A Meta-Analytic Review of Research on Gender Differences in Sexuality, 1993–2007

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In 1993 Oliver and Hyde conducted a meta-analysis on gender differences in sexuality. The current study updated that analysis with current research and methods. Evolutionary psychology, cognitive social learning theory, social structural theory, and the gender similarities hypothesis provided predictions about gender differences in sexuality. We analyzed gender differences in 30 reported sexual behaviors and attitudes for 834 individual samples uncovered in literature searches and 7 large national data sets. In support of evolutionary psychology, results from both the individual studies and the large data sets indicated that men reported slightly more sexual experience and more permissive attitudes than women for most of the variables. However, as predicted by the gender similarities hypothesis, most gender differences in sexual attitudes and behaviors were small. Exceptions were masturbation incidence, pornography use, casual sex, and attitudes toward casual sex, which all yielded medium effect sizes in which male participants reported more sexual behavior or permissive attitudes than female participants. Most effect sizes reported in the current study were comparable to those reported in Oliver and Hyde's study. In support of cognitive social learning theory, year of publication moderated the magnitude of effect sizes, with gender differences for some aspects of sexuality increasing over time and others decreasing. As predicted by social structural theory, nations and ethnic groups with greater gender equity had smaller gender differences for some reported sexual behaviors than nations and ethnic groups with less gender equity. Gender differences decreased with age of the sample for some sexual behaviors and attitudes.

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Numerous empirical studies have examined the stereotype that men have more sexual experience and hold more permissive sexual attitudes than women (Crawford & Popp, 2003; Marks & Fraley, 2006). To synthesize these data, Oliver and Hyde (1993) conducted a meta-analysis over a decade ago, which provided a comprehensive overview of research at the time on gender differences in reported sexual behaviors and attitudes. Since this study was published, over 15 years of research have been conducted, rendering it out-of-date. The current study provides an update to Oliver and Hyde's meta-analysis using current research and up-to-date methods.

Oliver and Hyde's (1993) meta-analysis considered 177 studies to estimate the magnitude of gender differences in reported sexual behaviors and attitudes. Ten behaviors were assessed, including reported incidence of vaginal sex, extramarital sexual behavior, oral sexual behavior, and frequency of intercourse. Eleven attitudes were assessed, including attitudes toward casual sex, attitudes toward homosexuality, general sexual permissiveness, and attitudes toward masturbation. The results indicated that men re-

ported more sexual activity and more permissive attitudes than women for many, but not all, of the measures. In particular, that meta-analysis indicated that men were much more likely than women to report masturbation ($d = 0.96$) and permissive attitudes toward casual sex ($d = 0.81$).

Numerous cultural shifts have occurred during the years since Oliver and Hyde (1993) reviewed the literature, warranting a new meta-analysis using current research. During this time, Internet use has expanded dramatically, providing millions of people access to meet potential sexual partners and view pornography online (Cooper, Boies, Maheu, & Greenfield, 2000). Additionally, in the United States and many other nations, civil liberties for gay men and lesbians have become a hot-button political issue affecting the sexual attitudes of many voters (Avery et al., 2007). These are just a few of the many changes in sexual culture that have occurred during the last 15 years that may affect current sexual behaviors and attitudes.

Research suggests that changes in sexual culture have been paralleled by changes in sexual behaviors and attitudes. Wells and Twenge (2005) conducted a cross-temporal meta-analysis using studies published between 1943 and 1999, which indicated that reported sexual behaviors and attitudes became more liberal across time. Specifically, the percentages of people who reported being sexually active, participating in oral sex, and holding permissive attitudes toward premarital intercourse increased over time, whereas reported incidence of sexual guilt and reported age at first

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intercourse decreased. In particular, women, but not men, reported more sexual activity and more permissive attitudes across time, thus reducing the gender gap in sexuality (Wells & Twenge, 2005). However, this study presented only a small subset of the changes in sexuality over time by examining reports of only three sexual behaviors and two sexual attitudes and by including gender as a moderator rather than a central component of the analysis.

Another significant change since the previous meta-analyses is the inclusion of sex-relevant variables in several large national data sets that are based on national probability sampling. Hedges and Nowell (1995) argued that including large, nationally representative data sets in meta-analytic reviews is essential to counteract sampling biases that occur in convenience samples. Thousands of participants took part in national surveys to compile large data sets such as the National Longitudinal Study of Adolescent Health (Add Health; UNC Population Health, 2003), the National Longitudinal Study of Youth (NLSY; U.S. Bureau of Labor Statistics, 1997), the National Health and Social Life Survey (NHSLS; Laumann, Gagnon, Michael, & Michaels, 1994), the Australian Study of Health and Relationships (ASHR; Smith, Rissel, Richters, Grulich, & de Visser, 2003), Britain's National Survey of Sexual Attitudes and Lifestyles (NATSAL II; National Center for Social Research & London School of Hygiene & Tropical Medicine, 2001), the Youth Risk Behavior Surveillance Study (YRBSS; Centers for Disease Control and Prevention [CDC], 2001), and the General Social Survey (GSS; National Opinion Research Center, 2006). These national data sets provide an exceptional opportunity for meta-analytic review to combine responses from several thousand nationally representative participants. Their inclusion also counteracts potential publication bias (Rosenthal, 1979) because the data are accessed independent of published articles.

An additional reason for a new meta-analysis on gender differences in sexual behaviors and attitudes is the introduction of new meta-analytic techniques that were not used by Oliver and Hyde (1993). That meta-analysis used a fixed-effects method, which assumes that between-studies variability in effect sizes can be completely explained by moderator variables coded by the researchers (Lipsey & Wilson, 2001). More recently, random-effects and mixed models have been introduced (Hedges & Vevea, 1998; Lipsey & Wilson, 2001). The random-effects model assumes that between-studies variability in effect sizes is due to random differences (both study-level sampling error and subject-level sampling error) that cannot be identified and accounted for. The assumptions of the fixed- and random-effects models are at opposite ends of the spectrum, and each is in some sense untenable—the fixed-effects model because it assumes that all variability in effect sizes is due to the coded moderators, and the random-effects model because it assumes that none of the variability in effect sizes can be accounted for systematically. The mixed-effects model offers an intermediate option based on a reasonable set of assumptions, that variance in effect sizes is due partly to systematic factors (coded moderator variables) and partly to unidentified random study-level sources (Lipsey & Wilson, 2001). The current study used a mixed-effects model.

A new meta-analysis using current literature, large national data sets, and up-to-date statistical methods is necessary to assess gender differences in reported sexual behaviors and attitudes. The current study updated Oliver and Hyde's (1993) meta-analysis to

provide a more accurate description of gender differences in current sexual culture.

Theoretical Frameworks

Several theories offer predictions about patterns of gender differences in sexual behaviors and attitudes. Here we review the accounts of evolutionary psychology, cognitive social learning theory, and social structural theory for gender differences in sexuality.

Evolutionary Psychology

Evolutionary psychology states that gender differences in sexuality are a result of evolution and a product of men and women differing in their strategies for genetic success (Buss, 1995). Reproductive success is achieved by maximizing the number of viable offspring who pass on their parents' genes to successive generations. A prominent interpretation of evolutionary psychology applied to sexuality is sexual strategies theory (Buss, 1998; Buss & Schmidt, 1993). This theory proposes that women focus on ensuring the survival of each offspring by choosing a mate who will provide resources for their family. Because women are able to give birth to and care for only a limited number of children, ensuring offspring survival is their most effective means of genetic success. However, sexual strategies theory argues that men, who are not limited in their reproductive capacity, historically desired many short-term sexual partners, hoping that these unions would result in children to pass on their genes. Although the goal of most modern men may not be to sire many children with short-term partners, this theory proposes that a desire for multiple partners and frequent intercourse evolved for men across many previous generations. Therefore, the theory proposes that gender differences in sexual strategies produce gender differences in sexuality (Buss & Schmidt, 1993). In particular, this theory suggests that men would be more likely than women to engage in casual sexual behaviors, have many sex partners, and engage in extrarelational sexual behaviors. In terms of sexual attitudes, evolutionary psychology predicts that men would be more accepting than women of attitudes requiring little sexual commitment, such as attitudes toward premarital sex, attitudes toward extramarital sex, attitudes toward casual sex, and general sexual permissiveness.

Evolutionary psychology proposes that both men and women engage in short-term and long-term mating relationships and their mate preferences differ depending on the anticipated duration of the relationship (Buss & Schmitt, 1993). For example, in short-term relationships, men are not particularly choosy about whom they mate with; however, in long-term relationships they prefer to maintain paternity certainty by choosing women who are sexually exclusive. Sexual strategies theory holds that women prefer men with immediate resources in short-term mating but prefer men with the potential for future resources when seeking long-term mates. The theory proposes that men are more likely than women to prefer short-term mating, such as casual relationships, but both men and women typically engage in long-term relationships such as marriage at some point in their lives (Buss & Schmidt, 1993). One study found that women preferred long-term relationships to short-term relationships throughout their teens, 20s, and 30s, but as men aged their desire for short-term relationships decreased and

their desire for long-term relationships increased (Mathes, King, Miller, & Reed, 2002). Therefore, we predicted that gender differences in sexual behaviors and attitudes would be larger among younger participants than among older participants because male and female adolescents and young adults prefer different mating strategies, but both older men and women prefer long-term mating strategies.

Cognitive Social Learning Theory

According to cognitive social learning theory, learning takes place by observing others' behaviors, analyzing those behaviors, and modeling them (Bandura, 1986; Bussey & Bandura, 1999). Although direct observations of others' sexual behaviors are rare, sexual behaviors and attitudes that are discussed on television, in magazines, and on the Internet are predicted to influence consumers' sexuality. In fact, research demonstrates that increased exposure to media is associated with more sexually permissive behaviors and attitudes (Chia, 2006; Zurbriggen & Morgan, 2006). With globalization, these Western media images are becoming increasingly common in countries around the world (Crothers, 2007).

A recent content analysis of television programs reported that sex scenes on television nearly doubled from 1998 to 2003 (Kunkel et al., 2003). These sexualized media images have increased more dramatically for women than for men (Kunkel et al., 2003). Cognitive social learning theory predicts that women will imitate the media images of sexually permissive women and thus decrease the gender gap for sexual behaviors and attitudes across time. In particular, we predicted that gender difference would decrease across time for number of sex partners, casual sex, and attitudes toward premarital sex in accordance with increased media portrayal of women engaging in these behaviors. Research on gender differences in sexuality supports this hypothesis. Wells and Twenge (2005) found a trend over time toward reporting more sexual experience and more liberal sexual attitudes in the United States and Canada. Oliver and Hyde's (1993) study reported a similar finding with reduced gender differences in sexuality from 1975 to 1990.

Social Structural Theory

Social structural theory proposes that psychological gender differences are a result of the division of labor by gender and the gender disparity in power (Eagly & Wood, 1999). Historically, men, who are larger and have more upper body strength than women, specialized in labor outside the home, whereas women, who have the ability to lactate, specialized in child care. This division of labor separated men into the role of breadwinner and women into the role of homemaker (Eagly & Wood, 1999). In many societies the role of breadwinner is associated with more power and status than the role of homemaker, providing men with more power than women. Even in the United States today there is a gender hierarchy of power, in which men control more resources and have more influence than women (U.S. Bureau of Labor Statistics, 2008).

In terms of sexuality, this theory proposes that gender inequality of power contributes to the idea that women are less valuable than men and are appropriate objects of male sexual satisfaction (Hekma, 2008). Therefore, men, who are more self-sufficient and

dominant, may devalue women as sexual objects, using them for casual relationships with little commitment. Because women have less power and earning potential than men, they must rely on men as their providers and seek long-term, committed relationships with powerful men to obtain resources (Eagly & Wood, 1999; Eagly, Wood, & Johanssen-Schmidt, 2004). Thus, social structural theory proposes that gender differences in sexuality are a result of gender differences in power.

Although this gender disparity in power is true for most areas of the world, the magnitude of the power differential varies cross-culturally (Eastwick et al., 2006). Societies with a large gender difference in power are expected to have greater gender differences in sexuality than more egalitarian societies. The United Nations Development Programme (UNDP) has developed a gender empowerment measure (GEM), which assesses the extent of gender equality in countries across the world (UNDP, 1995). Social structural theory would predict that countries with higher scores on the GEM (and thus greater gender equality) would have smaller gender differences in sexuality compared with countries with less gender equality. Eagly and Wood (1999), in fact, found a positive correlation, across nations, between the magnitude of gender inequality on the GEM and the magnitude of gender differences in mate preferences.

Cultural variations in power may exist not only cross-nationally but also within ethnic groups in the United States. For example, European American culture still contains residual effects of the Victorian era (Glick & Fiske, 1996). According to the Victorian ideal, women are expected to be sexually chaste, whereas men are expected to be sexually experienced. Similarly, the concepts of machismo and marianismo in Hispanic American culture indicates that men should be virile and dominant, whereas women should be loving and committed (Espin, 1986). These values are likely to be incorporated into sexuality, widening gender differences in reported sexual behaviors and attitudes among European and Hispanic Americans. Gender differences in the breadwinner role are also different across U.S. ethnic groups. The gender gap for employment rate in the U.S. labor force is smaller among African Americans (63% for women, 69% for men) than it is for European Americans (59% for women, 73% for men), Latin Americans (57% for women, 79% for men), and Asian Americans, (58% for women, 73% for men; U.S. Bureau of Labor Statistics, 2008). Social structural theory might predict that these gender differences in ethnic culture would be associated with gender differences in sexuality.

The Gender Similarities Hypothesis

The gender similarities hypothesis suggests that men and women are very similar for most, but not all, psychological variables. Evidence from numerous meta-analyses supports this hypothesis by indicating that gender differences are small or close to zero in areas such as cognitive abilities, psychological well being, and self-esteem (Hyde, 2005). Although the gender similarities hypothesis is not a theory per se, it deserves to be mentioned here as an alternative hypothesis to those theories predicting gender differences.

Oliver and Hyde's (1993) meta-analysis was among those reviewed to provide evidence for this hypothesis. On the basis of this review, Hyde (2005) concluded that many gender differences in

sexuality, such as sexual satisfaction, were negligible. However, some gender differences in sexuality, particularly gender differences in masturbation and attitudes toward casual sex, were exceptions to the gender similarities hypothesis. In accordance with this hypothesis, we predicted that gender differences would be small for many sexual behaviors and attitudes. However, we expected that some sexual behaviors, particularly those related to masturbation and casual sex, would be exceptions to this hypothesis.

Although evolutionary theory, cognitive social learning theory, and social structural theory all propose different mechanisms that may account for gender differences in sexuality, they all agree that gender differences are likely to exist. Nevertheless, the gender similarities hypothesis is not necessarily contradictory to the theories reviewed here. Although this hypothesis proposes gender similarities for many sexual behaviors and attitudes, the exceptions support evolutionary psychology and cognitive social learning theory. In particular, gender differences for attitudes toward casual sex are proposed by both cognitive social learning theory and evolutionary psychology and are acknowledged as exceptions to the gender similarities hypothesis. Also in accordance with the gender similarities hypothesis, cognitive social learning theory and social structural theory propose that gender differences, if they exist, are not static or universal but rather may be moderated by contextual variables such as secular trends and cultural attitudes toward gender empowerment.

Summary of Theories

In general, the theories presented here are not mutually exclusive or competing. Evolutionary psychology, cognitive social learning theory, social structural theory, and even the gender similarities hypothesis all agree that gender differences are evident for some measures of sexuality and that men typically are more sexually active and more sexually permissive than women. Both cognitive social learning theory and social structural theory propose that these differences may be moderated by additional variables such as secular trends (as indexed by year of publication), cultural attitudes toward gender empowerment, and ethnocultural differences in sex roles (which should vary with ethnicity). It is likely that mechanisms from multiple theories contribute to a multifaceted explanation of gender differences in sexuality and that gender similarities will be found for some variables.

The Current Study

The current study updated Oliver and Hyde's (1993) meta-analysis by synthesizing research on gender differences in sexual behaviors and attitudes from 1993 to 2007. In addition to reviewing current sex research, this study improved on the previous meta-analysis by updating the list of sexual behaviors and attitudes to reflect contemporary research, by including national data sets based on probability sampling and by employing up-to-date statistical techniques.

Method

The Sample of Studies

Two strategies were used to identify relevant research. In Analysis I, relevant studies were collected by computerized literature searches. In Analysis II, seven large data sets, based on national probability sampling, were analyzed.

Analysis I.   We performed literature searches for all published studies and unpublished dissertations written in English from January 1993 to March 2007 using the search engines PsycINFO and PubMed. PsycINFO uses subject indices to categorize related studies. As in the Oliver and Hyde (1993) meta-analysis, the subject indices that were searched in PsycINFO were "psychosexual behavior" and "sexual attitudes." Whitley and Kite (1995) suggested the addition of the subject index "homosexuality (attitudes toward)." Therefore this term was added to the PsycINFO search in the current study. To retrieve more relevant studies, we performed an additional literature search in the PubMed search engine. PubMed does not use the same subject indices as PsycINFO; therefore the search terms used for PubMed were "sexual behavior" and "sexual attitudes." All results from these searches were uploaded into RefWorks, an online reference manager, and all duplicate references were deleted. The result of the initial searches from PsycINFO and PubMed after all duplicate references were deleted was 20,260 studies. Jennifer L. Petersen examined each abstract for relevant content and excluded studies from analysis for any of the following reasons: (a) Participants were from a special population that was expected to have different sexual behaviors and attitudes than the general population (e.g., sex workers, participants who had HIV/AIDS or were at risk of HIV/AIDS); (b) the study focused on nonconsensual sex; (c) the sample consisted of only one gender; (d) the study reported no empirical data; (e) the study reported secondary analysis of data from another source, such as a large national data set; (f) the research was qualitative; (g) the research was conducted on nonhumans; and (h) the study did not measure relevant variables. If the abstract did not give enough information to justify exclusion, the article or dissertation was obtained.

After all abstracts were screened, Petersen coded the remaining 1,586 studies. Every study was either available online, ordered through interlibrary loan, or obtained from the author. Seven-hundred eighty-six of the articles and dissertations did not provide enough information in the abstract to justify exclusion, and once obtained, they were discovered to be unusable based on the criteria listed above. If the study assessed relevant information but the necessary statistics were not presented in the article or dissertation (e.g., did not give data separately for men and women), the first author of each study that did not report relevant statistics was contacted. The American Psychological Association (2001) requires authors to keep data for 5 years after publication, and the response rate from authors diminishes substantially with time since publication. Therefore authors were contacted only for studies published after 2001. Twenty-nine of the 99 authors who were contacted responded with relevant information. If authors did not respond, the study was not used. Studies presenting information for more than one sample, such as different age or ethnic groups, were coded for each individual sample. To maintain independence of samples, we noted longitudinal studies using the same data and used only the most recent wave of data collection.

Analysis II.   Following the suggestion by Hedges and Nowell (1995), we included seven large national data sets based on probability sampling. These studies were nationally representative and often oversampled ethnic minority participants. We considered these large data sets independently from studies uncovered in

literature searches to avoid the disproportionate effect they would have on a weighted mean effect size calculation and to separate these data sets with superior sampling criteria from convenience samples.

While Petersen reviewed all abstracts from the literature search, she made a list of studies that were omitted from Analysis I because they used large national data sets. The large data sets used in these studies were selected for Analysis II if they were nationally representative, based on probability sampling, and included relevant variables. If more than one wave of data included relevant variables, we selected the most recent wave in keeping with our goal of presenting the most current data. Longitudinal data sets included were Wave 3 of Add Health (UNC Population Health, 2003) and Round 9 of the NLSY (U.S. Bureau of Labor Statistics, 1997). Analysis II also included five nonlongitudinal data sets: NHSLS (Laumann et al., 1994), ASHR (Smith et al., 2003), NATSAL II (National Center for Social Research & London School of Hygiene & Tropical Medicine, 2001), YRBSS (CDC, 2001), and GSS (National Opinion Research Center, 2006). The NATSAL, YRBSS, and GSS included relevant variables at multiple time points from separate samples. Because they were not longitudinal and did not violate independence, we included each assessment of these studies from 1990 to 2007 in Analysis II to provide a more precise assessment of trends over time than Analysis I could provide.

Measures

To compare the effect sizes from the current study with those of the Oliver and Hyde (1993) meta-analysis, we adopted the original definitions for each sexual behavior provided by Oliver and Hyde. The only exception is that the term *homosexual behavior* used in Oliver and Hyde's study was changed to *same-gender sexual behavior* in the current study. Although the definition remains the same, the term *same-gender sexual behavior* has become standard in the literature in order to include individuals who do not identify as homosexual. The only item that was not coded from the Oliver and Hyde meta-analysis was "incidence of kissing." Few studies between 1993 and 2007 measured this behavior. However, several additional behaviors were added to the current study. Incidence of anal sex, casual sex, pornography use, and condom use were added to the original list of sexual behaviors in Oliver and Hyde's study based on their frequency of occurrence in the literature.

It is worth noting that all these variables are based on self-reports or the reports of others in the case of parents reporting on their young children. Self-reports are the dominant method of measurement in sex research because the behaviors are sensitive and private and therefore are not amenable to observation. Studies of the reliability of these self-reports, for example, assessing interpartner agreement or comparing implicit associations with self-reports, generally indicate good reliability, especially for reports of recent events (e.g., Hyde, DeLamater, Plant, & Byrd, 1998; Snowden, Wichter, & Gray, 2008).

Fourteen sexual behaviors were defined as follows:

1. Incidence of petting: Any experience with petting. This included petting with clothes on or clothes off.

2. Frequency of intercourse: The frequency of heterosexual vaginal intercourse.

3. Incidence of intercourse: Any experience with heterosexual, vaginal intercourse.

4. Age at first intercourse: The age at which the respondent first experienced vaginal intercourse.

5. Number of sexual partners: Total number of partners with whom the respondent reported sexual intercourse.

6. Oral sex: Incidence or frequency of performing or receiving heterosexual oral sex.

7. Anal sex: Incidence or frequency of receptive or insertive anal sex. Studies often did not distinguish between same-gender and cross-gender anal sex. Because anal sex is not likely among same-gender female partners, inclusion of same-gender anal sex in this category would inflate the gender difference. Therefore, when the distinction was made, same-gender anal sex was coded as "same-gender sexual behavior" and not as "anal sex."

8. Casual sex: Incidence or frequency of engaging in sexual behaviors with a stranger or a casual acquaintance.

9. Same-gender sexual behavior: Incidence or frequency of any same-gender sexual behavior.

10. Extramarital sex: Incidence or frequency of extramarital sexual behavior.

11. Condom use: Incidence or frequency of using a condom during sexual activity.

12. Masturbation: Incidence or frequency of masturbation.

13. Pornography use: Incidence or frequency of purposeful exposure to any pornographic material.

14. Cybersex: Incidence or frequency of cybersex, including having a sexual relationship through the Internet. Viewing pornography on the Internet was coded as "pornography use," not "cybersex."

In addition to the original sexual attitudes assessed by Oliver and Hyde (1993), attitudes toward condoms and attitudes toward gay marriage or civil unions were included based on their prevalence in current research. Based on recommendations from Whitley and Kite (1995), "attitudes toward gay men" and "attitudes toward lesbians" were coded in addition to "attitudes toward homosexuals" as coded by Oliver and Hyde. All other definitions of sexual attitudes were adopted from the Oliver and Hyde study, with the exception of attitudes toward the double standard. Although Oliver and Hyde coded endorsement of the double standard as the belief that there should be different standards for men and women regarding premarital sex, a "new" double standard indicates that men and women are judged by different standards for aspects of sexuality such as number of sexual partners and casual sex (Robinson & Jedlicka, 1982).

Sixteen sexual attitudes were defined as follows:

1. General sexual permissiveness: Attitudes about sexuality, such as a general measure of sexual permissiveness, or a composite score of attitudes toward multiple sexual behaviors. An example is Hendrick and Hendrick's (1985) Sexual Permissiveness Scale.

2. Premarital sex: Attitudes concerning the acceptability of sexual intercourse before marriage.

3. Casual sex: Attitudes toward sexual behaviors in a casual dating relationship or among partners who are not committed to each other.

4. Extramarital sex: Attitudes concerning the acceptability of extramarital sexual intercourse.

5. Sex while engaged to be married: Attitudes concerning the acceptability of sexual intercourse between partners who are engaged to be married to each other.

6. Sex–commitment: Attitudes toward sex between partners who are emotionally committed or are in love with each other.

7. Masturbation: Attitudes toward masturbation.

8. Condoms: Attitudes toward using a condom during sexual intercourse. Larger values indicated more positive attitudes toward using a condom during intercourse.

9. Double standard: Endorsement of any sexual double standard that implies that male and female sexual behaviors should be judged by different standards, such as the belief that casual sex is acceptable for men but not for women.

10. Fear/anxiety/guilt: Reports of negative feelings toward sexual behaviors, including anxiety, fear, guilt, shame, or disgust. Examples include Mosher's Sexual Guilt Index (Mosher, 1979).

11. Sexual satisfaction: Satisfaction or contentment with one's sexual activity, either in the current relationship or in general.

12. Homosexuals (general): Any measure of reported attitudes toward individuals who identify as homosexual or engage in same-gender sexual behaviors. This measure was used only when gender of the same-gender individuals was not specified; when gender was specified, it was coded as attitudes toward gay men or lesbians.

13. Gay men: A more specific measure than attitudes toward homosexuals, this refers specifically to reported attitudes toward people who identify as gay or men who engage in same-gender sexual behaviors.

14. Lesbians: Attitudes toward people who identify as lesbian or women who engage in same-gender sexual behaviors.

15. Homosexual civil liberties: Attitudes toward civil rights for people who identify as homosexual such as attitudes about employment discrimination. This measure does not include attitudes toward gay marriage or civil unions.

16. Civil unions/gay marriage: Attitudes toward granting marriage or civil union rights to same-gender couples.

Coding the Studies

Studies were coded for both information essential to computing effect sizes and for moderating variables. We double-coded 50 studies to compute interrater agreement. The following study characteristics were coded.

Number of male and female participants in the sample. Interrater reliability was $r = .80$ for number of male participants and $r = .83$ for number of female participants.

Statistics on gender differences in sexual behaviors and attitudes. Interrater agreement on gender differences in sexual behaviors and attitudes (e.g., means, standard deviations, frequencies) was $r = .99$.

Publication year. Interrater consistency for publication year was $r = .99$.

Participants' age group. Age group was classified as a continuous moderator because it was coded on an ordinal scale with seven categories. "Infants" were coded as participants younger than 4 years. Reports about this age group were typically given by parents or teachers. "Children" were coded as students in elementary or middle school or participants between the ages of 5 and 13. "Adolescents" were coded as high school students or participants between the ages of 14 and 17. "Young adults/college students" were samples with participants between the ages of 18 and 30 including college students or graduate students. "Adults" were coded as participants between the ages 30 and 55. "Older adults" were coded as samples older than 55 years, participants in nursing homes, or samples of retired persons. If a sample did not fall within the defined age groups, we coded it for the age group representing the majority of participants. Interrater consistency for age group was $\kappa = .72$.

Gender empowerment. Gender empowerment was calculated by using the sample's nationality and the United Nations' GEM. Sample nationality was coded as the nation in which the sample was recruited or the primary nationality of the participants. Interrater consistency for country of origin was $\kappa = .94$. Even though search criteria were limited to studies published in English, 41% of the studies were from non-English-speaking nations. The sample's nationality for each study was given a gender empowerment score based on the GEM (UNDP, 1995). This measure is based on the ratio of women to men on the following characteristics: (a) percentage of parliamentary seats; (b) percentage of legislators, senior officials and managers, and professional and technical positions; and (c) estimates of income. GEM scores could potentially range from 0 to 1 with high scores indicating a greater degree of equality. For example, the United States has a GEM of .762, and Turkey has a GEM of .298. This difference can be compared with differences in the estimated female-to-male ratio for earned income (.63 in the United States and .35 in Turkey), and the percentage of professional workers who were female (56% in the United States and 32% in Turkey). For further details on calculating the GEM, see United Nations Development Programme (1995, 2003).

Ethnicity. To investigate variation among U.S. ethnic groups in the magnitude of gender differences, we coded studies conducted in the United States for ethnicity. A sample was categorized as belonging to a particular ethnic group if 85% or more of participants reported belonging to that group. The following ethnic groups were coded: "White/Caucasian," "Black/African American," "Asian American," and "Hispanic/Latino/a." The sample was coded as "mixed" when the largest ethnic group included less than 85% of participants. The mixed category was reported for 45% of U.S. studies, and 16% did not report ethnicity. Studies with mixed or unreported ethnicity were not included in the analysis of ethnicity because interpretation of the results would have been unclear. Interrater consistency for ethnicity was κ = .84.

Statistical Analysis

Analysis I. The effect size d was used as a measure of the magnitude of gender differences in sexuality. The effect size was calculated as the mean score for male participants minus the mean score for female participants divided by the pooled within-gender standard deviation. Lipsey and Wilson (2001) summarized a variety of formulas for computing d from relevant statistics (e.g., frequencies, t tests, F values) that were used when means and standard deviations were not available. Effect sizes for individual samples were weighted by the inverse of the variance (using the mixed-effects model; Lipsey & Wilson, 2001), then averaged across all studies for each outcome variable. Positive effect sizes indicated that male participants reported more sexual experience or permissive attitudes than female participants, whereas negative values indicated that female participants reported more sexual experience or permissive attitudes than male participants. Cohen (1977) established a conventional interpretation of effect sizes in which $d = 0.20$ is considered a small effect, $d = 0.50$ is a medium-sized effect and $d = 0.80$ is a large effect. These guidelines are used throughout this article for interpreting results. It is important to note that effect sizes estimate the magnitude of the gender difference and not the frequency of the behavior or tolerance of the attitude. For example, a small effect size for number of sex partners indicates that men and women reported a similar number of partners but does not indicate whether they reported many or few partners.

Once mean weighted effect sizes for the current study were computed, they were compared with mean weighted effect sizes from Oliver and Hyde (1993). Significant differences between the two meta-analyses were determined by a z score calculated as the mean effect size from the current study subtracted from the mean effect size from the Oliver and Hyde study, divided by the square root of the sum of the variability for both studies (Hedges & Olkin, 1985).

We conducted homogeneity analyses to determine the amount of variability across effect sizes in the current study using mixed-model formulas provided by Lipsey and Wilson (2001). Significant homogeneity statistics (Q_T) indicate that there is significant variability between the studies. When significant heterogeneity was found in Analysis I, the mixed-effects model was used to account for variability among effect sizes. The mixed-effects model allows both moderator variables and random error to account for the variation between studies (Lipsey & Wilson, 2001). After moderators were taken into account, a random variance component (v) was estimated from the residual variance. This random variance component was added to the standard errors, and inverse variance weights were recalculated with the new standard errors (Lipsey & Wilson, 2001).

A weighted ordinary least squares (OLS) regression examined the variance in effect sizes due to age group, year of publication, and the GEM. All three variables were added simultaneously as predictors of gender differences for each behavior and attitude. Ethnicity could not be included in this regression equation because (a) it was coded only for U.S. studies and thus interfered with the GEM, and (b) only 6% of all studies (U.S. and international) reported ethnicity for a predominant ethnic group, which would have severely limited the number of studies in the regression because of missing data. Therefore a separate weighted OLS regression equation examined variance in effect sizes due to age group, publication year, and ethnicity for U.S. studies that reported ethnicity. Ethnicity was dummy coded with "Whites" as a reference group because it was the most commonly reported ethnicity. Lipsey and Wilson's (2001) macros were used to compute the mixed-effects model.

Analysis II. The same statistical methods used in Analysis I were used to compute effect sizes for data sets included in Analysis II. A mean weighted effect size was calculated across all data sets. To maintain independence of samples, we included only the most recent assessment in the mean weighted effect size calculation for data sets with longitudinal data. Homogeneity analyses indicated whether significant variability existed among the effect sizes across studies. We computed a comparison of weighted mean effect sizes between Analysis I and Analysis II for each sexual behavior and attitude using the same z transformation procedure used to compare Analysis I with the Oliver and Hyde (1993) study.

The moderator variables age group, GEM, and ethnicity were not applied to Analysis II because there were only seven large data sets, and the characteristics for most moderators were similar across studies. However, a weighted OLS regression equation accounted for variability in year of data collection for multiple assessments within the NATSAL, YRBSS, and GSS using the mixed-effects model. When year of data collection was identified as a significant moderator, this effect was further explored by conducting separate OLS regressions on the raw data for the measure of interest for male and female participants to determine which group changed at a faster rate.

Publication bias. In many meta-analyses, publication bias and the file drawer effect are concerns (Rosenthal, 1979). The concern is based on the systematic tendency for studies with significant effects to be published and for those with no significant effects to be relegated to file drawers, where they are invisible to the meta-analyst. Three features of this meta-analysis serve to counteract potential publication bias: (a) unpublished dissertations were included in Analysis I, (b) Analysis II was based on large national data sets that are available independent of publication, and (c) the search terms for Analysis I did not include the word *gender*. Had we included this search term, it might well have introduced bias toward studies that found a significant gender difference.

Nevertheless, for the sake of completeness, we conducted Egger's linear regression method to detect publication bias among the studies in Analysis I as a statistical test of funnel plot asymmetry (Egger, Davey Smith, Schnieder, & Minder, 1997). A funnel plot is a scatter plot of the effect size estimates against some measure of study size. An asymmetrical funnel plot indicates publication bias. Although funnel plots are useful, they are primarily a visual

tool subject to individual interpretation. Egger's linear regression model proposes a statistical method for analyzing funnel plot symmetry. This method suggests that a regression of the standard normal deviate (effect size divided by the standard error) on its precision (1 divided by the standard error) would produce a regression line with a *y*-intercept of zero if it was symmetrical (Egger et al., 1997). An asymmetrical funnel plot that exhibits publication bias would have a regression line with a *y*-intercept that was not equal to zero. We applied this method to all outcome variables to detect publication bias in Analysis I.

Results

Analysis I

The final count of usable studies in Analysis I was 730, yielding 834 independent samples with a total of 1,419,807 participants (682,863 male and 736,944 female). These studies were published between 1993 and 2007, with a sample mean age ranging from 4 to 83 years. Samples represented 87 countries from six continents. Within the United States, participants represented ethnic back-

grounds including European Americans, African Americans, Hispanic Americans, Asian Americans, and Native Americans.

Table 1 provides the mean weighted effect sizes for all sexual behaviors and attitudes. All the gender differences in reported sexual behavior were larger than would be expected by chance. Although male participants reported more sexual experience for many of the measures, the effect sizes were mostly in the small range ($d \leq 0.36$) according to Cohen's criteria, with 28% of the effect sizes for sexual behaviors less than or equal to 0.10. Compared with female participants, male participants were somewhat more likely to report petting, intercourse incidence, frequent intercourse, having a younger age at first intercourse, having more sexual partners, oral sex, anal sex, having more extramarital affairs, using condoms, and engaging in cybersex. Female participants were somewhat more likely than male participants to report same-gender sexual behavior. Medium effect sizes ($0.36 < d < 0.66$) indicated that male participants were more likely than female participants to report engaging in casual sex, masturbation, and pornography use. None of the effect sizes for gender differences in sexual behaviors were large ($d \geq 0.66$).

Table 1
Descriptive Statistics for Gender Differences in Reported Sexual Behaviors and Attitudes

Measure	k[a]	d[b]	95% CI	Q_T[c]	v[d]
Self-reported behaviors					
Petting (I)	38	0.06	[0.05, 0.08]	1241.47**	0.05
Intercourse (F)	49	0.10	[0.08, 0.12]	966.19**	0.10
Intercourse (I)	394	0.16	[0.15, 0.16]	12513.17**	0.07
Age at first sex	127	0.20	[0.19, 0.21]	15717.98**	0.37
Number of partners	256	0.36	[0.35, 0.36]	8672.43**	0.08
Oral sex (I/F)	81	0.06	[0.05, 0.07]	693.05**	0.01
Anal sex (I/F)	72	0.09	[0.08, 0.10]	1083.23**	0.02
Casual sex (I/F)	69	0.38	[0.37, 0.39]	3199.99**	0.11
Same-gender sex (I/F)	76	−0.05	[−0.06, −0.04]	1413.68**	0.02
Extramarital sex (I/F)	30	0.33	[0.31, 0.35]	715.46**	0.09
Condom use (I/F)	278	0.15	[0.14, 0.15]	6405.56**	0.05
Masturbation (I/F)	66	0.53	[0.51, 0.55]	2518.13**	0.26
Pornography (I/F)	25	0.63	[0.39, 0.85]	1756.69**	0.32
Cybersex (I/F)	3	0.14	[0.08, 0.19]	0.88	0.00
Self-reported attitudes					
General permissiveness	29	0.21	[0.17, 0.24]	147.68**	0.05
Premarital sex	41	0.17	[0.15, 0.19]	1597.64**	0.11
Casual sex	10	0.45	[0.39, 0.50]	36.85**	0.03
Extramarital sex	10	0.01	[−0.01, 0.04]	71.45**	0.03
Sex when engaged	6	0.02	[−0.04, 0.07]	85.74**	0.08
Sex with commitment	10	−0.18	[−0.23, −0.13]	287.92**	0.21
Masturbation	10	0.02	[−0.03, 0.07]	80.91**	0.07
Condom use	17	0.04	[0.02, 0.07]	1094.21**	0.22
Double standard	7	0.10	[0.03, 0.16]	17.49**	0.02
Fear/anxiety/guilt	5	−0.19	[−0.26, −0.12]	55.55**	0.10
Sexual satisfaction	29	0.17	[0.15, 0.18]	443.26**	0.03
Homosexuality	58	−0.13	[−0.15, −0.10]	497.57**	0.08
Gay men	40	−0.18	[−0.20, −0.17]	388.31**	0.03
Lesbians	28	−0.02	[−0.04, 0.00]	92.39**	0.01
Gay rights	3	−0.20	[−0.32, −0.11]	9.07*	0.03
Gay marriage	3	−0.29	[−0.39, −0.19]	8.33*	0.02

Note. CI = confidence interval; I = incidence; F = frequency.
[a] Number of studies used to compute each mean effect size.   [b] Negative values indicate that female participants reported more sexual experience or more sexually permissive attitudes than male participants.   [c] Significant values indicate that there is significant heterogeneity among the individual effect sizes for each measure.   [d] Random-effects variance component.
* $p < .05$.   ** $p < .01$.

Gender differences in sexual attitudes were also small, with 31% of the effect sizes for sexual behaviors less than or equal to 0.10 (see Table 1). There was no gender difference, as indicated by 95% confidence including zero, for reported attitudes toward extramarital sex, attitudes toward sex when engaged to be married, attitudes toward masturbation, and attitudes toward lesbians. Male participants reported general attitudes that were more sexually permissive than female participants, and also reported somewhat more permissive attitudes toward premarital sex, attitudes toward condom use, more endorsement of the sexual double standard, and more sexual satisfaction than female participants ($d \leq 0.36$). Compared with male participants, female participants reported somewhat more fear/anxiety/guilt about sex, more permissive attitudes toward having sex with emotional commitment, attitudes toward homosexuals, attitudes toward gay men, attitudes toward gay rights, and attitudes toward gay marriage ($0.00 \geq d \geq -0.36$). One medium-sized effect indicated that male participants reported more permissive attitudes toward casual sex than female participants ($d = 0.45$). None of the gender differences in sexual attitudes were large according to Cohen's criteria ($d \geq 0.66$).

Publication bias. Results of Egger's regression test for publication bias found that 25 of the 30 outcomes did not exhibit publication bias, with two-tailed p values for the regression intercept greater than .10. Reported incidence of intercourse, pornography use, same-gender behavior, attitudes toward premarital sex, and attitudes toward lesbians exhibited publication bias according to Egger's regression model (Egger et al., 1997). Interpretation of these outcomes in Analysis I should therefore be made cautiously.

Comparison to Oliver and Hyde (1993). We compared mean weighted effect sizes from the current study (studies published

between 1993 and 2007) with mean weighted effect sizes from the Oliver and Hyde (1993) meta-analysis (studies published between 1975 and 1990) using the z score method described above. Although mean effect sizes for the majority of sexual behaviors and attitudes for the current study were smaller than gender differences from the Oliver and Hyde study, the z score procedure determined only one of the comparisons to be greater than chance (see Table 2). The Oliver and Hyde study found that men reported more approval of sex in a committed relationship than women, whereas the current study found the reverse pattern; that is, women reported slightly more approval of sex in a committed relationship than men.

Homogeneity analysis. As seen in Table 1, the mixed-effects model indicated heterogeneous effect sizes for all reported sexual behaviors and attitudes, with the exception of cybersex. Moderator analyses were applied to each of the reported sexual behaviors and attitudes with significant heterogeneity. Publication year, GEM, and age group were added simultaneously to a weighted OLS regression, with mixed-effects methods, and accounted for the variance among the effect sizes for each outcome variable.

Age group. The majority of studies included in this meta-analysis examined adolescents (37.5%) and young adults (39.9%), with fewer studies focused on infants (0.2%), children (3.6%), adults (17.4%), and older adults (1.3%). The weighted OLS regression indicated that there were larger gender differences among younger samples than among older samples for reported incidence of intercourse, attitudes toward extramarital sex, attitudes toward lesbians, attitudes toward gay rights, and attitudes toward gay marriage (see Table 3). Male participants reported a greater incidence of intercourse and more permissive attitudes toward extramarital sex than female participants, but the gender difference

Table 2
Comparison of the Oliver and Hyde (1993) Meta-Analysis and the Current Study

Measure	Oliver and Hyde (1993)			Current study			
	d^a	k^b	95% CI	d^a	k^b	95% CI	z^c
Self-reported behaviors							
Intercourse (F)	0.31	11	[0.27, 0.36]	0.10	49	[0.08, 0.12]	0.94
Intercourse (I)	0.33	135	[0.32, 0.35]	0.16	394	[0.15, 0.16]	0.85
Age at first sex	0.38	8	[0.30, 0.45]	0.20	127	[0.19, 0.21]	0.73
Number of partners	0.25	12	[0.19, 0.32]	0.36	256	[0.35, 0.36]	−0.41
Oral sex (I/F)	0.10	21	[0.05, 0.15]	0.06	81	[0.05, 0.07]	0.18
Same-gender sex (I/F)	0.33	19	[0.30, 0.37]	−0.05	76	[−0.06, −0.04]	1.90
Masturbation (I/F)	0.96	26	[0.92, 1.00]	0.53	66	[0.51, 0.55]	1.62
Self-reported attitudes							
Premarital sex (Att)	0.37	46	[0.35, 0.40]	0.17	41	[0.15, 0.19]	0.82
Casual sex (Att)	0.81	10	[0.75, 0.87]	0.45	10	[0.39, 0.50]	1.3
Extramarital sex (Att)	0.29	17	[0.26, 0.32]	0.01	10	[−0.01, 0.04]	1.62
Sex when engaged (Att)	0.43	5	[0.32, 0.54]	0.02	6	[−0.04, 0.07]	1.44
Sex with commitment (Att)	0.49	10	[0.44, 0.53]	−0.18	10	[−0.23, −0.13]	2.99*
Masturbation (Att)	0.09	12	[0.04, 0.14]	0.02	10	[−0.03, 0.07]	0.31
Double standard (Att)	−0.29	7	[−0.37, −0.21]	0.10	7	[0.03, 0.16]	−1.38
Fear/anxiety/guilt (Att)	−0.35	11	[−0.44, −0.26]	−0.19	5	[−0.26, −0.12]	−0.48
Sexual satisfaction (Att)	−0.06	15	[−0.09, −0.03]	0.17	29	[0.15, 0.18]	−1.81
Homosexuality (Att)	−0.01	28	[−0.04, 0.02]	−0.13	58	[−0.15, −0.10]	−0.49
Gay rights (Att)	−0.00	14	[−0.03, 0.02]	−0.20	3	[−0.32, −0.11]	0.98

Note. CI = confidence interval; F = frequency; I = incidence; Att = attitudes toward. [a] Negative values indicate that female participants were more sexually active or sexually permissive than male participants. [b] Number of studies used to compute the mean effect size. [c] Score for the significance of difference between Oliver and Hyde's effect sizes and the effect sizes for the current study. Negative values indicate larger effect sizes for the current study than for Oliver and Hyde's study.
* $p < .05$. ** $p < .01$.

Table 3
Weighted Ordinary Least Squares Regression With Year of Publication, Age Group, and National Gender Empowerment Predicting Gender Differences in Reported Sexual Behaviors and Attitudes for All Studies

Measure	k^{a}	$Q_{model}{}^{b}$	$Q_{residual}{}^{c}$	$\beta_{age}{}^{d}$	$\beta_{year}{}^{d}$	$\beta_{GEM}{}^{d}$	R^{2e}
Self-reported behaviors							
Intercourse (F)	43	0.17	46.59	−.02	−.04	.02	.17
Intercourse (I)	335	70.38**	347.66	−.14**	−.12*	−.41**	.16
Age at first sex	109	1.90	114.35	−.03	.12	−.03	.02
Number of partners	209	4.06	219.11	−.07	−.10	−.07	.01
Oral sex (I/F)	78	5.96	81.46	.09	−.08	−.21*	.06
Anal sex (I/F)	67	25.89**	64.18	−.03	.36**	−.38**	.28
Casual sex (I/F)	53	13.92**	55.21	−.02	−.29*	−.37**	.20
Same-gender sex (I/F)	70	1.83	73.19	.14	−.09	−.05	.02
Extramarital sex (I/F)	23	1.24	21.94	.16	−.01	−.21	.05
Condom use (I/F)	219	4.52	224.13	−.09	.09	−.03	.02
Masturbation (I/F)	61	30.58**	59.74	.03	−.14	−.57**	.34
Pornography (I/F)	23	3.35	23.09	−.27	.23	−.12	.13
Self-reported attitudes							
Permissiveness	29	10.20*	31.04	.22	−.47**	.07	.25
Casual sex	6	34.91**	1.02	−.28	−1.18*	−.12	.97
Extramarital sex	9	5.09	10.16	−.56*	.07	.18	.33
Sex when engaged	5	54.75**	3.44	.22	.86**	.11	.94
Sex with commitment	8	2.71	7.71	−.17	.55	.11	.26
Masturbation	9	4.84	8.47	−.71	.13	.08	.36
Condom use	14	1.20	12.85	.11	−.09	.28	.09
Double standard	7	11.71	5.78	−.29	.88**	N/A	.67
Fear/anxiety/guilt	5	3.50	5.57	.12	−.57	N/A	.39
Satisfaction	27	3.21	28.11	−.25	−.11	.07	.10
Homosexuality	56	4.26	58.32	.00	.26*	−.03	.06
Gay men	40	3.37	37.14	.16	−.24	−.25	.08
Lesbians	28	21.53**	27.27	.59**	−.35*	−.48	.44
Gay rights	3	9.07*	0.00	.72*	N/A	.15	1.00
Gay marriage	3	8.32*	0.00	.66*	N/A	−.98**	1.00

Note. GEM = gender empowerment measure (large numbers indicate greater gender equality in the country of recruitment); F = frequency; I = incidence; N/A = not applicable (if there was no variability in the measure for each outcome variable, that measure was not included in the regression analysis). [a] Number of studies in each regression analysis. [b] Significant values indicate that there is significant variability accounted for by moderators. [c] Significant values indicate that studies are still heterogeneous after accounting for moderating variables. [d] Negative values indicate that there are larger reported gender differences at lower levels of the moderator and smaller reported gender differences at higher levels of the moderator. [e] Amount of variance accounted for by the moderators for each measure.
* $p < .05$. ** $p < .01$.

decreased with age. Female participants reported more permissive attitudes toward lesbians, gay rights, and gay marriage than male participants, but the gender difference decreased with age.

Publication year. To examine change from 1993 to 2007, we included year of publication as a moderator in the current study (see Table 3). The number of studies in the current analysis was fairly evenly divided between each year. However, because the literature search was performed in March 2007, only 3 months of publications were available for the year 2007. A weighted OLS regression indicated that gender differences for reported incidence of intercourse, casual sex, general permissiveness, attitudes toward casual sex, and attitudes toward lesbians were significantly smaller in recent years than in the 1990s. Gender differences for reported anal sex, endorsement of the double standard, attitudes toward sex while engaged, and attitudes toward homosexuals were larger in recent years than in the 1990s.

Because effect sizes measure the magnitude of the gender difference and not the absolute level of male or female reports, these statistics cannot determine whether male or female participants changed at a faster rate. This question is addressed in Analysis II.

National gender empowerment. Over half the studies included in the analysis (53%) were from the United States or

Canada. Of the remaining studies, the largest number represented Europe (15.0% of all studies) and Africa (13.5% of all studies). Countries in East Asia accounted for 9.5% of all studies, Australia and New Zealand accounted for 2.9%, Latin American countries accounted for 4.8%, and Middle Eastern nations accounted for 1.2%. The weighted OLS regression indicated that countries with greater gender equity (higher scores on the GEM) had smaller gender differences for reported incidence of intercourse, oral sex, anal sex, casual sex, masturbation, and attitudes toward gay marriage (see Table 3). No behaviors or attitudes showed the reverse pattern; that is, larger gender differences were never significantly associated with greater gender empowerment.

Ethnicity. The majority of U.S. studies included samples with mixed ethnicities (45%) or did not report ethnicity (16%). The remaining studies examined mostly European American participants (25%), with fewer studies examining African Americans (8%), Asian Americans (1%), or Latin Americans (3%). Therefore many of the sexual behaviors and attitudes did not have variability in ethnic group and could not be examined in this analysis. Table 4 presents the results of the OLS regression equation for U.S. studies that reported ethnicity including the moderators for age group, year

Table 4

Weighted Ordinary Least Squares Regression With Year of Publication, Age Group, and Ethnicity Predicting Gender Differences in Reported Sexual Behaviors and Attitudes for U.S. Samples

Measure	k^a	Q_{model}^b	$Q_{residual}^c$	β_{age}^d	β_{year}^d	β_{Black}^d	β_{AA}^d	β_{LA}^d	R^{2e}
Petting (I)	18	1.65	26.37	.23	.05	N/A	−.05	N/A	.06
Intercourse (F)	12	3.82	12.45	.12	.08	.32	N/A	−.28	.23
Intercourse (I)	71	29.45**	71.38	−.27*	−.23*	.25*	−.21*	.11	.29
Age at first sex	30	0.19	31.57	−.02	−.06	−.04	−.05	−.05	.01
Number of partners	50	4.29	51.02	−.23	−.07	.08	N/A	.01	.08
Oral sex (I/F)	21	7.99	19.59	.05	−.04	.12	−.15	.47*	.29
Anal sex (I/F)	18	11.76*	17.98	.35	.04	.34	−.01	.38	.39
Same-gender sex (I/F)	19	57.21	25.30	.52*	−.15	.04	.10	.33*	.69
Extramarital sex (I/F)	9	6.30	7.24	−.26	−.18	.52	N/A	N/A	.47
Condom use (I/F)	48	3.14	47.68	−.23	−.06	.00	N/A	.12	.06
Masturbation (I/F)	13	6.91	11.79	−.71*	.05	−.97*	N/A	N/A	.36
Premarital sex (Att)	7	4.97	7.26	.39	−.86*	N/A	N/A	−.35	.07
Homosexuality (Att)	19	10.57*	20.22	−.21	.52	−.12	N/A	N/A	.34
Gay men (Att)	12	1.89	10.90	−.09	.39	.22	N/A	N/A	.22

Note. Outcome variables not listed did not include studies that represented more than one U.S. ethnic group. Black, Asian American (AA), and Latin American (LA) were dummy-coded with White as the comparison group. I = incidence; F = frequency; Att = attitudes toward; N/A = not applicable (if there was no variability in the measure for each outcome variable, that measure was not included in the regression analysis). [a] Number of studies in each regression analysis. [b] Significant values indicate that there is significant variability accounted for by moderators. [c] Significant values indicate that studies are still heterogeneous after accounting for moderating variables. [d] Negative values indicate that there are larger reported gender differences at lower levels of the moderator and smaller reported gender differences at higher levels of the moderator. [e] Amount of variance accounted for by the moderators for each measure.
* $p < .05$. ** $p < .01$.

of publication, and ethnicity. Although age group and publication year were included in this analysis to account for additional variance, the effects of these moderators is better represented in Table 3 when all studies were used. Therefore only the results for ethnicity are interpreted from this analysis. In comparison to European American samples, African American samples reported larger gender differences for incidence of intercourse, but Asian American samples reported smaller gender differences for the same outcome when controlling for age group and publication year. Latin American samples reported larger gender differences for oral sex and same-gender behavior than European American samples. African American samples reported a smaller gender difference in masturbation incidence than European American samples. No other variables showed significant variation by ethnic group, and in many cases too few studies were available to permit analysis.

Analysis II

Table 5 presents the study characteristics for each large national data set. Each of the data sets included large sample sizes and together represented ages 14–89. In addition to data sets from the United States, other data sets represent populations in Great Britain and Australia. Table 6 presents the mean weighted effect sizes from each of these data sets including the most recent effect sizes from data sets with multiple waves of longitudinal data. Consistent with the results of Analysis I, the majority of effect sizes were small. Also consistent with the results of Analysis I, the exceptions were reported masturbation and pornography use. Male participants typically reported more sexual experience and more permissive sexual attitudes. In comparison to female participants, male participants reported somewhat more frequent intercourse; greater intercourse incidence; a younger age at first intercourse; more sexual partners; more oral, anal,

Table 5

Characteristics of Large National Data Sets Based on Probability Sampling

Study	Year	N_{male}	N_{female}	Minimum age	Maximum age	Country
Add Health	2002	2,253	2,629	18	28	United States
NLSY-97	2005	2,908	2,969	20	26	United States
NHSLS	1994	1,330	1,664	18	59	United States
ASHR	2003	10,173	9,134	16	59	Australia
NATSAL II	1990 and 2000	5,168 and 8,118	6,942 and 10,758	16	44	United Kingdom
YRBSS	1991–2005	5,071–7,735	5,309–8,119	14	19	United States
GSS	1993–2006	468–849	583–1,088	18	89	United States

Note. Add Health = National Longitudinal Study of Adolescent Health (Wave 3); NLSY-97 = National Longitudinal Study of Youth, 1997 (Round 9); NHSLS = National Health and Social Life Survey; ASHR = Australian Study of Health and Relationships; NATSAL II = National Survey of Sexual Attitudes and Lifestyles II; YRBSS = Youth Risk Behavior Surveillance Study; GSS = General Social Survey.

Table 6

Effect Sizes and Summary Statistics for Gender Differences in Reported Sexual Behaviors and Attitudes for the Most Recent Wave of Large National Data Sets in Analysis II

| | d^a | | | | | | | Summary statistics | | | |
Measure	Add Health	NLSY	NHSLS	ASHR	NATSAL	YRBSS	GSS	Weighted average d	95% CI	Q_T^b	z^c
Intercourse (F)	0.04			0.01	0.03		0.17	0.03	[0.02, 0.05]	24.13**	0.48
Intercourse (I)	0.01	−0.05	0.08	0.07		0.13		0.07	[0.05, 0.09]	37.79**	0.82
Age at first sex	0.00	0.03	0.22		−0.13	0.22		0.06	[0.04, 0.08]	215.03**	1.27
Number of partners	0.24	0.37	0.19	0.11	0.03	0.13	0.35	0.15	[0.14, 0.17]	181.05**	2.00*
Oral sex (I/F)			0.20	0.27	−0.03			0.16	[0.13, 0.18]	162.42**	−0.91
Anal sex (I/F)			0.47	0.15	0.04			0.14	[0.12, 0.16]	103.82**	−0.56
Casual sex (I/F)				0.17			0.24	0.18	[0.16, 0.21]	4.15*	2.24*
Same-gender sex (I/F)	−0.06	−0.12	0.20	−0.08	0.01		0.04	−0.03	[−0.05, −0.01]	75.25**	−0.18
Extramarital sex (I/F)			0.24				0.04	0.12	[0.07, 0.17]	17.56**	1.61
Condom use (I/F)	0.15	0.09	−0.08	0.12	0.13	0.28	0.08	0.15	[0.13, 0.16]	128.63**	0.00
Masturbation (I/F)			0.44	0.60				0.58	[0.55, 0.61]	17.43**	−0.28
Pornography (I/F)			0.32	0.50			0.40	0.46	[0.44, 0.49]	24.51*	0.15
Premarital sex (Att)			0.18	0.07	0.10		0.22	0.10	[0.08, 0.12]	24.75**	0.54
Extramarital sex (Att)				0.01	0.09		0.04	0.04	[0.02, 0.06]	12.26**	−0.29
Sexual satisfaction (Att)			0.12	0.21				0.19	[0.16, 0.22]	4.35*	−0.15
Gay men (Att)				−0.08	−0.24			−0.14	[−0.16, −0.12]	45.20*	−0.40
Lesbians (Att)				0.16	−0.11			0.06	[0.04, 0.08]	133.49**	−0.73

Note. F = frequency; I = incidence; Att = attitudes toward; Add Health = National Longitudinal Study of Adolescent Health; NLSY = National Longitudinal Study of Youth; NHSLS = National Health and Social Life Survey; ASHR = Australian Study of Health and Relationships; NATSAL = National Survey of Sexual Attitudes and Lifestyles; YRBSS = Youth Risk Behavior Surveillance Study; GSS = General Social Survey; CI = confidence interval.
[a] Negative values indicate that female participants reported more sexual activity or more permissive attitudes.   [b] Significant values indicate that there is heterogeneity among the data sets.   [c] Score comparison between Analysis I and Analysis II. Negative values indicate larger effect sizes for Analysis II in comparison to Analysis I.
* $p < .05$.   ** $p < .01$.

casual, and extramarital sex; more condom use; more masturbation; and more pornography use. Male participants also reported more permissive attitudes than female participants for premarital sex, extramarital sex, sexual satisfaction, and attitudes toward lesbians. Female participants were more likely to report same-gender behavior and permissive attitudes toward gay men than male participants. We compared effect sizes for Analysis II with those of Analysis I using the same z score procedure used to compare Analysis I with the Oliver and Hyde (1993) study. Results are presented in Table 6. Negative z values indicated that Analysis I had larger effect sizes than Analysis II. There were no differences between Analysis I and II for 15 of the 17 outcome variables examined in both analyses. The two exceptions indicated that Analysis I had larger gender differences than Analysis II for reported number of sex partners and reported incidence of casual sex.

To determine trends in sexual behaviors and attitudes across time, we performed homogeneity analyses on the different assessments of the NATSAL, YRBSS, and GSS from 1990 to 2006. Tables 7, 8, 9, and 10 report the mean weighted effect sizes and homogeneity statistics for each survey, respectively. The NATSAL, conducted in Great Britain, yielded seven sexual behaviors and attitudes with heterogeneous effect sizes from 1990 to 2000. Gender differences were smaller in 2000 when compared with 1990 for reports of sexual frequency, oral sex, same-gender behavior, and attitudes toward premarital sex but larger for reported age at first intercourse and attitudes toward gay men and lesbians.

The YRBSS (see Table 8) was conducted by the CDC on American youth from 1991 to 2005. For these data, heterogeneous effect sizes

were found for reported incidence of intercourse, age at first intercourse, number of sex partners, and condom use. Year of assessment moderated the gender difference for reported incidence of intercourse, age of first intercourse, and number of sex partners, suggesting a

Table 7

Effect Sizes and Homogeneity Statistics for the National Survey of Sexual Attitudes and Lifestyles (NATSAL) I (1990) and II (2000)

Measure	NATSAL I d^a	NATSAL II d^a	Weighted average d	Q_T^b
Intercourse (F)	−0.07	0.03	−0.03	18.21*
Age at first sex	−0.07	0.13	0.01	76.00**
Number of partners	0.00	0.03	0.01	1.34
Oral sex (I/F)	0.20	−0.03	0.09	90.49**
Anal sex (I/F)	0.03	0.04	0.04	0.59
Same-gender sex (I/F)	0.12	0.01	0.07	20.91**
Condom use (I/F)	0.14	0.13	0.14	0.54
Premarital sex (Att)	0.18	0.02	0.10	46.87**
Casual sex (Att)	0.45	0.42	0.44	1.04
Extramarital sex (Att)	0.11	0.07	0.09	2.54
Gay men (Att)	−0.10	−0.39	−0.24	151.05**
Lesbians (Att)	−0.05	−0.18	−0.11	34.59**

Note. F = frequency; I = incidence; Att = attitudes toward.
[a] Negative values indicate that female participants reported more sexual activity or more permissive attitudes.   [b] Significant values indicate that there is a significant difference between NATSAL I and NATSAL II.
* $p < .05$.   ** $p < .01$.

Table 8

Effect Sizes, Summary Statistics, and Moderator Analysis of Boys and Girls Reporting Incidence of Intercourse for the Youth Risk Behavior Surveillance Study Assessments From 1991 to 2005

Measure	d^a								Summary statistics			
	1991	1993	1995	1997	1999	2001	2003	2005	Weighted average d	$Q_T{}^b$	β	R^2
Intercourse (I)	0.24	0.21	0.12	0.17	0.20	0.14	0.05	0.13	0.16	78.04**	−.75**	.53**
Age at first sex	0.54	0.56	0.47	0.45	0.47	0.34	0.32	0.28	0.43	248.05**	−.95**	.90*
Number of partners	0.48	0.40	0.41	0.40	0.42	0.35	0.27	0.22	0.37	168.33**	−.89**	.80*
Condom use (I/F)	0.24	0.27	0.19	0.21	0.23	0.25	0.22	0.28	0.24	22.04**	.22	.05

Note. I = incidence; F = frequency.
[a] Negative values indicate that female participants reported more sexual activity or more permissive attitudes. [b] Significant values indicate that there is significant heterogeneity between each assessment.
* $p < .05$. ** $p < .01$.

decrease in gender differences across time. Table 9 presents the percentage of boys and girls who reported engaging in sexual intercourse, the average reported age at first intercourse, and the average reported number of sex partners for each year. To determine whether boys or girls are changing at a faster rate, we performed an OLS regression with year as an independent variable and each outcome as the dependent variable for boys and girls in the YRBSS. Although both boys and girls assessed at recent years are less likely to report having had intercourse than youth assessed in the early 1990s, boys' reports decreased at a faster rate ($\beta = -.91$, $t = -5.12$, $p = .002$) than girls' ($\beta = -.76$, $t = -2.90$, $p = .03$). Boys reported waiting to an older age to have their first intercourse in recent years than boys in the early 1990s ($\beta = .93$, $t = 6.13$, $p = .001$), but reports did not change across time for girls ($\beta = .52$, $t = 1.50$, *ns*). Similarly, reported number of partners was smaller for boys in recent years than for boys in the early 1990s ($\beta = -.94$, $t = -6.88$, $p = .001$), but there was no difference in girls' reports across time ($\beta = -.68$, $t = -2.27$, *ns*).

The GSS assessed the sexual behaviors and attitudes of American adults. This study indicated heterogeneity for attitudes toward premarital sex and attitudes toward extramarital sex, but a linear trend for year of assessment did not moderate effect sizes for either sexual attitude (see Table 10).

Discussion

Gender differences for 22 of the 30 sexual behavior and attitudes in Analysis I displayed small gender differences, and 4 of the 30 sexual behaviors and attitudes displayed no gender difference. Although gender differences were typically small, male participants reported more sexual activity than female participants for 13 of the 14 sexual behaviors. Male participants also reported more permissive sexual attitudes than female participants for the majority of sexual attitudes, but again, most of the effect sizes were small. The well-sampled, representative data sets in Analysis II indicated similar effect sizes to the studies uncovered in the literature searches for the majority of sexual behaviors and attitudes.

These results support the gender similarities hypothesis, which states that men and women are similar for most, but not all, psychological indicators (Hyde, 2005). For another way to interpret a small effect size, the effect size d may be expressed as an equivalent value of the Pearson's correlation (Cohen, 1988). For example, the effect size for age at first intercourse has a 95% confidence interval of $d = 0.19$ to $d = 0.21$, which is equivalent to a correlation between .09 and .10, certainly a small correlation between gender and age at first intercourse. The correlation between gender and masturbation, a medium-sized effect (95% confidence interval of $d = 0.51$ to $d = 0.55$), would be equivalent to a correlation between .25 and .26. The effect size d may also be interpreted in terms of how much overlap exists between the distribution of scores for both groups (Cohen, 1988). An effect size of zero would mean that there was 100% overlap between male participants' and female participants' scores. This interpretation suggests that there was about 85% overlap between male participants and female participants for age at first intercourse and about 67% overlap for masturbation. This interpretation suggests that

Table 9

Percentage of Boys and Girls Reporting Incidence of Intercourse for the Youth Risk Behavior Surveillance Study Assessments From 1991 to 2005

Measure	1991		1993		1995		1997		1999		2001		2003		2005	
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G
Intercourse (I; %)	63	51	62	52	63	57	58	49	59	49	53	46	48	45	52	46
Mean age at first sex[a]	4.67	5.61	4.60	5.54	4.65	5.45	4.76	5.52	4.81	5.60	5.12	5.68	5.09	5.62	5.18	5.63
Mean number of partners[b]	4.54	3.61	4.63	3.75	4.59	3.80	4.44	3.67	4.36	3.57	4.17	3.53	4.01	3.51	3.94	3.56

Note. B = boys; G = girls; I = incidence.
[a] Age at first intercourse was coded by the Youth Risk Behavior Surveillance Study as 1 = *never had intercourse*, 2 = *less than 12 years old*, 3 = *12 years old*, 4 = *13 years old*, 5 = *14 years old*, 6 = *15 years old*, 7 = *16 years old*, 8 = *17 years old or older*. [b] Number of sexual partners was coded as 1 = *never had intercourse*, 2 = *1 person*, 3 = *2 people*, 4 = *3 people*, 5 = *4 people*, 6 = *5 people*, 7 = *6 or more people*.

Table 10
Effect Sizes, Summary Statistics, and Moderator Analysis for the General Social Survey Assessments From 1993 to 2006

Measure	d^a								Summary statistics	
	1993	1994	1996	1998	2000	2002	2004	2006	Weighted average d	Q_T^b
Intercourse (F)	0.21	0.21	0.23	0.23	0.26	0.25	0.13	0.17	0.21	6.12
Number of partners	0.32	0.30	0.29	0.35	0.37	0.38	0.23	0.35	0.32	8.14
Casual sex (I/F)	0.27	0.28	0.27	0.22	0.27	0.26	0.26	0.24	0.25	1.18
Same-gender sex (I/F)	0.02	0.04	0.09	0.07	0.04	0.05	0.12	0.04	0.06	3.06
Extramarital sex (I/F)	0.18	0.21	0.18	0.12	0.19	0.13	0.17	0.04	0.14	8.23
Condom use (I/F)			−0.01	0.06	0.04	0.14	0.09	0.08	0.07	5.75
Pornography (I/F)		0.32	0.35	0.35	0.38	0.42	0.50	0.40	0.39	8.74
Premarital sex (Att)	0.17	0.24	0.29	0.25	0.15	0.24	0.28	0.22	0.27	53.43*
Extramarital sex (Att)	0.07	0.08	0.06	0.12	−0.01	0.09	0.21	0.01	0.08	14.85*
Homosexuality (Att)	−0.04	−0.11	−0.13	−0.11	−0.04	−0.12	−0.12	−0.13	−0.10	3.39
Gay marriage (Att)							−0.15	−0.09	−0.12	0.84

Note. F = frequency; I = incidence; Att = attitudes toward.
[a] Negative values indicate that female participants reported more sexual activity or more permissive attitudes. [b] Significant values indicate that there is significant heterogeneity between each assessment.
* $p < .05$.

stereotypes about gender and sexuality provide a largely inflated view of gender differences in sexual attitudes and behaviors.

The small gender differences in sexual behavior should not be surprising given that the majority of sexual behaviors are likely heterosexual (Laumann et al., 1994). Heterosexual men might wish to engage in sexual behaviors more frequently than women, but they might be limited by their female partners' preferences. Medium-sized gender differences for reported masturbation and pornography use might suggest that men prefer more sexual activity than women and frequently engage in these autoerotic behaviors because heterosexual behaviors are constrained by a partner. However, this observation about the constraints on sexual behavior does not explain the small gender differences in sexual attitudes, which are not constrained by a partner. Alternative explanations for the gender differences in autoerotic behaviors may clarify this inconsistency. In particular, gender differences in masturbation and pornography use may be due to differences in self-reports. Social stigma continues to surround female autoerotic behavior (Pinkerton, Bogart, Cecil, & Abramson, 2002). Therefore girls and women may be less likely to honestly report frequencies of these behaviors. For example, one study found that women, but not men, underreport the incidence of masturbation and pornography use more than any other sexual behaviors (Alexander & Fisher, 2003).

Comparison of Analysis I to Oliver and Hyde (1993)

Although there appears to be a trend toward smaller gender differences for sexual behaviors and attitudes in the current study in comparison to the Oliver and Hyde (1993) study, results suggest that the majority of these differences are not greater than would be expected by chance. However, small or nonsignificant changes in the magnitude of gender differences in sexual attitudes and behaviors do not necessarily indicate that sexual behaviors and attitudes have not changed overall. If men's and women's sexual behaviors and attitudes changed at the same rate, then gender differences would remain the same, regardless of whether people engaged in more sexual behavior or held more sexually permissive attitudes across time. In addition, the z test used to compare the current

study with the Oliver and Hyde study is a conservative test with a high chance of Type II error (Hedges & Olkin, 1985). This may explain why gender differences did not decrease significantly across a wider range of time between the two studies, even though the moderator analyses indicated that some gender differences do appear to be decreasing within the current study.

The only statistically significant difference between the current meta-analysis and the Oliver and Hyde study was found for attitudes toward sex in a committed relationship. Although men held more permissive attitudes than women in the prior study, the reverse was true for the current study. Men and women may interpret this category differently in current research than they did 20 years ago. For example, women in current research may report that they are approving of this behavior because they consider it a more conservative alternative to casual sex, whereas women in past research may have reported disapproval of any sexual behavior outside marriage.

Comparison of Analysis I and II

One of the strengths of the current study is the use of large national data sets that are free from selection and publication biases. These data sets add to our understanding of gender differences in sexual behaviors and attitudes by including samples that are representative and generalizable. The results from these data sets generally confirmed results from Analysis I, which was based on studies uncovered from literature searches. Both analyses indicated small gender differences for the majority of sexual behaviors and attitudes, with the exception of masturbation and pornography use. In comparison to Analysis II, Analysis I indicated slightly larger gender difference for number of sex partners and casual sex. This larger gender difference may be due to the use of convenience samples in studies uncovered from the literature searches. Convenience samples often use college students, and gender differences in sexuality may be at their maximum with this age group (Dunne, 2002).

Another advantage of including large national data sets in Analysis II was that some of these data sets included the same research questions across multiple waves of data. This provided an opportunity to describe changes in gender differences across time and discover

whether these changes are due to changes in male or female sexuality. Both Analysis I and the YRBSS in Analysis II indicated that gender differences in reported intercourse incidence have decreased across time from 1991 to 2005. The YRBSS further indicated that this change was due to fewer boys in the 21st century reporting that they engaged in intercourse in comparison to their peers in the 1990s, whereas girls indicated little change in intercourse incidence during the same period. Although Analysis I did not indicate a temporal change in gender differences for reported number of sex partners, the YRBSS in Analysis II suggested that adolescent boys reported fewer partners in recent years than in the early 1990s, whereas girls' reports did not change across the same years. Additional research supports the conclusion that adolescents have been delaying sexual intercourse and having fewer sexual partners since the early 1990s (Saewyc, Taylor, Homma, & Ogilvie, 2008). This small decline in adolescents' sexual activity may be associated with increased knowledge about and fear of HIV/AIDS and other STDs. Sex research experienced a boom during the 1980s and 1990s as the effects of HIV/AIDS were discovered (Kandel & Merrick, 2006). Publicity about this research may have been accompanied by a reduced rate of intercourse incidence among adolescents as fear spread about these diseases.

Evaluation of Theoretical Predictions

Despite the small gender differences found in this meta-analysis, the results indicate that men typically report more sexual behaviors and more permissive sexual attitudes than women. In particular, the current study indicated that men are more likely than women to report casual sex and permissive attitudes toward casual sex. Evolutionary psychology, specifically sexual strategies theory, would suggest that men have evolved to desire casual sex partners so that they may increase their genetic success, whereas women have evolved to disapprove of casual sex because it may yield fathers who do not provide for them and their children.

Evolutionary psychology proposes that short-term mating strategies are associated with significant gender differences but that long-term mating strategies, especially in adulthood, are associated with a shift toward gender similarities. Results from the current study support this theory, indicating larger gender differences for incidence of intercourse, attitudes toward extramarital sex, and attitudes toward lesbians, gay rights, and gay marriage among younger participants (who are more likely to be involved in short-term relationships) than among older participants (who are more likely to be involved in long-term relationships).

Cognitive social learning theory predicts that gender differences should decrease across time as sexual culture has changed to become more liberal. Although this theory was supported for some sexual behaviors and attitudes, it was not supported for others. Analysis I indicated that gender differences for some key sexual behaviors and attitudes (reports of intercourse incidence, casual sex, sexual permissiveness, attitudes toward extramarital sex, and attitudes toward lesbians) decreased across time, but gender differences for some other sexual behaviors and attitudes (reports of anal sex, endorsement of the double standard, attitudes toward sex while engaged, and attitudes toward homosexuals) increased across time. Other research indicates that, contrary to expectations, exposure to more sexualized media images in recent years may increase stereotypes about gender differences in sexuality, thus increasing the gender gap in sexuality for some sexual behaviors

and attitudes (Ward & Friedman, 2006). These findings may help to resolve the apparent paradox for why some gender differences have decreased over time, whereas others have increased.

As gay men and lesbians become more visible in the media, attitudes toward homosexuality may be changing. In accordance with results from prior meta-analyses (Kite & Whitley, 1996), the current study found that women were more permissive toward gay men and homosexuals than men were, but there was no gender difference in attitudes toward lesbians. Prior research suggests that men adhere more strongly to gender role attitudes, which are linked to attitudes toward homosexuals (e.g., Kite & Deaux, 1986). Although both gay men and lesbians may violate gender roles, heterosexual men may view gay men's violation of these roles as worse than violations by lesbian women (Kite & Whitley, 1996). Media use has also been associated with attitudes toward homosexuals. A recent study suggested that existing attitudes toward gay men and lesbians may be amplified with increased exposure to media (Calzo & Ward, 2009). In particular, women, who held favorable attitudes toward homosexuals, became even more accepting of homosexuals with increased media exposure, whereas men, who held more negative attitudes toward homosexuals, became even less accepting of homosexuals with increased media exposure (Calzo & Ward, 2009).

In contrast to predictions made by cognitive social learning theory, data from Analysis II found a trend toward increasing gender differences, specifically for intercourse incidence, age at first intercourse, and number of sex partners. Although these behaviors became more conservative for boys, there was little or no change in girls' behaviors. These results conflict with results from the Wells and Twenge (2005) meta-analysis, which indicated that women's reported sexual behaviors became more liberal over time with little change in male sexual behaviors. Trends in gender differences may be due to trends in reporting rather than actual gender differences in behavior. Perhaps boys in past years were overreporting their sexual behaviors to the YRBSS, whereas boys in recent years reported more honestly. Cultural forces might also be at work to counteract the impact of sexualized media images. For example, research throughout the 1990s has highlighted the threat of HIV and AIDS and encouraged more conservative sexual behaviors such as fewer sex partners and less casual sex (Kandel & Merrick, 2006). The trends from the YRBSS, however, should not be generalized to other sexual behaviors or to other age groups, and more research must be done to determine trends for gender differences in sexuality over time.

The current meta-analysis indicated that the magnitude of gender differences for some sexual behaviors (but not for sexual attitudes) was moderated by gender empowerment in the nation in which the study was conducted. As predicted by social structural theory, nations with larger gender differences in power had larger gender differences in sexual behaviors than more egalitarian nations. According to social structural theory, countries with large gender inequality often hold a sexual double standard by encouraging liberal sexual behaviors for men but discouraging the same behaviors for women. This inequality may lead to gender differences in actual sexual behavior by encouraging men to engage in frequent sexual activity but discouraging the same behaviors for women. Alternatively, gender inequality may be associated with gender differences in reporting in which men overreport sexual behaviors and women underreport sexual behavior in accordance with social norms.

Social structural theory was further supported by results that indicated that gender differences in sexuality were moderated by ethnic cultures within the United States. For example, gender differences in oral sex and same-gender sexual behaviors were larger among Latin Americans than they were for European Americans. The concepts of machismo and marianismo in Hispanic culture may increase gender differences in power; thus increasing gender differences in sexual behavior in comparison to European Americans. In contrast, African Americans reported smaller gender differences in masturbation incidence than European Americans. Small gender differences among African Americans in the workforce suggest little gender difference in power and thus smaller gender differences in sexuality compared with European Americans.

Although men consistently reported more sexual behavior and more permissive sexual attitudes than women, the majority of these gender differences were small, in accordance with the gender similarities hypothesis. Hyde (2005) indicated that some sexual behaviors may be exceptions to the gender similarities hypothesis. The current study indicated that these exceptions include masturbation, pornography use, casual sex, and attitudes toward casual sex.

Results from the current study supported evolutionary psychology, cognitive social learning, social structural theory, and the gender similarities hypothesis. In support of evolutionary psychology, men consistently reported engaging in more sexual behaviors and reported having more permissive sexual attitudes than women. Cognitive social learning theory predicted that gender differences for some sexual behaviors and attitudes would decrease across time due to increased sexualized media to which both men and women are exposed. Although some gender differences decreased from the early 1990s to the present, other gender differences increased during this time, and limited evidence suggested that male sexual behaviors might trend toward being more conservative. Social structural theory was supported by evidence that some effect sizes were smaller in egalitarian nations and ethnic groups than nations and ethnic groups with gender inequality. Finally, gender differences for the majority of sexual behaviors and attitudes were small, providing evidence for the gender similarities hypothesis. As noted in the introduction, the theories and hypotheses presented here are not contradictory but, in fact, work together to provide a multifaceted explanation for gender differences and similarities in sexuality.

Strengths and Limitations

By pooling 834 studies and seven large national data sets with data from over 1,000,000 participants, this meta-analysis has provided a comprehensive and up-to-date analysis of gender differences in sexual behaviors and attitudes. The studies used in this analysis spanned the globe, providing data from 87 countries. In addition, large national data sets based on probability sampling were reviewed to offset potential sampling biases in other studies. Analyzing multiple waves of some of these data sets provides a controlled means of determining trends in sexual behaviors and attitudes across time.

Despite these strengths, limitations remain that suggest caution in interpreting some results. The studies uncovered in literature searches in Analysis I relied far too heavily on White North American participants between the ages of 14 and 30. Researchers should place a greater emphasis on recruiting participants from underrepresented social, economic, and ethnic backgrounds to broaden the understanding of sexuality for all people.

In addition, research in sexuality is almost exclusively a study of *reported* sexual behaviors and attitudes. Although sex research typically relies on self-report measures because observational methods are not ethical or feasible, self-report methods can be affected by memory bias and social desirability effects (Alexander & Fisher, 2003). Modern methods of self-report such as computer-assisted interviews and daily diary reports may reduce distortion and memory bias, providing more accurate results (McAuliffe, DiFranceisco, & Reed, 2007; Morrison-Beedy, Carey, & Tu, 2006). Researchers should also control for social desirability effects by including measures of response set or other indicators of distorted reporting. Future research in sexuality would benefit from these methods to determine the most accurate indication of sexual attitudes and behaviors. In the meantime, the current meta-analysis reviews the best available data.

Conclusions

This meta-analysis indicated that gender differences in sexual behaviors and attitudes may not be as large as popular opinion suggests. In support of the gender similarities hypothesis, small gender differences for the majority of sexual behaviors and attitudes suggest that men and women are more similar than they are different in terms of sexuality.

Exaggerating gender differences in sexuality may be problematic for both genders. Stereotypes suggesting that men and women differ greatly on dimensions of sexual activity can perpetuate the double standard by suggesting that men's and women's sexuality should be judged by different standards. These stereotypes may be coupled with the notion that women have little sex drive of their own and are sexual objects who cater to men's sexual drives (Hekma, 2008). Women who violate these stereotypes might be considered promiscuous, whereas women who conform to these stereotypes may not be expressing their sexuality freely. Yet women are not the only victims of exaggerated gender differences in sexuality. Because the sexual double standard encourages sexuality in men, it may increase risky sexual behaviors such as casual sex with multiple partners. Gender stereotypes associate masculinity with sexuality, which may make men who have a low sex drive feel inadequate. This high demand on male sexuality may also lead to male sexual disorders associated with performance anxiety (Zilbergeld, 1999).

Emphasizing gender similarities in sexuality, rather than gender differences, may contribute to gender equality of sexual expression. The discovery that men and women are similar in terms of most sexual behaviors and attitudes reduces the double standard and pressure to conform to gendered norms of the sexually submissive female and dominant male. If Western nations continue to become more sexually liberal, then these gender differences would be expected to narrow (Oliver & Hyde, 1993; Wells & Twenge, 2005). The implications for gender equality in sexual expression range from increased sexual self-esteem and freedom of sexual expression to reduced sexual disorders for both men and women.

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Call for Nominations:
International Perspectives in Psychology: Research, Practice, Consultation

The Publications and Communications (P&C) Board of the American Psychological Association and Division 52 (International Psychology) of the APA have opened nominations for the editorship of ***International Perspectives in Psychology: Research, Practice, Consultation***, for the years 2011–2016. The editor search committee is co-chaired by Lynn Collins, PhD, and Peter Ornstein, PhD.

International Perspectives in Psychology: Research, Practice, Consultation, to begin publishing in 2011, is committed to publishing conceptual models, investigative methodologies, and intervention strategies to help understand, study, and influence the world's major mental health problems. The journal will promote psychological science and practice that is contextually informed, culturally inclusive and serves the public interest. Recognizing that mental health problems are imbedded in economic, environmental, political, and social contexts, ***International Perspectives in Psychology*** is a multidisciplinary title that will incorporate empirical findings from education, medicine, public health, applied and basic psychology, sociology and other related disciplines.

Included in the global concerns that interest the journal are inter-group conflict, societal transformations and national development, threats to the natural environment and recovery from national disasters, mental health care delivery and capacity buildings, and the struggles and physical and mental health needs of disempowered groups.

Editorial candidates should be available to start receiving manuscripts in July 2010 to prepare for issues published in 2011. Please note that the P&C Board encourages participation by members of underrepresented groups in the publication process and would particularly welcome such nominees. Self-nominations are also encouraged.

Candidates should be nominated by accessing APA's EditorQuest site on the Web. Using your Web browser, go to http://editorquest.apa.org. On the Home menu on the left, find "Guests." Next, click on the link "Submit a Nomination," enter your nominee's information, and click "Submit."

Prepared statements of one page or less in support of a nominee can also be submitted by e-mail to Molly Douglas-Fujimoto, Managing Director, Educational Publishing Foundation, at mdouglas-fujimoto@apa.org.

The deadline for accepting nominations is January 31, 2010, when reviews will begin.