birth control methods including the pill, tubal ligation, vasectomy, and the IUD that provide no protection against STIs the last time they had sexual intercourse. Although condoms serve as a method of birth control and also protect against STI transmission, only about three in 10 college students reported using condoms the last time they had sexual intercourse. This low rate of condom use is especially troubling considering that sexually active college males reported an average of eight partners, and sexually active college females reported an average of six partners (Reinisch, Hill, Sanders, & Ziemba-Davis, 1995).

Because STI prevalence rates and condom use rates in young adults are especially problematic, the current study proposed to increase condom use in college students via print advertisements. While other advertisements for condoms are self-focused and urge viewers to protect themselves, the current study used advertisements focused on social ties. Drawing on findings from other areas of health regarding the effects of social ties on behavioral changes and on research regarding cognitive interdependence, these advertisements urged viewers to protect their romantic relationships and friendships from the consequences of unprotected sex. In order to fully develop the rationale for the current study, I will first discuss research on factors related

to condom use. Next, I will review research regarding how advertisements have previously targeted condom use. Finally, I will discuss findings in areas of health, including physical fitness, that illustrate the effects that social ties can have on behavioral change.

Factors Related to Condom Use

Due to the staggering prevalence rates of STIs combined with the low rates of regular condom use in the United States, several researchers have focused on factors associated with increased condom use. These researchers have paid special attention to age, gender, relationship status, HIV/AIDS-related knowledge, motivation, attitudes, intentions, willingness to use condoms, and willingness to encourage others to use condoms.

Age and gender. Research regarding age and gender as they relate to condom use has resulted in mixed findings. In their meta-analysis, Sheeran, Abraham, and Orbell (1999) found weak correlations indicating that younger individuals are more likely to report condom use than older individuals and also that males are more likely to report condom use than females. However, in terms of correlations between condom use intentions and condom use, Sheeran and Orbell (1998) found that males and females did not differ, but that there were age differences reflecting the fact that adolescents are less able to implement their condom use intentions than undergraduate college students and adults. While this last finding may be due to less stable condom use intentions among younger individuals, together all of these findings seem to suggest that condom use intentions and behaviors are influenced by factors other than age and gender.

Relationship status. As such, research has also focused on relationship status as it relates to condom use. Sheeran et al. (1999) found that, on average, 17% of respondents reported always using a condom with their steady partners and 30% of respondents reported always using a condom with their casual partners. Additionally, the researchers found that 52% of respondents

with steady partners reported never using a condom, while an average of 40% of respondents with casual partners reported never using a condom. Thus, these findings illustrate that overall, respondents with casual partners reported more condom use than respondents with steady partners.

Likewise, Tucker, Elliot, Wenzel, and Hambarsoomian (2007) also found that, for impoverished women living in low-income housing and shelters, higher levels of relationship commitment were related to more frequent unprotected sex. In addition, individuals may use condoms more frequently with their casual partners than their steady partners because their intentions to use condoms with casual partners are higher (Von Haeften, Fishbein, Kasprzyk, & Montano, 2000).

Although researchers have found that individuals are more likely to intend to use condoms with casual partners than with steady partners, correlations between steady partner condom use intentions and behavior are stronger than correlations between casual partner condom use intentions and behavior. Researchers have explained this result by drawing attention to the fact that the beliefs and attitudes of steady partners are better known to each other and communication about contraceptive use is more likely (Sheeran & Orbell, 1998).

To further clarify the association between relationship status and condom use, researchers have described how demographic variables such as gender may interact with relationship status to influence condom use rates. For example, Von Haeften et al. (2000) found that while males and females did not differ in their abilities to use condoms with steady partners, women were significantly more likely to implement their condom use intentions with casual partners than men were. Additionally, men were equally likely to implement their condom use intentions with both steady and casual partners, but women were significantly more likely to implement their condom

use intentions with their casual partners than with their steady partners.

In summary, research regarding relationship status, gender, and condom use is somewhat contradictory. Research has demonstrated that despite the fact that people are more likely to use condoms with casual partners than steady partners, they are better able to act on their intentions to use condoms with steady partners. In addition, there are gender differences in condom use intentions and behavior. Because of these differing results, the current research examined the relationship that gender and relationship status have with other variables related to condom use (as discussed below).

HIV/AIDS-related knowledge. Along with demographic characteristics and relationship status variables, researchers have also looked at levels of HIV/AIDS-related knowledge in relation to condom use. For example, Fisher, Williams, Fisher, and Malloy (1999) looked at AIDS-related information as part of their test of the Information-Motivation-Behavioral Skills (IMB) Model among sexually active urban high school students. According to the IMB Model, having information relevant to AIDS prevention is necessary in order to implement AIDS preventative behaviors like condom use (Fisher, Fisher, & Harman, 2003).

Although having correct information about STIs and condom use is important in making educated decisions regarding condoms, research has shown that the low condom use rates among young adults are not solely due to a lack of information. Several studies examining the relationship between HIV/AIDS-preventative information and behaviors have found that the two are only slightly correlated or not correlated at all (Fisher et al., 1999; Sheeran et al., 1999; Anderson et al., 2006). Other studies have also shown that there is an inconsistency between college students' knowledge about HIV and their HIV-preventative behaviors. Even though these students know that condoms are necessary to protect against HIV, many still choose not to use

them (DiClemente, Forrest, & Mickler, 1990; Beckman, Harvey, & Tiersky, 1996; Ploem & Byers, 1997, as cited in Gabler, Kropp, Silvera, & Lavack, 2004).

Anderson et al. (2006) found similar results in a sample of low-income women from five cities across the United States. Despite receiving an education intervention including coupons for free AIDS brochures, women in this study decreased their condom use slightly between pre- and post-treatment. Additionally, the intervention led to higher levels of condom-use information, but these higher levels of information did not influence consequent condom use.

Together, these study results illustrate that information alone is not sufficient to cause behavioral change. Information about HIV/AIDS prevention may not be enough to cause increases in preventative behaviors because, as more and more interventions include information, people know more and more about HIV/AIDS. In fact, as evidence that people already have AIDS preventative information, Fisher et al. (1999) found that many of the participants in their study scored highly on the measure of information.

This is not to say that information is not important. Sheeran et al. (1999) found that the correlation between knowledge and condom use increased slightly as year of data collection increased. As a result, these researchers do not consider information alone to be an appropriate target for AIDS-prevention initiatives; information is a necessary but not sufficient condition for behavior change. Thus, although information is an important component in HIV prevention efforts, the current study did not attempt to increase levels of information to increase condom use because the information would not have been novel and because information has not been strongly correlated with HIV/AIDS preventative behaviors.

Motivation. Because research has shown that information is not enough to compel individuals to increase their condom use, researchers have focused on the other two variables

included in the IMB Model—motivation and behavioral skills. Research has supported the influence of motivation and behavioral skills by showing significant, positive correlations between condom-use rates and motivation and behavioral skills (Fisher et al., 2003).

Fisher et al. (1999) illustrated the importance of motivation and behavioral skills when they found that AIDS preventative motivation was significantly correlated with AIDS preventative behavioral skills in their sample of high school students. AIDS preventative behavioral skills were then significantly correlated with AIDS preventative behavior for both male and female participants.

Researchers implementing interventions based on the IMB Model have also shown that increases in condom use are largely due to increases in motivation and behavioral skills. Following an IMB-related intervention, Anderson et al. (2006) found that motivational increases in low-income women were the best predictors of higher condom-use rates. These motivational increases (operationalized by Anderson et al. as increases in perceived risk of HIV infection, condom-use social norms, condom-use attitudes, and condom-use intentions) not only led directly to higher condom-use rates but they also indirectly led to higher condom-use rates via behavioral skills. Similarly, Fisher, Fisher, Misovich, Kimble, and Malloy (1996) conducted an intervention containing AIDS risk information, motivation, and behavioral skills components with a sample of college students. Although Fisher et al. implemented their intervention with a different population than Anderson et al. did, their results were comparable. Again, the intervention increased levels of AIDS risk motivation and behavioral skills, and these in turn led to sustained increases in condom use more than two months after the intervention. Together, these studies show that motivation and behavioral skills are strongly correlated with condom use and are also strong predictors of condom use.

In the current study, condom use motivation was operationalized as condom-use social norms based on participants' closest friends' beliefs and practices, attitudes regarding sex with condoms, participants' perceived needs for condoms, and partners' reactions, and intentions regarding communication with partners and condom use. The current study used print advertisements to target motivation because advertisements have been shown to be important tools in fostering motivation to obtain HIV/AIDS preventative materials and motivation to use condoms. For example, Dahl, Frankenberger, and Manchanda (2003) found that participants who did not view a condom advertisement were less likely to pick up HIV/AIDS-related materials (including Condom Knowledge from Durex, AIDS ribbons, and business cards with the HIV/AIDS hotline from a local medical clinic) than participants who viewed condom advertisements using shock and fear appeals.

Condom advertisements are not only motivating in controlled experimental settings but also prompt people to change their behavior outside of the laboratory. For instance, the increase in condom sales that occurred during the late 1990s followed condom manufacturers' implementations of new marketing messages. These new messages emphasized "sex for fun," and the resulting increase in condom sales suggests that people responded to the advertisements and were motivated to buy more condoms (Eder, 1999).

Although advertisements are effective for motivating people to use condoms, in print form they are less successful at increasing behavioral skills related to condom use. Most behavioral skills training involves peer- or expert face-to-face, interactive demonstrations regarding how to use condoms or how to discuss condom use with a potential partner, so the advertisements in the current study did not focus on increasing behavioral skills (Fisher et al., 2003).

Attitudes and intentions. In addition to conducting research to determine how the constructs

of the IMB Model work to predict condom use, researchers have also conducted research involving condom use and the constructs of other behavioral theories, including the Theory of Planned Behavior. According to this theory, intentions to use condoms are largely influenced by attitudes toward using condoms. Attitudes are related to the expected outcomes of condom use (e.g., “I will be uncomfortable if I have to use a condom”) as well as the importance an individual attributes to those outcomes (e.g., “Feeling uncomfortable using a condom would be very unpleasant;” Ajzen, 1991; Sheeran & Taylor, 1999). Several studies have supported the associations predicted by the Theory of Planned Behavior as it relates to condom use intentions. For example, Sheeran and Taylor (1999) and Sheeran et al. (1999) found that attitudes toward condoms were significantly, positively correlated with behavioral intentions to use condoms.

Along with supporting the association that attitudes have with behavioral intentions, research has also shown that condom use intentions are significantly correlated with actual condom use. Past research has shown that preparatory behaviors connected with condom use intentions, such as carrying a condom or having a condom available, are also positively related to actual condom use (Sheeran et al., 1999).

As attitudes and intentions have both had strong influences on condom use, the print advertisements used in the current study attempted to target both variables in order to increase condom use. Although the motivation construct in the current study contained attitude and intention components, explicit attitudes and intentions were operationalized differently as their own constructs. As part of the motivation construct, attitudes were operationalized as participants’ feelings about their need for condoms and their predictions of their partners’ reactions if they were to suggest using condoms. As an individual construct, explicit attitudes included participants’ positive or negative feelings toward condom use. As part of the motivation

construct, intentions included participants' plans to communicate with their partners about condom use and to use condoms the next time they had sex. As an individual construct, intentions included the effort that participants were planning on putting forth in order to use condoms on a regular basis, buy condoms, and develop a concrete plan to use condoms. Thus, using explicit attitudes and intentions as individual constructs and as parts of the motivation construct allowed for inclusion of multiple types of attitudes and intentions all related to condom use in the current study.

Willingness to use condoms. Other research has also shown that willingness to engage in a behavior under certain circumstances is also an important predictor of the subsequent behavior. With young adults in particular, risky behaviors like unprotected sex are often not planned. Thus, researchers have investigated the willingness component of the Prototype Willingness Model (Gibbons & Gerrard, 1995, 1997) to better understand why young adults' intentions to use condoms do not always result in them actually using condoms. The basis of the willingness construct is that young adults do not always *plan* to participate in unprotected sex but *will* if given the opportunity. Therefore, intentions are different from levels of willingness because intentions are planned while willingness predicts more spontaneous behavior. Additionally, willingness is also an independent construct from behavioral expectation, or an individual's perceived likelihood that he or she will actually perform a behavior, as it relates to unprotected sex (Gibbons, Gerrard, Blanton, & Russell, 1998; Gibbons, Gerrard, & Lane, 2003).

Although young adults often have opportunities to have unplanned, unprotected sex, this implies that they also have opportunities to have unplanned, *protected* sex. In these situations, young adults may not have *planned* to have sex at all and are *willing* to take the risk and have sex, but even if they decide to have unplanned sex, they can still choose to use protection. As the

present study is focused on determining what variables are related to increased condom use, the willingness construct had an additional, realistic component beyond traditional willingness. Instead of just being asked how willing they would be to have unprotected sex in given situations, participants were also asked how willing they would be to go out of their way to use condoms in given situations if they decide that they would be willing to have sex. This addition made the willingness scenarios more realistic because it gave participants the option to be willing to have sex in the situation without being totally reckless and doing so without protection. In other words, this added component allowed for the assessment of a middle-level of willingness—the willingness to take a partial risk but not a completely irresponsible risk. Through these willingness scenarios, the current study also assessed how willing participants were to refuse sex.

Willingness to encourage others to use condoms. Studies have also highlighted the interactive nature of condom use and have shown that individual factors regarding condom use, such as intentions, are very much influenced by individuals' perceptions of their sexual partners' attitudes toward condom use and their sexual partners' intentions to use condoms (De Visser & Smith, 2004; Sheeran et al., 1999; Sheeran & Taylor, 1999). Additionally, studies have shown strong links between communication (both with sexual partners and with peers) and condom use intentions. For example, Gabler et al. (2004) found that one's confidence in his or her ability to convince a partner to use condoms influenced one's future behaviors related to purchasing and using condoms.

Moreover, Wolf and Pulerwitz (2003) discovered that Ghanaian youth who talked to their peers about AIDS-related information and behaviors were significantly more likely to report that they had done something to protect themselves from AIDS than Ghanaian youth who talked to no one. Similarly, Halpern-Felsher, Kropp, Boyer, Tschann, and Ellen (2004) found that

adolescent males and females who reported being able to talk to their peers about sex-related topics had more positive attitudes toward condoms than adolescents who reported less ability to talk to their peers about such topics. These more positive attitudes were in turn correlated with greater commitment to using condoms, which was associated with greater actual condom use. Because communication with peers and sexual partners has been linked to increased condom use, the present study measured two types of willingness: willingness to use condoms oneself and willingness to encourage others to use condoms.

Targeting Condom Use in Advertising

While many of the researchers whose work has just been reviewed have targeted condom use through intervention and education programs, researchers have also attempted to increase condom use through advertising, as previously discussed. Advertisements are persuasive and efficient means of presenting important information, and as advertising becomes increasingly prevalent in our culture, it is important to determine how best to use it to persuade individuals to practice healthy behaviors (Struckman-Johnson, Gilliland, Struckman-Johnson, & North, 1990).

Content of HIV/AIDS public service announcements (PSAs) and condom advertisements. In order to target condom use, PSA creators have used several methods. DeJong, Wolf, and Austin (2001) categorized 56 English HIV/AIDS prevention PSAs produced for television since 1987. The results of this content analysis indicated that most PSAs targeted both males and females. Most PSAs (88%) also targeted people aged 21-40, but there was some overlap in the ages of viewers targeted, with 61% of PSAs judged as targeting people under age 21. Common themes of the PSAs included urging viewers to become better informed about HIV/AIDS (45%), making viewers aware of the CDC's toll-free information hotline number (90%), describing who is at risk for HIV/AIDS (61%) as well as risk behaviors (64%), and mentioning that HIV causes

AIDS (27%). None of the PSAs analyzed included any information about HIV testing, and few PSAs included prevention information related to safer sex, such as reducing the number of sexual partners (4%) and using condoms (9%). The most frequent communications about costs of high-risk behaviors concentrated on physical risks (36%), while other risks cited included lowered self-esteem (7%) and economic loss (2%). In terms of appeal strategy, 46% of the PSAs were judged as including fear-based messages, but of these, only 11% provided preventative information or other help to viewers to resolve concerns about HIV/AIDS.

Like these PSAs, condom advertisements in the mid- to late-1980s also relied on fear-based appeals, but with little success (as discussed below). Because of the lack of success of trying to scare people into buying condoms, condom marketers began to implement sex-based appeals (e.g., images of couples in seductive scenarios with text reading, “Condoms shaped for two”) that emphasized the pleasure and fun of sex, as previously discussed. More recently, condom marketers have targeted couples with sex-based appeals that emphasize the pleasure of sex with certain types of condoms for both males and females. These appeals were initially successful, but these couple-focused advertisements have solely targeted couples in terms of the sexual aspect of their interactions (Eder, 1999). In recent years, these sexual advertisements have lost their effectiveness because people are so overwhelmed with sexual imagery that they do not notice it anymore, and condom marketers have begun to utilize humor-based appeals including the Trojan Man campaign (Galloni, 2001).

Fear appeals in advertising. The success of fear appeals in AIDS-related PSAs and condom commercials has been mixed. Previous research on AIDS PSAs and condom commercials indicates that fear appeals (e.g., “A woman says she does not want to die for love” with AIDS mentioned) were most effective in increasing college students’ intentions to use

condoms with future sexual partners (Struckman-Johnson, Struckman-Johnson, Gilliland, & Ausman, 1994). Dahl et al. (2003) also found that participants paid more attention to advertisements with greater shock appeal, or in other words, violations of expected norms (e.g., “Don’t be a f---ing idiot. Use a condom). Participants were also better able to recall and recognize these shocking advertisements than advertisements using fear (e.g., Text saying, “If you get the AIDS virus now, you and your license could expire at the same time. Use a condom” above a driver’s license with the expiration date circled) or information appeals (e.g., “AIDS. First identified May 11, 1982 in New York City. Use a condom”). Additionally, participants who viewed a fear advertisement and participants who viewed a shock advertisement were more likely to pick up HIV/AIDS-related materials at the end of the study than participants who viewed an informative advertisement (Dahl et al., 2003).

Other researchers have not found significant effects for fear appeals in advertising. Struckman-Johnson et al. (1990) found that their “high-fear” condom advertisements (which included slogans like “Someone I respect has been urging me to use condoms. He’s the Surgeon General. Believe me, I’m listening”) did not have a greater impact on participants than their “low-fear” condom advertisements (which included slogans like “Introducing condoms that let you feel good before, during and after”). However, this lack of significant results could have been due to the severity and salience of the “AIDS scare” at the time of their study. Thus, any exposure to any kind of condom advertisement may have caused high fear levels in participants. Although these researchers did not find any effects for fear level in their condom advertisements, they did find that males and females responded differently to different types of advertisement characteristics. Based on their findings, they recommended that condom advertisements aimed at women would be more influential if they showed romantic couples in committed, as opposed to

casual, relationships (Struckman-Johnson et al., 1990).

Fear appeals in HIV-prevention interventions. Despite the findings of several researchers (Arthur & Quester, 2004; Dahl et al., 2003; Struckman-Johnson et al., 1994) that fear appeals are effective in advertising, data from meta-analyses indicate that fear appeals in condom-related interventions are not successful in urging participants to use condoms. For example, Earl and Albarracin (2007) found that the presence of fear-inducing arguments was associated with lesser increases in knowledge and condom use than the absence of fear-inducing arguments in their meta-analyses containing data from 150 treatment groups and 34 control groups. Additionally, their meta-analyses illustrated that behavior change was greater when the level of fear in the intervention was zero or low rather than moderate or high. As there was no significant interaction between education and fear-inducing arguments, cognitive ability of the participants did not change the negative effects of the fear-inducing arguments.

Similarly, Albarracin et al. (2005) found that threat arguments were associated with decreased condom use in their meta-analysis containing data from 354 HIV-prevention interventions and 99 control groups, spanning 17 years. These threat arguments were thought to be unsuccessful because they induced avoidance processing that prevented people from fully paying attention to HIV/AIDS-related information, recommendations, and prevention strategies.

Because of the mixed results of the effectiveness of fear appeals both in advertising and in intervention research, the present study did not include fear appeals in any of the advertisements. Instead, the critical advertisements in the current study focused on social ties.

Targeting Social Ties to Change Behavior

In order for individuals to make behavioral changes after attending interventions or viewing advertising, social marketing research has shown that the behavioral changes advocated

must be compatible with their perspectives, must be realistic, and must relate to what they value (Lamprey & Price, 1998).

Social ties in exercise adherence. Along the same lines as the recommendations of Struckman-Johnson et al. (1990) that condom advertisements targeting women should include couples involved in committed, romantic relationships, research in areas of health psychology, such as exercise adherence, has shown that individuals value social ties and that social ties influence health-related behavioral changes. For example, cohesion of exercise classes and programs and support from exercise partners in these classes and programs has been shown to positively influence attitudes toward attending classes as well as adherence to the exercise program over time (Courneya & McAuley, 1995; Gillett, 1988; McAuley, Jerome, Elavsky, Marquez, & Ramsey, 2003; Wankel, Yardley, & Graham, 1985). Additionally, Brittain, Bailargeon, McElroy, Aaron, and Gyurcsik (2006) discovered that adults cited lack of an exercise partner as one of the barriers they perceived to physical activity, suggesting that individuals are in fact aware of the beneficial effects that partner and group exercise have as compared to solitary exercise.

Estabrooks and Carron (1999) also showed how using these ideas of individuals increasing their exercise adherence due to group cohesion and commitment to exercise partners could be used to create a successful team-building exercise intervention. The intervention included setting group goals and increasing levels of interaction and communication within the group. Compared with participants in the control condition who did not experience any team-building activities, participants in this team-building intervention attended significantly more exercise classes and also had higher return rates following a 10-week break in the program. Thus, social ties provide support and cohesion that can help people change their health behaviors, and their exercise

behaviors in particular.

Cognitive interdependence. While social ties may aid people in achieving behavioral changes because social relationships provide support, social ties may also help people change their behaviors because they change fundamental mental representations. Instead of people perceiving themselves as independent individuals as they do when they are not involved in committed, romantic relationships, as relationship commitment levels rise, people increasingly think of their partners as part of themselves and themselves as part of a unit that includes their partners. These collective mental representations of the self-in-relationship are referred to as cognitive interdependence and cause people's motivations and behaviors to become more pluralistically oriented toward their relationships (Agnew, Van Lange, Rusbult, & Langston, 1998).

Instead of pursuing individual, self-centered preferences, committed individuals pursue goals that will keep their relationships intact (Agnew et al., 1998). Because Agnew et al. (1998) only found associations between commitment level and cognitive interdependence within romantic relationships and not within friendships, pluralistic mental relationships may be more accessible in relationships where sexuality is a major component.

Because of the evidence for the power of social ties in changing attitudes, mental representations, motivation, and ultimately behavior, the current study targeted social ties. As condom use is an inherently social behavior, targeting social ties in relation to condom use is particularly logical. Based on the findings of Agnew et al. (1998), people in committed, romantic relationships view the world with a "we" orientation as opposed to a "me" orientation; instead of thinking about issues affecting themselves, they think about issues as they affect themselves and their partners collectively. However, because most condom advertisements are self-focused in

that they urge *individuals* to use condoms in interactions solely involving sex, they present messages that are incompatible with the ways that people in committed relationships view the world.

Targeting social ties in condom advertisements is logical to increase condom use for people involved in committed, romantic relationships, but it is also logical to increase condom use in people who are not involved in committed, romantic relationships because of the social nature of condom use. Regardless of relationship status and commitment, people cannot individually decide to use condoms without consent from their partners. Although the obvious scenario to illustrate this point is a male refusing to wear a condom at a female's request, the reverse of this situation is just as much of a reality. If a female does not want the male she is with to use a condom, she can just as easily refuse to have sex with a condom.

While condom use is a social behavior, it is also a behavior involving sexuality. Thus, evidence for cognitive interdependence lends even more credibility to the strategy of increasing factors associated with condom use via social ties. As advertising is a powerful motivational tool and has been shown to increase factors associated with condom use (e.g., Dahl et al., 2003; Struckman-Johnson et al., 1990), the current study targeted social ties through advertisements to increase condom use as discussed more fully below. However, instead of emphasizing pleasurable sex for both members of a couple as other condom advertisements have done (Eder, 1999), the advertisements in the present study focused more on factors related to cognitive interdependence including commitment and the long-term goal of maintaining the relationship (Agnew et al., 1998).

The Current Research

Unlike other condom advertisements, the advertisements in the present study took a

somewhat novel approach; they urged participants to consider the consequences of unprotected sex as they could affect their romantic relationships and friendships as opposed to how they could affect the self. Because of this novel factor, I hypothesized that these social tie-focused advertisements would grab participants' attention more than the traditional, self-focused condom advertisements because they would compel participants to consider consequences of unprotected sex in ways that they would not expect to while viewing a condom advertisement.

Additionally, as previously discussed, these advertisements highlighting social ties may be more effective in increasing condom use than self-focused condom advertisements because condom use is a social behavior that involves an interactive decision influenced heavily by communication with both sexual partners and with peers. Also, these social tie-advertisements may be more effective in increasing condom use based on the findings of several studies (e.g., Agnew et al., 1998; Courneya & McAuley, 1995; Estabrooks & Carron, 1999; Gillett, 1988; McAuley et al., 2003; Wankel et al., 1985;) indicating that participants increase health behaviors, such as exercise, when they are accountable to partnerships and groups instead of just to themselves.

In order to determine how effective these social tie-focused condom advertisements were compared to self-focused condom advertisements, half of the participants within the current study viewed one of three condom advertisements. The first of these condom advertisements urged participants to protect themselves from the dangers of unprotected sex (the danger of becoming infected with HIV/AIDS or another STI) by using condoms. To foster a sense of cohesion, accountability, and common goals within members of a romantic relationship, the second condom advertisement urged participants to protect their romantic relationship from the dangers of unprotected sex (the dangers of ruining or weakening the relationship by spreading

HIV/AIDS or another STI within the relationship) by using condoms. Finally, the third advertisement fostered this sense of cohesion among friends by urging participants to protect their friendships from the dangers of unprotected sex (the danger that an infection of HIV/AIDS or another STI could change the friendship for the worse or the danger that an individual's friends would have to watch him or her suffer) (Pryor, Reeder, & Landau, 1999) by using condoms.

I was also interested in determining how efficacious social tie-related advertisements were when the product advertised did not reflect a social behavior. As such, half of the participants within the current study viewed one of these same three types of advertisements regarding a less social behavior- sunscreen use. Sunscreen use was selected as the less social comparison behavior for several reasons. First, using sunscreen, like using condoms, is a preventative health behavior. Second, failing to use sunscreen, like failing to use condoms, has severe potential consequences (e.g., developing skin cancer). Finally, although sunscreen use does not require a social decision, individuals do talk to each other about using sunscreen, so asking participants to imagine themselves talking to others about sunscreen use does not seem too unnatural.

Based on the theoretical determinants of condom use discussed earlier, in the present study, I assessed how the condom advertisements influenced participants' explicit attitudes regarding condom use, intentions to buy condoms and use them regularly, motivations to use condoms, willingness to go out of their way to use condoms in given circumstances, and willingness to encourage others to use condoms after participants viewed one of the three possible condom advertisements. Participants who viewed one of the three sunscreen advertisements completed comparable measures regarding sunscreen use. Participants viewing one of the three condom advertisements then completed an implicit condom attitudes task, but

participants viewing one of the three sunscreen advertisements did not complete a parallel measure for sunscreen use because they served as a control group.

In addition, because there are often barriers to obtaining condoms, including cost and inconvenience, and because availability of condoms is an important predictor of future condom use, the present study made condoms more accessible to participants who viewed a condom advertisement by offering free condom samples. How many samples participants took served as a behavioral measure of condom use, and the free samples were offered in a similar way to how they are offered at Illinois Wesleyan University programs and residence halls (Lampthey & Price, 1998; Struckman-Johnson & Struckman-Johnson, 1996). Participants who viewed a sunscreen advertisement were offered free samples of sunscreen in a similar manner.

Hypotheses

Prior research offered unique rationales for why the relationship- and friendship-focused social tie appeals would each be associated with increased condom-related dependent measures. Thus, the relationship-focused condom advertisement was created to represent the idea of cognitive interdependence, while the friendship-focused condom advertisement was created to represent the positive influence of communications with peers regarding sex-related topics on factors related to condom use. Although there are distinct ideas and rationales behind each of the condom social ties-focused advertisements, there is also some overlap in the concepts because there is a friendship element involved in romantic relationships and there is also the potential for a romantic relationship element to be involved in friendships.

As a result of this overlap, the social-tie condom advertisements share similarities that the self-focused condom advertisement does not share with either social-tie condom advertisement. Thus, for several of the following hypotheses, the social-tie advertisements were grouped

together and compared to the other critical advertisements.

The hypotheses guiding the current study were as follows:

1. Because of the social nature of condom use, it was hypothesized that the condom advertisements targeting social ties would be rated as more effective than the condom advertisement targeting the self and all of the sunscreen advertisements. Additionally, because these condom advertisements targeting social ties were more novel and unexpected than the condom advertisement targeting the self, it was hypothesized that the condom advertisements targeting social ties would be viewed longer than the condom advertisement targeting the self.

2. Because condom use is a social behavior and because most individuals highly value their romantic relationships and friendships, it was hypothesized that participants viewing the condom advertisements targeting one's romantic relationship and friendships would report more positive implicit and explicit condom attitudes, intentions to purchase and use condoms, motivation to use condoms, willingness to use condoms oneself, willingness to encourage others to use condoms, and would take more free samples of condoms than participants viewing the condom advertisement targeting the self.

3. As sunscreen use is less of a social decision than condom use, it was also hypothesized that participants viewing the condom advertisements targeting one's romantic relationship and friendships would report higher scores on condom-related dependent variables (explicit condom attitudes, intentions to purchase and use condoms, motivation to use condoms, willingness to use condoms oneself, and willingness to encourage others to use condoms) than participants viewing similar social-tie advertisements for sunscreen would report on sunscreen-related dependent variables (explicit sunscreen attitudes, intentions to purchase and use sunscreen, motivation to use sunscreen, willingness to use sunscreen oneself, and willingness to encourage others to use

sunscreen). Additionally, it was hypothesized that participants viewing a social-tie condom advertisement would take more free condom samples than participants viewing a social-tie sunscreen advertisement would take free sunscreen samples.

4. Based on the recommendations of Dahl et al. (2003), it was hypothesized that female participants viewing the condom advertisement targeting one's romantic relationship would have more positive condom attitudes, intentions to purchase and use condoms, motivation to use condoms, willingness to use condoms oneself, and willingness to encourage others to use condoms than male participants viewing the same condom advertisement.

Finally, because of the complex and somewhat contradictory findings discussed previously regarding gender, relationship status, and condom use, exploratory analyses were conducted to further determine the associations between those variables, type of advertisement viewed, and condom attitudes, intentions to purchase and use condoms, motivation to use condoms, willingness to use condoms oneself, and willingness to encourage others to use condoms.

METHOD

Participants

Participants were 147 Illinois Wesleyan students (55% male) and were predominately freshmen and sophomores (88%). Sixty-six of the participants were involved in romantic relationships (45%), while the other 81 participants were single. The racial breakdown of the participants reflected the racial breakdown of the student body at Illinois Wesleyan, so a large majority of participants were Caucasian (80%). Potential participants under 18 were excluded from the study because they were not old enough to provide informed consent for themselves.

Participants were recruited via general psychology classes and social psychology classes.

As compensation for their participation, participants in general psychology classes received course credit and participants in social psychology classes received extra credit.

Procedure

The study took place during one 30-minute session within a large computer lab. As participants arrived in groups of six or less, they were greeted by a female experimenter and instructed to sit at a computer. At this point the experimenter obtained informed consent and took participants' blue cards, as these needed to be signed to indicate proof of participation in the study for research credit. In order to disguise the true purpose of the study, participants were then informed that the study was being run in collaboration with a local advertising agency and that the purpose of the study was to determine the effectiveness of different strategies used in health-related advertisements. The experimenter then wrote each participant's identification number and study information on the blue cards. In the meantime, all participants were asked to complete a demographic questionnaire. This demographic questionnaire, along with all other stimuli and measures, was presented and completed using Media Lab software (Jarvis, 1997-2002). In order to standardize the experimental experience for all participants, all participants completed all of the measures in the same order.

Upon completion of these initial measures, participants viewed a sequence of three advertisements. To begin, all participants viewed the same two filler advertisements in the same order (see Figures 1 and 2). After each, participants reported their advertisement perceptions and subsequent product-specific attitudes and intentions. These measures and their product-specific adaptations will be explained more fully below.

Participants then viewed one of six possible critical advertisements (see Figures 3-10). Three of these advertisements featured condoms, and three featured sunscreen. In order to make

the advertising agency cover story more believable and to minimize confounds with the behavioral measure when free samples of the critical product were offered to participants at the end of each session, the product in the critical advertisement (condoms or sunscreen) was randomly assigned across sessions and not across participants. Thus, participants in each session either viewed one of three randomly assigned condom advertisements or one of three randomly assigned sunscreen advertisements. Because all participants in a session viewed advertisements about the same product and only that product sample was offered at the end of each session, as is more fully described below, differences in numbers of free samples participants took were more clearly attributed to the critical advertisement variation they viewed. After viewing their third advertisement, participants again reported their advertisement perceptions and subsequent product-specific attitudes and intentions as before.

Next, participants were informed that the experimenter and the advertising agency would like more information about the participants' health behaviors to better understand their receptivity to the health products advertised. Three additional variables, motivation to use the product (either condoms or sunscreen, depending on the type of advertisement viewed), willingness to use the product oneself, and willingness to encourage others to use the product were then assessed. To make the cover story of the advertising agency wanting more information about the sample believable, the motivation and willingness measures contained filler questions about other health behaviors as well. Lastly, participants who viewed a condom advertisement completed an implicit condom attitude measure, and all participants completed a manipulation check.

After participants finished all measures, a second, female experimenter asked them to follow her one at a time to another room to pick up their debriefing materials and receive their

signed blue cards. On the way to the second room, this experimenter asked participants if they had any questions about the study and told each participant that the advertising agency had provided free samples of either the condoms or the sunscreen advertised. Available samples always matched the product advertised in the session of the study. Thus, participants who viewed condom advertisements were offered free condom samples, and participants who viewed sunscreen advertisements were offered free sunscreen samples. Participants were told to take as many of the free samples as they wished and to also take debriefing information. Once participants left the room with the free samples and debriefing information, the experimenter thanked them and noted how many free samples they chose to take.

Measures: Pre-Advertisement

Demographics

Participants provided basic background information including their age, race, gender, year in college, and relationship status (see Appendix A for the Demographics Questionnaire).

Advertisement Descriptions

As previously mentioned, participants viewed three advertisements out of a possible eight during the course of the study. Initially, all participants viewed the same two filler advertisements- an advertisement for Listerine mouthwash and an advertisement for Minute Maid multi-vitamin orange juice. Participants viewed these filler advertisements to make the cover story of an advertising agency wanting feedback on some health product advertising strategies more believable. Listerine mouthwash and Minute Maid multi-vitamin orange juice were chosen as products for these filler advertisements because there are health benefits to using each and because they are ordinary enough products that participants were able to recognize them without needing any additional product descriptions beyond the content of the

advertisements.

Additionally, the way that these two advertisements were created strengthened the advertising agency cover story because each advertisement used different advertising approach. The Listerine mouthwash advertisement contained a large image of the product and used an element of humor, containing text that said, “Be afraid, germs. Be very afraid. Kill the germs that cause bad breath, plaque, and the gum disease gingivitis. Protect your mouth 24 hours a day.” The Minute Maid multi-vitamin orange juice advertisement also contained a large image of the product but was more serious and straightforward, containing text that said, “Enhance your morning routine. Improved nutrition. Great orange juice taste,” implying that using the product would be convenient because it would fit into viewers’ daily routines.

Participants then viewed one of the six other advertisements. Of these six, three were advertisements for Durex condoms and three were advertisements for Coppertone sunscreen. For each product, one of the three advertisements focused on how behaviors associated with not using the product, namely unprotected sex or unprotected exposure to sunlight, are dangerous to the self and thus compelled participants to protect themselves. For example, the ‘condom-self’ advertisement contained text that said, “The consequences of unprotected sex can affect you. Look after yourself,” with a picture of either a male or female (matched to participant sex) looking at himself or herself in a mirror (Jupiterimages Corporation, 2007) and a small picture of a Durex condom at the bottom of the advertisement that matched the samples offered at the end of the study. The ‘sunscreen-self’ advertisement was exactly the same except that it contained a small picture of the Coppertone sunscreen logo at the bottom to match the logo on the sunscreen samples offered instead of a Durex condom, and the text said, “The consequences of unprotected exposure to sunlight can affect you” instead of “The consequences of unprotected sex can affect

you.”

The second of the three advertisements for each product focused on how behaviors associated with not using the product are dangerous to one’s romantic relationships and thus compelled participants to protect their romantic relationships. The ‘condom-relationship’ advertisement contained text that said, “The consequences of unprotected sex can affect your romantic relationship. Look after your relationship,” with a picture of a romantically involved male and female looking at each other and a small picture of a Durex condom at the bottom of the advertisement. The ‘sunscreen-relationship’ advertisement was exactly the same except that it contained a small picture of the Coppertone sunscreen logo instead of a Durex condom, and the text said, “The consequences of unprotected exposure to sunlight can affect your romantic relationship” instead of “The consequences of unprotected sex can affect your romantic relationship.”

The last of the three advertisements for each product focused on how behaviors associated with not using the product are dangerous to one’s friendships and thus compelled participants to protect their friendships. The ‘condom-friendship’ advertisement contained text that said, “The consequences of unprotected sex can affect your friendships. Look after your friendships,” with a picture of several friends (males and females) looking at each other (Jupiterimages Corporation, 2007) and a small picture of a Durex condom at the bottom of the advertisement. The ‘sunscreen-friendship’ advertisement was exactly the same except that it contained a small picture of the Coppertone sunscreen logo instead of a Durex condom, and the text said, “The consequences of unprotected exposure to sunlight can affect your friendships” instead of “The consequences of unprotected sex can affect your friendships” (see Figures 1-10 for the advertisements).

Measures: Post-Advertisement

Advertisement Effectiveness

This 15-item questionnaire was designed to measure the overall effectiveness of advertisements. These items asked participants to examine aspects of successful advertising including the clarity of the advertisement, the believability of the advertisement, and the importance of the message in the advertisement (Smoak, Marsh, & Dovidio, 2005; $\alpha = .95$). This measure asked participants to respond to the items using a 7-point Likert scale where 1 represented “Strongly Disagree” and 7 represented “Strongly Agree.” Sample items included: “This advertisement is effective overall” and “This advertisement prompts me to take action.” Participants’ scores on this scale were obtained by taking the mean of their responses. Higher scores indicated that participants found the advertisements more effective (see Appendix B for the Advertisement Effectiveness Questionnaire).

Explicit Product-related Attitudes

Each explicit, product-related attitude measure (adapted from Marsh, Johnson, & Scott-Sheldon, 2001; α s = .83, .85, and .84, respectively), corresponded with each type of product advertised (mouthwash, multi-vitamin orange juice, and sunscreen or condoms), and these measures assessed explicit attitudes toward each type of product. Each product-specific explicit attitudes questionnaire was a 7-item scale asking participants to respond using a five-point semantic differential scale. Included adjective pairings were pleasant/unpleasant, good/bad, harmful/beneficial, nice/awful, safe/dangerous, and ugly/beautiful. For each questionnaire, participants’ scores were determined by calculating the means of their responses after reverse scoring three items, which are indicated by asterisks in Appendix C. Higher scores indicated that participants had more positive attitudes toward the product (see Appendix C for the product-

specific Explicit Attitudes Questionnaires).

Purchase and Use Intentions

Similar to the product-specific explicit attitudes questionnaires, there were also product-specific intentions questionnaires. Each product-specific intentions questionnaire was a three-item scale designed to measure the likelihood that participants would actually obtain and use each advertised product (adapted from Ajzen, 2002; Fisher, Fisher, Bryan, & Misovich, 2002; α s = .87, .86, and .87, respectively). On each product-specific questionnaire, participants responded using a five-point Likert scale where 1 represented “Extremely unlikely” and 5 represented “Extremely likely.” Sample items included: “I will make an effort to use [product] on a regular basis” and “I will buy [product].” Participants’ scores on these questionnaires were obtained by taking the means of their responses. Higher scores on these questionnaires indicated stronger intentions to obtain and use the products (see Appendices D for the product-specific Intentions Questionnaires).

Product Use Motivation

Motivation to use condoms or sunscreen (depending upon condition) was assessed using a 12-item scale containing the following subscales: social norms (5 items; α = .87), attitudes (4 items, α = .23), and intentions (3 items, α = .79) toward using the specified product (adapted from Anderson et al., 2006; Fisher et al., 2002; α = .82). Together, measurements of these constructs indicated the amount of drive that participants had for using the products. Sample items included: “My closest friends think that carrying [product] is the right thing to do” and “Using [product] is viewed by my closest friends as the right thing to do.”

Participants responded to all motivation items using a four-point Likert scale with 1 representing “Strongly disagree” and 4 representing “Strongly agree.” Participants’ scores were

determined by calculating the means of their responses after reverse scoring four items, which are indicated by asterisks in Appendix E. Higher scores on this questionnaire indicated higher levels of motivation for using the advertised product (see Appendices E for the product-specific Motivation Questionnaires).

Willingness

Willingness to use product oneself. Participants' willingness to use condoms or sunscreen (depending upon condition) was assessed using six items. Two different vignettes addressed willingness to use the product oneself, with three items pertaining to each situation (adapted from Gibbons et al., 1998; $\alpha = .85$). More specifically, the first vignette addressed condom or sunscreen use for oneself around strangers, and the second vignette addressed condom or sunscreen use for oneself around a close friend. For example, the first vignette within the condom willingness questionnaire said, "Imagine that you have met a person that you find highly sexually attractive. Over the course of an evening, the two of you have an enjoyable conversation and you come to realize that this person wants to have sex with you. However, neither of you has a condom." The set of questions following that vignette asked participants to indicate how willing they would be to: a) Go ahead and have sex with this person without a condom, b) Refuse to have sex without finding and using a condom, c) Not have sex under the given circumstances.

Participants responded to these willingness items for both vignettes using a 7-point Likert scale with 1 representing "Not at all" and 7 representing "Very much." Participants' each received one score on this variable, which was determined by calculating the means of their responses, such that higher scores indicated higher levels of willingness to use the advertised product.

Willingness to encourage others to use product. Participants' willingness to encourage others to use condoms or sunscreen (depending upon condition) was also assessed using responses on six items total, with three items each corresponding to two different vignettes (adapted from Gibbons et al., 1998; $\alpha = .90$). More specifically, the first vignette assessed encouragement to strangers regarding strangers' product use, and the second vignette assessed encouragement to a close friend regarding that friend's product use.

For example, the first vignette within the condom willingness questionnaire said, "Imagine that you are at a party. You casually overhear some people you do not know talking. You find out that one of these people is about to go and have sex but doesn't have a condom." The set of questions following that vignette asked participants to indicate how willing they would be to: a) Encourage the person about to have sex to find and use a condom, b) Find a condom and give it to the person about to have sex, and c) Discourage the person from having sex under the given circumstances. Participants responded to these willingness items for both vignettes using a 7-point Likert scale with 1 representing "Not at all" and 7 representing "Very much." Participants' each received one score on this variable, which was determined by calculating the means of their responses after reverse scoring two items, which are indicated by asterisks in Appendix F, such that higher scores indicated higher levels of willingness for encouraging (and helping) others to use the product (see Appendix F for the product-specific Willingness Questionnaires).

Other Health Behaviors

In order to ensure the believability of the cover story, participants were also asked to respond to eight filler questions regarding their health behaviors (adapted from Marsh et al., 2001). Sample items included: "How many days in a typical week do you eat breakfast?" and

“How often do you brush your teeth?” (see Appendix G for Other Health Behavior questions).

Implicit Condom Attitudes

The Go/No-Go Association Task (GNAT) is a measure of participants' implicit associations with a single category of stimuli. In the current study, the category of interest was condoms. The GNAT works by presenting target (signal) and distracter (noise) stimuli for brief time periods, in this case 1000 ms. In this task, two category labels were placed at the top of the computer screen (e.g., condom and either positive or negative). Participants were instructed to 1) press the space bar (which reflects “go”ing) when stimuli from either of the target categories appeared on the screen and 2) to not press any key (“no-go”) when stimuli not belonging to either target category appeared. As participants progressed through the GNAT, a red “X” appeared when participants responded incorrectly to a stimulus (i.e., either by pressing the space bar when, in actuality, the stimulus did not belong to either of the represented categories or by not pressing the space bar when the stimulus did actually belong to one of the target categories. Similarly, a green “O” appeared on the screen when participants correctly classified signal items as signals (hits) or correctly rejected noise items (distracter trials) by not pressing the space bar.

The GNAT that participants who viewed condom advertisements completed in this study contained two blocks of 80 trials each. The GNAT assessed implicit, or underlying cognitive associations, that participants had toward condoms by asking them to pair condom-related pictures with positive or negative words. Twenty stimuli (five condom-related pictures, five sunscreen pictures, five positive words, and five negative words) were randomly presented in the middle of the computer screen four times each. For one block of 80 trials, participants were asked to press the space bar if the words and images shown represented something positive (e.g., “vacation,” “rainbow”) or a picture of a condom. For the other block of 80 trials, participants

were asked to press the space bar if the words and images shown represented something negative (e.g. “death,” “vomit”) or a picture of a condom. The response latency of the task indicated the strength of participants’ associations between the condom-related pictures and the positive/negative words, and therefore participants’ levels of positivity/negativity toward condoms. Thus, if participants felt more positively toward condoms, they should have had faster reaction times and more correct responses when the positive category was paired with the condom category. If participants felt more negatively toward condoms, they should have had faster reaction times and more correct responses when the negative category was paired with the condom category. Responses to the GNAT were analyzed using a traditional signal detection paradigm.

Behavioral Measure

After participants completed the computerized portion of the study, the first experimenter informed them that they needed to follow the second experimenter to a room around the corner to receive their debriefing information. Before the second experimenter left the room, the first experimenter handed her the participant’s blue card that had the participant’s identification number on it. This second experimenter then let participants into the second room one by one and told them that they could take as many free samples of the product (either condoms or sunscreen depending upon condition) as they wished from a bowl of thirty samples. Once each participant left the second room, the second experimenter counted the remaining condom or sunscreen samples left in the bowl. Finally, the second experimenter recorded how many free samples of condoms or sunscreen each participant took next to the participant’s identification number and refilled the bowl so it again included thirty samples.

Advertisement Viewing Time

Finally, the time that each participant spent looking at each advertisement was recorded through Media Lab software as a measure of attention. This measure was used to determine how much exposure participants had to each advertisement. Previous research (Dahl et al., 2003) has shown that participants who choose to spend more time looking at stimuli find those stimuli more surprising and unexpected than stimuli they choose to spend less time looking at, so this measure also functioned as a measure of the level of unexpectedness of the types of critical advertisements.

RESULTS

Manipulation Check

First, preliminary analyses were conducted to determine how well participants remembered the critical advertisements they viewed during the experiment. Thirteen participants responded incorrectly when asked to identify the product featured in the critical advertisement they saw and were thus excluded from all of the following analyses (see Table 1 for number of participants in each condition).

Judging Significance

Because each condition in the 2 (product: sunscreen, condoms) X 3 (advertisement type: self, relationship, friendships) between groups experimental design only had between 19 and 25 participants, analyses that approached significance with a p-value below .10 will be discussed in addition to significant results.

Gender and Relationship Status

Although there was a specific hypothesis made about gender effects among participants who viewed the relationship-focused condom advertisement, because of the complex findings of

other researchers regarding gender, gender analyses were performed in relation to each hypothesis. Additionally, exploratory analyses were also performed involving gender, relationship status, and several of the dependent variables.

Overall Advertising Effectiveness

Because participants' perceptions of the critical advertisements were important to determine so that their responses on other dependent variables could be better interpreted, the advertising effectiveness ratings of the six critical advertisements were analyzed in a 2 (product type: sunscreen, condoms) X 3 (advertisement type: self, relationship, friendships) factorial analysis of variance (ANOVA) (see Figure 11). There was a main effect for product type, indicating that participants who viewed condom advertisements ($M = 5.13$, $SD = 0.85$) rated the condom advertisements as significantly more effective than participants who viewed sunscreen advertisements ($M = 3.47$, $SD = 1.34$) rated the sunscreen advertisements, $F(1, 128) = 72.80$, $p = .00$. However, there was no main effect for advertisement type. In other words, self- ($M = 4.45$, $SD = 1.23$), relationship- ($M = 4.27$, $SD = 1.45$), and friendship- ($M = 4.05$, $SD = 1.52$) focused advertisements were not differentially effective, $F(2, 128) = 1.31$, $p = .27$. Finally, the interaction effect between product type and advertisement type approached significance. There were no significant differences in how participants rated the condom relationship advertisement ($M = 5.31$, $SD = 0.65$), the condom self advertisement ($M = 5.04$, $SD = 0.92$), and the condom friendship advertisement ($M = 5.03$, $SD = 0.99$). While not significant, the pattern of the means was that the condom relationship advertisement was rated as more effective than both the self- and friendship-focused condom advertisements. However, among participants who viewed the sunscreen advertisements, there was a different pattern of means. Again, participants' effectiveness ratings of the sunscreen advertisements did not significantly differ from each other,

but the pattern of means indicated that participants rated the sunscreen relationship advertisement ($M = 3.19$, $SD = 1.25$) and the sunscreen friendship advertisement ($M = 3.22$, $SD = 1.41$) as less effective than the sunscreen self advertisement ($M = 3.98$, $SD = 1.26$, $F(2, 128) = 2.56$, $p = .08$).

In addition, because it was unclear whether male and female participants would perceive the critical advertisements differently, the advertising effectiveness ratings of the six critical advertisements were also analyzed in a 2 (product type: sunscreen, condoms) X 3 (advertisement type: self, relationship, friendship) X 2 (gender: male, female) factorial analysis of variance (ANOVA). This analysis showed that there was no main effect for gender, $F(1, 122) = 1.89$, $p = .17$. Male participants ($M = 4.18$, $SD = 1.41$) and female participants ($M = 4.33$, $SD = 1.42$) did not rate the critical advertisements differently in terms of effectiveness. Similarly, none of the interaction effects including gender was significant, indicating that male and female participants' advertising effectiveness ratings did not differ across product (condoms or sunscreen) or advertisement type (self-focused, relationship-focused, or friendship-focused).

Effect Size Comparisons

To determine whether the social ties advertisements were differentially effective than the self-focused advertisements, two effect sizes were calculated. First, an effect size was calculated to represent the difference in mean ratings for participants who viewed a condom-related as compared to a sunscreen-related social ties-focused advertisement. The second effect size calculated represented the mean difference for participants who viewed a condom-related as compared to a sunscreen-related self-focused advertisement.

An examination of these effect sizes indicated that there was a greater disparity in the effectiveness ratings of the social-tie condom advertisements and the social-tie sunscreen advertisements than there was in the effectiveness ratings of the self condom advertisement and

the self sunscreen advertisement (partial $\eta^2 = 0.44$; partial $\eta^2 = 0.19$, respectively). This illustrates that differences in advertising effectiveness between participants who viewed a social ties-focused condom advertisement and participants who viewed a social ties-focused sunscreen advertisement were not solely due to a main effect for product type.

, Filler Advertisements

In order to ensure that the marginally significant interaction effect detailed above was unique to the critical advertisements, advertising effectiveness ratings were also analyzed for each of the filler advertisements. Thus, mouthwash advertising effectiveness ratings and orange juice advertising effectiveness ratings were each analyzed separately in a 2 (product type: sunscreen, condoms) X 3 (advertising type: self, relationship, friendships) X 2 (gender: male, female) factorial analysis of variance (ANOVA). However, none of the main effects or interaction effects was significant, indicating that participants in all conditions perceived the filler advertisements similarly and also that male and female participants did not perceive the mouthwash or orange juice advertisements differently. Finally, mouthwash and orange juice advertising effectiveness were used as covariates when the advertising effectiveness ratings of the six critical advertisements were analyzed in a 2 (product type: sunscreen, condoms) X 3 (advertisement type: self, relationship, friendships) factorial analysis of variance (ANOVA). However, neither mouthwash nor orange juice advertising effectiveness ratings was a significant covariate for advertising effectiveness rating of the critical advertisements.

Overall Analyses on Explicit Dependent Measures

In order to determine patterns of participants' responses in the entire 2 (product type: condoms, sunscreen) X 3 (advertisement type: self, relationship, friendships) experimental design, each explicit dependent measure was also analyzed in 2 (product type: sunscreen,

condoms) X 3 (advertisement type: self, relationship, friendships) factorial analysis of covariance (ANCOVA) with advertising effectiveness serving as the covariate. If advertising effectiveness was not a significant covariate, it was excluded from the analysis, and results were analyzed using a 2 X 3 analysis of variance (ANOVA).

Explicit Attitudes

Before assessing participants' responses on the explicit attitudes measure, the data was first prepared for analysis. More specifically, standardized z-scores were calculated for each item on the explicit attitudes measure because the first six items of the explicit attitudes questionnaire were answered using a 1-5 scale, but the last item of the questionnaire was answered using a 1-100 scale. The mean of each participant's z-scores was then used as the explicit attitudes score.

Advertising effectiveness was a significant covariate for this analysis, $F(1, 127) = 37.99$, $p = .00$. There was a significant main effect for product type, $F(1, 127) = 7.55$, $p = .01$. Participants who viewed a condom advertisement ($M = 0.07$, $SD = 0.84$) were significantly more positive toward condoms than participants who viewed a sunscreen advertisement ($M = -0.06$, $SD = 0.62$) were toward sunscreen. There was no main effect for advertisement type, $F(2, 127) = 1.34$, $p = .27$. Participants who viewed a self-focused advertisement ($M = -0.03$, $SD = 0.79$), participants who viewed a relationship-focused advertisement ($M = -0.06$, $SD = 0.79$), and participants who viewed a friendship-focused advertisement ($M = 0.07$, $SD = 0.63$) did not differ in their explicit attitudes toward the product they saw advertised. There was also no significant interaction between product type and advertisement type, $F(2, 127) = 0.98$, $p = .38$ (see Figure 12).

Intentions to Purchase and Use Condoms or Sunscreen

Advertising effectiveness was also a significant covariate for this analysis, $F(1, 125) =$

48.11, $p = .00$. There was no main effect for product type, $F(1, 125) = 0.02$, $p = .90$. Participants who viewed a condom advertisement ($M = 4.11$, $SD = 1.11$) and participants who viewed a sunscreen advertisement ($M = 3.21$, $SD = 1.24$) did not differ in their intentions to purchase and use either condoms or sunscreen, respectively. There was also no main effect for advertisement type, $F(2, 125) = 0.86$, $p = .43$. Participants who viewed a self-focused advertisement ($M = 3.58$, $SD = 1.21$), participants who viewed a relationship-focused advertisement ($M = 3.74$, $SD = 1.28$), and participants who viewed a friendship-focused advertisement ($M = 3.58$, $SD = 1.28$) did not differ in their intentions to purchase and use the product that they saw advertised. There was also no significant interaction between product type and advertisement type, $F(2, 125) = 0.58$, $p = .56$ (see Figure 13).

Motivation to Use Condoms or Sunscreen

Advertising effectiveness was a significant covariate for this analysis, $F(1, 127) = 16.96$, $p = .00$. Results of the factorial ANCOVA revealed that there was a significant main effect for product type, $F(1, 127) = 14.68$, $p = .00$. Participants who viewed a condom advertisement ($M = 3.27$, $SD = 0.49$) were significantly more motivated to use condoms than participants who viewed a sunscreen advertisement ($M = 2.63$, $SD = 0.49$) were to use sunscreen. However, there was no significant main effect for advertisement type, $F(2, 127) = 0.95$, $p = .39$. Participants who viewed a self-focused advertisement ($M = 2.87$, $SD = 0.54$), participants who viewed a relationship-focused advertisement ($M = 3.00$, $SD = 0.57$), and participants who viewed a friendship-focused advertisement ($M = 2.92$, $SD = 0.64$) did not differ in their level of motivation to use the product they saw advertised. There was also no significant interaction between product type and advertisement type, $F(2, 127) = 0.65$, $p = .52$ (see Figure 14).

Willingness to Use Condoms or Sunscreen Oneself

Advertising effectiveness was also a significant covariate for this analysis, $F(1, 127) = 14.05, p = .00$. Results of the factorial ANCOVA showed that there was a significant main effect for product type, $F(1, 127) = 34.35, p = .00$. Participants who viewed a condom advertisement ($M = 4.97, SD = 1.19$) were significantly more willing to use condoms themselves than participants who viewed a sunscreen advertisement ($M = 2.91, SD = 1.23$) were to use sunscreen themselves. However, there was no significant main effect for advertisement type, $F(2, 127) = 1.41, p = .25$. Participants who viewed a self-focused advertisement ($M = 3.67, SD = 1.50$), participants who viewed a relationship-focused advertisement ($M = 4.00, SD = 1.46$), and participants who viewed a friendship-focused advertisement ($M = 3.94, SD = 1.79$) did not differ in their willingness to use the product they saw advertised themselves. Also, there was no significant interaction between product type and advertisement type, $F(2, 127) = 0.86, p = .43$ (see Figure 15).

Willingness to Encourage Others to Use Condoms or Sunscreen

Also for this analysis, advertising effectiveness was a significant covariate, $F(1, 127) = 6.28, p = .01$. There was a significant main effect for product type, $F(1, 127) = 24.55, p = .00$. Participants who viewed a condom advertisement ($M = 4.72, SD = 1.51$) were significantly more willing to encourage others to use condoms than participants who viewed a sunscreen advertisement ($M = 2.82, SD = 1.22$) were to encourage others to use sunscreen. However, there was no significant main effect for advertisement type, $F(2, 127) = 0.45, p = .64$. Participants who viewed a self-focused advertisement ($M = 3.58, SD = 1.53$), participants who viewed a relationship-focused advertisement ($M = 3.91, SD = 1.63$), and participants who viewed a friendship-focused advertisement ($M = 3.65, SD = 1.82$) did not differ in their willingness to encourage others to use the product that they saw advertised. There was also no significant

interaction between product type and advertisement type, $F(2, 127) = 0.62, p = .54$ (see Figure 16).

Free Samples Taken

Advertising effectiveness was not a significant covariate for this analysis and was thus not considered further. Results of the factorial ANOVA revealed that there was no significant main effect for product type, $F(1, 122) = 2.56, p = .11$. Participants who viewed a condom advertisement ($M = 1.66, SD = 2.66$) and participants who viewed a sunscreen advertisement ($M = 1.10, SD = 1.07$) did not differ in the numbers of free condom or sunscreen samples that they took. Also, there was no significant main effect for advertisement type, $F(2, 122) = 0.18, p = .83$. Participants who viewed a self-focused advertisement ($M = 1.18, SD = 1.78$), participants who viewed a relationship-focused advertisement ($M = 1.39, SD = 2.06$), and participants who viewed a friendship-focused advertisement ($M = 1.50, SD = 2.10$) did not differ in the numbers of free samples they took. Finally, there was no significant interaction between product type and advertisement type, $F(2, 122) = 0.36, p = .70$ (see Figure 17).

Effect Size Comparisons

To determine whether the social ties advertisements were differentially effective than the self-focused advertisements, two effect sizes were calculated for each explicit dependent variable. First, an effect size was calculated to represent the difference in mean ratings for participants who viewed a condom-related as compared to a sunscreen-related social ties-focused advertisement. The second effect size calculated represented the mean difference for participants who viewed a condom-related as compared to a sunscreen-related self-focused advertisement. In some cases, the effect sizes for participants who viewed a social ties-focused advertisement were larger than those for participants who viewed a self-focused advertisement.

More specifically, on the intentions to purchase and use the relevant product, the effect size for participants who viewed a social ties-focused advertisement (partial $\eta^2 = 0.15$) was larger than the effect size for participants who viewed a self-focused advertisement (partial $\eta^2 = .09$). Similarly, on the motivation variable, the effect size for participants who viewed a social ties-focused advertisement (partial $\eta^2 = 0.38$) was larger than the effect size for participants who viewed a self-focused advertisement (partial $\eta^2 = .15$). Finally, on the willingness to use condoms or sunscreen oneself variable, the effect size for participants who viewed a social ties-focused advertisement (partial $\eta^2 = 0.48$) was also larger than the effect size for participants who viewed a self-focused advertisement (partial $\eta^2 = 0.30$). Together, these differences in effect size illustrate that differences on the intentions to purchase and use condoms or sunscreen, motivation to use condoms or sunscreen, and willingness to use condoms or sunscreen oneself variables between participants who viewed a social ties-focused condom advertisement and participants who viewed a social ties-focused sunscreen advertisement were not solely due to a main effect for product type.

Hypotheses

Because there were significant differences in how participants rated the effectiveness of the six critical advertisements, advertising effectiveness was used as a covariate for some of the following analyses. Additionally, the dependent measures of each hypothesis were also analyzed with gender as a factor in order to determine whether patterns of results were influenced by gender. As the analyses performed differed based on the hypothesis they were intended to test, the following results will be discussed in the order of the previously mentioned hypotheses. Due to the complex nature of each of the four hypotheses, a brief re-statement of each hypothesis has been included.

Hypothesis 1

The first hypothesis predicted that the condom advertisements targeting social ties would be rated as more effective than the condom advertisement targeting the self and all of the sunscreen advertisements. Also, this hypothesis predicted that the condom advertisements targeting social ties would be viewed longer than the condom advertisement targeting the self.

Advertising Effectiveness

The first part of Hypothesis 1 dealing with advertising effectiveness was analyzed using a one-way analysis of variance (ANOVA) which compared the condom advertisements targeting social ties with all other critical advertisements (see Figure 18). As predicted, the condom advertisements targeting social ties ($M = 5.17$, $SD = 0.83$) were rated as significantly more effective than the condom advertisement targeting the self and all of the sunscreen advertisements ($M = 3.80$, $SD = 1.41$), $F(1, 132) = 35.46$, $p = .00$.

Viewing Time

The second part of Hypothesis 1 dealing with viewing time was analyzed with a one-way analysis of covariance (ANCOVA) with advertising effectiveness serving as the covariate. Here, condom advertisements targeting social ties were grouped together and compared to the condom advertisement targeting the self. For this analysis, advertising effectiveness was a significant covariate, $F(1, 60) = 6.15$, $p = .02$. However, contrary to predictions, the condom advertisements targeting social ties ($M = 11080.20$ ms, $SD = 5749.28$ ms) and the condom advertisement targeting the self ($M = 10856.79$ ms, $SD = 5583.22$ ms) were not viewed for different lengths of time, $F(1, 60) = 0.11$, $p = .74$.

Gender

The effectiveness of the condom advertisements was also analyzed using a 2 (social tie-

focused advertisements vs. self-focused advertisement) X 2 (gender: male, female) factorial analysis of variance (ANOVA). In this analysis, neither the gender main effect nor the interaction effect was significant.

Additionally, condom advertisement viewing time was analyzed using a 2 (social-tie focused advertisements vs. self-focused advertisement) X 2 (gender: male, female) factorial analysis of covariance (ANCOVA) with advertising effectiveness serving as the covariate. In this analysis, advertising effectiveness remained a significant covariate, $F(1, 58) = 6.11, p = .02$. However, neither the gender main effect nor the interaction effect was significant for viewing time.

Hypothesis 2

The second hypothesis predicted that participants viewing the condom advertisements targeting one's romantic relationship and friendships would report more positive implicit and explicit condom attitudes, intentions to purchase and use condoms, motivation to use condoms, willingness to use condoms oneself, willingness to encourage others to use condoms, and would take more free samples of condoms than participants viewing the condom advertisement targeting the self. In order to test this hypothesis, participants who viewed a social-tie condom advertisement were first grouped together and compared to participants who viewed a self condom advertisement.

One-way analyses of covariance (ANCOVA) were then run with advertising effectiveness as a covariate for each of the nine dependent measures addressed in the second hypothesis. If advertising effectiveness was not a significant covariate, it was dropped from the analysis, and the dependent variable was analyzed using a one-way analysis of variance (ANOVA). If either the one-way ANCOVA or one-way ANOVA was significant for a

dependent variable, another one-way ANCOVA or one-way ANOVA was run to compare participants in each of the three condom advertisement conditions to each other.

Implicit Attitudes

In order to assess patterns of responding within the implicit measure, the data was first prepared for analysis. More specifically, for each GNAT trial, there were four possible scenarios: the participant was supposed to respond and did (which is labeled as a hit within signal detection analysis), the participant was supposed to respond but did not (which is labeled as a miss), the participant was not supposed to respond and did not (which is labeled as a correct rejection), or the participant was not supposed to respond but did (which is labeled as a false alarm). Thus, before any analyses were conducted, participants' error rates were determined; more specifically, participants' numbers of misses and false alarms were considered incorrect answers and were divided by the total number of GNAT trials for each participant to calculate participants' error rates. Based on these calculations, four participants whose GNAT error rates exceeded 15% were excluded from the data set. After excluding these participants, the resulting overall error rate on GNAT trials was 3.6%. Then, participants' mean latency scores were calculated. A latency score refers to the amount of time that passes between the presentation of the stimuli and the participant's response. Because latency essentially measures the time taken to respond, higher latency scores indicate less of an association between the categories of stimuli paired for that particular trial.

Three separate mean latencies were calculated: one to indicate participants' mean latency scores on the trials where condoms were paired with "positive" stimuli, one to indicate participants' mean latency scores on the trials where condoms were paired with "negative" stimuli, and one to indicate the difference in participants' mean latency scores on positive

condom trials and mean latency scores on negative condom trials. Once these scores had been calculated, one-way ANCOVAs (or ANOVAs if advertising effectiveness was not a significant covariate) were conducted for all three scores.

Condom-positive trials. Results of the one-way ANOVA revealed that mean latency scores of participants who viewed a social-ties condom advertisement ($M = 751.04$ ms, $SD = 19.77$ ms) did not differ from those of participants who viewed the self-focused condom advertisement ($M = 750.04$ ms, $SD = 22.09$ ms), $F(1, 57) = 0.03$, $p = .87$.

Condom-negative trials. Similarly, results of the one-way ANOVA for mean latency on condom-negative trials also revealed no difference in mean latency scores of participants who viewed a social-ties condom advertisement ($M = 749.21$ ms, $SD = 29.29$ ms) and mean latency scores of participants who viewed a self condom advertisement ($M = 747.43$ ms, $SD = 21.11$, $F(1, 57) = 0.05$, $p = .82$).

Differences between positive and negative latency scores. For this analysis, advertising effectiveness was a marginally significant covariate, $F(1, 56) = 3.25$, $p = .08$. However, results of the one-way ANCOVA indicated that participants who viewed a social-ties condom advertisement ($M = 1.83$ ms, $SD = 21.32$ ms) did not differ from participants who viewed a self condom advertisement ($M = 2.61$ ms, $SD = 18.18$ ms) in terms of their mean differences between positive and negative condom latency scores, $F(1, 56) = 0.03$, $p = .86$.

Explicit Attitudes

Advertising effectiveness was a significant covariate for this analysis, $F(1, 60) = 19.57$, $p = .00$. One-way ANCOVA results revealed that participants who viewed a social-ties condom advertisement ($M = 0.07$, $SD = 0.82$) and participants who viewed a self condom advertisement ($M = 0.07$, $SD = 0.92$) did not differ in their explicit attitudes toward condoms, $F(1, 60) = 0.12$, p

= .73.

Intentions to Purchase and Use Condoms

Again, advertising effectiveness was a significant covariate for this analysis, $F(1, 59) = 13.48, p = .00$. However, one-way ANCOVA results indicated that participants who viewed a social-ties condom advertisement ($M = 4.16, SD = 1.01$) and participants who viewed a self condom advertisement ($M = 3.98, SD = 1.32$) did not differ in their intentions to purchase and use condoms, $F(1, 59) = 0.09, p = .76$.

Motivation to Use Condoms

For this analysis, advertising effectiveness was not a significant covariate. One-way ANOVA results revealed that participants who viewed a social-ties condom advertisement ($M = 3.34, SD = 0.47$) were marginally more motivated to use condoms than participants who viewed a self condom advertisement ($M = 3.11, SD = 0.52, F(1, 61) = 3.01, p = .09$) (see Figure 19).

Subsequently, a one-way analysis of variance (ANOVA) was conducted to compare participants in each of the three condom advertisement conditions to each other. Results indicated that participants' motivation to use condoms did not differ based on whether they saw the condom advertisement targeting the self ($M = 3.10, SD = 0.52$), one's romantic relationship ($M = 3.35, SD = 0.45$), or one's friendships ($M = 3.33, SD = 0.50, F(2, 60) = 1.49, p = .23$).

Willingness to Use Condoms Oneself

For this analysis, advertising effectiveness was also not a significant covariate. One-way ANOVA results again approached significance, $F(1, 61) = 2.96, p = .09$ (see Figure 20). Participants who viewed a social-ties condom advertisement ($M = 5.13, SD = 1.14$) were marginally more motivated to use condoms than participants who viewed the self condom advertisement ($M = 4.58, SD = 1.24$).

Consequently, participants' willingness to use condoms oneself was analyzed using a one-way analysis of variance (ANOVA) to compare participants in each of the three condom advertisement conditions to each other. This analysis indicated that willingness to use condoms oneself did not differ based on whether participants saw the condom advertisement targeting the self ($M = 4.58$, $SD = 1.24$), one's romantic relationship ($M = 5.00$, $SD = 1.06$), or one's friendships ($M = 5.28$, $SD = 1.23$), $F(2, 60) = 1.78$, $p = .18$. There was, however, a marginally significant main effect for advertisement type when willingness to use condoms oneself was analyzed in a 2 (gender: male, female) X 3 (advertisement type: self, relationship, friendships) factorial analysis of variance (ANOVA), $F(2, 57) = 3.01$, $p = .06$ (see Figure 21). A Tukey post-hoc test did not reveal any significant differences between participants viewing the three advertisement types, though.

Willingness to Encourage Others to Use Condoms

Again, advertising effectiveness was not a significant covariate for this analysis. One-way ANOVA results showed no differences in willingness to encourage others to use condoms between participants who viewed social-ties condom advertisements ($M = 4.77$, $SD = 1.60$) and participants who viewed the self condom advertisement ($M = 4.63$, $SD = 1.33$, $F(1, 61) = 0.10$, $p = .75$).

Free Condom Samples Taken

Finally, advertising effectiveness was also not a significant covariate for this analysis. One-way ANOVA results revealed no differences in numbers of free samples taken between participants who viewed social-ties condom advertisements ($M = 1.64$, $SD = 2.74$) and participants who viewed the self condom advertisement ($M = 1.71$, $SD = 2.52$, $F(1, 57) = 0.01$, $p = .94$).

Gender and Dependent Variables

All nine dependent variables were also analyzed in a 2 (social-ties condom advertisement vs. self condom advertisement) X 2 (gender: male, female) factorial ANCOVA (or factorial ANOVA if advertising effectiveness was not a significant covariate). Significant results involving gender from those analyses are reported below.

Motivation to use condoms. The factorial ANOVA revealed a marginally significant main effect for gender, $F(1, 59) = 3.24, p = .08$ (see Figure 22). Overall, female participants who viewed a condom advertisement ($M = 3.41, SD = 0.45$) were marginally more motivated to use condoms than male participants who viewed a condom advertisement ($M = 3.18, SD = 0.50$).

However, when motivation to use condoms was analyzed in a 2 (gender: male, female) X 3 (advertisement type: self, relationship, friendships) factorial analysis of variance (ANOVA), the main effect for gender was significant, $F(1, 57) = 4.11, p = .05$ (see Figure 23). Female participants ($M = 3.41, SD = 0.45$) were more motivated to use condoms than male participants ($M = 3.18, SD = 0.50$).

Willingness to use condoms oneself. For this analysis, the factorial ANOVA revealed a significant main effect for gender, $F(1, 59) = 15.12, p = .00$ (see Figure 24). Female participants who viewed a condom advertisement ($M = 5.54, SD = 0.89$) were more willing to use condoms themselves than male participants who viewed a condom advertisement ($M = 4.56, SD = 1.22$).

Willingness to encourage others to use condoms. For this analysis, the factorial ANOVA again revealed a significant main effect for gender, $F(1, 59) = 6.40, p = .01$ (see Figure 25). Female participants who viewed a condom advertisement ($M = 5.41, SD = 1.30$) were significantly more willing to encourage others to use condoms than male participants who viewed a condom advertisement ($M = 4.24, SD = 1.48$).

Free condom samples taken. Finally, for this analysis, advertising effectiveness was a significant covariate, $F(1, 54) = 5.72, p = .02$. There was also a significant main effect for gender, $F(1, 54) = 8.28, p = .01$ (see Figure 26). Male participants who viewed a condom advertisement ($M = 2.37, SD = 3.03$) took significantly more free condom samples than female participants who viewed a condom advertisement ($M = 0.63, SD = 1.53$).

Hypothesis 3

The third hypothesis predicted that participants viewing the condom advertisements targeting one's romantic relationship and friendships would report higher scores on all explicit condom-related dependent variables than participants viewing similar social-tie advertisements for sunscreen would report on all explicit sunscreen-related dependent variables. Also, the third hypothesis predicted that participants viewing the social-tie condom advertisements would take more free condom samples than the participants viewing the social-tie sunscreen advertisements would take free sunscreen samples.

Each of these six dependent variables was analyzed using a one-way analysis of covariance (ANCOVA) with advertising effectiveness serving as the covariate unless otherwise noted. For these analyses, scores for participants who saw one of the condom advertisements targeting social ties (romantic relationships and friendships) were compared to scores for participants who saw one of the sunscreen advertisements targeting social ties, and follow-up analyses including gender were conducted for all dependent variables.

Explicit Attitudes

For this analysis, advertising effectiveness was a significant covariate, $F(1, 88) = 12.33, p = .00$. One-way ANCOVA results revealed that participants who viewed condom advertisements targeting social ties ($M = 0.07, SD = 0.82$) had marginally significantly more

positive attitudes toward condoms than participants who viewed sunscreen advertisements targeting social ties ($M = -0.04$, $SD = 0.60$) had toward sunscreen, $F(1, 88) = 3.09$, $p = .08$ (see Figure 27).

Results of the 2 (gender: male, female) X 2 (product type: sunscreen, condoms) factorial ANCOVA indicated that there was also a significant main effect for gender, $F(1, 86) = 7.77$, $p = .01$ (see Figure 28). Female participants ($M = 0.24$, $SD = 0.52$) reported significantly more positive explicit attitudes regarding the product that they saw advertised than male participants ($M = -0.16$, $SD = 0.78$). However, the interaction effect between gender and product type was not significant.

Intentions to Purchase and Use Condoms or Sunscreen

Advertising effectiveness was also a significant covariate for the intentions analysis, $F(1, 88) = 35.36$, $p = .00$. However, participants who saw social tie-related advertisements for condoms did not have greater intentions to purchase and use the related product ($M = 4.16$, $SD = 1.01$) than participants who saw social tie-related sunscreen advertisements ($M = 3.19$, $SD = 1.33$), $F(1, 88) = 0.30$, $p = .59$. In addition, neither the gender main effect nor the interaction effect was significant.

Motivation to Use Condoms or Sunscreen

Similar to the two previously discussed analyses for the third hypothesis, advertising effectiveness was also a significant covariate for the analysis on motivation, $F(1, 88) = 8.46$, $p = .01$. One-way ANCOVA results indicated that participants who viewed an advertisement for condoms targeting social ties ($M = 3.34$, $SD = 0.47$) were significantly more motivated to use condoms than participants who viewed an advertisement for sunscreen targeting social ties ($M = 2.60$, $SD = 0.48$) were to use sunscreen, $F(1, 88) = 14.65$, $p = .00$ (see Figure 29). Results of the

2 (gender: male, female) X 2 (product type: sunscreen, condoms) factorial ANCOVA for motivation to use the related product indicated that there was also a significant main effect for gender, $F(1, 86) = 4.57, p = .04$ (see Figure 30). Female participants ($M = 3.05, SD = 0.61$) were significantly more motivated to use the product that they saw advertised than male participants ($M = 2.89, SD = 0.60$). The interaction effect between gender and product type was not significant.

Willingness to use condoms or sunscreen oneself

For this analysis, advertising effectiveness was also a significant covariate, $F(1, 88) = 5.29, p = .02$. Similar to the results for the motivation analysis, participants who viewed a social ties-related condom advertisement ($M = 5.13, SD = 1.14$) were also significantly more willing to use condoms themselves than participants who viewed a social ties-related sunscreen advertisement ($M = 2.88, SD = 1.21$) were to use sunscreen themselves, $F(1, 88) = 29.41, p = .00$ (see Figure 31).

Results of the 2 (gender: male, female) X 2 (product type: sunscreen, condoms) factorial ANCOVA for willingness to use condoms or sunscreen oneself indicated that there was also a significant main effect for gender, $F(1, 86) = 7.42, p = .01$ (see Figure 32). Female participants ($M = 4.25, SD = 1.58$) were significantly more willing to use the product that they saw advertised themselves than male participants ($M = 3.76, SD = 1.65$) were. However, the interaction effect between gender and product type was not significant.

Willingness to encourage others to use condoms or sunscreen

For this analysis, advertising effectiveness was not a significant covariate and was not included in any subsequent analyses. Results of the one-way ANOVA revealed that participants who viewed a social ties-related condom advertisement ($M = 4.77, SD = 1.60$) were significantly

more willing to encourage others to use condoms than participants who viewed a social ties-related sunscreen advertisement ($M = 2.85$, $SD = 1.27$) were to encourage others to use sunscreen, $F(1, 89) = 40.09$, $p = .00$ (see Figure 33).

Results of the 2 (gender: male, female) X 2 (product type: sunscreen, condoms) factorial ANOVA for willingness to encourage others to use condoms or sunscreen indicated that there was also a significant main effect for gender, $F(1, 87) = 16.88$, $p = .00$ (see Figure 34). Female participants ($M = 4.33$, $SD = 1.75$) were significantly more willing to encourage others to use the product that they saw advertised than male participants ($M = 3.36$, $SD = 1.60$) were. However, the interaction effect between gender and product type was not significant.

Free samples taken

Finally, because advertising effectiveness was not a significant covariate for the free samples taken analysis, it was not included in the subsequent analysis. Results of this ANOVA indicated that participants who viewed a social ties-related condom advertisement ($M = 1.64$, $SD = 2.74$) did not take more free samples of the product they saw advertised than participants who viewed a social ties-related sunscreen advertisement ($M = 1.26$, $SD = 1.16$), $F(1, 86) = 0.75$, $p = .39$.

Results of the 2 (gender: male, female) X 2 (product type: sunscreen, condoms) factorial ANOVA for free samples of sunscreen or condoms taken indicated that there was also a significant main effect for gender, $F(1, 84) = 5.20$, $p = .03$ (see Figure 35). Male participants ($M = 1.84$, $SD = 2.38$) took significantly more free samples of the product that they saw advertised than female participants ($M = 0.89$, $SD = 1.39$) did. There was also a significant interaction effect between product type and gender, $F(1, 84) = 3.92$, $p = .05$ (see Figure 36). Male participants who viewed a social ties-related condom advertisement ($M = 2.35$, $SD = 3.12$) took

more free condom samples than female participants in the same conditions ($M = 0.50$, $SD = 1.41$). However, male participants who viewed a social ties-related sunscreen advertisement ($M = 1.32$, $SD = 1.03$) and female participants who viewed a social ties-related sunscreen advertisement ($M = 1.19$, $SD = 1.33$) did not take drastically different numbers of free sunscreen samples.

Hypothesis 4

The fourth hypothesis predicted that female participants viewing the condom advertisement targeting one's romantic relationship would have more positive implicit and explicit condom attitudes, intentions to purchase and use condoms, motivation to use condoms, willingness to use condoms oneself, and willingness to encourage others to use condoms than male participants viewing the same condom advertisement.

Again, each of these six dependent measures was first analyzed using a one-way analysis of covariance (ANCOVA) with advertising effectiveness serving as the covariate. However, advertising effectiveness was only a significant covariate in the analyses regarding explicit attitudes and number of free samples taken and was not included in any of the other analyses within this section. Although no specific hypothesis was made about the numbers of free condom samples that male and female participants viewing the condom advertisement targeting one's romantic relationship would take, number of free condom samples taken by male and female participants in this condition was also analyzed using a one-way ANCOVA.

Implicit attitudes

Condom-positive trials. The mean latency on condom-positive trials was analyzed in a one-way analysis of variance (ANOVA) with gender as the predictor variable. Results of the ANOVA indicated that male ($M = 747.58$ ms, $SD = 19.60$ ms) and female ($M = 760.80$ ms, $SD =$

21.41 ms) participants viewing the relationship condom advertisement did not differ in terms of their mean latencies on condom-positive trials, $F(1, 21) = 2.32, p = .14$.

Condom-negative trials. Second, a one-way ANOVA was performed for the condom-negative mean latency. Results of the one-way ANOVA revealed that again, male ($M = 743.54$ ms, $SD = 33.62$ ms) and female ($M = 755.00$ ms, $SD = 35.09$ ms) participants viewing the condom relationship advertisement did not differ in their mean latencies on condom-negative trials, $F(1, 21) = 0.62, p = .44$.

Differences between positive and negative latency scores. Last, a one-way ANOVA was performed for the difference between positive and negative latency scores as the dependent measure. Similar to the results of the other ANOVAs run for measures of implicit attitudes, results of the one-way ANOVA for differences between positive and negative latency scores revealed that male ($M = 4.04$ ms, $SD = 21.36$ ms) and female ($M = 5.80$ ms, $SD = 27.47$ ms) participants viewing the condom relationship advertisement did not differ on this measure, $F(1, 21) = 0.03, p = .87$.

Explicit Attitudes

As previously noted, ANCOVA analyses indicated that advertising effectiveness was a significant covariate for this analysis, $F(1, 20) = 7.12, p = .02$. Using advertising effectiveness as a covariate, the difference between female and male participants' explicit condom attitudes in the romantic relationship condition was significant, $F(1, 20) = 4.38, p = .05$ (see Figure 37). More specifically, female participants who viewed the condom advertisement targeting one's romantic relationship ($M = 0.46, SD = 0.42$) had significantly more positive explicit attitudes toward condoms than male participants who viewed the same advertisement ($M = -0.24, SD = 1.06$).

Intentions to Purchase and Use Condoms

For intentions to purchase and use condoms, a one-way ANOVA indicated that male ($M = 4.21$, $SD = 1.04$) and female ($M = 4.48$, $SD = 0.44$) participants who viewed the condom relationship advertisement did not differ in their intentions to purchase and use condoms, $F(1, 21) = 0.52$, $p = .48$.

Motivation to Use Condom

For motivation to use condoms, a one-way ANOVA revealed that male ($M = 3.28$, $SD = 0.50$) and female ($M = 3.46$, $SD = 0.34$) participants viewing the condom relationship advertisement also did not differ in their levels of motivation to use condoms, $F(1, 21) = 0.91$, $p = .35$.

Willingness to Use Condoms Oneself

Likewise, a one-way ANOVA indicated that male ($M = 4.86$, $SD = 1.27$) and female ($M = 5.22$, $SD = 0.63$) participants who viewed the condom relationship advertisement did not differ in their willingness to use condoms themselves, $F(1, 21) = 0.64$, $p = .43$.

Willingness to Encourage Others to Use Condoms

The one-way ANOVA was, however, significant for willingness to encourage others to use condoms, $F(1, 21) = 7.26$, $p = .01$ (see Figure 38). Female participants viewing the condom relationship advertisement ($M = 5.67$, $SD = 1.16$) were significantly more willing to encourage others to use condoms than male participants viewing the same advertisement ($M = 4.11$, $SD = 1.46$). However, as discussed in the results for hypothesis 2, this gender effect was observed for all participants who viewed a condom advertisement.

Free Samples Taken

As previously noted, advertising effectiveness was a significant covariate for free samples taken, $F(1, 19) = 8.54$, $p = .01$. However, female participants ($M = 1.00$, $SD = 1.93$) and

male participants ($M = 2.07$, $SD = 3.17$) who viewed the condom advertisement targeting one's romantic relationship did not differ in the numbers of free condom samples that they took, $F(1, 19) = 1.17$, $p = .29$.

Exploratory Analyses

Romantic Relationship Status

Because condom use is a social behavior that may be influenced by one's romantic relationship status, two sets of exploratory analyses were conducted using participants' romantic relationship status as an independent variable of interest.

All condom advertisements. First, each of the nine dependent variables was analyzed in a 2 (romantic relationship status: currently dating, not currently dating) X 3 (advertisement type: self, relationship, friendships) X 2 (gender: male, female) factorial analysis of covariance (ANCOVA), with advertising effectiveness serving as a covariate unless nonsignificant. Because differences (or lack thereof) between genders and participants viewing different types of advertisements have been discussed previously, this section will only focus on main effects for romantic relationship status and any interaction effects involving romantic relationship status.

There were no significant main effects for romantic relationship status and also no significant interaction effects involving romantic relationship status in the analyses regarding implicit attitude measures, explicit attitudes, intentions to purchase and use condoms, motivation to use condoms, willingness to use condoms oneself, and free condom samples taken. However, there was a significant three-way interaction between romantic relationship status, advertisement type, and gender in the analysis for willingness to encourage others to use condoms, $F(2, 51) = 4.63$, $p = .01$ (see Figure 39). Male participants not currently involved in a romantic relationship who viewed the condom relationship advertisement ($M = 4.62$, $SD = 1.39$) were more willing to

encourage others to use condoms than male participants not currently involved in a romantic relationship who viewed the condom self advertisement ($M = 3.87$, $SD = 1.42$) or the condom friendship advertisement ($M = 3.19$, $SD = 1.26$). However, male participants currently involved in a romantic relationship who viewed the condom friendship advertisement ($M = 5.50$, $SD = 1.06$) were more willing to encourage others to use condoms than male participants currently involved in a romantic relationship who viewed the condom self advertisement ($M = 4.97$, $SD = 1.31$) and were much more willing to encourage others to use condoms than male participants currently involved in a romantic relationship who viewed the condom relationship advertisement ($M = 2.83$, $SD = 0.65$).

Female participants not currently involved in a romantic relationship who viewed the condom friendship advertisement ($M = 5.88$, $SD = 1.74$) were more willing to encourage others to use condoms than female participants not currently involved in a romantic relationship who viewed the condom relationship advertisement ($M = 5.47$, $SD = 1.38$) or the condom self advertisement ($M = 4.92$, $SD = 1.61$). However, female participants currently involved in a romantic relationship who viewed the condom relationship advertisement ($M = 6.06$, $SD = 0.59$) were more willing to encourage others to use condoms than female participants currently involved in a romantic relationship who viewed the condom friendship advertisement ($M = 5.58$, $SD = 1.34$) or the condom self advertisement ($M = 4.83$, $SD = 1.13$).

There were no other significant main effects or interactions involving romantic relationship status for the willingness to encourage others to use condoms variable.

Condom relationship advertisement. Because this advertisement specifically targeted one's romantic relationship, each of the nine dependent variables was also analyzed in a 2 (romantic relationship status: currently dating, not currently dating) X 2 (gender: male, female)

factorial analysis of covariance (ANCOVA, with advertising effectiveness serving as the covariate, unless nonsignificant) for participants who viewed this advertisement.

Similar to the previously discussed results for all participants who viewed a condom advertisement, the results of the analyses including romantic relationship status for only the participants who viewed the condom advertisement targeting one's romantic relationship also revealed that there were no significant main effects for romantic relationship status and also no significant interaction effects involving romantic relationship status in the analyses on implicit attitudes, explicit attitudes, intentions to purchase and use condoms, motivation to use condoms, willingness to use condoms oneself, and free condom samples taken. However, there was a significant two-way interaction between romantic relationship status and gender in the analysis for willingness to encourage others to use condoms, $F(1, 18) = 4.35, p = .05$ (see Figure 40). Female participants involved in romantic relationships ($M = 6.06, SD = 0.59$) were more willing to encourage others to use condoms than males involved in romantic relationships ($M = 2.83, SD = 0.65$), but female participants not involved in romantic relationships ($M = 5.47, SD = 1.38$) and male participants not involved in romantic relationships ($M = 4.62, SD = 1.39$) differed less in their willingness to encourage others to use condoms. There were no other significant main effects or interactions involving romantic relationship status for the willingness to encourage others to use condoms variable.

DISCUSSION

Previous research has shown that despite having high prevalence rates of STIs, adolescents and young adults use methods of protecting against STIs infrequently and have particularly low rates of condom use. (Reinisch et al., 1995; The United Nations Children's Fund, UNAIDS, & World Health Organization, 2002). Although advertisers use several different strategies in

condom advertisements, because most of these condom advertisements are self-focused, they present messages that are incompatible with the ways that people in committed relationships view the world. Thus, the purpose of the current study was to determine how condom advertisements targeting social ties would compare to a condom advertisement targeting the self and a control set of sunscreen advertisements in terms of advertising effectiveness and other attitudinal and motivational dependent variables. Additionally, the current study sought to determine whether males and females responded to the advertisements differently depending upon condition.

In summary, the interaction between product type and advertisement type on advertising effectiveness was marginally significant. An examination of effect sizes indicated that there was a greater disparity in the effectiveness ratings of the social-tie condom advertisements and the social-tie sunscreen advertisements than there was in the effectiveness ratings of the self condom advertisement and the self sunscreen advertisement. This could suggest that a social-ties approach to advertising is perceived as more relevant when it is used to advertise a product related to a social behavior like condom use, but as less relevant when it is used to advertise a product related to an individual behavior like sunscreen use. In addition, participants who viewed a social-tie condom advertisement had marginally more positive explicit attitudes toward condoms than participants who viewed a social-tie sunscreen advertisement had toward sunscreen. Moreover, participants who viewed a social-tie condom advertisement were significantly more motivated and willing to use and to encourage others to use condoms than participants who viewed a social-tie sunscreen advertisement were to use and encourage others to use sunscreen.

Gender differences between male and female participants also existed for these analyses.

Female participants had more positive explicit attitudes toward, were more motivated to use, were more willing to use, and were more willing to encourage others to use the product that they saw advertised than male participants. In terms of gender differences for just those participants who viewed a condom advertisement, female participants were more motivated and willing to use condoms themselves and were more willing to encourage others to use condoms than male participants who viewed a condom advertisement, but male participants who viewed a condom advertisement took significantly more free condom samples than female participants who viewed a condom advertisement.

There were also gender differences observed when male and female participants who viewed the condom relationship advertisement were compared. Unlike the overall gender differences for participants who viewed a condom advertisement, within the condom relationship advertisement condition, female participants had more positive attitudes toward condoms than male participants, but there were no gender differences in motivation to use condoms, willingness to use condoms oneself, or number of free condom samples taken.

Fewer differences on dependent variables existed when participants viewing the social-tie condom advertisements were compared to participants viewing the self condom advertisement. Participants who viewed the social-tie condom advertisements were only marginally more motivated to use condoms and marginally more willing to use condoms themselves than participants who viewed the self-focused condom advertisement.

Finally, exploratory analyses revealed that romantic relationship status only influenced willingness to encourage others to use condoms and no other dependent variables. More specifically, the combination of romantic relationship status and advertisement type viewed affected how willing male and female participants were to encourage others to use condoms in

different ways. Among male participants not currently involved in a romantic relationship, the condom relationship advertisement led to the most willingness to encourage others to use condoms. However, among male participants currently involved in a romantic relationship, the friendship condom advertisement led to the most willingness to encourage others to use condoms. Among female participants not currently involved in a romantic relationship, the condom friendship advertisement led to the most willingness to encourage others to use condoms. Conversely, among female participants currently involved in a romantic relationship, the condom relationship advertisement led to the most willingness to encourage others to use condoms.

For participants who viewed the relationship-focused condom advertisement, the combination of romantic relationship status and gender affected how willing participants were to encourage others to use condoms. Female participants involved in romantic relationships were more willing to encourage others to use condoms than males involved in romantic relationships, but female participants not involved in romantic relationships and male participants not involved in romantic relationships differed less in their willingness to encourage others to use condoms.

Advertising Effectiveness

Overall, results showed that the social-tie focused advertisements were perceived as more effective when they related to a social behavior (condom use) than when they related to a non-social behavior (sunscreen use). These findings are consistent with several studies that have documented the importance of social ties, cohesion, and support in positively changing health behaviors, especially exercise behaviors (Courneya & McAuley, 1995; Gillett, 1988; McAuley et al., 2003; Wankel et al., 1985;). Beyond that, the social-tie advertisements regarding condom use may have been perceived as more effective because they contained a match between a social-ties

approach and a social behavior. At some level, participants may have recognized the importance of social support as it relates to increasing one's own condom use behaviors, as well as the condom use behaviors of one's friends, because of the social nature of condom use. Although sunscreen can be used in social settings, it is typically a non-social behavior that one can enact individually. Thus, a social-ties approach to sunscreen advertisements is potentially less relevant than a social-ties approach to condom advertisements.

Additionally, the social-tie condom advertisements may have been perceived as more effective than the social-tie sunscreen advertisements because of the link between cognitive interdependence and the relationship-focused condom advertisement. At some level, participants may have recognized the connection between being in a committed, romantic relationship and pursuing goals that will keep the relationship intact (Agnew et al., 1998). More specifically, participants could have identified condom use as a goal that will keep a relationship safer, and thus intact, and that recognition, coupled with the social nature of condom use and the social-tie advertising approach could have been more appealing to participants than the less logical relationship-focused sunscreen advertisement.

Beyond Advertising Effectiveness: Other Outcome Variables

Beyond being rated as more effective than the social-tie focused sunscreen advertisements, the social-tie focused condom advertisements led participants to be significantly more motivated and willing to use condoms and to encourage others to use condoms than participants who viewed a social-tie sunscreen advertisement were to use and to encourage others to use sunscreen.

These variables have been demonstrated to be correlates and predictors of actual condom use by other researchers, thus suggesting that this social-ties approach to condom advertisements

could potentially positively affect actual condom-use behaviors. For example, researchers have shown that increases in condom use are largely due to increases in motivation (Anderson et al., 2006; Fisher et al., 1996). Additionally, other research has shown that willingness to engage in a behavior under certain circumstances is an important predictor of the subsequent behavior (Gibbons & Gerrard, 1995, 1997). Because of the interactive nature of condom use, researchers have also found that being able to talk to peers about sex-related topics is ultimately related to greater condom use (Halpern-Felsher et al., 2004), so willingness to encourage others to use condoms is also important for condom use. Based on the importance of motivation, willingness to use a product oneself, and willingness to encourage others to use a product as cited by these researchers, it would seem that the results of the current study imply that the social-tie condom advertisements were more successful in prompting participants to increase their condom use than the social-tie sunscreen advertisements were in prompting participants to increase their sunscreen use.

Although many of the researchers whose work has been cited have studied factors related to condom use within condom use interventions, condom advertisements have also been shown to be powerful tools for changing behavior both in controlled experimental settings and outside of the laboratory (Dahl et al., 2003; Eder, 1999). This motivational influence of advertisements gives even more credibility to the possibility that changes observed on dependent variables in the current study as a result of viewing advertisements could have led to actual behavioral changes after participants completed the study.

It would be short-sighted not to note that the results of the current study also indicated that participants' attitudes toward and intentions to purchase and use the related product did not differ based on whether they viewed a social-tie condom advertisement or a social-tie sunscreen

advertisement. This could potentially be unfortunate because previous research has demonstrated that more positive attitudes toward condoms are correlated with greater intentions to use condoms, and that greater intentions to use condoms are associated with higher rates of actual condom use (Sheeran et al., 1999; Sheeran & Taylor, 1999).

This lack of significant differences on attitudes and intentions coupled with the significant differences on motivation and willingness found in the current study reflects a dichotomy cited by other researchers. Researchers have found that motivation and willingness are significantly correlated with condom use in spontaneous, impulsive sexual interactions, while attitudes and intentions are significantly correlated with condom use in planned sexual interactions (Marsh et al., 2001). Also supporting this proposition is the Theory of Planned Behavior (Ajzen, 1991), which cites attitudes and intentions as important predictors of planned, less spontaneous behavior. This division in the literature suggests that the social-tie condom advertisements in the current study could be effective in increasing condom use in spontaneous, impulsive sexual interactions. However, they may not be anymore effective than the self-focused condom advertisement in increasing condom use in planned sexual interactions.

Gender

The fact that female participants were consistently more motivated, willing, and willing to encourage others to use the product they saw advertised than male participants regardless of product type and advertisement type suggests that males and females have different views on health and communication overall. Other researchers have attributed these gender differences to differences in how males and females are socialized. For example, one reason that females are socialized with more emphasis on health and safety than males are is because females face more severe consequences for dangerous sexual activities (e.g. unplanned pregnancies and fertility

complications) than males do (Baldwin, Whiteley, & Baldwin, 1990).

Although the current study found several gender effects associated with factors related to condom use, these results do not clear up gender inconsistencies in previously cited research. Instead, results of the current study regarding factors related to condom use and gender are similar to the findings of other researchers in that they illustrate the complex relationship between demographic characteristics, such as gender, and condom use (Sheeran et al., 1999; Sheeran & Orbell, 1998). More specifically, in the current study, female participants who viewed a condom advertisement were significantly more motivated to use condoms than male participants who viewed a condom advertisement, but male participants who viewed a condom advertisement took significantly more free condom samples than female participants who viewed a condom advertisement. Research has found positive correlations between condom-use rates and motivation (Fisher et al., 2003), but one cannot use a condom unless one has a condom, and one is not necessarily motivated to use a condom just by having one. Thus, like previous studies, the current study's results also show inconsistencies between males and females related to factors affecting condom use, suggesting that the determinants of condom use are more complicated than simple demographic characteristics.

Relationship Status

Although the findings of the current study regarding gender are similar to findings of other studies in that they are somewhat contradictory, the findings of the current study regarding relationship status differ from findings of other studies. While other studies (Sheeran et al., 1999; Tucker et al., 2007; Von Haeften et al., 2000) have found associations between level of commitment, factors related to condom use, and condom use in relationships, in the current study, relationship status was largely unrelated to factors related to condom use. However, this

discrepancy could have been due to the fact that other studies have assessed the degree of commitment in a romantic relationship, but the current study assessed the presence or absence of a romantic relationship.

Implications

There are several implications of the current study. First, this study implies that a social-ties approach to advertising could be effective when it is used to advertise products that are related to social behaviors based on the fact that the social-ties condom advertisements were rated as more effective than the social-ties sunscreen advertisements. Additionally, although there were not significant differences between participants who viewed a social-ties condom advertisement and participants who viewed a social-ties sunscreen advertisement on all dependent variables, there were significant differences between those groups of participants on several dependent variables which have been shown by other researchers to be associated with actual increased condom use. Also, the differences in those dependent variables always indicated that participants who viewed the social-ties condom advertisements were more likely to use condoms than participants who viewed the social-ties sunscreen advertisements were to use sunscreen. In other words, none of the significant effects favored the participants who viewed the social-tie sunscreen advertisements.

Based on these findings, a social-ties approach to condom use may help decrease the incidence of STIs because of the persuasive and efficient nature in which advertisements present important information (Struckman-Johnson et al., 1990), and because young adults, as well as children and older adults, have the potential to be exposed to thousands of advertisements every day through various media forms (Jhally, 2000).

Another implication of the present study's findings is that current self-focused condom

advertisements may be inadequate on their own for increasing condom use. The discrepancy between the effectiveness ratings of the condom social-tie advertisements and the sunscreen social-tie advertisements could suggest that participants perceive a social-ties advertising approach to condom use as logical and relevant. This in turn could suggest that people are not purely self-interested in their condom use-related behaviors; in other words, it seems that people do have other motivations for using condoms beyond just protecting themselves.

Moreover, it should be noted that participants were inconsistent in how they responded to measures that were all related to the same behavior. As previously discussed, there were only significant effects on the motivation and willingness variables, suggesting that only assessing a few of those variables in other studies may lead to an incomplete picture of condom use.

Finally, results of the present study imply that at some level, there appears to be a disconnect in how people rate the effectiveness of advertisements and in how effective those advertisements actually are in prompting people to change their behaviors. Although participants rated the social-tie condom advertisements as more effective than the social-tie sunscreen advertisements, as previously discussed, there were only significant effects on some of the dependent variables that have been associated with behavioral changes. Thus, if the goal of advertisers is to prompt people to take action as a result of an advertisement instead of just to admire it, those outcomes need to be considered separately.

Limitations

Although the previously discussed implications of the present study are important, they must be considered in conjunction with the limitations of the present study. First, because the present study assessed intervention outcome variables instead of consumer outcomes, it is unclear whether or not participants who viewed the different types of condom advertisements

actually purchased and used different numbers of condoms after the study. The intervention variables used in the present study have all been associated with increased condom use, but because condom use was not measured in the current study, it is unclear whether or not participants actually bought and used different amounts of condoms after viewing the advertisements.

Along those same lines, another limitation of the current study is that there was no measure of participants' sexual activity within the demographic questionnaire to serve as an independent variable. This is a limitation because without that information, it is uncertain how many participants found the condom advertisements immediately relevant to their current sexual situations. Therefore, it is unknown whether participants who responded negatively toward condoms saw them as inconsistent with and unrelated to their current lifestyles or whether those participants would probably not use condoms even if given the opportunity. On the other hand, it is also unknown whether participants who responded positively toward condoms actually had the opportunity to use them or whether those participants tried to imagine how they might feel toward condoms if they had the opportunity to use them.

Although the level of sexual activity of the sample in the current study was unknown, it is not likely that the condom advertisements were completely irrelevant for a majority of participants based on national data of young adult sexual activity levels. For example, the Kaiser Family Foundation's 2002 *Youth Knowledge and Attitudes on Sexual Health: A National Survey of Adolescents and Young Adults* found that 81% of young adults aged 18-24 had had sexual intercourse (The Henry J. Kaiser Family Foundation, 2002). While the sexual activity level of the present study's sample may not be exactly 81%, it seems unreasonable that it would be drastically different.

Also, another limitation of the current study is that the advertisements used as stimuli were not contextualized. Not only were the advertisements in the current study not presented on a web site or in a magazine, for example, but they also were not viewed by two people trying to make the decision regarding whether or not to use condoms. Thus, the presentation of the advertisements in the current study was somewhat different from how advertisements would be presented in everyday life, and this could have impacted the results of the current study. Had the advertisements used in the current study been on a web site or in a magazine, there would have been no guarantee that participants would have paid any attention to them. Also, if the advertisements used in the current study had been viewed by two people trying to make the decision regarding whether or not to use condoms, the relationship dynamics between those people would have interacted with their responses to the advertisements to ultimately determine whether or not they increased their condom use.

Additionally, the small cell sample size in the current study may have led to insufficient power. As a result, statistical analyses may not have detected effects that do exist in reality. Thus, it is necessary to collect more data to increase the cell sample size in order to increase the statistical power.

Finally, another limitation of the current study is that it is unknown exactly what participants thought was effective about the social-tie condom advertisements. Participants could have responded favorably to those advertisements because of the previously discussed match of a social-ties advertising approach and a product related to a social behavior, or participants could have responded favorably for completely unrelated reasons. For example, participants may have responded positively to those advertisements because the people in them looked like they were having fun. However, the fact that participants rated advertisements about sunscreen containing

the same pictures as so much less effective decreases the chances that participants responded favorably to the social-tie condom advertisements for reasons unrelated to the combination of social ties and a product related to a social behavior.

Future Research

Based on the limitations of the current study, there are several possible directions of future research. For example, future research could assess changes in consumer outcome variables after individuals view condom advertisements featuring social ties. Also, because of the inconsistencies in the effectiveness of advertising strategies, such as fear-based appeals, in condom advertisements (Dahl et al., 2003; Struckman-Johnson et al., 1990; Struckman-Johnson et al., 1994) future research could examine the combination of traditional advertising strategies, such as these fear-based appeals, and social-ties in print advertisements, commercials, or both to determine whether or not the strategies' effectiveness could be enhanced by using social ties.

Moreover, because of the previously discussed association between attitudes, intentions, and planned sexual interactions, future researchers could also specifically create social-tie advertisements to target attitudes and intentions. For example, condom use intentions could be targeted with a line reading, "Plan to use condoms." Also, future research could present social-tie condom advertisements in context (e.g. on a website or in a magazine), such that participants view them in a similar way to how they would view advertisements in the media everyday.

Because the social-tie condom advertisements were grouped together for many of the analyses in the current study, future researchers could also attempt to separate the effects of condom advertisements targeting romantic relationships from the effects of condom advertisements targeting friendships on predictors and correlates of condom use or on consumer outcome variables related to condom use. This could potentially be accomplished through the

creation of social-tie advertisements that emphasize characteristics of romantic relationships (e.g. physical intimacy) that are not present in the average friendship.

Additionally, because it is unclear how sexually active the current study's sample was, future studies could investigate ways to test the effectiveness of social-tie condom advertisements in a population with a known level of sexual activity. Finally, because it is unknown exactly what participants responded to in the social-tie condom advertisements, focus group studies or market research studies could be conducted to collect qualitative data on how people respond to social-tie advertisements for condoms.

Conclusion

Young adults are at high risk for contracting STIs; however, their rates of condom use are low. Based on previous research on the powerful positive effects that social ties have on behavioral change, the current study tested a social-ties approach to condom advertising with young adults that seems to have been at least partially effective. Social-tie condom advertisements targeting one's romantic relationship and friendships led to increased motivation and willingness to use condoms compared to social-tie sunscreen advertisements' effect on participants' motivation and willingness to use sunscreen. These increases are important because motivation and willingness have been found to be strong correlates of condom use in impulsive sexual interactions. Future research directions include: assessing consumer outcome variables after participants view social-tie condom advertisements and using qualitative research methods to determine participants' perceptions of social-tie condom advertisements in participants' own words.

References

- Agnew, C. R., Van Lange, P. A. M., Rusbult, C. E., & Langston, C. A. (1998). Cognitive interdependence: Commitment and the mental representation of close relationships. *Journal of Personality and Social Psychology*, 74, 939-954.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Albarracin, D., Gillette, J. C., Ho, M., Earl, A. N., Glasman, L. R., & Durantini, M. R. (2005). A test of major assumptions about behavior change: A comprehensive look at the effects of passive and active HIV-prevention interventions since the beginning of the epidemic. *Psychological Bulletin*, 131, 856-897.
- Anderson, E. S., Wagstaff, D. A., Heckman, T. G., Winett, R. A., Roffman, R. A., Soloman, L. J., Cargill, V., Kelly, J. A., & Sikkema, K. J. (2006). Information motivation-behavioral skills (IMB) model: Testing direct and mediated treatment effects on condom use among women in low-income housing. *Annals of Behavioral Medicine*, 31, 70-79.
- Arthur, D., Quester, P. (2004). Who's afraid of that ad? Applying segmentation to the protection motivation model. *Psychology & Marketing*, 21, 671-696.
- Baldwin, J. I., Whiteley, S., & Baldwin, J. D. (1990). Changing AIDS- and fertility related behavior: The effectiveness of sexual education. *Journal of Sex Research*, 27, 245-263.
- Brittain, D. R., Baillargeon, T., McElroy, M., Aaron, D. J., Gyurcsik, N. C. (2006). Barriers to moderate physical activity in adult lesbians. *Women & Health*, 43, 75-92.

- Centers for Disease Control and Prevention (2007). Basic statistics. Retrieved November 18, 2007, from <http://www.cdc.gov/hiv/topics/surveillance/basic.htm#international>
- Courneya, K. S. & McAuley, E. (1995). Cognitive mediators of the social influence exercise adherence relationship: A test of the theory of planned behavior. *Journal of Behavioral Medicine*, 18, 499-515.
- Dahl, D. W., Frankenberger, K. D., & Manchanda, R. V. (2003). Does it pay to shock? Reaction to shocking and nonshocking advertising content among university students. *Journal of Advertising Research*, 43, 268-280.
- DeJong, W., Wolf, R. C., Austin, S. B. (2001). U.S. federally funded television public service announcements (PSAs) to prevent HIV/AIDS: A content analysis. *Journal of Health Communication*, 6, 249-263.
- De Visser, R. O. & Smith, A. M. A. (2004). Which intention? Whose intention? Condom use and theories of individual decision making. *Psychology, Health & Medicine*, 9, 193-204.
- Earl, A. & Albarracin, D. (2007). Nature, decay, and spiraling of the effects of fear inducing arguments and HIV counseling and testing: A meta-analysis of the short- and long-term outcomes of HIV-prevention interventions. *Health Psychology*, 26, 496-506.
- Eder, R. (1999, November 29). The new American sexual revolution paradigm shift sparks condom sales. *Drug Store News*. Retrieved November 20, 2007, from the Business Source Elite database.

- Estabrooks, P. A. & Carron, A. V. (1999). Group cohesion in older adult exercisers: Prediction and intervention effects. *Journal of Behavioral Medicine*, 22, 575-588.
- Fisher, J. D., Fisher, W. A., Bryan, A. D., & Misovich, S. J. (2002). Information motivation behavioral skills model-based HIV risk behavior change intervention for inner-city high school youth. *Health Psychology*, 21, 177-186.
- Fisher, J. D., Fisher, W. A., Misovich, S. J., Kimble, D. L., & Malloy, T. E. (1996). Changing AIDS risk behavior: Effects of an intervention emphasizing AIDS risk reduction information, motivation, and behavioral skills in a college student population. *Health Psychology*, 15, 114-123.
- Fisher, W. A., Fisher, J. D., & Harman, J. (2003). The information-motivation behavioral skills model: A general social psychological approach to understanding and promoting health behavior. In J. Suls & K.A. Wallston (Eds.), *Blackwell handbook of social psychology and health* (pp. 82-106). Malden, MA: Blackwell Publishers.
- Fisher, W. A., Williams, S. S., Fisher, J. D., & Malloy, T. E. (1999). Understanding AIDS risk behavior among sexually active urban adolescents: An empirical test of the information-motivation-behavioral skills model. *AIDS and Behavior*, 3, 1999.
- Gabler, J., Kropp, F., Silvera, D. H., & Lavack, A. M. (2004). The role of attitudes and self-efficacy in predicting condom use and purchase intentions. *Health Marketing Quarterly*, 21, 63-78.

- Galloni, A. (2001, July 27). In new global campaign, Durex maker uses humor to sell condoms— Safe-sex theme created anxiety and steamy ads no longer seem to have much impact. *Wall Street Journal*. Retrieved November 20, 2007, from <http://proquest.umi.com>
- Gibbons, F. X., Gerrard, M., Blanton, H., & Russell, D. W. (1998). Reasoned action and social reaction: Willingness and intention as independent predictors of health risk. *Journal of Personality and Social Psychology*, 74, 1164-1180.
- Gibbons, F. X., Gerrard, M., & Lane, D. J. (2003). A social reaction model of adolescent health risk. In J. Suls & K.A. Wallston (Eds.), *Blackwell handbook of social psychology and health* (pp. 107-136). Malden, MA: Blackwell Publishers.
- Gillet, P. A. (1988). Self-reported factors influencing exercise adherence in overweight women. *Nursing Research*, 37, 25-29.
- Halpern-Felsher, B. L., Kropp, R. Y., Boyer, C. B., Tschann, J. M., & Ellen, J. M. (2004). Adolescents' self-efficacy to communicate about sex: Its role in condom attitudes, commitment, and use. *Adolescence*, 39, 443-456.
- The Henry J. Kaiser Family Foundation. (2002). Substance use and risk sexual behavior: Attitudes and practices among adolescents and young adults. Retrieved April 24, 2008, from <http://www.outproud.org/pdf/CASASurveySnapshot.pdf>
- Jarvis, B. (1997-2002). MediaLab (Version 2006) [Computer software]. New York: Empirisoft.
- Jhally, S. (executive producer and director). (2000). *Killing Us Softly 3: Advertising's Image of Women* [videorecording]. Northhampton, MA: Media Education Foundation.

- The Joint United Nations Programme on HIV/AIDS. (2006). 2006 Report on the global AIDS epidemic. Retrieved November 18, 2007, from http://www.unaids.org/en/HIV_data/2006GlobalReport/default.asp
- Jupiterimages Corporation. (2007). Comstock Complete database. Retrieved September 10, 2007, from <http://www.comstockcomplete.com/en>
- Jupiterimages Corporation. (2007). Photos.com database. Retrieved September 10, 2007, from <http://www.photos.com/en/>
- Lamphey, P. R. & Price, J. E. (1998). Social marketing sexually transmitted disease and HIV prevention: A consumer-centered approach to achieving behaviour change. *AIDS, 12*, S1-S9.
- Marsh, K. L., Johnson, B. T., & Scott-Sheldon, L. A. (2001). Heart versus reason in condom use: Implicit versus explicit attitudinal predictors of sexual behavior. *Zeitschrift fur Experimentelle Psychologie, 48*, 161-175.
- McAuley, E., Jerome, G. J., Elavsky, S., Marquez, D. X., & Ramsey, S. N. (2003). Predicting long-term maintenance of physical activity in older adults. *Preventative Medicine, 37*, 110-118.
- Pryor, J. B., Reeder, G. D., & Landau, S. (1999). A social-psychological analysis of HIV related stigma. *American Behavioral Scientist, 42*, 1193-1211.
- Reinisch, J. M., Hill, C. A., Sanders, S. A., & Ziemba-Davis, M. (1995). High-risk sexual behavior at a Midwestern university: A confirmatory survey. *Family Planning Perspectives, 27*, 79-82.

- Rusbult, C. E., Martz, J. M., & Agnew, C. R. (1998). The investment model scale: Measuring commitment level, satisfaction level, quality of alternatives, and investment size. *Personal Relationships*, 5, 357-391.
- Sheeran, P., Abraham, C., & Orbell, S. (1999). Psychosocial correlates of heterosexual condom use: A meta-analysis. *Psychological Bulletin*, 125, 90-132.
- Sheeran, P. & Orbell, S. (1998). Do intentions predict condom use? Meta-analysis and examination of six moderator variables. *British Journal of Social Psychology*, 37, 231-250.
- Sheeran, P. & Taylor, S. (1999). Predicting intentions to use condoms: A meta-analysis and comparison of the theories of reasoned action and planned behavior. *Journal of Applied Social Psychology*, 29, 1624-1675.
- Smoak, N. D., Marsh, K. L., & Dovidio. (2005). Unpublished manuscript.
- Struckman-Johnson, C. J., Gilliland, R. C., Struckman-Johnson, D. L., & North, T. C. (1990). The effects of fear of AIDS and gender on response to fear-arousing condom advertisements. *Journal of Applied Social Psychology*, 20, 1396-1410.
- Struckman-Johnson, D. & Struckman-Johnson, C. (1996). Can you say condom? It makes a difference in fear-arousing AIDS prevention public service announcements. *Journal of Applied Social Psychology*, 26, 1068-1083.
- Struckman-Johnson, C., Struckman-Johnson, D., Gilliland, R. C., & Ausman, A. (1994). Effect of persuasive appeals in AIDS PSAs and condom commercials on intentions to use condoms. *Journal of Applied Social Psychology*, 24, 2223-2244.

- Treise, D. & Weigold, M. F. (2001). AIDS public service announcements: Effects of fear and repetition on predictors of condom use. *Health Marketing Quarterly*, 18, 39-61.
- Tucker, J. S., Elliot, M. N., Wenzel, S. L., & Hambarsoomian, K. (2007). Relationship commitment and its implications for unprotected sex among impoverished women living in shelters and low-income housing in Los Angeles County. *Health Psychology*, 26, 644-649.
- The United Nations Children's Fund, UNAIDS, & World Health Organization. (2002). Young people and HIV/AIDS: Opportunity in crisis. Retrieved November 18, 2007, from http://data.unaids.org/Topics/Young-People/YoungpeopleHIVAIDS_en.pdf
- United Nations Population Fund. (2005). Youth and HIV/AIDS Fact Sheet. Retrieved November 18, 2007, from http://www.unfpa.org/swp/2005/presskit/factsheets/facts_youth.htm#ftn1
- Von Haeften, I., Fishbein, M., Kasprzyk, D., & Montano, D. (2000). Acting on one's intentions: Variations in condom use intentions and behaviors as a function of type of partner, gender, ethnicity, and risk. *Psychology, Health & Medicine*, 5, 163-171.
- Wankel, L. M., Yardley, J. K., & Graham, J. (1985). The effects of motivational interventions upon the exercise adherence of high and low self-motivated adults. *Canadian Journal of Applied Sport Sciences*, 10, 147-156.

Weinstock, H., Berman, S., & Cates, W. Jr. (2004). Sexually transmitted diseases among American youth: Incidence and prevalence estimates, 2000. *Perspectives on Sexual and Reproductive Health*, 36, 6-10.

Wolf, R. C. & Pulerwitz, J. (2003). The influence of peer versus adult communication on AIDS-protective behaviors among Ghanaian youth. *Journal of Health Communication*, 8, 463-474.

Table 1

Male and Female Participants in Each Condition

		Condoms			Sunscreen		
		Male	Female	Total	Male	Female	Total
Self-focused							
	N	10	9	19	12	12	24
Relationship-focused							
	N	14	9	23	13	9	22
Friendship-focused							
	N	13	8	21	12	13	25
Total							
	N	37	26	63	37	34	71

Figure Captions

Figure 1. Listerine mouthwash filler advertisement.

Figure 2. Minute Maid multi-vitamin orange juice filler advertisement.

Figure 3. Durex female 'condom-self' advertisement.

Figure 4. Durex male 'condom-self' advertisement.

Figure 5. Durex 'condom-relationship' advertisement.

Figure 6. Durex 'condom-friendship' advertisement.

Figure 7. Coppertone female 'sunscreen-self' advertisement.

Figure 8. Coppertone male 'sunscreen-self' advertisement.

Figure 9. Coppertone 'sunscreen-relationship' advertisement.

Figure 10. Coppertone 'sunscreen-friendship' advertisement.

Figure 11. Mean advertising effectiveness ratings by advertisement type and product type.

Figure 12. Mean explicit attitudes by advertisement type and product type.

Figure 13. Mean intentions to purchase and use condoms or sunscreen by advertisement type and product type.

Figure 14. Mean motivation to use condoms or sunscreen by advertisement type and product type.

Figure 15. Mean willingness to use condoms or sunscreen oneself by advertisement type and product type.

Figure 16. Mean willingness to encourage others to use condoms or sunscreen by advertisement type and product type.

Figure 17. Mean free condom or sunscreen samples taken by advertisement type and product type.

Figure 18. Hypothesis 1: Mean advertising effectiveness (condom social-ties vs. all other advertisements).

Figure 19. Hypothesis 2: Mean motivation (condom social-ties vs. condom self).

Figure 20. Hypothesis 2: Mean willingness to use condoms (condom social-ties vs. condom self).

Figure 21. Hypothesis 2: Willingness to use condoms oneself by advertisement type and gender.

Figure 22. Hypothesis 2: Mean motivation to use condoms by advertisement target and gender.

Figure 23. Hypothesis 2: Mean motivation to use condoms by advertisement type and gender.

Figure 24. Hypothesis 2: Mean willingness to use condoms by advertisement target and gender.

Figure 25. Hypothesis 2: Willingness to encourage others to use condoms by advertisement target and gender.

Figure 26. Hypothesis 2: Free samples taken by advertisement target and gender.

Figure 27. Hypothesis 3: Mean explicit attitudes (condom social ties vs. sunscreen social ties).

Figure 28. Hypothesis 3: Mean explicit attitudes by product type and gender.

Figure 29. Hypothesis 3: Mean motivation (condom social ties vs. sunscreen social ties).

Figure 30. Hypothesis 3: Mean motivation by product type and gender.

Figure 31. Hypothesis 3: Mean self willingness (condom social ties vs. sunscreen social ties).

Figure 32. Hypothesis 3: Mean self willingness by product type and gender.

Figure 33. Hypothesis 3: Mean willingness to encourage others (condom social ties vs. sunscreen social ties).

Figure 34. Hypothesis 3: Mean willingness to encourage others by product type and gender.

Figure 35. Hypothesis 3: Mean free samples taken by product type and gender.

Figure 36. Hypothesis 4: Mean explicit attitudes (males vs. females in condom relationship condition).

Figure 37. Hypothesis 4: Mean willingness to encourage others to use condoms (males vs. females in condom relationship condition).

Figure 38. Mean willingness to encourage others to use condoms by advertisement type, relationship status, and gender.

Figure 39. Mean willingness to encourage others to use condoms by relationship status and gender (condom relationship condition).

Figure 1. Listerine mouthwash filler advertisement.

Be afraid, germs.

Be

Very

Afraid.



**Kill the germs that cause bad breath, plaque,
and the gum disease gingivitis.
Protect your mouth 24 hours a day.**

Figure 2. Minute Maid multi-vitamin orange juice filler advertisement.



Enhance your morning routine

Enhanced Juice
Minute Maid.
MULTI-VITAMIN

GOOD SOURCE OF
16 VITAMINS & MINERALS

PURE SQUEEZED ORANGE JUICE

Improved nutrition
Great orange juice taste

The advertisement features a central image of a Minute Maid Multi-Vitamin orange juice bottle. The bottle is yellow with a black cap and a label that includes the brand name, product type, and a list of vitamins and minerals. The background is white with purple vertical bars on either side of the bottle. The text 'Enhance your morning routine' is at the top, and 'Improved nutrition' and 'Great orange juice taste' are at the bottom.

Figure 3. Durex female 'condom-self' advertisement.

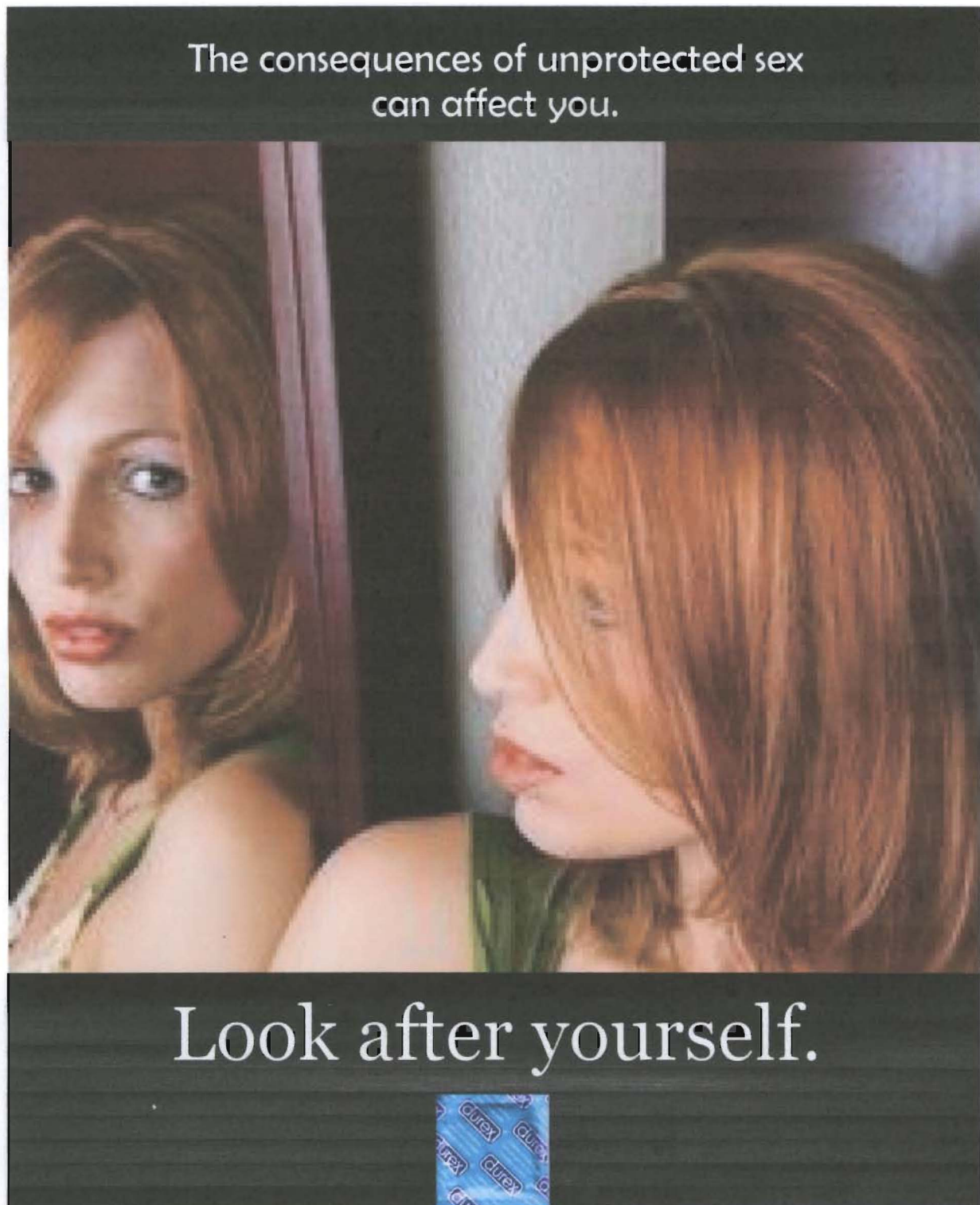


Figure 4. Durex male 'condom-self' advertisement.

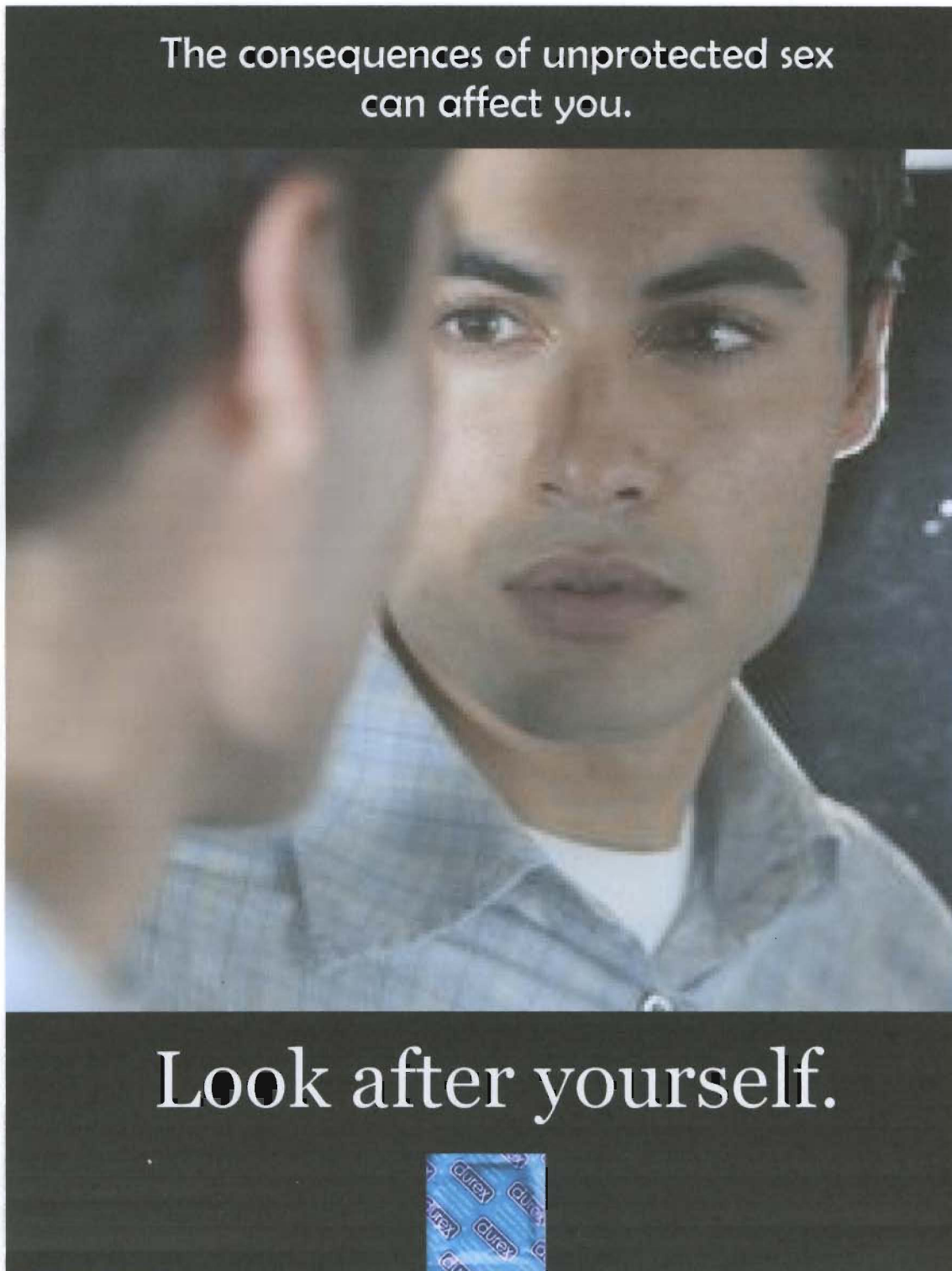


Figure 5. Durex 'condom-relationship' advertisement.

The consequences of unprotected sex
can affect your romantic relationship.




Look after your
relationship.



The advertisement features a central photograph of a young man and woman with light-colored hair, smiling warmly at each other. They are positioned on opposite sides of a light-colored wooden table, with their forearms resting on the surface. The background is a bright, out-of-focus indoor setting. The top and bottom of the advertisement are framed by dark grey/black bars containing white text. The top bar reads 'The consequences of unprotected sex can affect your romantic relationship.' and the bottom bar reads 'Look after your relationship.' Below the bottom text, there is a small, square inset image of a blue Durex condom wrapper.

Figure 6. Durex 'condom-friendship' advertisement.

The consequences of unprotected sex
can affect your friendships.



Look after your friendships.




Figure 7. Coppertone female 'sunscreen-self' advertisement.

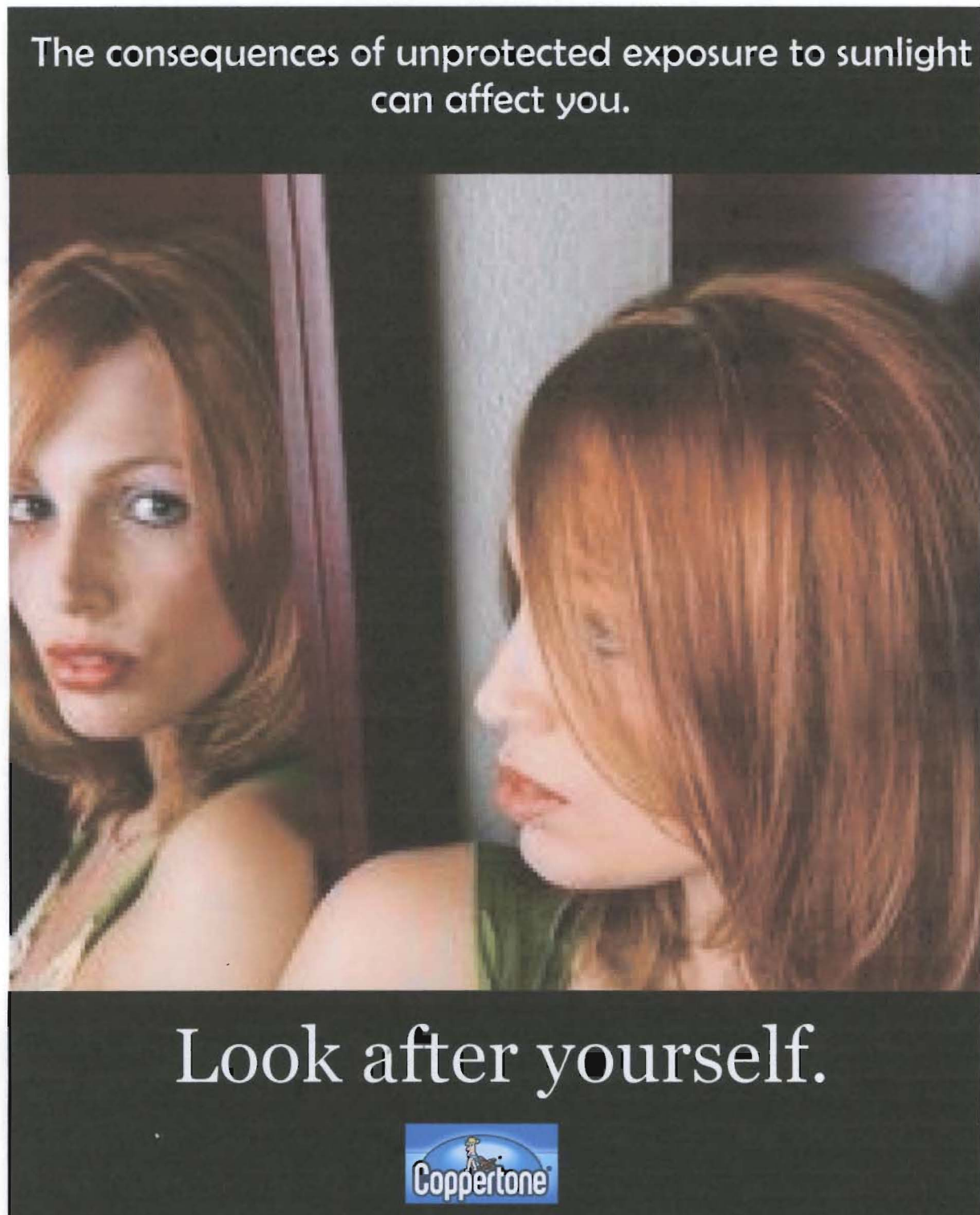


Figure 8. Coppertone male 'sunscreen-self' advertisement.

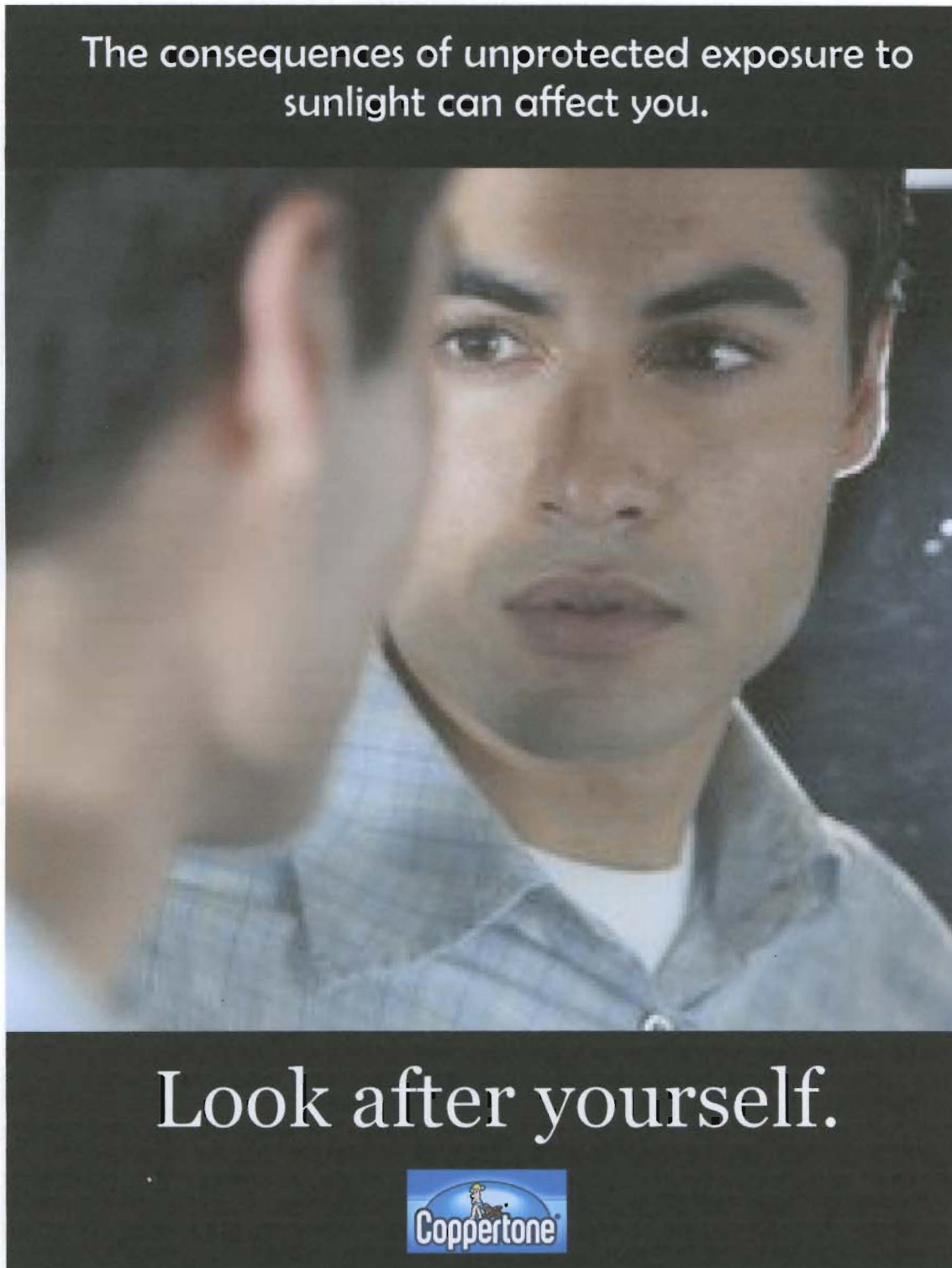



Figure 9. Coppertone 'sunscreen-relationship' advertisement.

The consequences of unprotected exposure to sunlight can affect your romantic relationship.



Look after your relationship.




Figure 10. Coppertone 'sunscreen-friendship' advertisement.

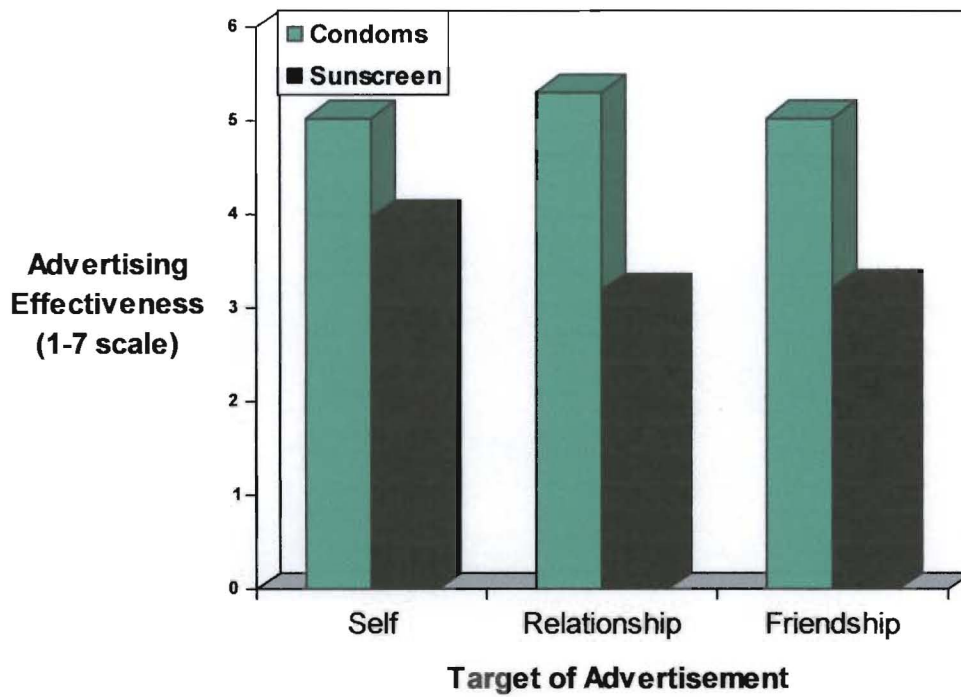
The consequences of unprotected exposure to sunlight
can affect your friendships.



Look after your friendships.



Figure 11. Mean advertising effectiveness ratings by advertisement type and product type.

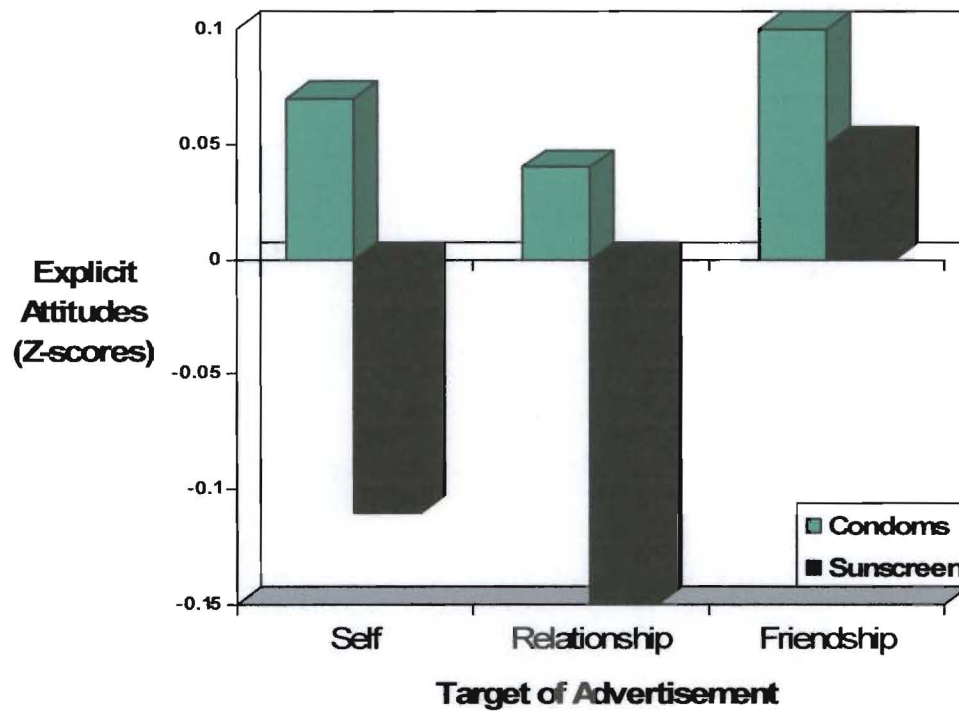


Note. Main effect for product type, $F(1, 128) = 72.80, p = .00$

Interaction effect between product type and advertisement type approached significance,

$$F(2, 128) = 2.56, p = .08.$$

Figure 12. Mean explicit attitudes by advertisement type and product type.



Note. Main effect for product type, $F(1, 127) = 7.55, p = .01$.

Figure 13. Mean intentions to purchase and use condoms or sunscreen by advertisement type and product type.

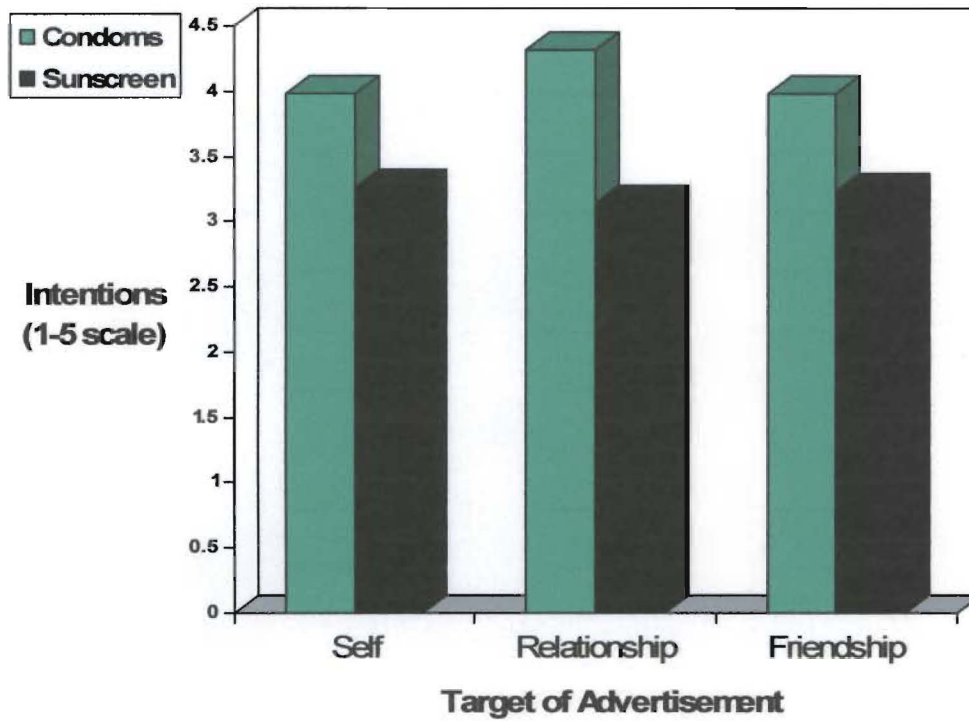
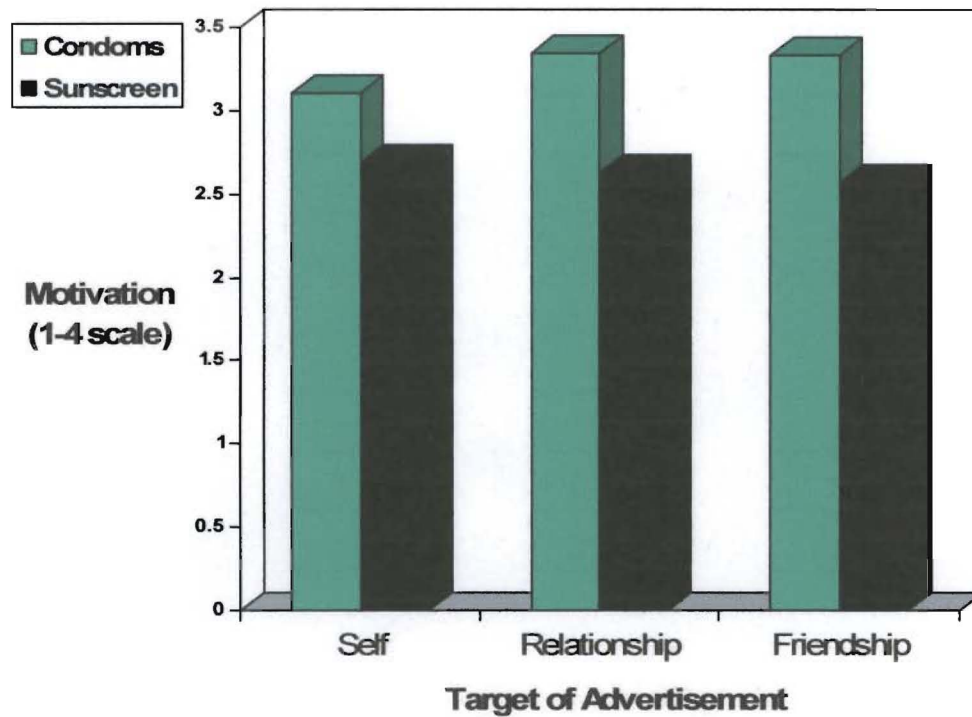
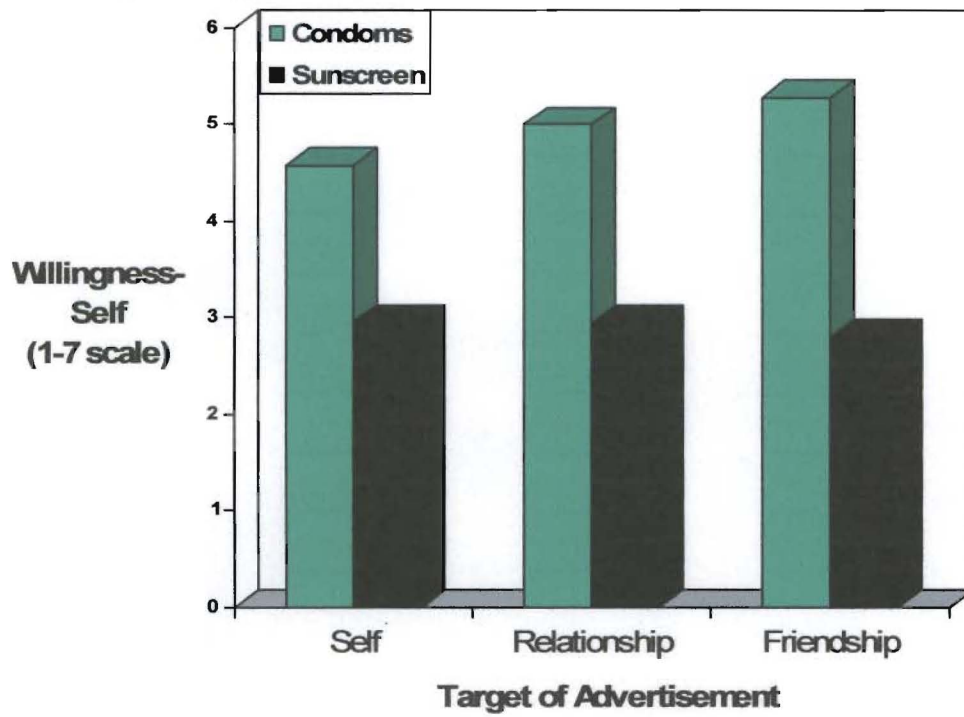


Figure 14. Mean motivation to use condoms or sunscreen by advertisement type and product type.



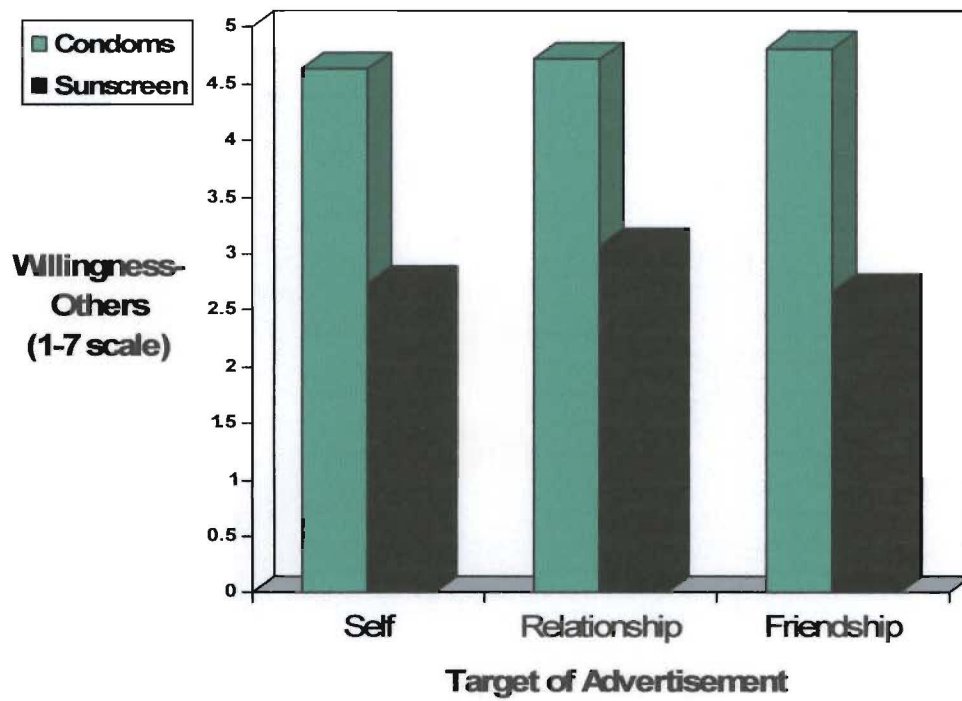
Note. Main effect for product type, $F(1, 127) = 14.68, p = .00$.

Figure 15. Mean willingness to use condoms or sunscreen oneself by advertisement type and product type.



Note. Main effect for product type, $F(1, 127) = 34.35, p = .00$.

Figure 16. Mean willingness to encourage others to use condoms or sunscreen by advertisement type and product type.



Note. Main effect for product type, $F(1, 127) = 24.55, p = .00$.

Figure 17. Mean free condom or sunscreen samples taken by advertisement type and product type.

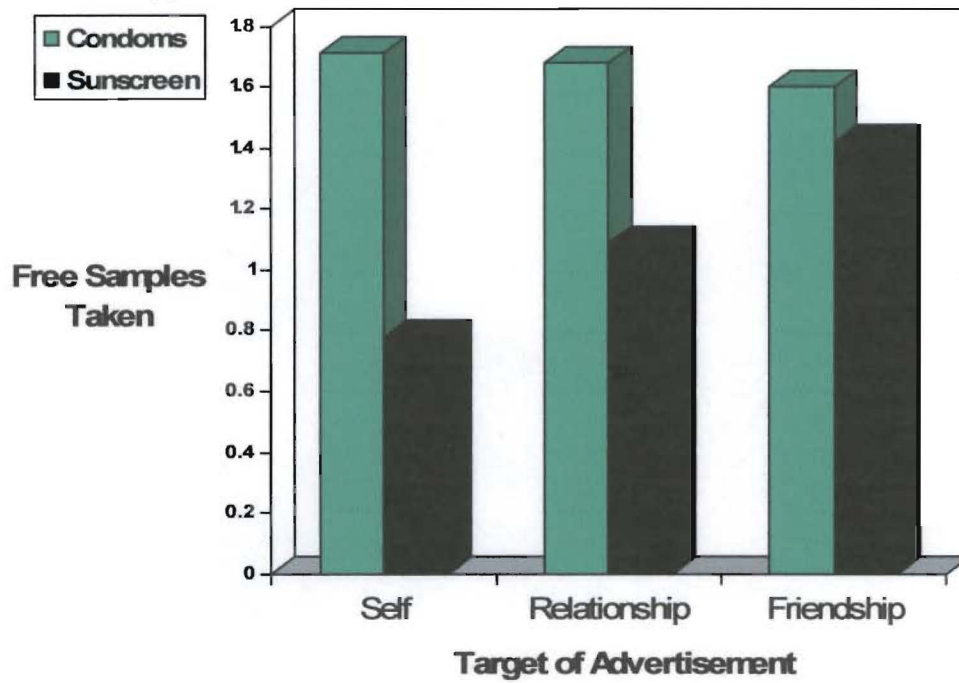
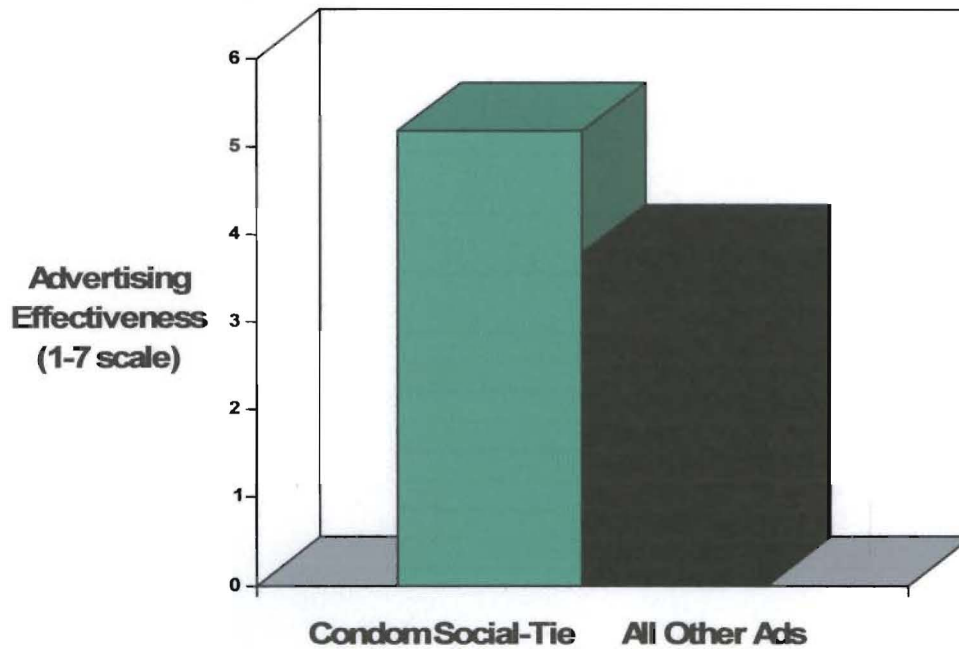
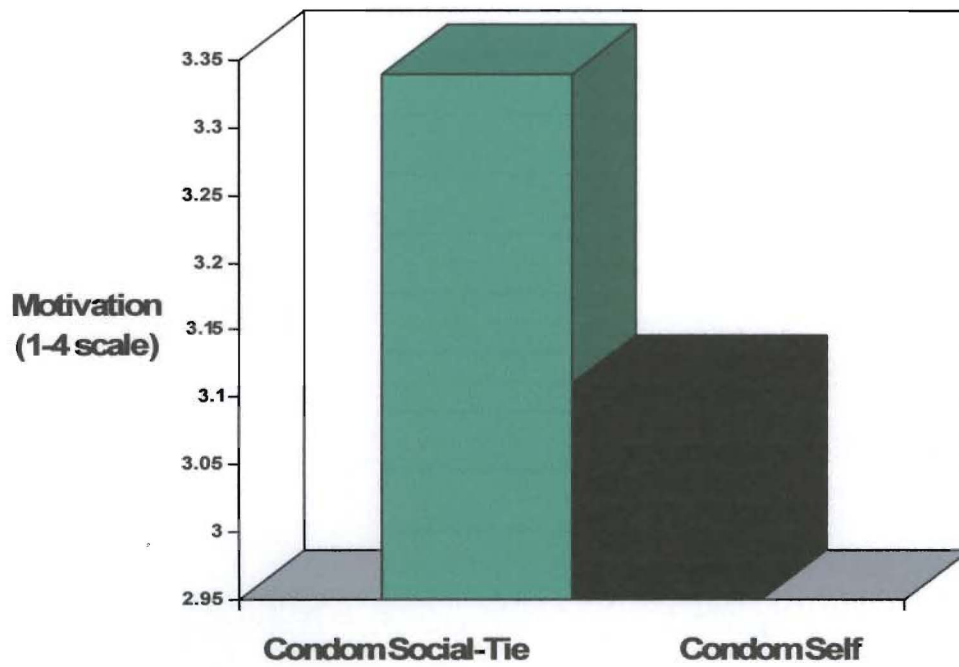


Figure 18. Hypothesis 1: Mean advertising effectiveness (condom social-ties vs. all other advertisements).



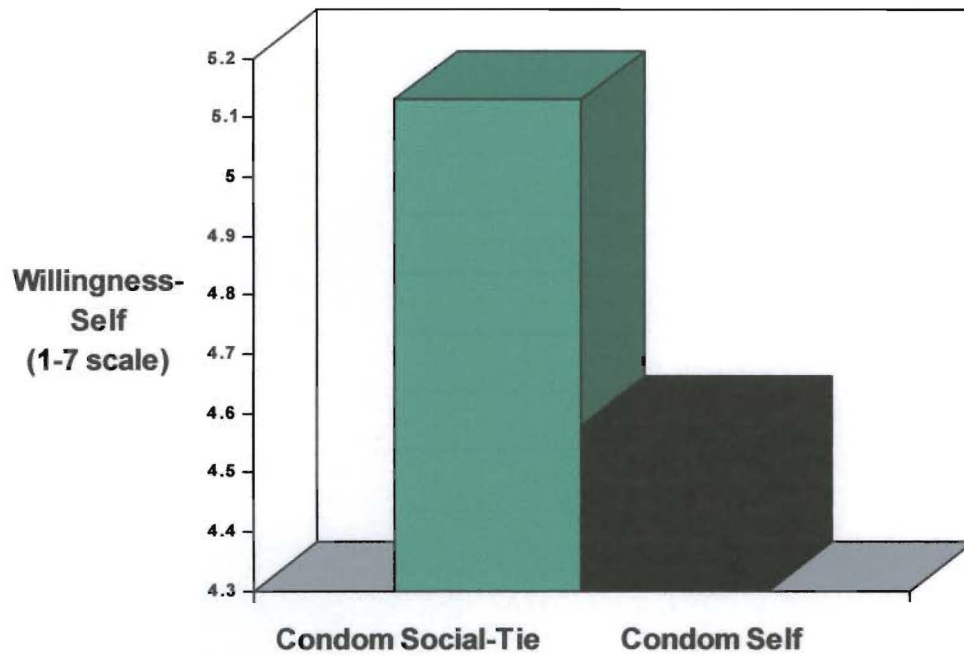
Note. Effect for type of advertisement, $F(1, 132) = 35.46, p = .00$.

Figure 19. Hypothesis 2: Mean motivation (condom social-ties vs. condom self).



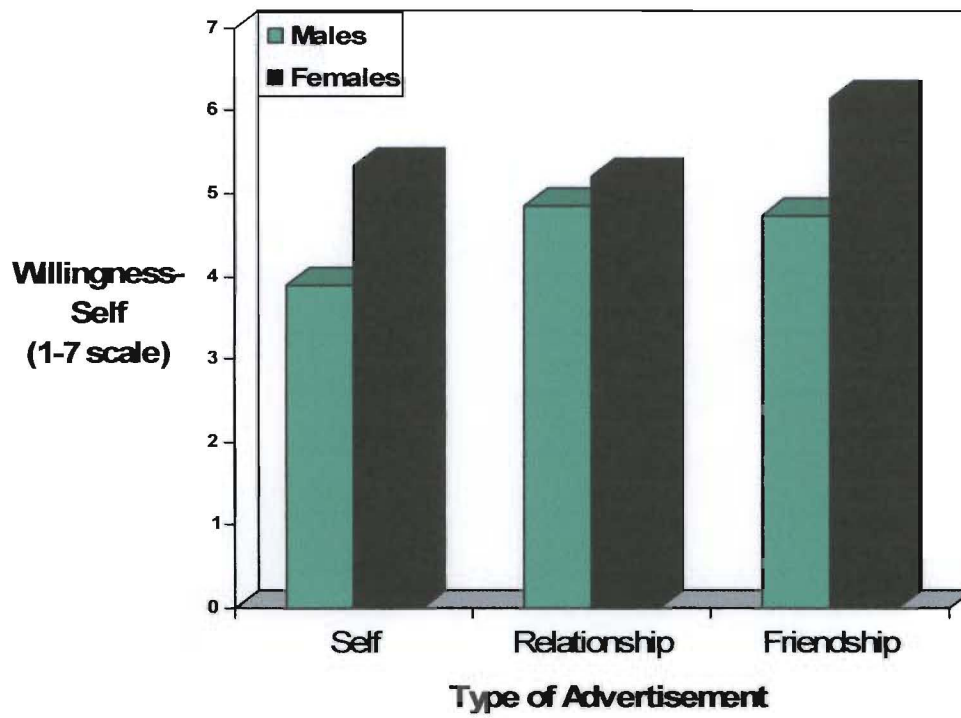
Note. Effect for target of advertisement, $F(1, 61) = 3.01, p = .09$.

Figure 20. Hypothesis 2: Mean willingness to use condoms (condom social-ties vs. condom self).



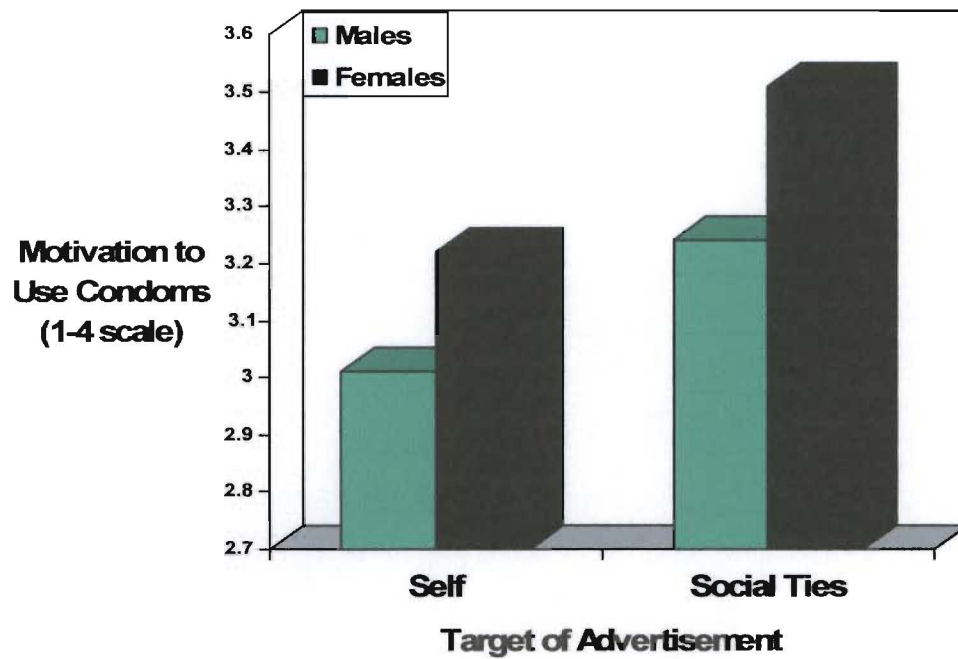
Note. Effect for target of advertisement, $F(1, 61) = 2.96, p = .09$.

Figure 21. Hypothesis 2: Willingness to use condoms oneself by advertisement type and gender.



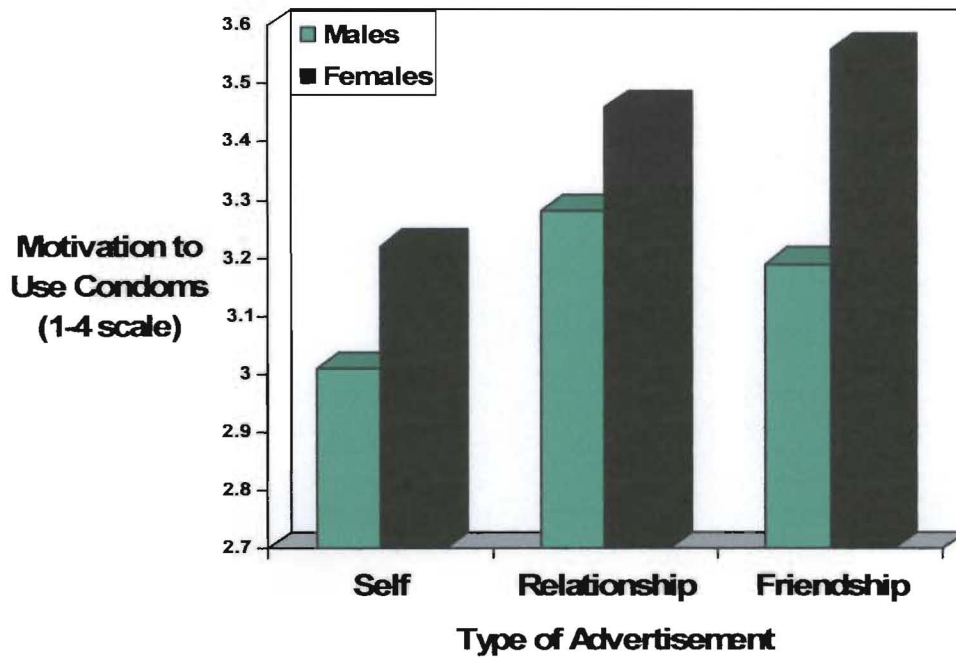
Note. Marginally significant main effect for advertisement type, $F(2, 57) = 3.01, p = .06$.

Figure 22. Hypothesis 2: Mean motivation to use condoms by advertisement target and gender.



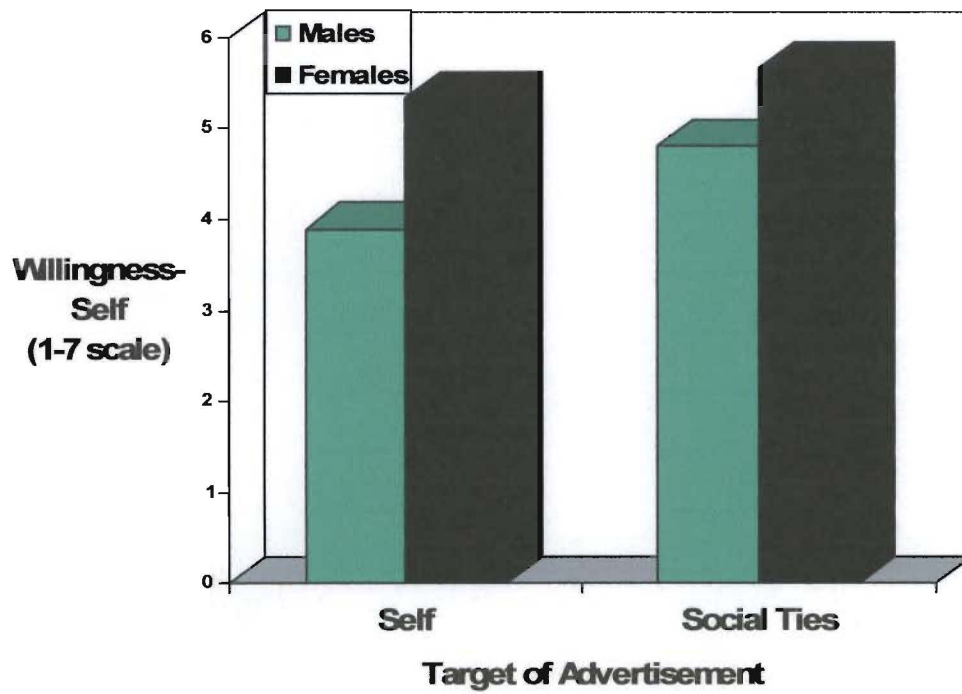
Note. Marginally significant main effect for gender, $F(1, 59) = 3.24, p = .08$.

Figure 23. Hypothesis 2: Mean motivation to use condoms by advertisement type and gender.



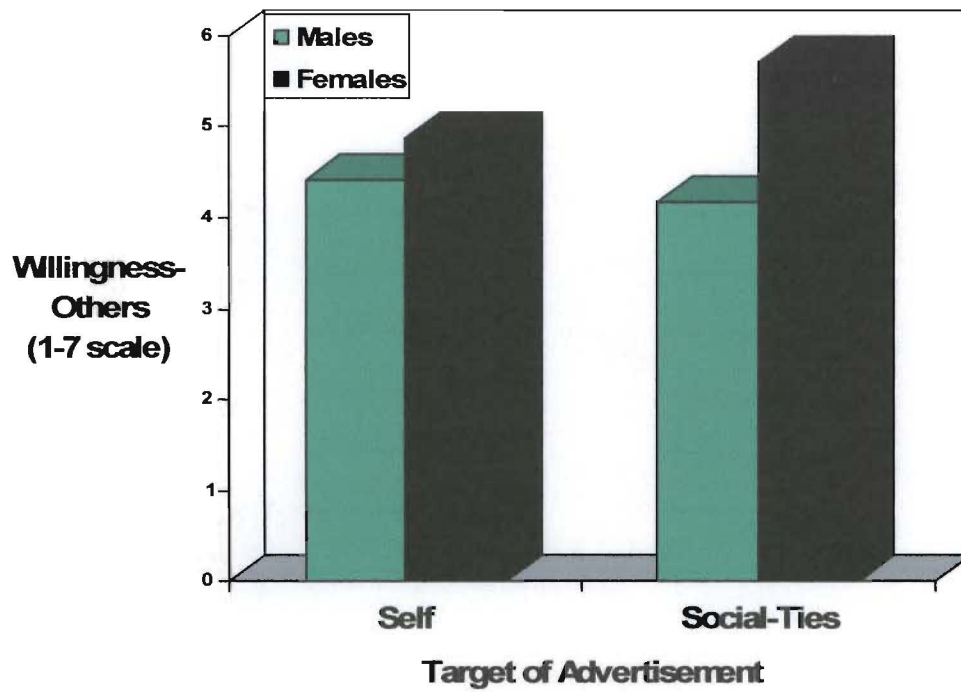
Note. Main effect for gender, $F(1, 57) = 4.11, p = .05$.

Figure 24. Hypothesis 2: Mean willingness to use condoms by advertisement target and gender.



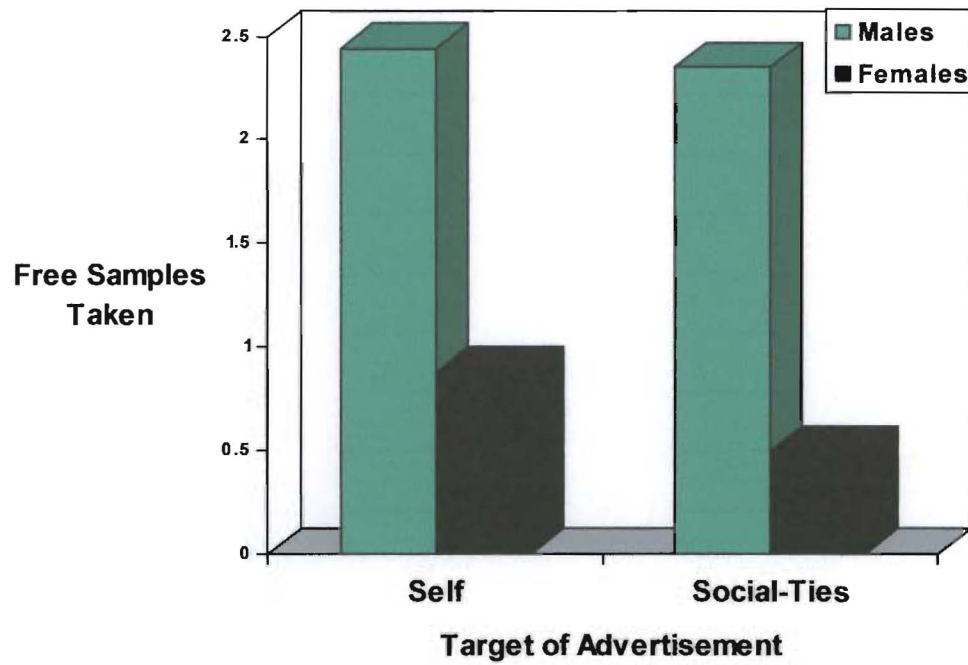
Note. Main effect for gender, $F(1, 59) = 15.12, p = .00$.

Figure 25. Hypothesis 2: Willingness to encourage others to use condoms by advertisement target and gender.



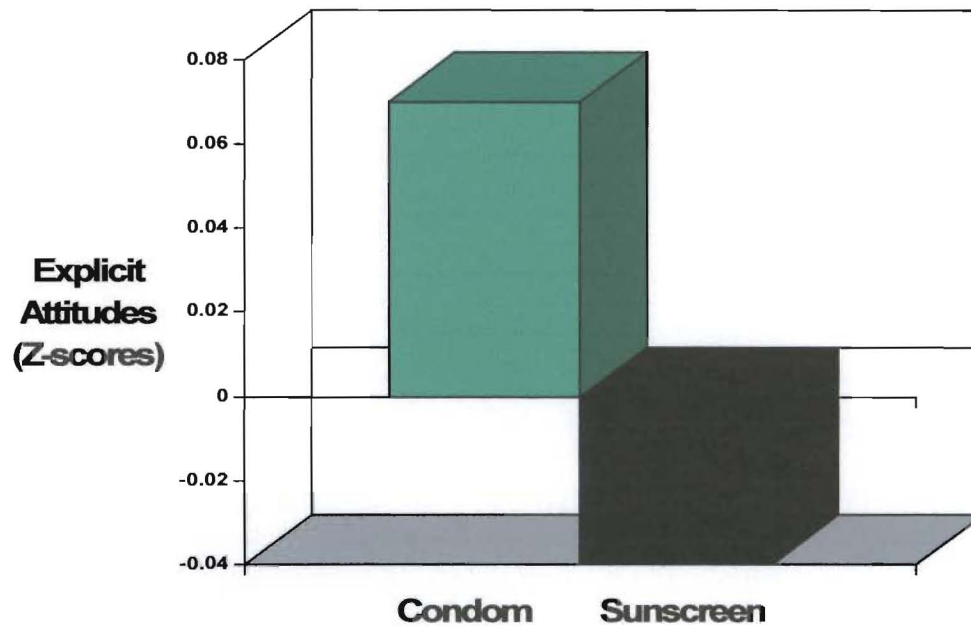
Note. Main effect for gender, $F(1, 59) = 6.40, p = .01$.

Figure 26. Hypothesis 2: Free samples taken by advertisement target and gender.



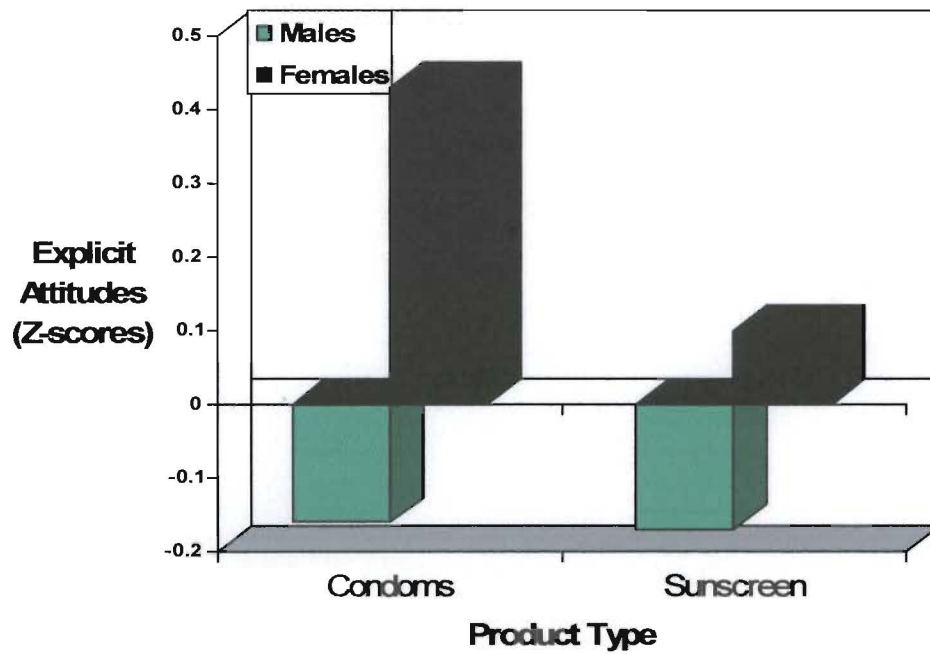
Note. Main effect for gender, $F(1, 54) = 8.28, p = .01$.

Figure 27. Hypothesis 3: Mean explicit attitudes (condom social ties vs. sunscreen social ties).



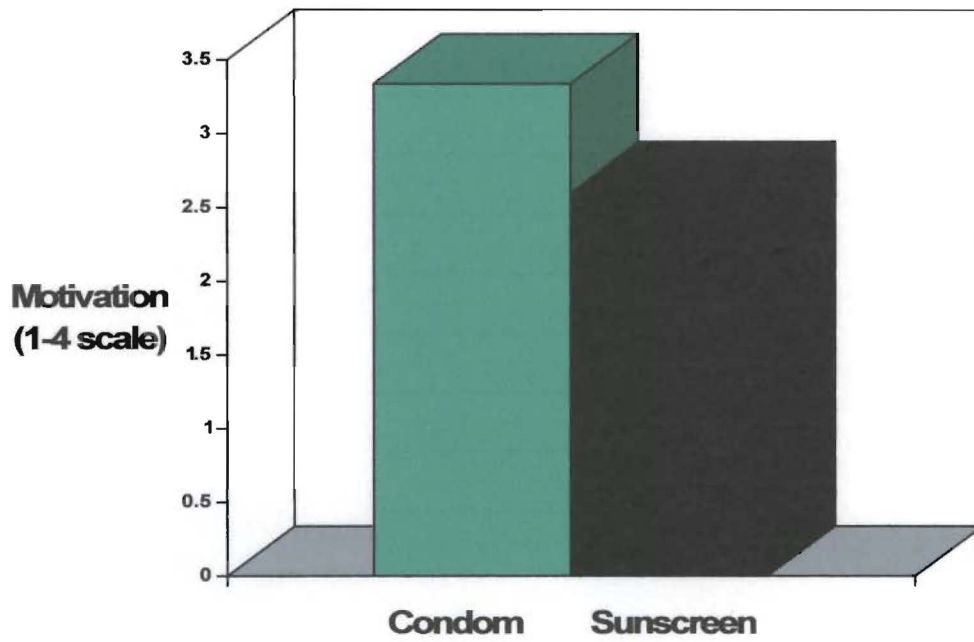
Note. Effect for product type approached significance, $F(1, 88) = 3.09, p = .08$.

Figure 28. Hypothesis 3: Mean explicit attitudes by product type and gender.



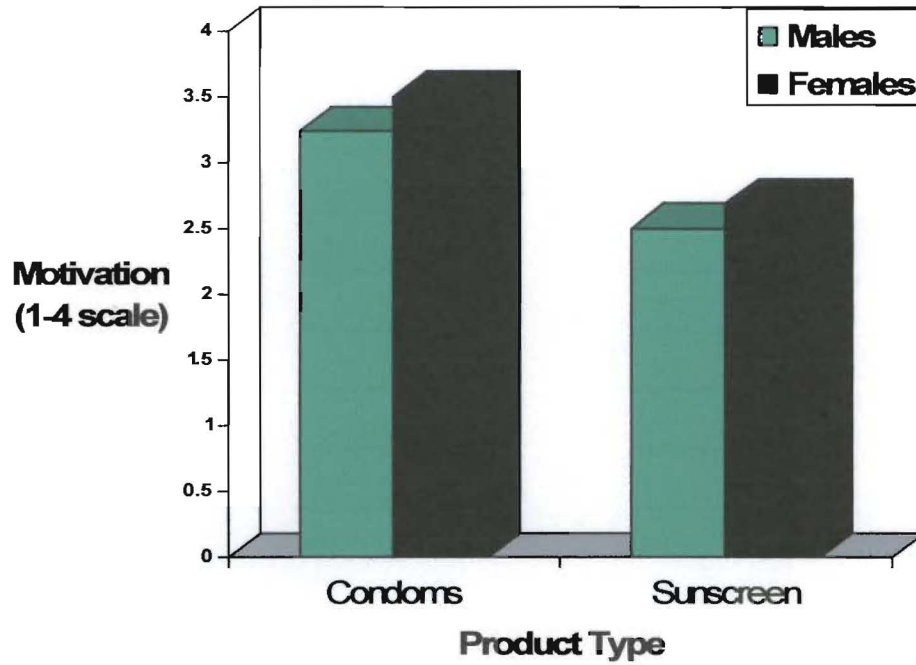
Note. Main effect for gender, $F(1, 86) = 7.77, p = .01$.

Figure 29. Hypothesis 3: Mean motivation (condom social ties vs. sunscreen social ties).



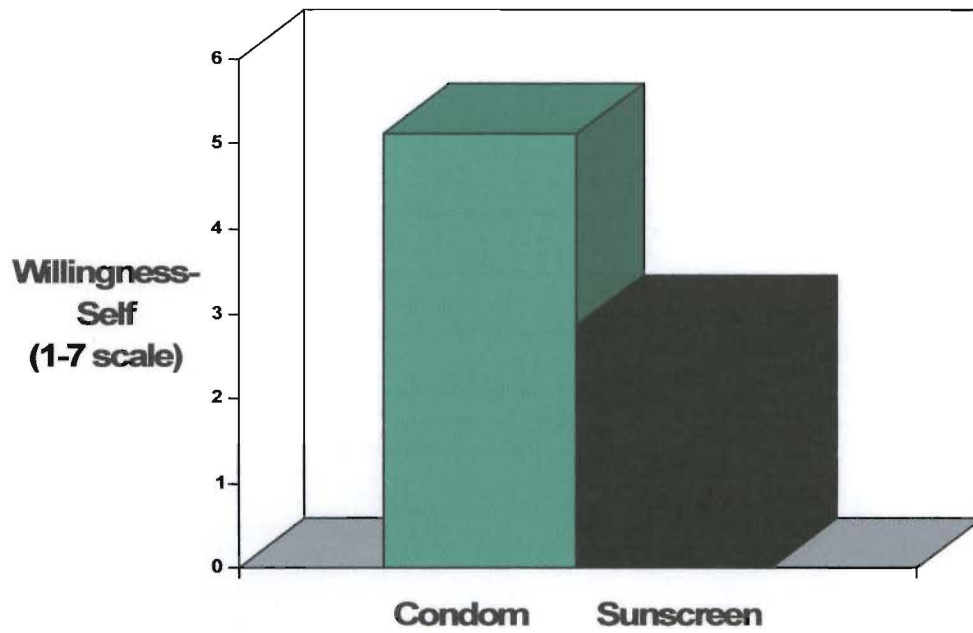
Note. Effect for product type, $F(1, 88) = 14.65, p = .00$.

Figure 30. Hypothesis 3: Mean motivation by product type and gender.



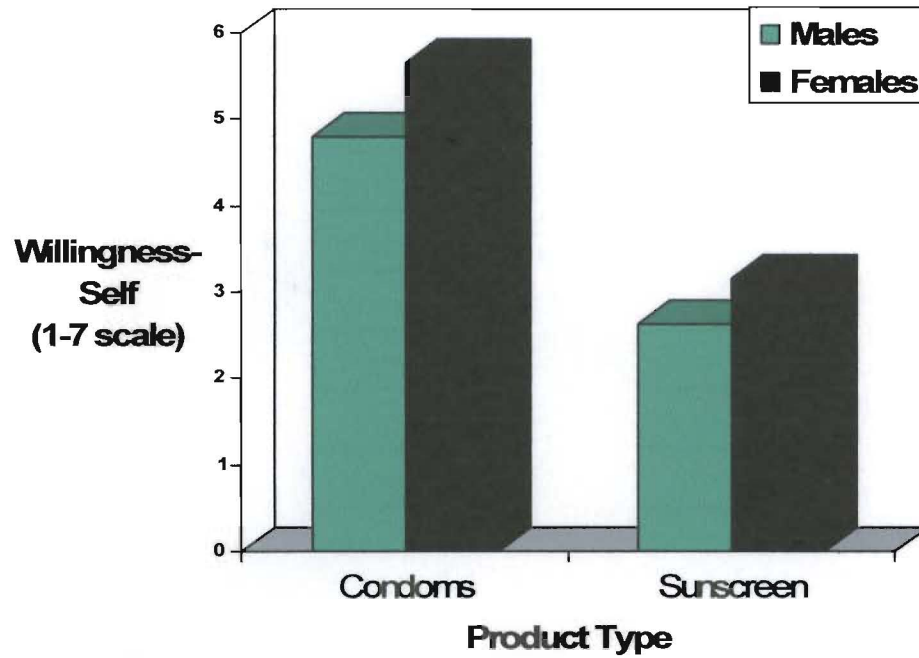
Note. Main effect for gender, $F(1, 86) = 4.57, p = .04$.

Figure 31. Hypothesis 3: Mean self willingness (condom social ties vs. sunscreen social ties).



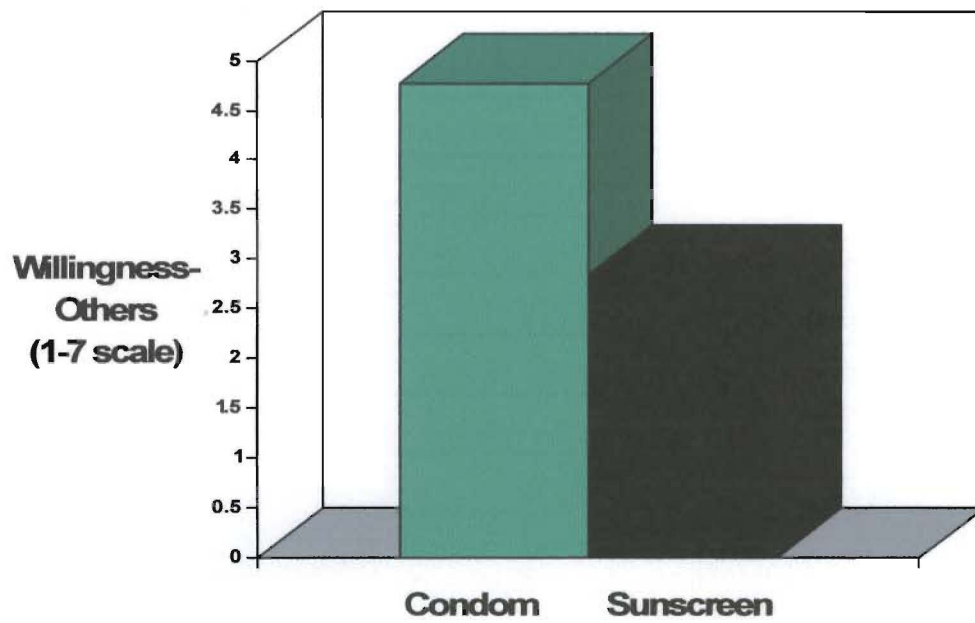
Note. Effect for product type, $F(1, 88) = 29.41, p = .00$.

Figure 32. Hypothesis 3: Mean self willingness by product type and gender.



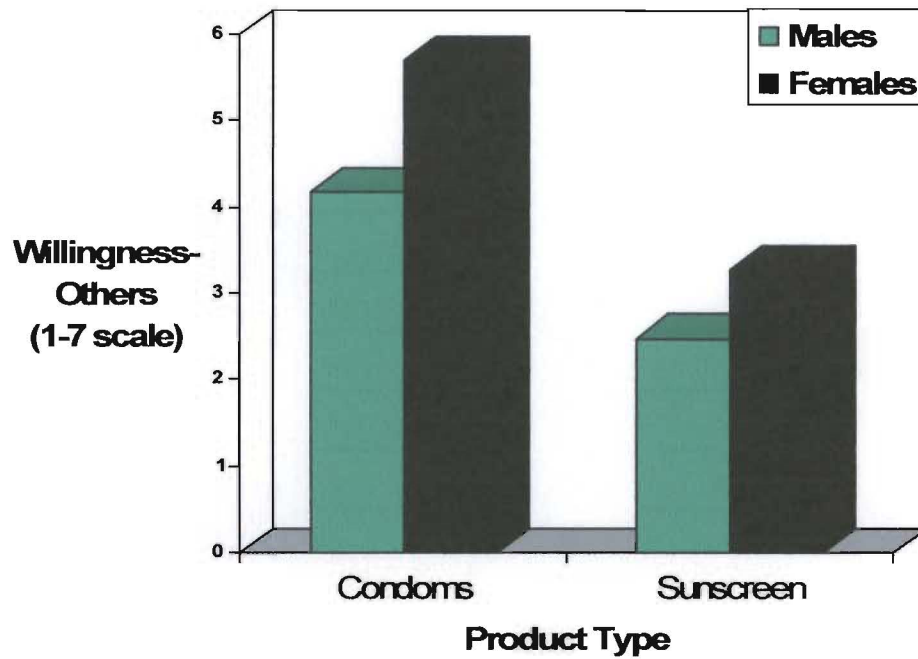
Note. Main effect for gender, $F(1, 86) = 7.42, p = .01$.

Figure 33. Hypothesis 3: Mean willingness to encourage others (condom social ties vs. sunscreen social ties).



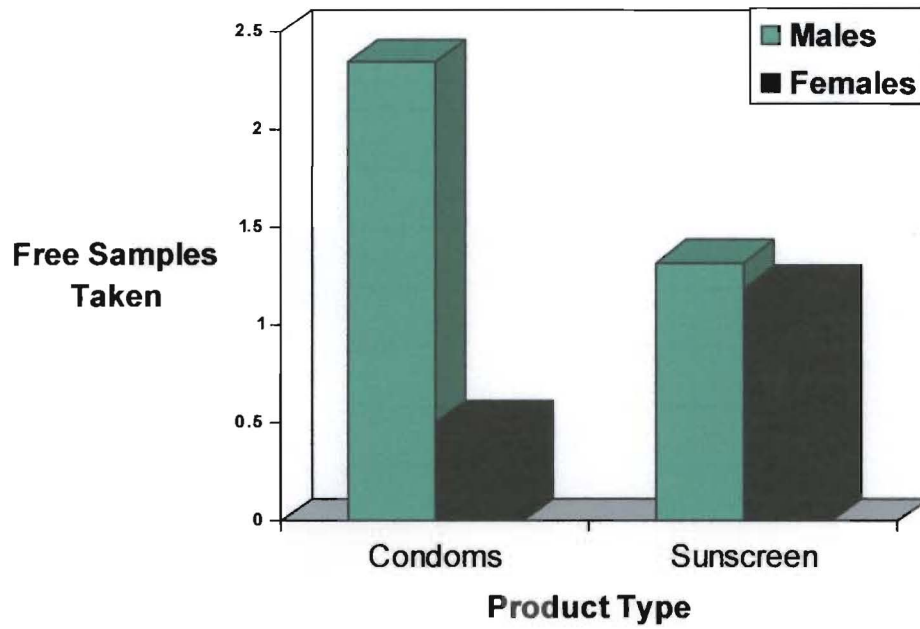
Note. Effect for product type, $F(1, 89) = 40.09, p = .00$.

Figure 34. Hypothesis 3: Mean willingness to encourage others by product type and gender.



Note. Main effect for gender, $F(1, 87) = 16.88, p = .00$.

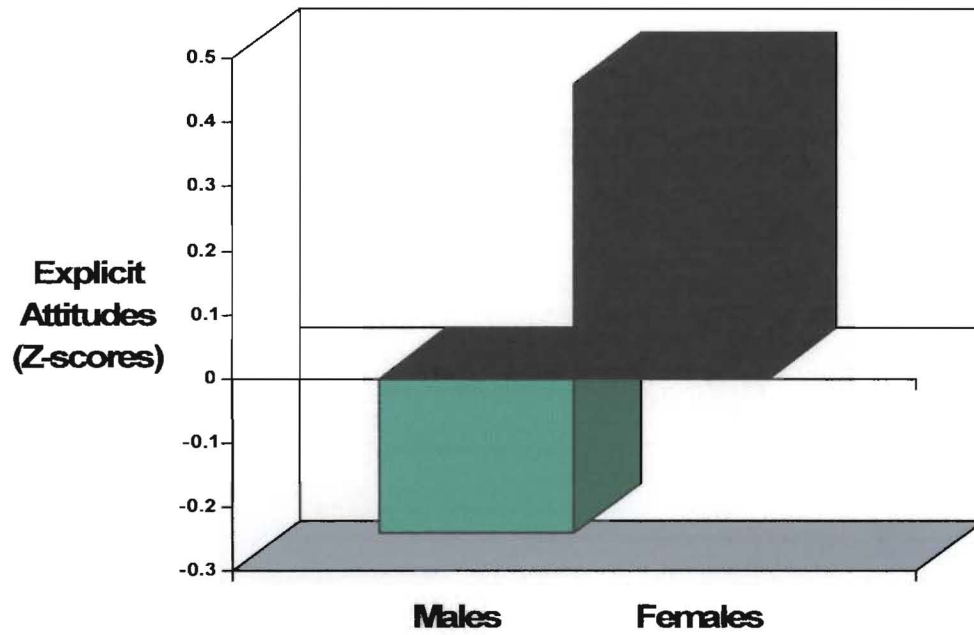
Figure 35. Hypothesis 3: Mean free samples taken by product type and gender.



Note. Main effect for gender, $F(1, 84) = 5.20, p = .03$

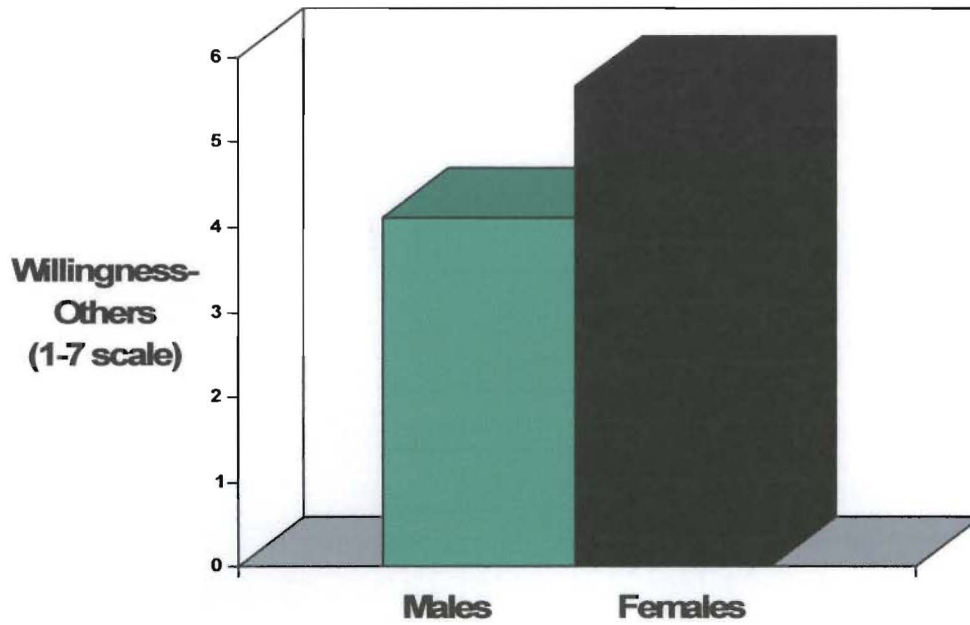
Interaction effect between product type and gender, $F(1, 84) = 3.92, p = .05$.

Figure 36. Hypothesis 4: Mean explicit attitudes (males vs. females in condom relationship condition).



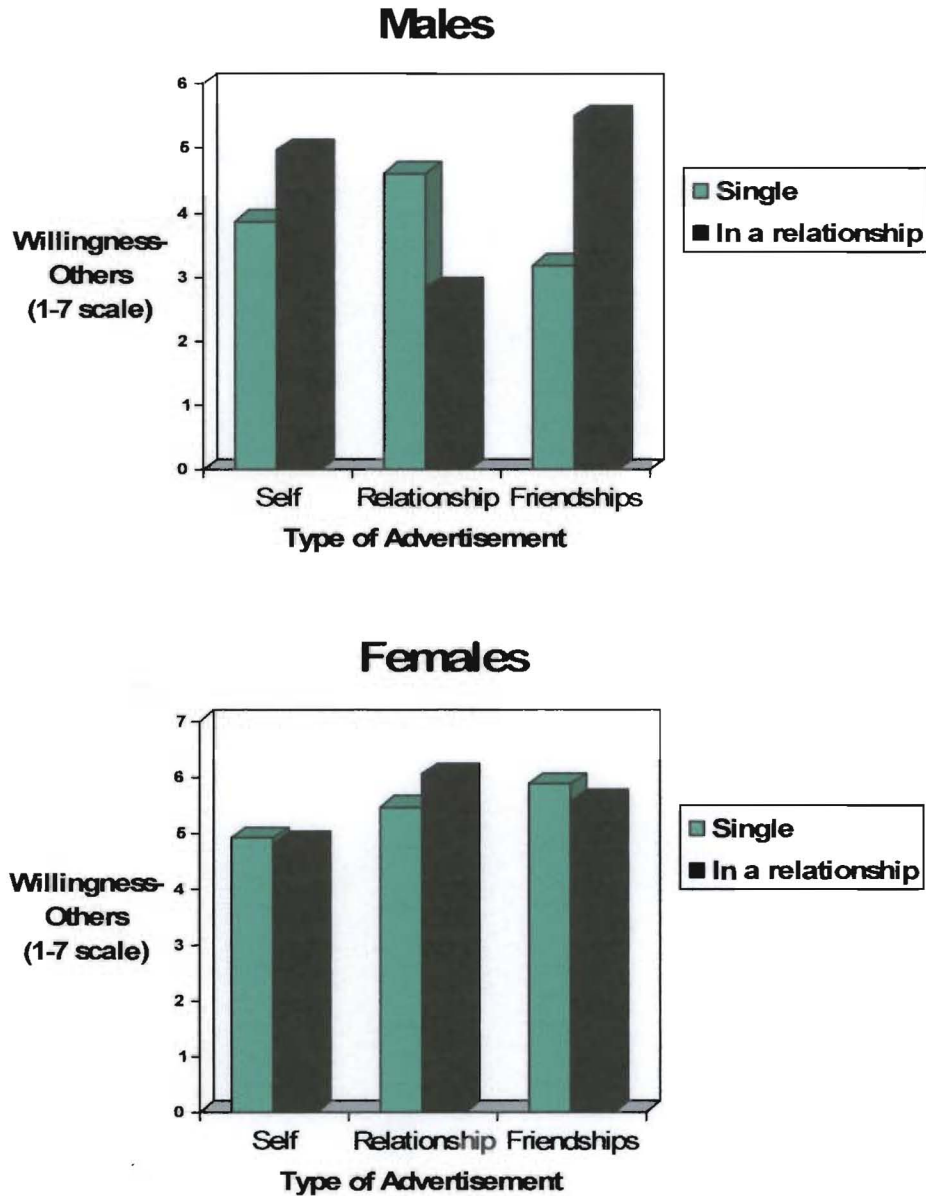
Note. Effect for gender, $F(1, 20) = 4.38, p = .05$.

Figure 37. Hypothesis 4: Mean willingness to encourage others to use condoms (males vs. females in condom relationship condition).



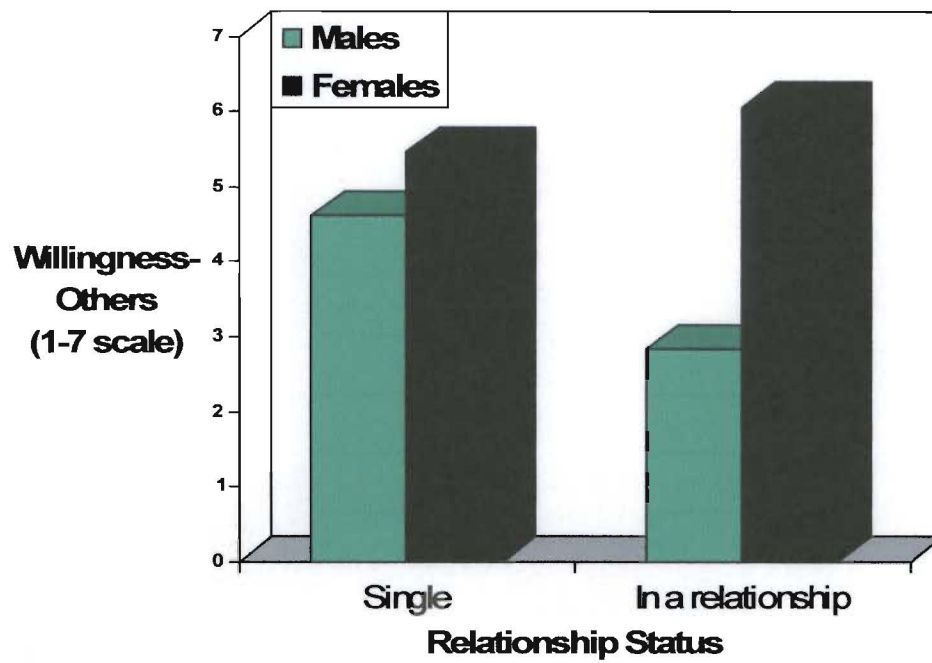
Note. Effect for gender, $F(1, 21) = 7.26, p = .01$.

Figure 38. Mean willingness to encourage others to use condoms by advertisement type, relationship status, and gender.



Note. Three-way interaction between romantic relationship status, advertisement type, and gender, $F(2, 51) = 4.63, p = .01$.

Figure 39. Mean willingness to encourage others to use condoms by relationship status and gender (condom relationship condition).



Note. Interaction between romantic relationship status and gender, $F(1, 18) = 4.35, p = .05$.

Appendix A

Demographics

Please answer the following demographic items.

What is your age (in years)? _____

What is your racial/ethnic background? (circle all that apply) White (non Hispanic), African-American, Hispanic-American, Asian-American, Native American, Multiethnic, Other

What is your gender?

Are you a (circle one): Freshman Sophomore Junior Senior

Are you currently in a romantic relationship? (circle one) Yes, No

Appendix B

Advertisement Effectiveness Questionnaire

Please indicate the degree to which you agree with each of the following statements regarding the advertisement that you just saw (circle an answer for each item).

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

1. This advertisement is effective overall.
2. The images in this advertisement are vivid.
3. This advertisement prompts me to take action.
4. This advertisement prompts most college students to take action.
5. This advertisement is motivating.
6. This advertisement prompts me to change my attitudes.
7. This advertisement motivates me to change my behavior.
8. This advertisement prompts most college students to change their attitudes.
9. This advertisement motivates most college students to change their behavior.
10. The topic addressed in this advertisement is not at all important.*
11. This advertisement addresses a timely issue.
12. The statements made in this advertisement are believable.
13. This advertisement is clear.
14. This advertisement addresses a critical topic.
15. I believe the topic addressed in this advertisement is essential to consider.

* Reverse scored items

Appendix C

Explicit Attitudes Questionnaire

For each of the following items, please indicate the number that best describes your opinion.

Mouthwash: Using mouthwash would be...

1. 1-5 pleasant-unpleasant*
2. 1-5 bad-good
3. 1-5 harmful-beneficial
4. 1-5 nice-awful*
5. 1-5 safe-dangerous*
6. 1-5 ugly-beautiful
7. Using the diagram below, please type the number (from 0-100 degrees) that best represents how warm or cold you feel toward using mouthwash. Lower numbers indicate less warmth toward mouthwash use, while higher numbers indicate more warmth toward mouthwash use.

Multi-Vitamin Orange Juice: Drinking multi-vitamin orange juice would be...

1. 1-5 pleasant-unpleasant*
2. 1-5 bad-good
3. 1-5 harmful-beneficial
4. 1-5 nice-awful*
5. 1-5 safe-dangerous*
6. 1-5 ugly-beautiful
7. Using the diagram below, please type the number (from 0-100 degrees) that best represents how warm or cold you feel toward drinking multi-vitamin orange juice. Lower numbers indicate less warmth toward drinking multi-vitamin orange juice, while higher numbers indicate more warmth toward drinking multi-vitamin orange juice.

Sunscreen: Using sunscreen would be...

1. 1-5 pleasant-unpleasant*
2. 1-5 bad-good
3. 1-5 harmful-beneficial
4. 1-5 nice-awful*
5. 1-5 safe-dangerous*
6. 1-5 ugly-beautiful
7. Using the diagram below, please type the number (from 0-100 degrees) that best represents how warm or cold you feel toward using sunscreen. Lower numbers indicate less warmth toward sunscreen use, while higher numbers indicate more warmth toward sunscreen use.

Condoms: For me, using condoms with my partner would be...

1. 1-5 pleasant-unpleasant*
2. 1-5 bad-good
3. 1-5 harmful-beneficial
4. 1-5 nice-awful*
5. 1-5 safe-dangerous*
6. 1-5 ugly-beautiful
7. Using the diagram below, please type the number (from 0-100 degrees) that best represents how warm or cold you feel toward using condoms with your partner. Lower numbers indicate less warmth toward condom use, while higher numbers indicate more warmth toward condom use.

* Reverse scored items

Appendix D

Intentions Questionnaire

Please indicate the likelihood that you will do each of the following, using the scale:

1	2	3	4	5
Extremely Unlikely				Extremely Likely

Mouthwash

1. I will make an effort to use mouthwash on a regular basis
2. I will buy mouthwash
3. I will develop a concrete plan to use mouthwash on a regular basis

Multi-Vitamin Orange Juice

1. I will make an effort to drink multi-vitamin orange juice on a regular basis
2. I will buy multi-vitamin orange juice
3. I will develop a concrete plan to drink multi-vitamin orange juice on a regular basis

Sunscreen

1. I will make an effort to use sunscreen on a regular basis
2. I will buy sunscreen
3. I will develop a concrete plan to use sunscreen on a regular basis

Condoms

1. I will make an effort to use condoms on a regular basis when having sex
2. I will buy condoms
3. I will develop a concrete plan to use condoms on a regular basis when having sex

Appendix E

Motivation Questionnaire

Please indicate the degree to which you agree with each of the following statements using the scale:

1	2	3	4
Strongly Disagree			Strongly Agree

Condoms

1. Most of my closest friends use condoms when they have sex.
2. My closest friends will say 'no' to sex if a partner won't use a condom.
3. My closest friends think that carrying condoms is the right thing to do.
4. Using condoms is viewed by my closest friends as the right thing to do.
5. My closest friends think that telling a partner to use condoms is the right thing to do.
6. Sex is not as good with a condom.*
7. I do not have a need to use condoms.*
8. Using condoms means you do not trust your partner.*
9. My romantic partner would react badly if I suggested the use of a condom.*
10. If I want to have sex, I will first talk to my romantic partner about using a condom.
11. I will say 'no' to sex if my romantic partner won't use a condom.
12. I will use a condom the next time I have sex.

Sunscreen

1. Most of my closest friends use sunscreen when they are exposed to sunlight.
2. My closest friends will say 'no' to spending time in the sunlight if they cannot use sunscreen.
3. My closest friends think that carrying sunscreen is the right thing to do.
4. Using sunscreen is viewed by my closest friends as the right thing to do.
5. My closest friends think that telling a friend to use sunscreen is the right thing to do.
6. Spending time in the sunlight is not as good with sunscreen.*
7. I do not have a need to use sunscreen.*
8. Using sunscreen means you do not trust nature.*
9. My romantic partner would react badly if I suggested the use of sunscreen.*
10. If I want to spend time in the sunlight with my romantic partner, I will first talk to him/her about using sunscreen.
11. I will say 'no' to spending time in the sunlight if I cannot use sunscreen.
12. I will use sunscreen the next time I spend time in the sunlight.

* Reverse scored items

Appendix F

Willingness Questionnaire

Please indicate how willing you would be to do each of the items in the context of the situation provided, using the scale:

1	2	3	4	5	6	7
Not at all						Very much

CondomsWillingness to Use Product Oneself

Situation 1: Imagine that you have just met a person that you find highly sexually attractive. Over the course of an evening, the two of you have an enjoyable conversation and you come to realize that this person wants to have sex with you that night. However, neither of you has a condom.

Under these circumstances, how willing would you be to:

- a) Go ahead and have sex with this person without a condom*
- b) Refuse to have sex without finding and using a condom
- c) Not have sex

Situation 2: Imagine that you have been romantically involved for 6 months with a steady partner that you find highly sexually attractive. Over the course of an evening, the two of you have an enjoyable conversation and you come to realize that your partner wants to have sex with you that night. However, neither of you has a condom.

Under these circumstances, how willing would you be to:

- a) Go ahead and have sex with this person without a condom*
- b) Refuse to have sex without finding and using a condom
- c) Not have sex

Willingness to Encourage Others to Use Product

Situation 1: Imagine that you are at a party. You casually overhear some people you do not know talking. You find out that one of these people is about to go and have sex but doesn't have a condom.

Under these circumstances, how willing would you be to:

- a) Encourage the person about to have sex to find and use a condom
- b) Find a condom and give it to the person about to have sex
- c) Discourage the person from having sex

Situation 2: Imagine that you are at a party with your closest friends. One of your friends is about to go and have sex but doesn't have a condom.

Under these circumstances, how willing would you be to:

- a) Encourage your friend about to have sex to find and use a condom
- b) Find a condom and give it to your friend about to have sex
- c) Discourage your friend from having sex

Sunscreen

Willingness to Use Product Oneself

Situation 1: Imagine that you are at a hotel on vacation. You have met a person whose company you enjoy. Over lunch, the two of you have a great time and this person invites you to go to the beach. However, neither of you has any sunscreen.

Under these circumstances, how willing would you be to:

- a) Go to the beach with this person without any sunscreen*
- b) Refuse to go to the beach without finding and using sunscreen
- c) Not go to the beach

Situation 2: Imagine that you and your friend are at a hotel on vacation. Over lunch, you have a great time and your friend invites you to go to the beach. However, neither of you has any sunscreen.

Under these circumstances, how willing would you be to:

- a) Go to the beach with your friend without any sunscreen*
- b) Refuse to go to the beach without finding and using sunscreen
- c) Not go to the beach

Willingness to Encourage Others to Use Product

Situation 1: Imagine that you are at a hotel on vacation. You casually overhear some people you do not know talking. You find out that this group of people is about to go to the beach but no one in the group has any sunscreen.

Under these circumstances, how willing would you be to:

- a) Encourage the group about to go to the beach to find and use sunscreen
- b) Find sunscreen and give it to the group about to go to the beach
- c) Discourage the group from going to the beach

Situation 2: Imagine that you are at a hotel on vacation with your closest friends. One of your friends is about to go to the beach but doesn't have any sunscreen.

Under these circumstances, how willing would you be to:

- a) Encourage your friend about to go to the beach to find and use sunscreen
- b) Find sunscreen and give it to your friend about to go to the beach
- c) Discourage your friend from going to the beach

* Reverse scored items

Appendix G

Filler Questions

Please indicate how often you perform the following behaviors (circle an answer for each item).

1. Do you ever drive after you have been drinking alcohol or ride with a driver who has?

1	2	3	4
Never	Rarely	Sometimes	Always or nearly always

2. How often do you use a seat belt when you drive or ride in a car?

1	2	3	4
Never	Rarely	Sometimes	Always or nearly always

3. How many days in a typical week do you eat breakfast?

1	2	3	4
Never	1-3 days/week	4-6 days/week	Everyday

4. How often do you brush your teeth?

1	2	3	4
Never	1-3 days/week	4-6 days/week	Everyday

5. How often do you shampoo your hair?

1	2	3	4
Never	1-3 times/week	4-6 times/week	7 or more times/week

6. How often do you snack on foods like pastries, candy, sweets, soft drinks, or other sugary foods?

1	2	3	4
Never	1-3 times/week	4-6 times/week	7 or more times/week

7. Have you ever tried smoking a cigarette? Even taking one or two puffs?

- 1: I have never tried smoking.
- 2: I have tried smoking once or twice
- 3: I smoke occasionally; less than 1 cigarette a day
- 4: I smoke regularly; 1 or more cigarettes a day
- 5: I used to smoke regularly, but have quit smoking

8. How many days in a typical week do you exercise?

- 1: 0 days/week
- 2: 1-2 days/ week
- 3: 3-4 days/ week
- 4: 5-6 days/ week
- 5: 7 days/ week