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Individual Differences in Need for Cognition and Stereotypes of Sexual Behavior as well as STD Infection Rates

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Abstract

This study was designed to explore the effects of need for cognition on stereotypes of sexual behaviors and STD infection rates. After reviewing the literature on sexual behaviors, STD infection rates, stereotypes, and need for cognition, two hypotheses were proposed. The first hypothesis was that participants would engage in stereotyping. That is, participants would perceive the frequency of various sexual behaviors, the acceptability of various sexual behaviors, and STD infection rates differently depending on the sex and sexual orientation of targets. The second hypothesis was that participants low in need for cognition should be more likely than participants high in need for cognition to use stereotypes when perceiving the frequency of sexual behavior, acceptability of sexual behavior, and STD infection rates. Participants were randomly assigned to answer questionnaires about one of four targets: heterosexual female, heterosexual male, homosexual female, or homosexual male. The first hypothesis received substantial support, and the second hypothesis received very limited support. Plausible alternative explanations and future directions are discussed.

Researchers began studying sexuality and sexual behaviors during the twentieth century (Janus & Janus, 1993). Alfred Kinsey did the first large-scale study of human sexual behavior in the 1940s and 1950s (1948, 1953). Kinsey used surveys to gather

information about sexual behaviors of thousands of people. William Masters and Virginia Johnson (1966) took a different approach by measuring physiological aspects of sexual response in a laboratory setting. A few recent large-scale surveys have been conducted during the past two decades: the National Health and Social Life Survey (Laumann, Gagnon, Michael, & Michaels, 1994) and the Janus report (Janus & Janus, 1993) are the most well known of these surveys.

Sexual behavior and societal sexual permissiveness in the United States have changed throughout the past century. During the 1930s and 1940s (i.e., after the Great Depression and during World War II) sexual mores of the United States were more conservative than they had been during the 1920s (Janus & Janus, 1993). Several events had an effect on the public's view of sexuality including the burgeoning feminist and civil rights movements as well as the birth control pill (for overviews, see Francouer, Koch, & Weis, 1998; Janus & Janus, 1993). Sexual activity has increased over the years, and with increased sexual activity came increased sexually transmitted diseases like HIV (Janus & Janus, 1993). With the rise in HIV, the need to prevent and manage the HIV disease by individual and social methods also rose quickly.

One important facet of HIV prevention programs is assessing common risk behaviors of a group of people, but little research has been done on lesbian sexuality (Diamant, Lever, & Schuster, 2000). Because AIDS was first seen in gay men when the AIDS epidemic in North America began in the early 1980's, a majority of researchers concentrated on gay male sexuality (Morrow, 1995). Detailed questions were asked of HIV-infected men about their sexual behaviors and orientation. Such detailed questions have not been asked of HIV-infected women (Warren, 1993). A dearth of research exists concerning sexual behavior of women who have sex with women. In particular, when compared to literature regarding gay male sexuality, this

deficiency regarding lesbian sexuality is pronounced.

In addition to this lack of general knowledge about lesbian sexuality, lesbians have systematically been excluded from data gathering on infection rates of HIV and other STDs (Warren, 1993). In particular, there has been very little research on female-to-female transmission of HIV (Bauer & Welles, 2001). For example, researchers at the Center for Disease Control (CDC) have never included a category of female-to-female transmission when tracking HIV transmissions. Many researchers therefore believe that there has been a vast misclassification and underreporting of female-to-female HIV transmissions (Stevens 1993). Most HIV/AIDS data collection is done by health care providers who frequently do not ask about women's sexual orientations and assume that any woman who has sex with a man is heterosexual (James, 1995). Because female-to-female transmission is not tracked, these infected women most likely show up in the CDC's category of "other/ risk not reported or identified." As of December 1994, 15% of women's cases of HIV infection were categorized as "other"; only 8% of men's cases of HIV infection were categorized as "other" (Goldstein & Manlowe, 1997). These exclusionary methods (i.e., not identifying an HIV-infected woman's sexual orientation and not tracking female-to-female transmission of HIV) ensure that (a) lesbians as a risk population are underestimated and (b) sexual acts between women are underreported.

What health professionals and non-professionals frequently fail to realize is that sexual orientation does not necessarily predict sexual behavior. People contract HIV through engaging in risky sexual behaviors with an HIV-positive partner, and lesbians do engage in risky behaviors. Although there are very few documented cases of female-to-female transmission of HIV (see Morrow, 1995, for a review of the literature), lesbians can contract HIV in many other ways (e.g., having sex with high-risk men, engaging in prostitution, using IV drugs, and artificial insemination) (CDC, 2003; Glassman, 1995; Morrow 1995).

In one meta-analysis of studies on female intravenous drug users (IDUs) who have sex with women, researchers found that this particular group of women reported higher levels of risky sexual behaviors than other female IDUs who do not have sex with women (Young, Friedman, Case, Asencio, & Clatts, 2000). Once lesbians have contracted the HIV virus, their partners are at risk for contracting HIV.

Contrary to the belief that lesbians are at low risk for contracting HIV, a few researchers have shown that women who have sex with women actually engage in risky behavior with little protection against sexually transmitted diseases. In one study (Morrow & Allsworth, 2000), 85% of women in this sample reported having unprotected sex with a female partner at least once a month, and 20% of sexually active women in this sample reported engaging in sexual activity involving possible exposure to blood. Out of all these respondents, 84% believed they were at zero risk of HIV or STD infection in the previous year. In brief, these women were participating in activities that would be deemed risky by most HIV prevention educators. Nonetheless, these women viewed themselves as zero risk. These women may have viewed themselves at zero risk because they believe they are members of a group that has been labeled as low risk. In another study, lesbians reported similarly risky behavior; only 11% of respondents had used a protective barrier with their female sexual partners (Diamant, Lever, & Schuster, 2000). Only 6% of lesbians in another study reported always using safer sex practices with their female partners (Einhorn & Polgar, 1994).

Some lesbians share sex toys (e.g., dildos, butt plugs) and can spread the HIV virus if these sex toys are used without a fresh condom for each partner. Being present in vaginal secretions, the HIV virus can attach to pores in the dildo or butt plug. In one study, 13% of lesbians had engaged in anal sex without a protective barrier, and 12% of lesbians reported sharing a dildo without washing it between partners (Diamant et al., 2000).

Many lesbians engage in other behaviors that put them at high risk for contracting HIV and other STDs. Fisting is an activity in which many lesbians engage and involves insertion of a woman's entire hand into the vaginal canal or anus of her partner (Newman, 1999). Fisting can result in tears in thin tissues and membranes of a receptive partner's vaginal canal or anus. These small tears enable HIV to enter the blood stream quickly.

Many lesbians engage in sadomasochism (S/M). S/M can include bondage, whipping or flogging, cutting, and other risky behaviors (Newman, 1999). Bondage is not considered to be very risky unless skin abrasions occur. Whipping and flogging can be risky if blood is drawn. Cutting is an intentional act of drawing blood during a sex act using a razor blade, knife, or scalpel. Acts that are closely related to cutting are play piercing (temporary piercing the skin with needles) and tattooing. Because needles are involved in piercing and tattooing, there is a high risk of HIV infection involved if needles are shared without sterilizing them between partners (Bond-Webster, 2000). Morrow and Allsworth (2000) found 18% of lesbians in their sample participated in sadomasochism or bondage and 3% participated in cutting/piercing/tattooing.

Lesbians are perceived to be at little or no risk of contracting HIV and other STDs. Nevertheless, the few researchers who have studied lesbian sexual behavior and STD risk have consistently found that perception to be false. Morrow and Allsworth (2000) reported that 24% of lesbians they surveyed had been diagnosed with at least one STD in their lifetime. Diamant et al. (2000) found that 17% of lesbians they surveyed had been diagnosed with at least one STD in their lifetime (lifetime prevalence). Diamant et al. (2000) also reported a 6% lifetime prevalence of STDs in women who reported engaging in sexual behaviors *only* with other women. Bauer and Welles (2001) found a 13% lifetime prevalence of STDs in a group of women who reported engaging in sexual behaviors only with other women.

To summarize, lesbians engage in a variety of behaviors that can transmit HIV and STDs. Despite the fact that lesbians engage in these behaviors, professionals (e.g. health care providers) and non-professionals think they at little or no risk. One explanation for the discrepancy between the perceived risk of lesbians and their actual behavior is stereotypes.

Stereotyping

The definition of a stereotype varies slightly according to who is defining it. The most basic definition is that stereotypes are beliefs about characteristics and behaviors of members of certain groups (Hilton & von Hippel, 1996). Some authors further define the nature of these beliefs as simplistic and overgeneralized (e.g., Snyder & Miene, 1994). A variety of stereotypes exists about a large number of groups.

Stereotypes exist about men and women. People use gender stereotypes to describe how men and women are expected to behave and appear in our society. A stereotypical woman is seen as passive, dependent, gentle, emotional, and persuadable; a stereotypical man is seen as aggressive, unemotional, rational, independent, and confident (Fiske, 1998; Prentice & Carranza, 2002). Based on these stereotypes, men and women have been portrayed as very opposite in their personalities, but the number and magnitude of real differences between men and women tend to be surprisingly small (Feingold, 1994).

Stereotypes also exist about gay men and lesbians. Stereotypes about gay men are usually more negative than are stereotypes about lesbians (Herek, 2000, 2002). A stereotypical gay man is seen as being feminine, wearing women's clothing, and engaging in sexually indiscriminate acts (Herek, 2002). A stereotypical lesbian is seen as being masculine, having a "quite different" type of love from heterosexuals, and having a weaker sex drive than do heterosexuals (LaMar & Kite, 1998).

There is a growing number of researchers who are documenting sex differences in attitudes towards lesbians and gay men. Overall, men are less tolerant than are women of homosexuality (Herek, 2000, 2002; Herek & Capitanio, 1999; Kite & Whitley, 1996; LaMar & Kite, 1998). Using data from a 1999 national survey, Herek (2002) examined attitudes about gay men. He found that men were significantly more likely than women to regard gay men as child molesters and mentally ill. Men's attitudes toward gay men were more negative than were their attitudes toward lesbians or than women's attitudes toward either gay men or lesbians. Men who have less negative attitudes toward lesbians may also sometimes perceive lesbians as being erotic (Whitley, Wiederman, & Wryobeck, 1999). However, heterosexual women express more negative attitudes toward contact with lesbians than toward contact with gay men (LaMar & Kite, 1998). In one study, almost half of the female participants reported they felt "somewhat" or "very" uncomfortable being around a lesbian (Herek, 2002).

Several cognitive processes are involved in stereotyping such as information processing, judgments, behavior, perception, and memory (see Fiske, 1998, for a review of the literature). Perceivers use stereotypes during information processing to simplify assimilating new information. Instead of depending solely on incoming information about a new individual, perceivers draw on previously stored information to make judgments about a new individual (Hilton & von Hippel, 1996). Previously stored information is usually separated into categories (such as gender, race, age, or sexual orientation) to facilitate information processing about a new individual (Macrae & Bodenhausen, 2000).

Gender, for example, is a common category used when perceivers are processing information about a new individual. Several researchers have performed studies in which participants watched a tape of several people speaking and were then asked to report who on the tape said what. Participants in these

studies consistently made more within-sex errors (attributing a sentence to the incorrect individual but the correct sex) than cross-sex (attributing a sentence to the incorrect individual and the incorrect sex) errors (e.g., Beauvais & Spence, 1987).

Perceivers use stereotypes when making judgments about individuals. Perceivers are likely to make stereotypic judgments about an individual regardless of that individual's actual characteristics (see Fiske, 1998, for a review of the literature). These stereotypic judgments will occur because perceivers will draw upon already-held stereotypes instead of forming new judgments. For example, in a meta-analysis of 58 experiments, Swim and Sanna (1996) examined individuals' attributions for the performance of men and women on masculine tasks. These researchers found that if women failed at a masculine task, their failures were attributed to stable factors (e.g., ability, motivation); if men failed at a masculine task, their failures were attributed to unstable factors (e.g. luck, difficulty of task).

Individuals' behavior toward other people can be strongly influenced by those individuals' use of stereotypes (see Fiske, 1998, for a review of the literature). This behavior has a profound effect on others' lives when stereotypes are expressed in the form of discrimination. Groups of people that are stereotyped (e.g., women and homosexuals) are also frequently targets of discrimination. Members of a privileged group (e.g., men and heterosexuals) who hold prejudicial attitudes based on negative stereotypes frequently feel detached from groups experiencing discrimination; this detachment allows the ingroup members to perpetuate discrimination against the outgroups (Snyder & Miene, 1994).

Gender discrimination in workplaces, for example, has been widely documented and researched. In one well documented gender discrimination case, a female accountant was denied promotion because she received a negative evaluation. This negative evaluation occurred even though she had worked more hours than any other person eligible for

promotion and she had brought in \$25 million worth of business. She was described as overbearing and arrogant. These qualities would have been valued in a male business partner but were considered unsuitable for a female business partner (Fiske, Bersoff, Borgida, Deaux, & Heilman, 1991).

When individuals rely heavily on stereotypes, perception and attention to detail are affected (see Fiske, 1998, for a review of the literature). Perceivers who hold strong stereotypical beliefs notice stereotype-confirming details about other individuals before the perceivers notice details that do not confirm their stereotypes about these other individuals (Fiske, 1998). By failing to notice individual differences, perceivers often view other individuals as more similar to a stereotype than those individuals actually are (Hilton & von Hippel, 1996).

A commonly held stereotype about lesbians, for example, is that they are masculine (LaMar & Kite, 1998). If perceivers holding that stereotypical belief meet a lesbian, they are likely to notice masculine details (such as short hair or an absence of makeup) before they notice feminine details (such as delicate jewelry or painted nails). By noticing such stereotype-confirming details, this lesbian is perceived as masculine and the perceivers' stereotypes remain intact.

Individuals remember information differently when depending on stereotypes (see Fiske, 1998, for a review of the literature). Individuals are generally better able to recall information that is congruent with their existent stereotypes than information that is incongruent with their existent stereotypes (Hilton & von Hippel, 1996). If information is incongruent with their stereotypes, perceivers must think about this information to try and make sense of this incongruence. Most often, examination of such incongruent information results in the perceiver changing the meaning of that information or discounting that information altogether (Hilton & von Hippel, 1996). By doing so, perceivers effectively change incongruent information to congruent

information so that their stereotypes remain intact.

Some perceivers, for example, hold a stereotype that lesbians are masculine women who have low sex drives (LaMar & Kite, 1998). If these perceivers encountered a feminine lesbian who was openly sexual, these perceivers might consider her an anomaly. The perceivers' stereotype remains unaffected because the feminine lesbian is an exception to their stereotype. Perceivers might also discount a feminine lesbian as "not a real lesbian" so that their stereotype remains unaffected because these perceivers would not consider her a member of the stereotyped group.

However, not all perceivers engage in stereotyping to the same degree. Why do some perceivers depend more heavily on stereotypes than other perceivers? One explanation for this individual difference is a perceiver's need for cognition.

Need for Cognition

Need for cognition is the tendency for an individual to willfully engage in effortful thinking (see Cacioppo, Petty, Feinstein, & Jarvis, 1996, for a review of the literature). Need for cognition is conceptualized on a bipolar continuum from low to high. Individuals with a high need for cognition are naturally inclined to seek out information and analyze it critically. Individuals low in need for cognition are not naturally inclined to engage in information seeking or critical thinking. To measure need for cognition, the Need for Cognition Scale (NCS) was developed by Cacioppo and Petty (1982).

If individuals high in need for cognition are likely to devote much cognitive effort to processing information, then they should be able to recall more of this information than should individuals low in need for cognition. Conversely, if individuals low in need for cognition are not as likely to devote much cognitive effort to information processing, then they should be able to recall less of this information than should high in need for cognition individuals. This hypothesis was tested by Cacioppo and Petty

in 1983 and has been tested an additional 22 times since then. After a meta-analytic comparison of overall differences in information recall (Cacioppo et al., 1996), Cacioppo and Petty concluded that individuals high in need for cognition recalled more of the information to which they were exposed than did individuals low in need for cognition.

The ability to recall information is relevant to stereotypes about lesbians and HIV. There is not much information in the media about lesbians and HIV, risk behaviors, and infection rates. However, individuals who are high in need for cognition should remember and recall this information when asked about lesbians and HIV, risk behaviors, and infection rates. Individuals low in need for cognition should not remember or recall this information when asked about lesbians and HIV.

Another difference between people with a high need for cognition and people with a low need for cognition is their responsiveness to argument quality (Cacioppo et al., 1996). People high in need for cognition should be influenced by the quality of an argument presented to them because they are devoting much effort to analyzing the argument. People low in need for cognition should not be influenced by the quality of an argument presented to them because they are devoting little, if any, effort to analyzing the argument. In 1983, Cacioppo and Petty tested the hypothesis that individuals would be differently affected by the quality of an argument depending on whether they were high or low in need for cognition. Since then, researchers have tested the interaction between argument quality and need for cognition eleven times. Cacioppo et al. (1996) performed a meta-analysis on the results of these studies and found the interaction between need for cognition and responsiveness to argument quality to be reliable. Based on the results of the meta-analysis, individuals who were high in need for cognition were more influenced by the quality of a persuasive message than were individuals low in need for cognition.

The ability to think critically about messages is particularly relevant when looking at stereotypes of lesbian behavior. There is a vast array of misleading stereotypes about “what lesbians do” and how the sexual behaviors of lesbians translate into their risk for HIV infection (e.g., Diamant et. al., 2000; Morrow & Allsworth, 2000). If individuals high in need for cognition are likely to think critically and analyze messages that are presented to them, then these individuals should be less likely than individuals low in need for cognition to be influenced by misleading stereotypes about the sexual behavior of lesbians. If individuals low in need for cognition are not as likely to think critically and analyze messages that are presented to them, then these individuals should be more likely than those high in need for cognition to be influenced by stereotypes about the sexual behavior of lesbians.

Not only are individuals low in need for cognition less likely than individuals high in need for cognition to be influenced by the quality of the argument, low need for cognition individuals are also more likely than high need for cognition individuals to be influenced by the source of the information (Cacioppo et al., 1996). Several researchers have validated the hypothesis that need for cognition affects whether individuals are likely to be affected by peripheral cues such as the attractiveness or expertise of the source (e.g., Petty, Cacioppo, & Goldman, 1981; Petty & Cacioppo, 1984). Individuals low in need for cognition are more influenced than individuals high in need for cognition by peripheral cues particularly if the issue is irrelevant to the individual.

It would be expected that individuals low in need for cognition would not be inclined to spend much cognitive effort on a subject such as lesbian sexual behavior because such a subject does not personally relate to them. It would instead be simpler for individuals low in need for cognition to depend on outside sources (such as television) for information about lesbian sexual behavior whether that information was valid or not. It would also be expected that individuals high

in need for cognition would be inclined to expend much cognitive effort seeking valid and reliable information about the lesbian sexual behavior. Because individuals high in need for cognition engage in effortful thinking about all different types of subjects, these individuals would be expected to question the validity of sources from which information is collected.

If individuals high in need for cognition spend much effort on thinking about any given task, then it would be reasonable to conclude that these individuals generate more thoughts on a task than do individuals low in need for cognition (Cacioppo et al., 1996). In fact, researchers have performed several studies to test this hypothesis in various ways (e.g., Lassiter, Briggs, & Slaw, 1991; Verplanken, 1993). Two main procedures have been used: (a) looking at the sheer number of task-relevant and task-irrelevant thoughts generated and (b) controlling for task-irrelevant thoughts. After looking at results from these studies, researchers have confirmed the hypothesis that more task-relevant thoughts are generated by those high in need for cognition than by those low in need for cognition (Cacioppo et al., 1996). If individuals high in need for cognition spend much cognitive energy on making judgments, then these individuals' judgments should be predictable based on these individuals' existent thoughts and beliefs. If individuals low in need for cognition do not spend much cognitive energy on making judgments, their judgments should not be predictable based on these individuals' existent thoughts and beliefs. Researchers have tested this hypothesis in several studies. Overall, researchers found that attitudes of individuals high in need for cognition were strongly correlated with these individuals' thoughts (whether positive or negative); individuals low in need for cognition, however, did not show this correlation (Cacioppo et al., 1996).

When given the task of thinking about what sexual behaviors heterosexuals and homosexuals engage in and who is at risk for contracting HIV, individuals high in need for

cognition should produce more thoughts about these issues than should individuals low in need for cognition. Individuals high in need for cognition, therefore, should be more likely to have more well-developed thoughts about the diversity of human sexuality than should individuals low in need for cognition. High need for cognition individuals would use these well-developed thoughts in their judgments of another person, thereby making these individuals likely to use a "mental shortcut" like stereotyping. Individuals low in need for cognition would not be expected to have many well-developed thoughts concerning the diversity of human sexuality. Because of their lack of thoughts, low need for cognition individuals should be expected to depend on stereotypes instead of existing thoughts.

Individuals high in need for cognition should have a wider base of knowledge than individuals low in need for cognition (Cacioppo et al., 1996). Individuals high in need for cognition are highly inclined to seek out and process knowledge, whereas individuals low in need for cognition are not as inclined to seek out and process knowledge. Several studies were performed to test the hypothesis that high need for cognition individuals have a wider base of knowledge than do low need for cognition individuals. In order to test this hypothesis, researchers looked at various predictors of knowledge. For example, Wolfe and Grosch (1990) demonstrated that individuals high in need for cognition were able to perform better on a trivia test than were individuals low in need for cognition. Also, in three different studies examining politics, individuals high in need for cognition were able to list more pieces of information about presidential candidates (Cacioppo et al., 1986), more consequences of electing certain candidates (Ahlering, 1987) and more reasons supporting their candidates (Condra, 1992) than were individuals low in need for cognition.

It is a reasonable assumption that individuals high in need for cognition should be highly informed on issues of sexuality including risk behaviors because these

individuals have actively sought out information. It is also reasonable to assume that individuals low in need for cognition should not be well informed on issues of sexuality because these individuals do not actively seek out information about matters that do not pertain to them. Therefore, it should be expected that individuals high in need for cognition will know accurate information about the lesbian sexual behavior and how that behavior affects lesbians' risk for being infected with HIV or other STDs. Individuals low in need for cognition should not be expected to know accurate information about the lesbian sexual behavior and how that behavior affects lesbians' risk for being infected with HIV or other STDs.

Individuals who differ in their need for cognition are also likely to differ in what type of information they seek out and where they obtain this information (Cacioppo et al., 1996). Researchers performed a meta-analysis of studies done on need for cognition and information seeking (Cacioppo et al., 1996). The researchers concluded that the data supports this hypothesis. Individuals high in need for cognition were found to be more likely than individuals low in need for cognition to seek and gather information about a wide variety of issues and current events. For example, Ferguson, Chung, and Weigold (1985) demonstrated that individuals high in need for cognition were more likely than individuals low in need for cognition to gain information from newspapers and magazines. These researchers found that individuals high in need for cognition were less likely than individuals low in need for cognition to watch television.

There is a rarity of relevant and in-depth information about lesbians and HIV on television, so individuals who gather most of their knowledge from television are likely to have limited information concerning lesbian sexuality and HIV-infection risk. Because individuals low in need for cognition are likely to seek a majority of their information from television, it is a reasonable hypothesis that they will have inadequate or inaccurate information about lesbian sexuality and risk

behaviors. Conversely, individuals who stay abreast of current issues and gather information from a wide variety of sources are likely to have sufficient knowledge of lesbian sexual behavior. Because individuals high in need for cognition are likely to gather their information from several different sources, they should be adequately informed on lesbian sexuality and risk behaviors.

After reviewing the literature on sexual behavior, stereotypes, and need for cognition, two hypotheses were proposed. First, participants would engage in stereotyping and would perceive the frequency of various sexual behaviors, acceptability of various sexual behaviors, and STD infection rates differently depending on the sex and sexual orientation of a target. Second, participants low in need for cognition should be more likely than participants high in need for cognition to use stereotypes when perceiving the frequency of sexual behavior, acceptability of sexual behavior, and STD infection rates.

Method

Participants

Participants in this study were in undergraduate psychology courses. A total of 132 students volunteered to take part in a study titled "Individual Differences in Attitudes Toward Sexual Behavior." For their participation, students could receive extra credit in their course. However, participation in this study was not the only way students could receive extra credit. The experimenter did not place any restrictions on who could participate in this study.

There were 29 males and 103 females in this sample. A majority of participants was Caucasian (64%). Most participants were between 18-22 years old (67%). A majority of participants identified themselves as heterosexual (95%).

Participants were randomly assigned to one of four conditions. All participants signed a written informed consent form. All participants were treated in accordance with the Ethical Principles of Psychologists and Code of Conduct (American Psychological Association, 2003).

Procedure

Participants completed this study in groups of eight people or less at a time. Males and females were assigned to two separate rooms in groups of up to four. Before participants received a questionnaire, a female experimenter explained that they would be taking part in a study about attitudes toward sexual behavior. She informed participants that not many studies had been done on what people thought about different types of sexual behavior. She then emphasized that participants would not be answering questions about their own personal sexual behavior but instead questions about how the participants felt about what *others* did. She also informed participants that they would be answering questions about how they viewed themselves in order to see if there was a connection between how they viewed themselves and how they viewed others.

Participants then received an informed consent form. The experimenter explained to participants that responses were anonymous and confidential, participation in this study was voluntary, and right to withdraw at any time was available. She also made it clear that sexuality is an important yet sensitive subject and repeatedly emphasized that participants could withdraw if they became uncomfortable or distressed during this study. After reviewing information in their informed consent form, participants signed and dated their form and the experimenter collected the forms. After the experimenter collected all the forms, participants were randomly assigned to receive one of four questionnaires.

The Heterosexual Experience Scale is a 14-item self-report instrument developed to measure sexual experience of heterosexual individuals (Zuckerman, 1973). The response format for each item in this scale is a 5-point scale. Response options are labeled *never*, *once or twice*, *several times*, *more than several times but less than ten times*, and *ten times or more*. Zuckerman (1973) included fourteen items about different sexual acts such as “kissing without tongue contact,” “male mouth contact with female breast,” “female manipulation of male’s penis,” and

“sexual intercourse, face-to-face, in side position.” This scale was the basis of the section of the questionnaire which asked respondents to report how often different groups (homosexual males, homosexual females, heterosexual males, and heterosexual females) engaged in certain sexual behaviors. Questionnaires in the current study were identical except for the sexual orientation of the target person in these questionnaires (heterosexual female, heterosexual male, homosexual female, homosexual male).

In the first part of the questionnaire were questions about participants’ perceptions of and attitudes toward sexual behavior. All fourteen items in the Heterosexual Experience Scale were kept or modified to indicate the sexual orientation of the target person (e.g. “female manipulation of male’s penis” was changed to “partner manipulating his penis” when the subject was a homosexual male). Other sexual behaviors were added such as “one or more fingers inserted in partner’s anus,” “bondage/ S&M play,” and “using sex toy/dildo on partner’s body.” These items were added because several different researchers had shown these to be potentially risky activities in which lesbians engage (Diamant et. al., 2000; Morrow & Allsworth, 2000). Participants first answered questions about their perceptions of how *frequently* the target person in their questionnaire would engage in certain sexual behaviors (e.g., in the heterosexual female questionnaire there were items such as, “kissing male partner with tongue contact,” “mouth/tongue contact with her male partner’s penis,” and “have sex with an anonymous partner.”). Answer options provided were *don’t know/unsure*, *never*, *occasionally*, *often*, and *very frequently*. Participants then rated the *acceptability* of the same sexual behaviors mentioned in the previous section. Answer options provided were *completely acceptable*, *somewhat acceptable*, *don’t know/unsure*, *somewhat unacceptable*, and *completely unacceptable*.

Participants were asked to indicate the percentage of the target group in their surveys (heterosexual males, heterosexual females, homosexual males, or homosexual females)

who typically contracted various sexually transmitted infections. Participants chose from five response options: *1% to 5%*; *6% to 10%*; *11% to 15%*; *16% to 20%*; and *21% or more*. The sexually transmitted infections in the survey were gonorrhea, genital warts, chlamydia, genital herpes, syphilis, and HIV. The percentage categories and specific STDs were derived from research by Laumann et al. (1994), Diamant et al. (2000), and Morrow and Allsworth (2000).

Zuckerman, Tushup, and Finner (1976) reported the coefficients of reproducibility of scores on the 14-item Heterosexual Experience Scale to be .93 and .94. From the same scores, researchers calculated that the coefficients of scalability were .77 for females and .81 for males. After a 15-week interval, test-retest reliabilities for the scores on the Heterosexual Experience Scale were .80, .92, .94, and .95 in four different samples (Zuckerman et al., 1976).

In the second part of this questionnaire were statements designed to assess participants' need for cognition. The Need for Cognition Scale is an 18-item self-report instrument developed to measure individuals' tendencies to engage in and enjoy effortful thinking (Cacioppo, Petty, & Kao, 1984). The response format for each item in this scale is a 5-point Likert scale. Response options are *strongly disagree*, *disagree*, *undecided/uncertain*, *agree*, and *strongly agree*. Nine items are worded positively with agreement indicating an individual has a high need for cognition (e.g., "I find satisfaction in deliberating hard and for long hours."). The other nine items are worded negatively with disagreement indicating an individual has a high need for cognition (e.g., "I only think as hard as I have to.").

Statements are counterbalanced to avoid response set effects. Responses to items expressing negative views of thinking (e.g., "Thinking is not my idea of fun.") are reverse-scored so that a higher score indicates a greater need for cognition. A total score is obtained by summing scores across all 18 items. Higher scores are representative of higher levels of need for cognition.

Individuals are classified as either high or low in need for cognition based on a median split of the scores on the Need for Cognition Scale.

Reliability and validity of scores on the Need for Cognition Scale have been evaluated in numerous studies (see Cacioppo et al., 1996, for a review). Researchers have validated the internal consistency of scores on the Need for Cognition Scale in several studies. In one study using undergraduates, Wolfe and Grosch (1990) calculated a Cronbach alpha of .88. The Cronbach alpha was .91 in the sample for this study. Test-retest reliability of scores on the Need for Cognition Scale has also been evaluated. For example, in a study of seventy-one undergraduates, Sadowski and Gulgoz (1992) reported a test-retest correlation of .88 for scores on the Need for Cognition Scale over a seven-week period.

The convergent and discriminant validity of scores on the Need for Cognition Scale have also been evaluated in numerous studies. Scores on the Need for Cognition Scale are negatively related to scores on scales designed to assess closed-mindedness (meta-analysis $r_{ave} = -.34, p < .01$; Petty & Jarvis, 1996), simplification ($r = -.26, p < .05$; Ventrakaman et al., 1990), and dogmatism ($r_s = -.23$ to $-.24, p_s < .05$; Cacioppo & Petty, 1982; Fletcher et al., 1986). Scores on the Need for Cognition Scale are positively related to scores on many other scales designed to assess information-oriented identity style ($r = .50, p < .01$; Berzonsky & Sullivan, 1992), objectivism ($r = .47, p < .01$; Leary et al., 1986), and cognitive innovativeness ($r_s = .26$ to $.40, p_s < .05$; Ventrakaman et al., 1990; Ventrakaman & Price, 1990).

Last, participants completed some demographic questions about their sex, age, race, sexual orientation, religious affiliation, and political affiliation. Participants were given different options for each question. Age range options were *18-22*, *23-27*, *28-32*, *33-37*, and *38 or older*. Race options were *Caucasian/White*, *African-American/Black*, *Latino/Hispanic*, *Asian*, and *Other*. Sexual orientation options were *heterosexual*,

bisexual, and *homosexual*. After completing their questionnaires, participants turned in their questionnaires and answer sheets and were thanked for their time.

Results

The design of this study was a 2 (high vs. low need for cognition) by 2 (heterosexual vs. homosexual target) by 2 (male vs. female target) factorial. The three predictor variables were participants' need for cognition, target's sexual orientation, and target's sex. All predictor variables were between-subjects variables. Results were analyzed using a three-way ANOVA. Separate analyses were performed for (a) perceptions of the *frequency* with which certain groups of people engage in various types of sexual behavior, (b) perceptions of the *acceptability* of different kinds of sexual behaviors for certain groups of people, and (c) perceptions of the percentage of certain groups of people who typically contract various sexually transmitted diseases.

Frequency of Various Sexual Behaviors

Participants were asked to indicate the frequency with which people engaged in various sexual behaviors. Recall that higher scores indicated higher perceived frequency. Because the focus of this study was perceptions of sexual behavior related to potential STD transmission, some of the sexual behaviors were more relevant (e.g., "have sex with an anonymous partner") than were other sexual behaviors (e.g., "feeling partner's nude chest"). In this section, only statistically significant results for relevant behaviors are discussed.

There was a main effect of target sex on the perceived frequency of sexual intercourse in a face-to-face position (for heterosexuals, the male partner on top), $F(1, 124) = 5.98, p < .05$. Participants thought women ($M = 3.78, SD = 1.15$) were more likely than men ($M = 3.28, SD = 1.30$) to engage in sexual intercourse in a face-to-face position. There was also a main effect of target sexual orientation on the perceived

frequency of sexual intercourse in a face-to-face position, $F(1, 124) = 45.75, p < .01$. Participants thought heterosexuals ($M = 4.15, SD = 0.93$) were more likely than homosexuals ($M = 2.89, SD = 1.23$) to engage in sexual intercourse in a face-to-face position.

There was a main effect of target sexual orientation on the perceived frequency of sexual intercourse in a face-to-face position with one's partner (for heterosexuals, the female partner) on top, $F(1, 124) = 33.34, p < .01$. Participants thought heterosexuals ($M = 3.91, SD = 0.88$) were more likely than homosexuals ($M = 2.88, SD = 1.23$) to engage in sexual intercourse in a face-to-face position with their partner on top. There was also an interaction between target sexual orientation and need for cognition on the perceived frequency of sexual intercourse in a face-to-face position with one's partner on top, $F(1, 124) = 6.17, p < .05$. Participants low in need for cognition thought heterosexuals ($M = 4.03, SD = 0.82$) were more likely than homosexuals ($M = 2.45, SD = 1.15$) to engage in sexual intercourse in a face-to-face position with their partner on top. Participants high in need for cognition thought heterosexuals ($M = 3.78, SD = 0.82$) were almost equally likely as homosexuals ($M = 3.22, SD = 1.20$) to engage in sexual intercourse in a face-to-face position with their partner on top.

There was a main effect of target sexual orientation on the perceived frequency of face-to-face sexual intercourse in a side position, $F(1, 124) = 8.95, p < .05$. Participants thought heterosexuals ($M = 3.18, SD = 0.89$) were more likely than homosexuals ($M = 2.68, SD = 1.25$) to engage in face-to-face sexual intercourse in a side position.

There was a main effect of target sex on the perceived frequency of sexual intercourse with their partner (for heterosexuals, the male partner) entering from the rear, $F(1, 124) = 10.27, p < .01$. Participants thought men ($M = 3.54, SD = 1.35$) were more likely than women ($M = 2.86, SD = 1.24$) to engage in sexual intercourse with their partner entering from

the rear. There was also an interaction between target sex and target sexual orientation on the perceived frequency of sexual intercourse with their partner entering from the rear, $F(1, 124) = 10.57, p < .01$. Participants thought homosexual men ($M = 4.00, SD = 1.30$) were most likely to engage in sexual intercourse with their partner entering from the rear. Participants thought heterosexual men ($M = 3.09, SD = 1.26$) and women ($M = 3.06, SD = 1.17$) were equally likely to engage in sexual intercourse with the male partner entering from the rear. Participants thought homosexual women ($M = 2.66, SD = 1.29$) were least likely to engage in sexual intercourse with their partner entering from the rear.

There was a main effect of target sex on the perceived frequency of mouth or tongue contact with a partner's anus, $F(1, 124) = 4.93, p < .05$. Participants thought men ($M = 2.52, SD = 1.13$) were more likely than women ($M = 2.11, SD = 0.87$) to engage in mouth or tongue contact with a partner's anus. There was also a main effect of target sexual orientation on the perceived frequency of mouth or tongue contact with a partner's anus, $F(1, 124) = 7.01, p < .01$. Participants thought homosexuals ($M = 2.55, SD = 1.21$) were more likely than heterosexuals ($M = 2.09, SD = 0.75$) to engage in mouth or tongue contact with a partner's anus.

There was a main effect of target sex on the perceived frequency of inserting one or more fingers in a partner's anus, $F(1, 124) = 19.18, p < .01$. Participants thought men ($M = 2.69, SD = 1.91$) were more likely than women ($M = 1.91, SD = 0.86$) to engage in inserting one or more fingers in a partner's anus. There was also a main effect of target sexual orientation on the perceived frequency of inserting one or more fingers in a partner's anus, $F(1, 124) = 6.28, p < .05$. Participants thought homosexuals ($M = 2.54, SD = 1.33$) were more likely than heterosexuals ($M = 2.07, SD = 0.84$) to engage in inserting one or more fingers in a partner's anus. There was also an interaction between target sex and target sexual orientation, $F(1, 124) = 5.22, p < .05$. Participants thought homosexual men (M

$= 3.12, SD = 1.39$) were more likely than heterosexual men ($M = 2.26, SD = 0.90$), homosexual women ($M = 1.94, SD = 0.98$) or heterosexual women ($M = 1.88, SD = 0.74$) to engage in inserting one or more fingers in a partner's anus.

There was a main effect of target sex on the perceived frequency of inserting a fist in a partner's anus, $F(1, 124) = 3.93, p < .05$. Participants thought men ($M = 2.09, SD = 1.08$) were more likely than women ($M = 1.78, SD = 0.62$) to engage in inserting a fist in a partner's anus. There was also an interaction between target sex, target sexual orientation, and need for cognition on the perceived frequency of inserting a fist in a partner's anus, $F(1, 124) = 7.15, p < .01$. Participants low in need for cognition thought homosexual men ($M = 2.59, SD = 1.54$) were more likely than heterosexual women ($M = 1.90, SD = 0.45$), homosexual women ($M = 1.83, SD = 0.72$), or heterosexual men ($M = 1.80, SD = 0.56$) to engage in inserting a fist in a partner's anus. Participants high in need for cognition thought heterosexual men ($M = 2.21, SD = 0.21$) were more likely than homosexual women ($M = 1.80, SD = 0.77$), homosexual men ($M = 1.69, SD = 0.87$), or heterosexual women ($M = 1.54, SD = 0.52$) to engage in inserting a fist in a partner's anus.

There was a main effect of target sexual orientation on the perceived frequency of using a sex toy or dildo on a partner's body, $F(1, 124) = 39.91, p < .01$. Participants thought homosexuals ($M = 3.51, SD = 1.32$) were more likely than heterosexuals ($M = 2.33, SD = 0.99$) to engage in using a sex toy or dildo on a partner's body. There was also an interaction between target sex and target sexual orientation on the perceived frequency of using a sex toy or dildo on a partner's body, $F(1, 124) = 29.59, p < .01$. Participants thought homosexual women ($M = 4.09, SD = 1.17$) were more likely than homosexual men ($M = 2.94, SD = 1.22$), heterosexual men ($M = 2.76, SD = 0.92$), or heterosexual women ($M = 1.88, SD = 0.86$) to engage in using a sex toy or dildo on a partner's body.

There was a main effect of target sex on the perceived frequency of a partner's

mouth or tongue on a recipient's anus, $F(1, 124) = 4.33, p < .05$. Participants thought men ($M = 2.48, SD = 1.09$) were more likely than women ($M = 2.14, SD = 0.95$) to receive their partner's mouth or tongue contact on their anus. There was also a main effect of target sexual orientation on the perceived frequency of a partner's mouth or tongue on a recipient's anus, $F(1, 124) = 5.21, p < .05$. Participants thought homosexuals ($M = 2.52, SD = 1.22$) were more likely than heterosexuals ($M = 2.10, SD = 0.76$) to receive their partner's mouth or tongue contact on their anus.

There was a main effect of target sex on the perceived frequency of a partner inserting one or more fingers in a recipient's anus, $F(1, 124) = 9.40, p < .01$. Participants thought men ($M = 2.48, SD = 1.09$) were more likely than women ($M = 2.14, SD = 0.95$) to receive one or more of their partner's fingers in their anus. There was also an interaction between target sex and target sexual orientation on the perceived frequency of a partner inserting one or more fingers in a recipient's anus, $F(1, 124) = 11.33, p < .01$. Participants thought homosexual men ($M = 2.97, SD = 1.31$) were most likely to receive one or more of their partner's fingers in their anus. Participants thought heterosexual women ($M = 2.18, SD = 0.93$) and heterosexual men ($M = 2.15, SD = 0.86$) were equally likely to receive one or more of their partner's fingers in their anus. Participants thought homosexual women ($M = 1.88, SD = 0.91$) were least likely to receive one or more of their partner's fingers in their anus.

There was an interaction between target sex, target sexual orientation, and need for cognition on the perceived frequency of a partner inserting a fist in a recipient's anus, $F(1, 124) = 5.46, p < .05$. Participants low in need for cognition thought homosexual men ($M = 2.47, SD = 1.37$) were more likely than heterosexual women ($M = 1.90, SD = 0.45$), homosexual women ($M = 1.75, SD = 0.75$), or heterosexual men ($M = 1.73, SD = 0.46$) to receive a partner's fist in their anus. Participants high in need for cognition thought homosexual women ($M = 2.15, SD =$

1.34) were more likely than heterosexual men ($M = 2.05, SD = 0.62$), heterosexual women ($M = 1.85, SD = 0.80$), or homosexual men ($M = 1.81, SD = 0.83$) to receive a partner's fist in their anus.

There was a main effect of target sex on the perceived frequency of a partner using a sex toy or dildo on a recipient's body, $F(1, 124) = 22.75, p < .01$. Participants thought women ($M = 3.42, SD = 1.25$) were more likely than men ($M = 2.57, SD = 1.06$) to receive the use of a sex toy or dildo by a partner. There was also a main effect of target sexual orientation, $F(1, 124) = 31.49, p < .01$. Participants thought homosexuals ($M = 3.52, SD = 1.31$) were more likely than heterosexuals ($M = 2.46, SD = 0.88$) to receive the use of a sex toy or dildo by a partner.

There was a main effect of target sex on the perceived frequency of having sex with an anonymous partner, $F(1, 124) = 8.69, p < .01$. Participants thought men ($M = 3.07, SD = 0.88$) were more likely than women ($M = 2.68, SD = 1.02$) to engage in having sex with an anonymous partner. There was also an interaction between target sex, target sexual orientation, and need for cognition, $F(1, 124) = 6.91, p < .01$. Participants low in need for cognition thought homosexual men ($M = 3.35, SD = 1.27$) were more likely than heterosexual men ($M = 3.07, SD = 0.59$), heterosexual women ($M = 2.80, SD = 0.95$), or homosexual women ($M = 2.17, SD = 0.94$) to engage in having sex with an anonymous partner. Participants high in need for cognition thought all individuals [homosexual women ($M = 2.15, SD = 1.34$), heterosexual men ($M = 2.95, SD = 0.52$), homosexual men ($M = 2.94, SD = 0.93$), or heterosexual women ($M = 2.31, SD = 0.95$)] were more or less equally likely to engage in having sex with an anonymous partner.

There was a main effect of target sex on the perceived frequency of sex with one or more individuals at a sex club, $F(1, 124) = 9.64, p < .01$. Participants thought men ($M = 2.43, SD = 1.20$) were more likely than women ($M = 1.91, SD = 0.86$) to engage in sex with one or more individuals at a sex

club. There was also a main effect of target sexual orientation, $F(1, 124) = 4.37, p < .05$. Participants thought homosexuals ($M = 2.37, SD = 1.20$) were more likely than heterosexuals ($M = 1.99, SD = 0.90$) to engage in sex with one or more individuals at a sex club. There was also an interaction between target sex and target sexual orientation, $F(1, 124) = 5.86, p < .05$. Participants thought homosexual men ($M = 2.85, SD = 1.30$) were more likely than heterosexual men ($M = 2.03, SD = 0.94$), heterosexual women ($M = 1.94, SD = 0.86$), or homosexual women ($M = 1.88, SD = 0.87$) to engage in sex with one or more individuals at a sex club.

There was a main effect of target sex on the perceived frequency of having group sex at a private residence, $F(1, 124) = 3.99, p < .05$. Participants thought men ($M = 2.39, SD = 1.14$) were more likely than women ($M = 2.03, SD = 1.02$) to engage in having group sex at a private residence. There was also a main effect of target sexual orientation, $F(1, 124) = 4.18, p < .05$. Participants thought homosexuals ($M = 2.40, SD = 1.18$) were more likely than heterosexuals ($M = 2.03, SD = 0.97$) to engage in group sex at a private residence. There was also an interaction between target sex, target sexual orientation, and need for cognition, $F(1, 124) = 3.95, p < .05$. Participants low in need for cognition thought homosexual men ($M = 2.88, SD = 1.41$) were more likely than heterosexual women ($M = 2.10, SD = 1.07$), homosexual women ($M = 2.00, SD = 0.95$), and heterosexual men ($M = 1.87, SD = 0.83$) to engage in group sex at a private residence. Participants high in need for cognition thought homosexual men ($M = 2.44, SD = 1.15$), heterosexual men ($M = 2.32, SD = 0.95$), and homosexual women ($M = 2.20, SD = 1.06$) were all more likely than heterosexual women ($M = 1.69, SD = 0.95$) to engage in group sex at a private residence.

There was a main effect of target sexual orientation on the perceived frequency of attending a sex party, $F(1, 124) = 6.04, p < .05$. Participants thought homosexuals ($M = 2.38, SD = 1.07$) were more likely than

heterosexuals ($M = 2.01, SD = 0.86$) to attend a sex party.

There was an interaction between target sexual orientation and need for cognition on the perceived frequency of using any sort of barrier during sex, $F(1, 124) = 6.20, p < .05$. Participants high in need for cognition thought heterosexuals ($M = 3.16, SD = 1.27$) were more likely than homosexuals ($M = 2.56, SD = 1.40$) to use any sort of barrier during sex. Participants low in need for cognition thought homosexuals ($M = 2.72, SD = 1.31$) were almost equally likely as heterosexuals ($M = 2.20, SD = 1.37$) to use any sort of barrier during sex.

There was a main effect of target sexual orientation on the perceived frequency of using a condom during sex, $F(1, 124) = 10.15, p < .01$. Participants thought heterosexuals ($M = 3.99, SD = 0.95$) were more likely than homosexuals ($M = 3.45, SD = 1.19$) to use a condom during sex. There was also an interaction between target sex and target sexual orientation, $F(1, 124) = 5.86, p < .05$. Participants thought heterosexual women ($M = 4.03, SD = 1.02$), heterosexual men ($M = 3.94, SD = 0.89$), and homosexual men ($M = 3.79, SD = 1.02$) were all more likely than homosexual women ($M = 3.09, SD = 1.25$) to use a condom during sex.

Acceptability of Various Sexual Behaviors

Participants were asked to indicate the acceptability of various sexual behaviors when performed by different groups of people. Recall that higher scores indicate greater *unacceptability* and lower scores indicate greater *acceptability*. Because the focus of the study was perceptions of sexual behavior related to potential STD transmission, some behaviors were more relevant (e.g., “have sex with an anonymous partner”) than were other behaviors (e.g., “feeling partner’s nude chest”). In this section, only statistically significant results for relevant behaviors are discussed.

There was a main effect of target sexual orientation on the perceived acceptability of having sexual intercourse in a

face-to-face position (for heterosexuals, the male partner on top), $F(1, 124) = 21.07, p < .01$. Participants thought it was more acceptable for heterosexuals ($M = 1.27, SD = 0.81$) than homosexuals ($M = 2.29, SD = 1.64$) to have sexual intercourse in a face-to-face position.

There was a main effect of target sexual orientation on the perceived acceptability of having sexual intercourse in a face-to-face position with their partner (for heterosexuals, a female partner) on top, $F(1, 124) = 21.65, p < .01$. Participants thought it was more acceptable for heterosexuals ($M = 1.27, SD = 0.81$) than homosexuals ($M = 2.31, SD = 1.63$) to have sexual intercourse in a face-to-face position with their partner on top.

There was a main effect of target sexual orientation on the perceived acceptability of having sexual intercourse, face-to-face, in a side position, $F(1, 124) = 17.73, p < .01$. Participants thought it was more acceptable for heterosexuals ($M = 1.39, SD = 0.90$) than homosexuals ($M = 2.32, SD = 1.62$) to have sexual intercourse, face-to-face, in a side position.

There was a main effect of target sexual orientation on the perceived acceptability of having sexual intercourse with a partner (for heterosexuals, a male partner) entering from the rear, $F(1, 124) = 9.84, p < .01$. Participants thought it was more acceptable for heterosexuals ($M = 2.06, SD = 1.46$) than homosexuals ($M = 2.77, SD = 1.62$) to have sexual intercourse with a partner entering from the rear. There was also an interaction between target sex and target sexual orientation on the perceived acceptability of having sexual intercourse with a partner entering from the rear, $F(1, 124) = 5.09, p < .05$. Participants thought it was most acceptable for heterosexual women ($M = 1.67, SD = 1.05$) to have sexual intercourse with a partner entering from the rear. Participants thought it was almost equally acceptable for homosexual men ($M = 2.67, SD = 1.49$) and heterosexual men ($M = 2.44, SD = 1.69$) to have sexual intercourse with a partner entering from the rear. Participants thought it was least acceptable

for homosexual women ($M = 2.88, SD = 1.76$) to have sexual intercourse with a partner entering from the rear.

There was a main effect of target sex on the perceived acceptability of bondage and sadomasochism play (e.g., using handcuffs, whips, etc.), $F(1, 124) = 7.10, p < .01$. Participants thought it was more unacceptable for men ($M = 3.33, SD = 1.46$) than women ($M = 2.63, SD = 1.44$) to engage in bondage and sadomasochism play. There was also an interaction between target sex and target sexual orientation, $F(1, 124) = 4.72, p < .05$. Participants thought it was more unacceptable to engage in bondage and sadomasochism play for heterosexual men ($M = 3.68, SD = 1.27$) than homosexual men ($M = 2.97, SD = 1.49$), homosexual women ($M = 2.78, SD = 1.60$), or heterosexual women ($M = 2.48, SD = 1.28$).

There was a main effect of target sexual orientation on the perceived acceptability of mouth or tongue contact with a partner's genitals, $F(1, 124) = 13.09, p < .01$. Participants thought it was more acceptable for heterosexuals ($M = 1.43, SD = 0.87$) than homosexuals ($M = 2.26, SD = 1.67$) to have mouth or tongue contact with a partner's genitals.

There was a main effect of need for cognition on the perceived acceptability of one or more fingers inserted in a partner's anus, $F(1, 124) = 6.63, p < .05$. Participants low in need for cognition thought inserting one or more fingers in a partner's anus was more unacceptable ($M = 3.77, SD = 1.43$) than did participants high in need for cognition ($M = 3.07, SD = 1.64$).

There was a main effect of target sexual orientation on the perceived acceptability of inserting a fist in a partner's anus, $F(1, 124) = 4.13, p < .05$. Participants thought it was more unacceptable for heterosexuals ($M = 4.37, SD = 1.22$) than homosexuals ($M = 3.80, SD = 1.46$) to insert a fist into a partner's anus. There was also an interaction between target sex and target sexual orientation, $F(1, 124) = 7.95, p < .01$. Participants thought it was most unacceptable to insert a fist into a partner's anus for

heterosexual men ($M = 4.44$, $SD = 1.05$) than it was for heterosexual women ($M = 4.30$, $SD = 1.38$), homosexual women ($M = 3.94$, $SD = 1.48$) or homosexual men ($M = 3.67$, $SD = 1.45$).

There was an interaction between target sex and target sexual orientation on the perceived acceptability of using a sex toy or dildo on a partner's body, $F(1, 124) = 4.27$, $p < .05$. Participants thought it was more unacceptable to use a sex toy or dildo on a partner's body for heterosexual women ($M = 3.21$, $SD = 1.71$) than it was for homosexual men ($M = 2.67$, $SD = 1.53$), heterosexual men ($M = 2.50$, $SD = 1.31$), or heterosexual women ($M = 2.09$, $SD = 1.67$).

There was a main effect of target sexual orientation on the perceived acceptability of a partner's mouth or tongue in contact with a recipient's genitals, $F(1, 124) = 18.65$, $p < .01$. Participants thought it was more acceptable for heterosexuals ($M = 1.43$, $SD = 0.87$) than homosexuals ($M = 2.26$, $SD = 1.67$) to have a partner's mouth or tongue in contact with a recipient's genitals.

There was a main effect of target sexual orientation on the perceived acceptability of a partner inserting one or more fingers in a recipient's vagina, $F(1, 124) = 8.54$, $p < .01$. Participants thought it was more acceptable for heterosexuals ($M = 1.30$, $SD = 0.88$) than homosexuals ($M = 2.25$, $SD = 1.80$) to have a partner inserting one or more fingers in a recipient's vagina.

There was a main effect of need for cognition on the perceived acceptability of a partner's fist inserted in a recipient's vagina, $F(1, 124) = 4.61$, $p < .05$. Participants low in need for cognition thought a recipient receiving a fist in her vagina was more unacceptable ($M = 3.81$, $SD = 1.40$) than did participants high in need for cognition ($M = 3.12$, $SD = 1.40$).

There was a main effect of need for cognition on the perceived acceptability of receiving one or more fingers inserted in the anus, $F(1, 124) = 8.30$, $p < .01$. Participants low in need for cognition thought receiving one or more fingers in the recipient's anus was more unacceptable ($M = 3.77$, $SD = 1.42$)

than did participants high in need for cognition ($M = 3.09$, $SD = 1.63$). There was also an interaction between target sex and target sexual orientation, $F(1, 124) = 7.95$, $p < .01$. Participants thought it was most unacceptable for heterosexual men ($M = 3.89$, $SD = 1.34$) to receive one or more fingers in their anus. Participants thought it was somewhat unacceptable for homosexual women ($M = 3.50$, $SD = 1.55$) and heterosexual women ($M = 3.27$, $SD = 1.66$) to receive one or more fingers in their anus. Participants thought it was least unacceptable for homosexual men ($M = 3.00$, $SD = 1.62$) to receive one or more fingers in their anus.

There was a main effect of target sex on the perceived acceptability of a partner using a sex toy or dildo on a recipient's body, $F(1, 124) = 32.26$, $p < .01$. Participants thought it was unacceptable for men ($M = 3.66$, $SD = 1.42$) but acceptable for women ($M = 2.14$, $SD = 1.56$) to have a partner use a sex toy or dildo on a recipient's body.

There was an interaction between target sex, target sexual orientation, and need for cognition on the perceived acceptability of having sex with an anonymous partner, $F(1, 124) = 4.48$, $p < .05$. Participants low in need for cognition thought it was most unacceptable for heterosexual men ($M = 4.20$, $SD = 1.08$) to engage in sex with an anonymous partner. Participants low in need for cognition thought it was somewhat unacceptable for homosexual women ($M = 4.08$, $SD = 0.45$) and heterosexual women ($M = 3.60$, $SD = 1.39$) to engage in sex with an anonymous partner. Participants low in need for cognition thought it was least unacceptable for homosexual men ($M = 3.47$, $SD = 1.12$) to engage in sex with an anonymous partner. Participants high in need for cognition thought it was most unacceptable for heterosexual women ($M = 4.00$, $SD = 1.73$) to engage in sex with an anonymous partner. Participants high in need for cognition thought it was somewhat unacceptable for heterosexual men ($M = 3.79$, $SD = 1.47$) and homosexual men ($M = 3.63$, $SD = 1.36$) to engage in sex with an anonymous partner. Participants high in need

for cognition thought it was somewhat acceptable for homosexual women ($M = 2.90$, $SD = 1.65$) to engage in sex with an anonymous partner.

There was a main effect of target sex on the perceived acceptability of using any sort of barrier during sex, $F(1, 124) = 8.87$, $p < .01$. Participants thought it was more acceptable for women ($M = 1.95$, $SD = 1.19$) than men ($M = 2.66$, $SD = 1.57$) to use any sort of barrier during sex.

There was a main effect of target sex on the perceived acceptability of using a latex dam (thin square of latex) during sex, $F(1, 124) = 7.06$, $p < .01$. Participants thought it was more acceptable for women ($M = 1.83$, $SD = 1.23$) than men ($M = 2.49$, $SD = 1.44$) to use a latex dam during sex.

There was a main effect of target sex on the perceived acceptability of using plastic wrap during sex, $F(1, 124) = 4.98$, $p < .05$. Participants thought it was more acceptable for women ($M = 2.55$, $SD = 1.45$) than men ($M = 3.13$, $SD = 1.62$) to use plastic wrap during sex.

Sexually Transmitted Diseases

Participants were asked to indicate the percentage of people who typically contracted various sexually transmitted diseases. Recall that higher scores indicate a higher percentage of people.

There was a main effect of target sexual orientation on the perceived percentage of gonorrheal infection, $F(1, 124) = 5.30$, $p < .05$. Participants thought heterosexuals ($M = 3.12$, $SD = 1.30$) were more likely than homosexuals ($M = 2.65$, $SD = 1.34$) to contract gonorrhea. There were no other main effects or interactions that were statistically significant. That is, neither sex of target nor the participant's need for cognition (either alone or in combination with any of the other predictor variables) had an effect on participants' perception of gonorrheal infection rates.

There were no main effects of target sex, target sexual orientation, or participants' need for cognition on the perceived percentage of genital warts infection rates.

Also, there were no interactions between target sex, target sexual orientation, and/or participants' need for cognition on the participants' perceptions of infection rates of genital warts. That is, participants' perceptions of infection rates of genital warts were apparently not affected by any of the predictor variables.

There was a main effect of target sexual orientation on the perceived percentage of chlamydial infection, $F(1, 124) = 7.88$, $p < .01$. Participants thought heterosexuals ($M = 3.25$, $SD = 1.40$) were more likely than homosexuals ($M = 2.61$, $SD = 1.50$) to contract chlamydia. There were no other main effects or interactions that were statistically significant. That is, neither sex of target nor the participant's need for cognition (either alone or in combination with any of the other predictor variables) had any effect on participants' perception of chlamydial infection rates.

There were no main effects of target sex, target sexual orientation, or the participants' need for cognition on the perceived percentage of genital herpes infection. Also, there were no interactions between target sex, target sexual orientation, and/or participants' need for cognition on the participants' perceptions of infection rates of genital herpes. That is, participants' perceptions of the infection rates of genital herpes were apparently not affected by any of the predictor variables.

There was a main effect of target sex on the perceived percentage of syphilis infection, $F(1, 124) = 6.54$, $p < .05$. Participants thought women ($M = 2.91$, $SD = 1.36$) were more likely than men ($M = 2.35$, $SD = 1.12$) to contract syphilis. There were no other main effects or interactions that were statistically significant. That is, neither sexual orientation of target nor the participant's need for cognition (either alone or in combination with any of the other predictor variables) had any effect on people's perception of syphilis infection rates.

There was a main effect of target sex on the perceived percentage of HIV infection, $F(1, 124) = 19.43$, $p < .001$. Participants

thought men ($M = 3.30$, $SD = 1.38$) were more likely than women ($M = 2.29$, $SD = 1.33$) to contract HIV. There was also a main effect of need for cognition on the perceived percentage of HIV infection, $F(1, 124) = 8.00$, $p < .01$. Participants low in need for cognition ($M = 3.13$, $SD = 1.30$) were more likely than participants high in need for cognition ($M = 2.50$, $SD = 1.34$) to expect high levels of HIV infection among all targets. That is, regardless of the sex or sexual orientation of the target, participants low in need for cognition thought the infection rate of HIV was higher among all targets than did participants high in need for cognition.

There was a two-way interaction between target sex and target sexual orientation on the perceived percentage of HIV infection, $F(1, 124) = 6.67$, $p < .05$. Participants thought homosexual men ($M = 3.67$, $SD = 1.27$) were more likely than heterosexual men ($M = 2.94$, $SD = 1.41$) to contract HIV; participants thought heterosexual women ($M = 2.60$, $SD = 1.39$) were more likely than homosexual women ($M = 1.97$, $SD = 1.20$) to contract HIV. That is, homosexual men were perceived as most likely to be infected with HIV, whereas homosexual women were perceived as least likely to be infected with HIV.

Discussion

In this study, there were two hypotheses about stereotyping and attitudes towards sexual behavior. The first hypothesis was that participants would engage in stereotyping such that participants would perceive frequency of various sexual behaviors, acceptability of various sexual behaviors, and STD infection rates differently depending on the sex and sexual orientation of target groups. The second hypothesis was that participants low in need for cognition should be more likely than participants high in need for cognition to use stereotypes in their perceptions of frequency of various sexual behaviors, acceptability of various of sexual behaviors, and STD infection rates.

The first hypothesis was largely supported. Participants were engaging in some form of stereotyping about target groups whether about the target's sex, target's sexual orientation, or both. Target sex and target sexual orientation had a significant effect on the perceived frequency of sexual behaviors. For example, participants thought heterosexuals were more likely than homosexuals to engage in "normal" sexual behavior (e.g., sexual intercourse in face-to-face position). However, participants thought homosexuals were more likely than heterosexuals to engage in "abnormal" sexual behavior (e.g., inserting one or more fingers in the partner's anus).

Target sex and target sexual orientation also had a significant effect on the perceived acceptability of various sexual behaviors. Participants frequently reported sexual behaviors as less acceptable for homosexuals than for heterosexuals. For example, participants thought it was less acceptable for homosexuals to engage in sexual intercourse (in any position) or oral sex than it was for heterosexuals. The exception to this was for "unusual" sexual behaviors such as bondage, sadomasochism, and anal fisting; it was more unacceptable for heterosexuals (particularly heterosexual men) to engage in these behaviors than it was for homosexuals. For many of the behaviors, though, participants viewed heterosexual sexual behavior as *more* acceptable than homosexual sexual behavior but did not generally view homosexual sexual behavior as *unacceptable*.

Target sex and target sexual orientation also had a significant effect on the perceived infection rates of gonorrhea, chlamydia, syphilis, and HIV. However, based on the existing literature on HIV and STDs, it is unclear whether participants were engaging in stereotyping. In all cases except for syphilis, participants' perceptions matched existing CDC statistics. For example, participants thought men were more likely than women to contract HIV. According to the CDC (2005), 73% of the HIV diagnoses made in 2003 were in men. Participants also

thought homosexual men were more likely than any other target group to contract HIV. Also according to the CDC (2005), male-to-male sexual contact was responsible for 63% of new HIV infections. In the case of perceived infection rates of STDs, stereotypes were used more in personal opinions and used less in factual instances.

The second hypothesis received very limited support. Need for cognition was involved in only a few interactions. Need for cognition effects were present in only five interactions concerning perceived frequency. Need for cognition effects were present in only one interaction concerning perceived acceptability. Need for cognition effects were absent in interactions concerning perceived STD infection rates.

Taken as a whole, these results can be summarized as follows. Clearly, evidence of stereotyping was found when it came to frequency and acceptability for different groups of people. There was less evidence of stereotyping for perceptions of STD infection rates. There was virtually no evidence for differences in stereotyping between people high and low in need for cognition.

There are a few possible explanations for these results. One explanation for the difference in perceived frequency of sexual behavior is the use of stereotypes. A common stereotype about lesbians is that they do not have sex, and a common stereotype about gay men is that they are only interested in anal sex. If participants used these stereotypes when perceiving the frequency of sexual behavior, then these participants would be much more likely to under- or over-estimate the sexual behavior of lesbians and gay men, respectively, than those participants who did not rely on stereotypes.

An explanation for the pronounced difference in acceptability of sexual behavior also is the use of stereotypes. If participants hold negative stereotypes about homosexual men and women, then participants' attitudes toward homosexual sexual behavior are likely to be more negative than their attitudes toward heterosexual sexual behavior. Participants also largely reported that any

sexual behavior involving the anus was "unacceptable," and this stigmatization of a certain sexual behavior may be connected to negative attitudes toward gay men because of the stereotype that only gay men engage in anal sex.

An explanation for the consistency with actual STD infection rates could be the increase in STD awareness and education. Most students are required to take a health education class in high school and most students receive education about STDs in college. If participants learned correct information about STDs in high school or college, then participants' responses would closely match existing STD infection rates.

Need for cognition did not have as much of an effect as was hypothesized. Revisiting the literature, very few researchers have conducted studies specifically examining a possible connection between need for cognition and stereotyping. Crawford and Skowronski (1998) conducted four experiments to explore the connection between need for cognition and the use of stereotyping when processing information. These researchers found that participants high in need for cognition remembered more stereotype-consistent information than did participants low in need for cognition. Conversely, in experiments about stereotypes and judgments, participants low in need for cognition relied more on stereotypes to form judgments than did participants high in need for cognition. These researchers concluded that individuals high and low in need for cognition both use stereotypes, but individuals high and low in need for cognition use stereotypes *differently*. With respect to processing information about heterosexuals and homosexuals, it is certainly possible that individuals high in need for cognition have a different way of utilizing schemas and stereotypes than do individuals low in need for cognition. Further research on need for cognition and stereotype usage is necessary to explore this possibility.

Alternative Explanations

There are several plausible alternative explanations for the results of this study. One plausible alternative explanation for the results of this study is that participants may have engaged in socially desirable responding. Participants may not have wanted to report their true perceptions because they did not want to appear prejudiced. By engaging in socially desirable responding, participants might have felt they were making themselves look positive according to their culture's norms (Ganster, Hennessey, & Luthans, 1983). This theory of socially desirable responding is consistent with participants' perceived acceptability of sexual behaviors for all target groups. Participants largely found most sexual behaviors, including those for gay men and lesbians, to be at least somewhat acceptable. However, this theory of socially desirable responding is inconsistent with participants' perceived frequency of sexual behaviors for all target groups. Participants appeared to use stereotypes when determining how frequently target groups engaged in various sexual behaviors; participants reported very different frequencies depending on the sex and sexual orientation of the target.

However, steps were taken in designing the method of this study to minimize participants responding in a socially desirable manner. Participants were informed that their answers would be both anonymous and confidential; this eliminated the possibility that someone could link their answers to their identities. Therefore, participants should have felt comfortable reporting their honest perceptions and attitudes.

Another plausible alternative explanation for the results of this study is the validity of the modified Zuckerman scale. It is possible that in modifying the Zuckerman Heterosexual Experience Scale, the validity of this scale was compromised. Items from this original scale were reworded to fit this experiment. If rewording these items had changed this scale's validity then there would have been no pattern to responses. However,

evidence of stereotyping is present in the perceived frequency and acceptability of sexual behavior. It is clear that participants responded in a consistent and theoretically meaningful way. Therefore, this explanation (i.e., the modified scale was not valid) is possible but not plausible.

Another plausible alternative explanation for the results of this study is the participants' unknown contact with gay men or lesbians. If very few of these participants had experience with gay men or lesbians, most participants would have to rely on stereotypes because these participants did not have any other sources of knowledge to use when asked about the sexual behavior of gay men or lesbians. Researchers have demonstrated that contact with gay men and lesbians reduces stereotypes and prejudice against gay men and lesbians (e.g., Bowen & Bourgeois, 2001). In retrospect, a question could have been added to the end of the questionnaire to assess participants' prior contact with gay men and lesbians. This explanation might account for the negligible differences between perceptions and attitudes of participants high or low in need for cognition.

Limitations

There were also a few limitations of this study. One limitation of this study was sample size. The sample of this study totaled one hundred and thirty-two participants. Because there were four different questionnaires, thirty-three participants on average answered each questionnaire. The sample size of this study was adequate to compare differences between the perceptions of men and women and heterosexuals and homosexuals. However, the sample size of this study may not have been large enough to assess the interactions of those variables with need for cognition. This small sample size could account for the lack of significant results for need for cognition.

Another limitation of this study was the nature of this sample. Participants were all college students, and college students differ from the general population in several areas.

These areas include social and political beliefs, need for peer approval, and intelligence level (Sears, 1986). Most participants were female who are only representative of half the population. Additionally, researchers have shown that women tend to have more favorable attitudes than men toward homosexuals (e.g., Herek, 2002). Most participants were also Caucasian and heterosexual. Although this sample is representative of the majority of United States residents, these results cannot be generalized to members of minority groups (e.g., homosexuals, Latinos). Most participants were also between the ages of 18 and 22. The results of this study, therefore, are not applicable to the majority of the U.S. population. The results of this study are at best reflective of the perceptions and attitudes of a younger generation of American college students. It would be interesting to study the differences between the perceptions and attitudes of younger (e.g., 18-22) and older (e.g., 40+) people toward homosexual sexual behavior.

Another limitation of this study was the nature of this study's method. Participants were all asked to self-report their perceptions and attitudes. Other methods exist that may more accurately measure participants' responses. The Implicit Association Test (IAT) is one method that uses a computer to analyze the speed with which participants respond by keystroke to paired words (e.g., "good" and "old"). Attitude-consistent judgments are performed faster than attitude-inconsistent judgments (Nosek, Greenwald, & Banaji, 2005; Rudman, Greenwald, Mellott, & Schwartz, 1999). Rudman et al. (1999) conducted three experiments and reported that the IAT was a valid way to assess prejudice toward age, religion, and national origin. More research would be needed in order to assess the IAT's validity for assessing prejudice and stereotypes about gay men and lesbians.

Additionally, the scope of this study was narrow. This research was only about heterosexual men and women and homosexual men and women. It would be

useful to study people's perceptions and attitudes toward the sexual behavior of bisexual men and women. Very few studies have been done which examine individuals' attitudes toward bisexual people. Herek (2002) conducted a study in which he found people's attitudes toward bisexuals were more negative than toward any other group excluding injection drug users. People hold negative stereotypes against bisexual people, and it would be interesting and useful to know how these negative stereotypes are related to perceptions and attitudes toward bisexuals' sexual behaviors.

Conclusions

Individuals use stereotypes when thinking about sexual behaviors and when judging sexual behaviors. An individual's use of stereotypes is influenced in some cases by the sex and sexual orientation of the person about whom an individual is thinking. In a vacuum, this phenomenon would not be a problem. However, stereotypes about sexual orientation, sex, and sexual behavior are related to everything from the creation and enforcement of sodomy laws to HIV education and public policy. Stereotypes are also associated with discrimination against groups of individuals like gay men and lesbians and, in extreme cases, with violence as in the Matthew Shepard murder in 1998. The more education individuals receive about sexually transmitted diseases and sexual behaviors, the more stereotypes will be dispelled and the safer the world will be for people of all sexes and sexual orientations.

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