Sex Differences in Self-Disclosure: A Meta-Analysis

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A meta-analysis of 205 studies involving 23,702 Ss was conducted to determine whether there are sex differences in self-disclosure. Across these studies, women disclosed slightly more than men (d = .18). This effect size was not homogeneous across studies. Several moderator variables were found. Sex of target and the interaction effect of relationship to target and measure of self-disclosure moderated the effect of sex on self-disclosure. Sex differences in self-disclosure were significantly greater to female and same-sex partners than to opposite-sex or male partners. When the target had a relationship with the discloser (i.e., friend, parent, or spouse), women disclosed more than men regardless of whether self-disclosure was measured by self-report or observation. When the target was a stranger, men reported that they disclosed similarly to women; however, studies using observational measures of self-disclosure found that women disclosed more than men.

Theory and research on self-disclosure has been important in three areas: (a) personality, (b) personal relationships, and (c) counseling and psychotherapy (Berg & Derlega, 1987). Self-disclosure is viewed as a personality trait, and the role of individual differences in self-disclosure has been studied in personality research. The functions of self-disclosure in the development, maintenance, and dissolution of relationships have been studied in the personal relationships literature. The role of self-disclosure in the etiology and treatment of psychological distress has been examined in counseling and psychotherapy (Berg & Derlega, 1987).

One of the major issues in self-disclosure theory and research is sex differences in self-disclosure. Sex differences in self-disclosure have important implications for theory and research in all of the areas cited in the previous paragraph. Sex differences in self-disclosure have been studied in personality research. Self-disclosure is viewed as a relatively stable personality characteristic that is related to one's sex. Sex differences are also important to theory and research on mental health. Sex differences in self-disclosure have been hypothesized to affect the development and treatment of psychological distress. If men disclose less than women and if self-disclosure is a factor in mental health, then men should be more prone to psychological distress (Jourard, 1971). Virtually all forms of counseling and psychotherapy emphasize the importance of client self-disclosure for the treatment of psychological distress (Chaiken & Derlega, 1974). Consequently, if men self-disclose less than women, then counseling and psychotherapy may be less effective for men than women. Sex differences in self-disclosure are important in the personal relationships literature because they may affect diverse aspects of male-female relationships (Hendrick, 1988).

This review's purpose was to determine whether there are sex differences in self-disclosure. Rather than conducting a study on sex differences and self-disclosure (there are more than 200 studies on sex differences and self-disclosure), a meta-analysis of these studies was conducted. This meta-analysis tests whether there are sex differences in self-disclosure and how large these differences are and identifies variables that moderate the effect of sex on self-disclosure (such as sex of target and relationship to target).

Sex Differences in Self-Disclosure

In his early research with the Jourard Self-Disclosure Questionnaire (JSDQ), Jourard found that women disclose more than men (Jourard, 1961; Jourard & Lasakow, 1958; Jourard & Richman, 1963). Jourard attributed these differences to sex roles, in particular, the male sex role:

The male role requires men to appear tough, objective, striving, achieving, unsentimental, and emotionally unexpressive. . . . The male role, and the male's self-structure will not allow man to acknowledge or to disclose the entire breadth and depth of his inner experience to himself or to others. Man seems obliged, rather, to hide much of his real self—the ongoing flow of his spontaneous inner experience—from himself and from others. (Jourard, 1971, p. 35)

Thus, Jourard concluded that women disclose more than men because the male sex role inhibits men's self-disclosure.

Researchers continued to investigate whether women were more disclosing than men. Narrative reviewers of these studies (Cline, 1982; Cozby, 1973; Hill & Stull, 1987; Rosenfeld, Civikly, & Herron, 1979) concluded that the results of studies on sex differences and self-disclosure were inconclusive. For example, Rosenfeld et al. (1979) reported the following:

Recent sex and self-disclosure research is equivocal. Numerous studies have found that females were more self-disclosing than males. . . . Several studies have found that males and females engage in the same amount of self-disclosure. . . . and one study
found that males disclosed more and asked more intimate questions than females. (p. 82)

These reviewers suggested that there may be factors moderating the effect of sex on self-disclosure.

Cozby (1973) suggested that the nature of any sex difference might be found if researchers studied the types of items that reliably discriminate males and females and the types of situations in which males and females differ in self-disclosure. Rosenfeld et al. (1979) suggested that subject and target characteristics (such as attractiveness, sex, and age) and characteristics of the setting (such as intimacy and organizational structure) may be possible intervening variables. Hill and Stull (1987) discussed five possible moderating factors: (a) situational factors including topic of disclosure, sex of target, and relationship to target, (b) sex role attitudes, (c) sex role identity, (d) sex role norms, and (e) measure of self-disclosure.

Narrative Reviews

The inconsistency in the results of studies on sex differences and self-disclosure may be the result of narrative-reviewing techniques. Narrative reviews use a subjective procedure for evaluating studies to determine the effect of sex on self-disclosure. Narrative reviews have been criticized for being unsystematic and subjective. The task of reviewing 100 or more studies simply exceeds the information-processing capacities of the human mind (Cooper & Rosenthal, 1980; Hunter & Schmidt, 1990; Hunter, Schmidt, & Jackson, 1982).

In its most sophisticated form, narrative review uses vote counting of significance test results. Vote-counting reviews of self-disclosure studies group these studies into three sets: (a) those in which females disclose significantly more than males, (b) those in which males disclose significantly more than females, and (c) those with nonsignificant results.

There are problems with vote-counting reviews. Vote counting will only reliably represent the magnitude of the sex difference if the studies have the same sample sizes and a unimodal distribution reflecting one population (Bangert-Downs, 1986). Whether a result is statistically significant is a function of the size of the effect and the sample size. If the sample sizes of studies differ, results from studies with larger samples are more likely to be significant even when the underlying effect is the same as for studies with smaller samples. If the set of studies reflects more than one population (e.g., the magnitude of sex differences for self-report and observational studies are different), this will cause variability in the effect size. Thus, the conflicting results of past studies may stem from a number of causes including different sample sizes and different effect sizes.

Meta-Analysis

Meta-analysis is a systematic, objective, and quantitative procedure for evaluating the effect of sex on self-disclosure and for identifying and evaluating variables that moderate the effect. Meta-analysis applies statistics to numbers representing the effect and investigates the influence of factors that moderate the effect (Bangert-Downs, 1986). A moderator variable is a variable that influences the size of the effect of an independent variable on a dependent variable. For instance, method of measurement would be a moderator variable if the effect of sex is different for studies in which self-disclosure is measured using self-report versus observation.

Hosman (1986) conducted a meta-analysis of studies on sex differences in self-disclosure. Hosman found that women disclose slightly more than men ($r = .07$). Hosman also found that sex differences in self-disclosure had changed slightly over time. The difference between men’s and women’s self-disclosure was less in the 1970s ($r = .07$) and 1980s ($r = .07$) than in the 1960s ($r = .10$). The difference between men’s and women’s self-disclosure could not be attributed to whether the study used self-report ($r = .08$) or observation ($r = .06$). However, Hosman did not test for other moderator variables. This is a major flaw in Hosman’s meta-analysis because all the effect sizes were heterogeneous, indicating that other moderator variables exist. In addition, Glass, McGaw, and Smith (1981) contend that the sampling of studies in a meta-analysis should be well defined and complete. Hosman’s sampling was neither. Hosman analyzed 73 studies of sex differences in self-disclosure. At the time of Hosman’s meta-analysis there were more than 150 empirical studies on sex differences in self-disclosure (see Appendix). Thus, it is not known whether the results of Hosman’s meta-analysis are generalizable. Hosman also did not include unpublished studies, which may be more likely to have nonsignificant results. Consequently, Hosman’s meta-analysis may have overestimated sex differences in self-disclosure.

Moderator Variables

Hill and Stull (1987) provided a theoretic approach to understanding the inconsistent findings in research on sex differences in self-disclosure. Hill and Stull argued that various situational factors may account for inconsistencies in sex differences in self-disclosure. The logic of their approach is (a) a number of situational factors have been found to affect self-disclosure and (b) there are often sex differences in the way in which these factors affect self-disclosure. Thus, interactions with these factors may moderate sex differences (Hill & Stull, 1987). Their strategy led us to consider the following possible moderating variables: (a) sex of target, (b) relationship to target, and (c) measure of self-disclosure.

Sex of Target

Sex differences in self-disclosure may differ on the basis of sex of target. A number of studies have found that sex differences in self-disclosure differ for same-sex and opposite-sex interactions. Often, female-female self-disclosure is highest, male-male self-disclosure is lowest, and opposite-sex self-disclosure is in between (Hill & Stull, 1987). For example, Derlega, Winstead, Wong, and Hunter (1985) found that males disclose similarly to females in same-sex interactions but more than

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1 Hill and Stull (1987) investigated a third situational factor, topic of self-disclosure, and three dispositional factors, sex role attitudes, sex role identity, and sex role norms. However, none of these factors could be included in this meta-analysis because there was an insufficient number of studies investigating these variables.
females in opposite-sex interactions. Using the diary method, Reis, Sencak, and Solomon (1985) found that females disclose more than males in same-sex interactions but that females disclose similarly to males in opposite-sex interactions.

Reciprocity of self-disclosure has been used to explain the finding that sex differences are smaller in opposite-sex relationships than in same-sex relationships. Rubin, Hill, Peplau, and Dinkel-Schetter (1980) suggested that high disclosure by women encourages their male partners to disclose more, whereas low disclosure by men encourages their female partners to disclose less. This results in both men and women disclosing at intermediate levels in opposite-sex relationships, resulting in smaller sex differences in opposite-sex relationships than in same-sex relationships.

**Relationship to Target**

The relationship between discloser and target person may moderate the effect of sex on self-disclosure. Several studies have found that women disclose more than men to best friends, whereas men disclose more than women to strangers. However, the results are not consistent across all studies (Hill & Stull, 1987). Sex differences between spouses and strangers have also been studied. Morton (1978) found a main effect for sex of discloser but no interaction effect between sex of discloser and type of relationship.

**Measure of Self-Disclosure**

Hill and Stull (1987), as well as others (Cline, 1982; Hosman, 1986), have argued that method of measuring self-disclosure may moderate the effect of sex on self-disclosure. Chelune (1979) grouped self-disclosure measures into three categories: (a) self-report inventories and self-ratings, (b) observer or recipient ratings, and (c) objective metrics. Each category reflects a different perspective. According to Chelune (1979), self-report measures and self-ratings assess self-disclosure from the perspective of the discloser and involve self-evaluation using an internalized standard of self-disclosure. Observer and recipient ratings are functionally equivalent to the target person's perspective. Objective metrics reflect the researcher's perspective and his or her operational definition of self-disclosure.

Different perspectives may involve the use of different judgment criteria (Goodstein, Goldstein, D'Orta, & Goodman, 1976, p. 145). The role that different judgment criteria play in self-disclosure research is poorly understood. Self-disclosure has been assessed from different perspectives, each with possibly different judgment criteria, thus, caution must be exercised in generalizing from self-disclosure data (Chelune, 1979).

The investigator cannot assume that data generated from one perspective will necessarily be equivalent to data derived from either of the other two perspectives. . . . Certainly, more formal attention and study are needed to determine the potential effects that differences in perspectives and judgment criteria may have on the measurement of self-disclosure (Chelune, 1979, pp. 15-16).

Cline (1982) conducted a vote count of studies on sex differences and self-disclosure. She compared the results from 28 self-report studies and 19 behavioral studies. She concluded that the results of self-report and behavioral studies were similar. Hosman (1986) concluded from the results of his meta-analysis that self-report and behavioral studies were similar. However, because of problems associated with vote counting and because of problems with the sampling of studies in Hosman's meta-analysis, it is difficult to determine whether method of measuring self-disclosure moderates the effect of sex on self-disclosure.

**Interaction Effects**

Hill and Stull (1987) concluded their discussion of potential moderating factors by stating the following:

One of the problems is that self-disclosure is far more complex than anyone realized when this research was begun. The original prediction that traditional male-role expectations inhibit men's disclosure is too simple because it does not take into account the many situational factors that affect disclosure. We now know what many of these factors are, but we still cannot specify how these factors interact with one another and with gender. Future studies need to incorporate these situational factors and test hypotheses about interactions among them (p. 94).

Thus, we sought to test for interaction effects among sex of target, relationship to target, and measure of self-disclosure as potential moderators of the effect of sex on self-disclosure.

**Publication Date and Status**

Methodological considerations led us to ask whether publication date and publication status influence the effect of sex on self-disclosure.

**Publication Date**

Sex differences in self-disclosure may be in a process of decline. Sex role attitudes, sex role identities, and sex role norms have changed in the past 30 years, so that men and women may disclose more similarly.

The results of Hosman's (1986) meta-analysis indicate that publication year moderates the effect of sex on self-disclosure. Specifically, Hosman found that sex differences were greater for studies published between 1960 and 1969 than for studies published between 1970 and 1986. In addition, sex differences in several other aspects of behavior have been found to decrease in more recent publications, including sex differences in verbal abilities (Hyde & Linn, 1988), cognitive abilities (Rosenthal & Rubin, 1986), influenceability (Eagly & Carli, 1981), and helping behavior (Eagly & Crowley, 1986). However, publication year was unrelated to sex differences in aggressive behavior (Eagly & Steffan, 1986).

**Publication Status**

It is considered more difficult to publish nonsignificant results than significant results. Glass et al. (1981) cautioned against ignoring "hidden" studies (unpublished studies) in a meta-analysis. These studies may be of equal quality to that of published studies but may not have been published because of null findings. If there is a bias to publish significant results, then the results of studies published on sex differences and self-disclosure may overestimate the effect of sex on self-disclo-
sure. Hosman's (1986) meta-analysis only included published studies of self-disclosure. Thus, Hosman did not test whether publication status moderated the relationship between sex of discloser and self-disclosure.

Method

Literature Search

We compiled the sample of studies by computer searches of the following databases: Psychological Abstracts (1967–December 1989), Social Sciences Index (February 1983–January 1990), Dissertation Abstracts (July 1980–June 1989), and the Comprehensive Dissertation Index (1861–June 1980). The key terms self-disclosure and human sex differences were used in the Psychological Abstracts search; the key terms self-disclosure and sex differences were used in the other computer searches. The instructions to the databases indicated that these were the appropriate key terms. Only articles written in English were requested.

All issues of the Journal of Social and Personal Relationships were searched for studies because this journal only recently was included in Psychological Abstracts. Studies also were obtained from prior narrative reviews of sex differences and self-disclosure (Cline, 1982; Cozby, 1973; Hill & Stull, 1987; Rosenfeld et al., 1979) and Hosman's (1986) meta-analysis. The review of literature and reference sections of the articles included in this meta-analysis were examined for additional studies.

The search resulted in more than 250 articles on sex differences in self-disclosure. A number of articles from the computer searches were not included in the meta-analysis because they were not original reports of research, not applicable, or information regarding sex differences was not recoverable. Approximately 25 dissertations were not included in this meta-analysis because they were not available for loan. However, 51 dissertations were included in the meta-analysis.

There were several studies with subjects from different races, ethnic groups, and cultures. Cozby (1973) reviewed the literature on race, ethnic group, and cross-cultural findings on self-disclosure. Cozby reported that there was some evidence of racial, ethnic, and cultural differences in self-disclosure. Whether race, culture, and ethnic group moderate the effect of sex on self-disclosure is not known. Roles for men and women vary across cultures and ethnic groups. Thus, race, ethnic group, and culture could moderate the effect of sex on self-disclosure. However, there was not a sufficient number of studies of any particular culture, race, or ethnic group (other than North American Whites) to include culture, race, or ethnic group as moderator variables in the meta-analysis. Thus, this meta-analysis is limited to North American White subjects.

Several studies reported separate results for White and non-White subjects; however, only the results for North American White subjects were included in this meta-analysis. Several studies involved multiple cultures, races, or ethnic groups but did not report separate results for each subgroup (Balswick & Balkwell, 1977; Borrega, Chavez, & Tiley, 1982; Dimond & Hellkamp, 1969; Franco & LeVine, 1985; Franco, Malloy, & Gonzalez, 1984; Grant, 1983; Jones, 1981; Plasky & Lorion, 1984). These studies were dropped from this meta-analysis because we could not calculate separate effects for North American White subjects. Several studies were of other cultures, races, or ethnic groups and were not included in this meta-analysis (Argyle, Trimble, & Forgas, 1988; Bennett & Rutledge, 1989; Bhatnagar & Rastogi, 1984; Joshi, 1985; Joshi & Hassain, 1984; Lomranz & Shapiro, 1974; Lopez, 1980; Vidyapati, 1985, 1987). Thus, a total of 203 studies published between 1958 and 1989 were included in this meta-analysis (see Appendix).\(^1\)

Coding Studies

The following variables were coded for each study: (a) sex of target (male, female, same sex, opposite sex), (b) relationship to target (stranger, friend, spouse, parent), (c) measure of self-disclosure (self-report, other report, observation), (d) publication date (1960–1969, 1970–1979, 1980–1989), and (e) publication status (journal article). There was not a sufficient number of studies to calculate effect sizes for any other relationships to target (e.g., dating partners, acquaintances). Eight dissertations were later published as journal articles (see Appendix: Certner, 1970; G. J. Chelune, 1976; Feigenbaum, 1975; Malec, 1979; Mark, 1976; McCarthy, 1978/1979b; Molina, 1984/1985; Vondracek, 1969/1970). These studies were coded as journal articles because they were published. If the results for any sample were published in two journal articles, the study was entered once, and the earliest publication date was used. When available, the reliability of the dependent measure(s) was recorded.

Statistical Analyses

The effect size computed for each study was \( d \). Most of the studies reported a \( t \) or \( F \) statistic. These and other statistics were converted to \( d \) using formulas provided by Glass et al. (1981), Hedges and Olkin (1985), Hunter and Schmidt (1990), Hunter et al. (1982), and Rosenthal (1984, 1987). A positive \( d \) indicates that women disclosed more than men; a negative \( d \) indicates that men disclosed more than women.

A number of studies used multiple subgroups, multiple dependent measures, or multiple targets. For example, some studies measured self-disclosure with both self-report and observational measures. Other studies measured self-disclosure to a mother, father, best female friend, and best male friend. Some studies manipulated sex of target and randomly paired subjects with a male or female partner resulting in four subgroups (male to male self-disclosure, male to female self-disclosure, female to male self-disclosure, female to female self-disclosure). If a study contained more than one subgroup/measure/target and sufficient information was provided to calculate separate effect sizes for each subgroup/measure/target, separate effect sizes were computed for each subgroup/measure/target.

The overall effect size for a study or average effect size across subgroups meaures/targets was used in the analysis of the main effect of sex and the tests involving publication date and publication status as moderator variables. For these analyses, study was the unit of analysis. If a study provided sufficient information to calculate separate effect sizes for multiple subgroups/measure/targets, the effect size for each subgroup/measure/target was used for tests involving sex of target, relationship to target, and measure of self-disclosure as moderator variables. Thus, in these analyses, finding (i.e., the effect size for the subgroup/measure/target) was the unit of analysis. For example, several studies recorded effect sizes for self-report and observational measures of self-disclosure. Thus, the effect size for self-report was used in the analysis of self-report studies, and the effect size for observation was used in the analysis of observational studies.

Using multiple effect sizes from the same study is a violation of the assumption of independence because results reported within a study are not independent. However, a Monte Carlo simulation demonstrated that the mean effect size and estimate of the variance are unaffected by nonindependence (Tracey, 1985). Similarly, Hedges (1986) be-

\(^1\) Requests for the following should be sent to Kathryn Dindia: (a) the list of dissertations not included in the meta-analysis because they were not available for loan and (b) the list of articles not included in the meta-analysis because they were not applicable or statistical information was not recoverable.

\(^2\) Requests for the data should be sent to Kathryn Dindia.
believed that multiple effect sizes do not dramatically affect statistical precision. In addition, if multiple observations were not used from the same study, the influence of moderator variables on the effect of sex on self-disclosure could not have been analyzed. Preis and Allen (1990) argued that any use of nonindependent data should be recognized but not necessarily avoided.

In many instances authors failed to report a test statistic when the results of the study were not statistically significant. In such cases the effect size was coded as zero. Including these findings in the meta-analysis results in a bias toward smaller effect sizes, excluding these findings results in a bias toward larger effect sizes. Thus, we ran all the analyses including and excluding the effect sizes coded as zero. The results including these findings can be considered a lower limit of the effect size, and the results excluding these findings can be considered an upper limit of the effect size. Only the results including effect sizes coded as zero are reported unless the results were different for the analysis excluding effect sizes coded as zero.

A number of studies found no significant difference between men's and women's self-disclosure and did not report a test statistic but provided information regarding the direction of the relationship. In such cases the effect size was calculated as one-half the effect size for the minimal significant value using the appropriate degrees of freedom (see Boster & Mongeau, 1984).

Hedges and Olkin's (1985) formulas were used to calculate homogeneity of effect sizes and to test for moderator variables. The assumption underlying the meta-analysis is that the average effect size represents a single normal distribution of results. Homogeneity of effect sizes indicates that the average effect size is generated from a sample of studies in which the observed variability among effect sizes is due to random sampling error. Heterogeneity of effect sizes indicates that the average effect size is not based on a single distribution in which observed variability is due to sampling error. Heterogeneity indicates that the variability in effect sizes may be due to a moderator variable. For example, if a sample contains a mixture of effect sizes from self-report and observational studies and measures of self-disclosure moderates the effect of sex on self-disclosure, the distribution of effect sizes will be bimodal. If the moderator variable is found, the subgroups will have different effect sizes (e.g., the average effect sizes for self-report and observational studies will be different). Identifying the moderating variable should produce homogeneous effect sizes for each subgroup. Homogeneity indicates that each subgroup is free from moderating variables.

Thus, in this meta-analysis, if an effect size was heterogeneous, a search for moderator variables was conducted. Once homogeneous subgroups were found, these subgroups were compared to see if the average effect sizes were different. If the effect sizes for the subgroups were homogeneous and significantly different from each other, this provided evidence of a moderator variable.

We also used homogeneity statistics (Hedges & Olkin, 1985, pp. 256–257), to identify outliers. An outlier is an effect size that is considerably larger or smaller than most of the other effect sizes. Outliers are due to one of several reasons. First, random outliers should be expected in a large number of studies because they are a random statistical artifact. If $\alpha = .05$, 5% of the studies are outliers. Second, an outlier may be caused by a computational or data entry mistake made by the researchers conducting the study or the researchers conducting the meta-analysis. Third, an outlier may be a systematic effect. When a large number of studies exist and only one or two studies possess some particular characteristic that is a moderating influence, this will result in an outlier. These studies may generate effect sizes significantly different from other studies. Using the example from above, if a measure of self-disclosure is a moderator variable and only one or two observational studies are included in the sample, the effect sizes from these studies may be outliers. If only one or two studies possess this characteristic, it will be difficult to identify the moderator variable. Similarly, the ability to determine whether this is a random or systematic outlier will be virtually impossible. Whether the effect size is random or systematic, the study will appear as an outlier.

Outliers affect the analysis of moderator variables. An outlier may cause a subgroup to appear heterogeneous when it is homogeneous. However, because the moderator variable cannot be identified and, in fact, the researcher does not know whether the outlier is a random or systematic effect, all the researcher can do is treat it as an outlier.

Thus, in this meta-analysis, if an outlier was identified, we verified that it was not the result of a computational or data entry mistake on our part. Then we ran all subsequent analyses with and without the outlier.

The reliability of the dependent measures was uniformly high (Hosman, 1986, reported a mean reliability of .93). Thus, we did not correct $d$ for attenuation. Correction would have increased the size of $d$. Therefore, the effect sizes reported in this meta-analysis are a slight underestimate of the true effect sizes.

**Results**

**Sex of Subject**

A total of 23,702 subjects participated in 205 studies for an average sample size of 116. The average weighted effect size for the main effect of sex of discloser on self-disclosure was $d = .184$. The positive effect size indicates that women disclose more than men. The 95% confidence interval for $d$ was .158 to .210. The value for the homogeneity test was compared with a chi-square distribution with $k = 1$ degrees of freedom. The results of the homogeneity test were significant, indicating that the variation of the effect sizes across studies was not solely due to sampling error $\chi^2(204, N = 205) = 541.20, p < .05$. Thus, tests for moderator variables were conducted.

**Moderator Variables**

The moderating influence of sex of target, relationship to target, measure of self-disclosure, publication year, and publication status on the effect of sex on self-disclosure was tested. The sample size (number of studies or findings) depended on the specific moderator variable tested. Smaller sample sizes decrease the power of an analysis.  

**Sex of target**. Table 1 reports the results for studies categorized by sex of target. Three of the four effect sizes were positive and heterogeneous (female target $d = .35$, same-sex target $d = .37$, opposite-sex target $d = .13$). The effect size for male targets was zero and heterogeneous. The differences between the effect sizes for the four subgroups were tested for statistical significance. The effect sizes for female and same-sex targets were not significantly different, $t(108) = .33, ns$. The effect sizes for female and same-sex targets were significantly greater than the effect size for opposite-sex targets, $t(107) = 3.86$, and $t(131) = 4.21, p < .05$, two-tailed tests, respectively. The effect size for opposite-sex targets was significantly greater than the effect size for the other categories.

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* Outliers were located in the analyses of the independent effects of the moderator variables. However, no outliers were removed from the data for these analyses because outliers primarily affect the variance, not the mean, of an effect size, and even with the outliers removed from the data there were heterogeneous effect sizes for all of the independent effects of the moderator variables.
Table 1: Independent Moderating Effects of Sex of Target, Relationship to Target, Measure of Self-Disclosure, Publication Date, and Publication Status

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<th>Variable</th>
<th>k</th>
<th>N</th>
<th>d</th>
<th>95% CI for d</th>
<th>Homogeneity</th>
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<td>873</td>
<td>.437</td>
<td>.306</td>
<td>.562</td>
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</table>

Note. Includes studies with effect sizes set to zero; CI = confidence interval.
* p < .05.

Size for male targets, t(113) = 2.44, p < .05, two-tailed test. Thus, sex differences in self-disclosure are greatest for female and same-sex targets, in the middle for opposite-sex targets, and smallest for male targets. However, because of heterogeneous effect sizes, sex of target was not, by itself, a moderator variable.

Relationship to target. Table 1 also reports the results for studies categorized by relationship to target. The effect sizes were all positive (stranger d = .07, friend d = .28, spouse d = .22, parent d = .26). The effect sizes for spouses and parents were homogeneous. However, the homogeneous effect size for parents is a statistical artifact that is due to averaging across mothers and fathers. Almost every study that measured self-disclosure to the mother also measured self-disclosure to the father. We averaged across mothers and fathers to calculate the effect size for parents. When separate effect sizes for mothers and fathers were included in the analysis, the results were heterogeneous. The differences between the effect sizes for strangers, friends, parents, and spouses were tested for statistical significance. There were significant differences between strangers and friends, t(148) = 3.72, p < .05, two-tailed test, and between strangers and parents, t(119) = 2.33, p < .05, two-tailed test. Strangers and spouses were marginally significantly different, t(16) = 1.77, p ≤ .10, two-tailed test. There were no significant differences between friends, spouses, and parents. Thus, sex differences in self-disclosure to strangers apparently are significantly less than sex differences in self-disclosure in relationships (i.e., friends, parents, and spouses). However, because not all targets had homogeneous effect sizes, relationship to target was not, by itself, a moderator variable.

Measure of self-disclosure. Table 1 also reports the results for studies categorized by measure of self-disclosure. The average effect sizes for self-report and observational studies were small, positive, and heterogeneous (d = .17 and .22, respectively). The effect size for other-report studies was positive and homogenous (d = .44), and the confidence interval did not include zero. The differences between the effect sizes for self-report, other-report, and observational studies were tested for statistical significance. The effect size for other-report studies was significantly greater than the effect size for self-report studies, t(.42) = 3.07, p < .05, two-tailed test, and marginally significantly greater than the effect size for observational studies, t(.05) = 1.76, p < .10. The effect sizes for self-report and observational studies were not significantly different, t(222) = 1.23, ns. Thus, measure of self-disclosure moderated the effect of sex on self-disclosure, but only for other-report studies. Whether self-disclosure is measured by self-report or observation did not, by itself, moderate the effect of sex on self-disclosure.

Publication status. Table I also contains the results for studies categorized as dissertations and journals. The effect sizes for dissertations and journal articles were both small, positive, and heterogeneous ($d = .15$ and .20, respectively). In addition, the effect sizes for dissertations and journal articles were not significantly different, $t(99) = .84, p > .05$. Thus, publication status did not moderate the effect of sex on self-disclosure.

Tests for Interactions Among Moderator Variables

None of the potential moderator variables independently moderated the effect of sex on self-disclosure. Had the moderators been able to explain the variance, then the resulting subgroups would have been homogeneous. That the subgroups were still heterogeneous indicates that the variables, by themselves, are not moderator variables. Consequently we conducted a test of whether interactions among sex of target, relationship to target, and measure of self-disclosure moderated the effect of sex on self-disclosure. Studies measuring self-disclosure using other report were not included in this analysis because there were too few studies using other report ($n = 11$) to cross this level of measure of self-disclosure with sex of target and relationship to target. In addition, this subgroup was homogeneous, and the effect size was significantly different from the effect sizes for self-report and observational studies. Thus, measure of self-disclosure was categorized as self-report versus observation.

Before conducting the analysis for interaction effects, we tested whether the data could be collapsed across friends, parents, and spouses. We did this because the effect sizes for friends, parents, and spouses were not significantly different from each other but were significantly different from the effect size for strangers. We calculated both within-group and between-groups homogeneity tests (Hedges & Becker, 1986) for (a) male friends and fathers, (b) female friends and mothers, and (c) opposite-sex friends and spouses. This procedure tests whether the effect sizes within subgroups are similar and whether the effect sizes between subgroups are different. This analysis was conducted for self-report studies; targets in observation studies were overwhelmingly strangers. The within-group homogeneity tests and the homogeneity tests of between-group differences indicated that male friends and fathers are equivalent targets, female friends and mothers are equivalent targets, and opposite-sex friends and spouses are equivalent targets.

Thus, the analysis of interaction effects involves 16 subgroups: 4 levels of sex of target (male, female, same sex, and opposite sex), by 2 levels of relationship (stranger, relationship), by 2 levels of measure of self-disclosure (self-report, observation).

Homogeneity statistics, applied to the subgroups, were used to locate outliers. Four outliers were identified. One outlier occurred in the self-report, male relationship subgroup (Zampich, 1981, $d = .903, n = 60$). A careful review of this study indicated no apparent reason for its being an outlier. Thus, it may be a random effect. Two effect sizes from Jourard (1961) were outliers in the self-report, same-sex relationship and self-report, opposite-sex relationship subgroups ($d = .148$ and $d = -.110$, respectively). Ironically, the two effect sizes from this study were outliers because they were considerably lower than the rest of the effect sizes for the respective subgroups.

Jourard’s (1961) study contributed approximately one fourth of the subjects to both subgroups and may be an outlier because of its disproportionate sample size ($N = 1,020$). An effect size from Shaffer, Smith, and Tomarelli (1982) was an outlier in the observational measure, same-sex stranger subgroup ($d = -.524$). This may be a systematic outlier. It is one of the few studies of strangers in which there is a prospect of future interaction. The overwhelming majority of observational studies involve strangers who are unlikely to see each other again. The possibility that “prospect of future interaction” is a potential moderator variable is discussed later in this article. Four outliers is less than would be expected because of chance ($p = .223$ observations, $\alpha = .05$).

Effect sizes were calculated and tested for homogeneity for each of the 16 subgroups (with outliers removed from the data). Table 2 reports the results for these analyses. Fifteen of the 16 subgroups were homogeneous when effect sizes coded as zero were included in the analysis. The effect size for self-report, female relationships was heterogeneous. This may be the result of one study (Carpenter & Freese, 1979) in which the effect size was coded as zero because the authors failed to report a test statistic for nonsignificant results and failed to provide the direction of the relationship. Because the mean effect size for this subgroup ($d = .449$) is considerably higher than zero and because the sample size for this study is considerably larger ($N = 253$) than the average sample size in this subgroup ($N = 163$), this study added a great deal of variance to this subgroup. All 16 subgroups were homogeneous when effect sizes coded as zero were excluded from the analysis.

We conducted two multiple regression analyses, one including outliers and one excluding outliers, with sex of target, relationship to target, measure of self-disclosure, and their two- and three-way interactions as the independent variables and the weighted effect size as the dependent variable. We used the SPSS-X regression procedure and conducted the analysis on $d$.

The significant regression equation for the data excluding outliers was ($R = .45$), $F(7, 211) = 7.83, p < .05$. The following effects were significant: the main effect of sex of target ($\beta = .30$, $t(211) = 3.72, p < .05$, the main effect of relationship to target ($\beta = .32$, $t(211) = 3.90, p < .05$, the main effect of measure of self-disclosure ($\beta = .21$, $t(211) = 2.57, p < .05$, and the interaction effect of relationship to target and measure of self-disclosure ($\beta = -.15$, $t(211) = -2.43, p < .05$. The results were similar for the regression equation including outliers.

These results indicate that relationship to target interacts with measure of self-disclosure to moderate the effect of sex on self-disclosure. Follow-up tests on the adjusted means (which are also included in Table 2) revealed that sex differences for self-report data to strangers ($d = .40, 95\%$ confidence interval includes zero) were significantly less than sex differences for ob-

Requests for the results of this analysis should be sent to Kathryn Dindia.

The results for the multiple regression equation with outliers was ($R = .43$), $F(7, 215) = 6.78, p < .05$. The results for the tests were sex of target ($\beta = .28$, $t(215) = 3.41, p < .05$, relationship to target ($\beta = .28$, $t(215) = 3.44, p < .05$, measure of self-disclosure ($\beta = .22$, $t(215) = 2.64, p < .05$, and the interaction effect of relationship to target and measure of self-disclosure ($\beta = -.13$, $t(215) = -2.07, p < .05$.}

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1. Requests for the results of this analysis should be sent to Kathryn Dindia.

2. The results for the multiple regression equation with outliers was ($R = .43$), $F(7, 215) = 6.78, p < .05$. The results for the tests were sex of target ($\beta = .28$, $t(215) = 3.41, p < .05$, relationship to target ($\beta = .28$, $t(215) = 3.44, p < .05$, measure of self-disclosure ($\beta = .22$, $t(215) = 2.64, p < .05$, and the interaction effect of relationship to target and measure of self-disclosure ($\beta = -.13$, $t(215) = -2.07, p < .05$.}
Table 2
Interacting Moderating Effects of Sex of Target, Relationship to Target, and Measure of Self-Disclosure

<table>
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<td>1,082</td>
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<td>.154</td>
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</tbody>
</table>

Relationships

| Male     |        |   |     |            |              |       |       |             |
|          |         |   |     |            |              |       |       |             |
| Male     | SR      | 17| 2,773 | .033    | .026        | -.048  | 0.100 | 24.72       |
|          | OBS     | 2 | 44  | -.117    | -.052        | -.656  | 0.552 | 0.30        |
| Female   | SR      | 18| 2,939 | .291    | .449        | 0.378  | 0.514 | 29.39*      |
|          | OBS     | 2 | 44  | .327     | .592         | 0.034  | 1.140 | 1.73        |
| Same sex | SR      | 19| 2,605 | .397    | .504        | 0.428  | 0.572 | 28.36       |
|          | OBS     | 5 | 178  | .377     | .490         | 0.206  | 0.766 | 4.92        |
| Opposite sex | SR    | 28| 3,150 | .119    | .244        | 0.176  | 0.312 | 39.43       |
|          | OBS     | 6 | 312  | .187     | .196        | -.026  | 0.418 | 2.47        |

Note: Includes studies with effect sizes set to zero. Adjusted *d*s are generated from the regression analysis and take into account the correlations between effects. CI = confidence interval, SR = self-report, OBS = observation.

* p ≤ .05

Discussion

Jourard was the first to hypothesize sex differences in self-disclosure. His research with the JSDQ provided support for sex differences in self-disclosure. Later research failed to consistently replicate these findings. Thus, narrative reviewers of research on sex differences in self-disclosure concluded that the results of studies on sex differences and self-disclosure are inconclusive. These reviewers suggested that the inconsistency in the results may be due to moderator variables, variables that systematically affect the degree to which sex affects self-disclosure. They hypothesized several moderator variables and called for research examining the effect of these moderator variables on sex differences in self-disclosure.

Rather than conducting additional research on sex differences in self-disclosure, this review sought to explain the inconsistency in the results of studies on sex differences in self-disclosure and to isolate the factors that systematically moderate the effect of sex on self-disclosure. We chose meta-analysis, a quantitative review of the literature, to accomplish this goal. The results of this meta-analysis help to explain the inconsistent results in studies of sex differences in self-disclosure.

The inconsistent results of studies of sex-differences in self-disclosure can be explained by several moderator variables. The direction and magnitude of sex differences in self-disclosure vary systematically depending on these variables. Sex-differences in self-disclosure are not consistent across studies.

Observational data to strangers (d = .17, Tukey = 4.43), self-report data in relationships (d = .21, Tukey = 5.13), and observational data in relationships (d = .23, Tukey = 5.77). Thus, self-report and observational data provided similar results for sex differences in self-disclosure when the target had a relationship with the subject. However, when the target was a stranger, males reported that they disclosed similarly to females, but observations of self-disclosure indicated that females disclosed more than males.

There was a significant main effect for sex of target. The adjusted means for sex of target were same-sex target d = .31, female target d = .24; opposite-sex target d = .08, and male target d = .03 (confidence interval includes 0). Follow-up tests indicated the following. Sex differences were not significantly different for female and same-sex targets (Tukey = 1.56). Sex differences to female and same-sex targets were significantly greater than sex differences to opposite-sex targets (Tukey = 3.63 and 5.20, respectively) and to male targets (Tukey = 4.95 and 6.52, respectively). Sex differences were not significantly different for opposite-sex and male targets (Tukey = 1.31). Thus, females disclose more than males to females. However, females do not disclose more than males to males. In same-sex interactions, females disclose more to females than males disclose to males. In opposite-sex interactions, females disclose more to males than males disclose to females; however, the differences in self-disclosure are not as great as for same-sex interactions.

In addition, there were significant main effects for relationship to target and measure of self-disclosure. Sex differences in self-disclosure were greater in relationships than for strangers. Sex differences in self-disclosure were greater for observational data than for self-report data. However, both these effects are spurious results because of the significant interaction effect between relationship to target and measure of self-disclosure.
Instead, there are reliable moderator variables that consistently affect the magnitude of sex differences in self-disclosure and explain the lack of consistent results across studies on sex differences and self-disclosure.

Summary of Results of Meta-Analysis

A meta-analysis of 205 studies of sex differences in self-disclosure, involving 23,702 subjects, published between the years 1958 and 1989, was conducted. The results of the meta-analysis yielded a mean weighted effect size of $d = .18$. However, the effect size was not homogeneous across studies. Sex differences in self-disclosure were influenced by several moderator variables.

Sex of target. Sex of target moderated the effect of sex on self-disclosure. The results of this meta-analysis were that females disclosed more than males to female and same-sex partners ($d = .24$ and .31, respectively), slightly more than males to opposite-sex partners ($d = .08$), but no more than males to male partners ($d = .03$, confidence interval includes 0). In addition, sex differences in self-disclosure were significantly greater to female and same-sex targets than to opposite-sex and male targets.

In their narrative review of the literature, Hill and Stull (1987) wrote that often female–female self-disclosure is highest, male–male self-disclosure is lowest, and opposite-sex self-disclosure is in-between. Hill and Stull indicated that gender differences may be smaller in opposite-sex relationships than in same-sex relationships because of reciprocity of self-disclosure. Women disclose more than men, and their high self-disclosure elicits their partner's self-disclosure. Men disclose less than women, and their low self-disclosure inhibits their partner's self-disclosure. Thus, women disclose at all levels in same-sex relationships, men disclose at low levels in same-sex relationships, and men and women disclose at intermediate levels in opposite-sex relationships.

The results of this meta-analysis partially support the reciprocity explanation. The results of this meta-analysis indicate that sex differences in self-disclosure are greater in same-sex interactions than in opposite-sex interactions. However, female-to-male self-disclosure was not greater than male-to-male self-disclosure. According to the reciprocity explanation, the level of female-to-male self-disclosure should have been intermediate, and the level of male-to-male self-disclosure should have been low.

The results of this meta-analysis also indicate that females disclose more than males to females but not more than males to males. There are a number of possible explanations for this. One is that females are threatened when interacting with males, and this may inhibit their self-disclosure to males. Research indicates that women avoid self-disclosure to avoid personal hurt and relational problems to be higher when self-disclosing to a man.

Relationship to target. Relationship to target did not, by itself, moderate the effect of sex on self-disclosure. Sex differences in self-disclosure to strangers were not significantly different from sex differences in self-disclosure in relationships (i.e., self-disclosure to a friend, parent, or spouse).

Measure of self-disclosure. When the measure of self-disclosure was other report (a subject reporting on his or her partner's self-disclosure), $d = .44$ and the confidence interval did not include 0. Thus, individuals reported that female partners disclose more than male partners. This effect size was homogeneous across 11 studies ($N = 873$) of sex differences in self-disclosure and was significantly greater than the effect size for self-report and observational studies.

The effect size for other-report studies may be a spurious result accounted for by one or more independent variables. Because of the small sample size for other-report studies, we could not test whether the effect holds up when we control for sex of target, relationship to target, and so on. For example, if other-report studies primarily involved female or same-sex targets, because sex of target is associated with effect size, sex of target could account for the relationship between measure of self-disclosure (other report vs. self-report and observation) and effect size. However, a subjective examination of the other-report studies indicated no particular bias in sex of target, relationship to target, publication year, or publication status.

Why do partner perceptions of self-disclosure result in larger sex differences in self-disclosure than disclosing or trained observer perceptions of self-disclosure? One possible explanation is that partner perceptions of self-disclosure are more prone to the effects of sex role norms. Hill and Stull (1987) indicate that sex role norms affect our expectations of appropriate self-disclosure for men and women. We may expect women to disclose more than men because we believe it is more appropriate for women to disclose more than men, and this may cause people to perceive that they receive more self-disclosure from women than men. Judgments of our own self-disclosure (and trained observer judgments of self-disclosure) may be less prone to this bias.

Publication year. Whether studies were published between 1960–1969, 1970–1979, or 1980–1989 did not moderate the effect of sex on self-disclosure. In particular, sex differences in self-disclosure for studies published between 1960 and 1969 were not significantly greater than sex differences for studies published between 1970 and 1979, and sex differences for studies published between 1970 and 1979 were not significantly greater than sex differences for studies published between 1980 and 1989. In fact, sex differences in studies published between 1960 and 1969 were not significantly greater than sex differences for studies published between 1980 and 1989. The results of this meta-analysis suggest that sex differences in self-disclosure have not changed in the past 30 years.

Publication status. Whether a study was published did not influence the effect of sex on self-disclosure. There does not appear to be a bias for publishing studies that find sex differences in self-disclosure versus studies that do not find sex differences in self-disclosure.

Interaction effects. Hill and Stull (1987) suggested that interactions between situational factors may moderate sex differences in self-disclosure. We tested whether interaction effects between sex of target, relationship to target, and measure of self-disclosure moderated the effect of sex on self-disclosure. The findings indicate that the interaction effect of relationship
to target and measure of self-disclosure moderates the effect of sex on self-disclosure.

Measure of self-disclosure (self-report vs. observation) did not affect sex differences in self-disclosure to targets that have a relationship with the discloser (friend, spouse, parent). In these relationships, both self-report and observational data indicate that females disclose more than males ($d = .21$ and $.23$ respectively). However, measure of self-disclosure (self-report vs. observation) moderated sex differences in self-disclosure when the target was a stranger. Men reported that they self-disclose similarly to women ($d = -.02$, confidence interval includes 0). However, observational studies of self-disclosure found that women disclosed more than men to strangers ($d = .17$), and the effect size was not significantly different from the effect size for self-report and observational data to friends, parents, and spouses.

Why does measure of self-disclosure (self-report vs. observation) affect estimates of sex differences in self-disclosure when the target is a stranger but not when the target has a relationship with the discloser? Why are there consistent sex differences in self-disclosure when the target person is a friend, parent, or spouse and self-disclosure is measured by self-report or observational data and when the target person is a stranger and self-disclosure is measured by observational data? When the target has a relationship with the discloser, a specific person is referred to in self-disclosure questionnaires. For example, the target listed on the questionnaire is mother, father, spouse, best male friend, or best female friend. The subject's frame of reference for answering questions is their past self-disclosure to a particular person. These questionnaires typically ask the respondent to indicate how much they have disclosed to the specific person in the past. On the other hand, when the target person is a stranger, the target person is unspecified. Typically, the subject is asked, how much do you or would you self-disclose to a stranger? The subject's frame of reference for answering questions includes past experience with multiple strangers and projections of self-disclosure to any one of an infinite number of strangers.

Self-disclosure questionnaires may be more valid when the target person is someone with whom the respondent has a relationship than when the target person is a stranger. Subjects may be more accurate at reporting their self-disclosure when they are reporting on past self-disclosure to a friend, parent, or spouse than when they are trying to estimate their self-disclosure to any one of an infinite number of strangers. Thus, the significant interaction effect of relationship to target and measure of self-disclosure may be an artifact of invalid measurement of self-report data to strangers. This explanation assumes the validity of observational measures of self-disclosure.

Summary of results The results of this meta-analysis indicate that sex differences in self-disclosure are moderated by sex of target (male, female, same sex, opposite sex) and the interaction effect of relationship to target (stranger vs. relationship) and measure of self-disclosure (self-report vs. observation). Women disclosed more than men to partners, to same-sex participants, and to opposite-sex partners. However, the difference in self-disclosure to opposite-sex partners was not as great as the difference in self-disclosure to female and same-sex partners. Women did not disclose more than men to men. In addition, women disclosed more than men to partners with whom they had a relationship (friends, parents, and spouses), regardless of whether self-disclosure was measured by self-report or observational data. Women also disclosed more than men to strangers when self-disclosure was measured by observational data. However, men reported that they disclose similarly to women when interacting with strangers. This last finding may be a spurious result because of invalid self-report measures of self-disclosure when the target person is a stranger.

Comparison With Results of Hosman's Meta-Analysis

The results of this meta-analysis can be compared with the results found by Hosman (1986). Hosman summarized 73 studies ($N = 9,402$) of sex differences in self-disclosure and reported an average effect size of $r = .07$ (which is the same as $d = .14$). This effect size was heterogeneous. The effect size for self-report studies was $r = .08$ ($d = .16$; 36 studies, $N = 6,241$) and the effect size for observational studies was $r = .06$ ($d = .12$; 36 studies, $N = 3,161$). Thus, Hosman concluded that the dependent measure did not moderate the effect of sex of discloser. Our results also indicated no independent moderating effect of self-report versus observational data. Hosman found a mean $r$ of $.10$ ($d = .20$) for studies published between 1960 and 1969, a mean $r$ of $.07$ ($d = .14$) for studies published between 1970 and 1979, and a mean $r$ of $.07$ ($d = .14$) for studies published between 1980 and 1989 and heterogeneity of variance for all three subgroups. Hosman concluded that in later studies men's and women's self-disclosure less. The results of our meta-analysis indicate no significant differences in sex differences in self-disclosure for studies published between 1960-1969, 1970-1979, and 1980-1989. However, the average effect size did decrease from studies published in the 1960s and 1970s ($d = .23$ and .21, respectively) to studies published in the 1980s ($d = .16$). Hosman did not analyze sex of target and relationship to target as potential moderator variables of the effect of sex on self-disclosure.

The results of Hosman's (1986) meta-analysis, for the most part, are similar to the results of our meta-analysis. The differences are most likely attributable to differences in the samples of studies analyzed. Hosman analyzed a subset of studies on sex differences and self-disclosure. Hosman's method of obtaining studies was not systematic, such as a computer search, and he limited his meta-analysis to published articles. We used several computer searches to locate our sample of studies and supplemented this method with additional techniques. We also included unpublished dissertations in our meta-analysis.

Limitations of This Meta-Analysis

There are several limitations to this meta-analysis. First, we were unable to test several potential moderator variables that have been hypothesized to moderate the effect of sex on self-disclosure. In particular, the situational variables studied in this meta-analysis represent a dated view of self-disclosure. Recent and emerging work on self-disclosure indicates that other situational variables, besides sex of target and relationship to target, have important effects on self-disclosure. In recent years many psychologists have adopted an “interactionist” perspec-
tive, believing that many social behaviors are influenced by both situational and dispositional factors. As stated by Shaffer et al. (1985), "the critical question for the student of self-disclosure is not 'Who disclosed?' but rather 'Who is most likely to disclose (or not disclose) in a particular setting or situation?'" (p. 164) Situational factors, beyond sex of target and relationship to target, have not been heavily investigated in self-disclosure research. Future research needs to examine these variables as potential moderators of the effect of sex on self-disclosure.

Hill and Stull (1987) suggested that topic is an important situational variable that may moderate the effect of sex on self-disclosure. They argued that if men and women differ in the topics on which they tend to self-disclose, then the topics studied will influence whether sex differences are found. The topics on which sex differences have been found tend to support the notion that traditional sex role expectations encourage women to disclose more on social-emotional matters (Hill & Stull, 1987). However, Hill and Stull acknowledged that there are inconsistencies with this conclusion.

We were unable to test whether topic moderated the effect of sex on self-disclosure in observational studies. As noted by Hill and Stull (1987), in observational studies topics vary from study to study and there are differences in the ways in which topics are described and categorized by researchers. Future observational studies of sex differences in self-disclosure should consider (a) using multiple topics and reporting separate self-disclosure scores for each topic or (b) using similar topics across studies. Environ, ition that the effect of topic on sex differences in self-disclosure can be examined in future meta-analyses of sex differences in self-disclosure.

We were also unable to analyze the effect of topic in self-report studies of sex differences in self-disclosure. The JSDQ measures self-reported self-disclosure to four target persons on seven topics: body, personality, money, work, tastes and interests, attitudes, and opinions. Unfortunately, research using the JSDQ typically does not report separate self-disclosure scores for each topic. Future self-report studies of self-disclosure should use or develop questionnaires that take topic into account and report separate self-disclosure scores for each topic.

Another aspect of the situation that has been studied in self-disclosure research is the physical setting. Chelune (1976) developed the Self-Disclosure Situational Survey (SDSS), which incorporates physical setting in a self-report measure of self-disclosure. The SDSS consists of 20 different social situations aimed at sampling various social interactions. The 20 situations are divided into 4 groups of 5 items according to 1 of 4 target persons: a friend, a group of friends, a stranger, and a group of strangers. The 5 items within each target class represent five different levels of physical-setting conditions scaled for intimacy. Thus, the SDSS represents a 4 x 5 (Target x Intimacy-of-Setting Condition) matrix of items.

Although the SDSS has been used to study sex differences in self-disclosure to each of the four target persons (Chelune, 1976), it has not been used to study sex differences in self-disclosure for each of the five levels of physical-setting conditions. Future research using the SDSS should report sex differences for the five levels of physical setting.

Another aspect of context that may moderate the effect of sex on self-disclosure is the prospect of future interaction. Almost all observational studies of self-disclosure between strangers use subjects who have no prospect of future interaction. Shaffer et al. (1982) studied self-disclosure between strangers with a prospect of future interaction. The results were that men disclosed more intimately than women to a same-sex confederate. In a follow-up study, Shaffer and Ogden (1986) manipulated prospect of future interaction and investigated its effect on sex differences in self-disclosure. The results were a significant interaction between sex of discloser and prospect of future interaction. Specifically, female subjects disclosed more intimately than male subjects when there was no prospect of future interaction. There were no significant differences in the intimacy of male and female disclosures when subjects anticipated future interaction with their partner. Shaffer and Ogden suggested that anticipated future interaction activates agentic or instrumental motives and performance-based goals prompting men to become more intimate and women to become less intimate under the prospect of future interaction. Shaffer and Ogden argued that the situation, and the goals that are motivated by the situation, may affect men's and women's self-disclosure in different ways. Future research on self-disclosure should (a) use strangers who have a prospect of future interaction or (b) systematically examine the effect of prospect of future interaction on men's and women's self-disclosure.

Miller and Read (1987) also espoused a goal-based model of self-disclosure. Miller and Read argued that past research on individual differences in self-disclosure may have found inconsistent results because previous disclosure measures were not concerned with subjects' goals when disclosing. Miller and Read (1987) suggest that instead of asking "which individuals are more likely to disclose?", we may want to ask the following questions: (1) "What are the different goals . . . that may lead to disclosing about oneself . . .?" (2) "Are there differences in disclosing patterns for different goals . . .?"; and (3) "Given particular interaction goals, how do individuals differ in their beliefs, resources, and strategies regarding disclosure of particular kinds of self-related information?" (p. 53)

Thus, future research on sex differences in self-disclosure should study the different goals that lead men and women to self-disclose, the effect of different goals on men's and women's self-disclosure, and whether, given similar goals, men and women differ in their self-disclosure.

We were also unable to analyze some potentially important dispositional variables in this meta-analysis. Hill and Stull (1987) indicated that sex role identity may moderate the effect of sex on self-disclosure. Apart from the biological sex of a person, an extremely important predictor of interpersonal behavior is sex role identity, or the gender-related characteristics that a person ascribes to him or herself. Wide consensus exists about what constitutes stereotypic masculine and feminine traits. Masculine traits are instrumental ones, defined by such attributes as competence, rationality, and assertion. Feminine traits are expressive ones, defined by such attributes as warmth, expressiveness, and nurturance (Bem, 1974). Generally, self-disclosure is hypothesized to be positively related to femininity. Alternatively, self-disclosure may be positively related to masculinity because self-disclosure may reflect masculine assertiveness (Hill & Stull, 1987).

Research has found inconsistent results regarding sex role
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identity and self-disclosure (Hill & Stull, 1987). This is true regardless of measure of sex role identity (e.g., Masculinity-Femininity scale of the Adjective Check List, Bem Sex-Role Inventory, Personal Attributes Questionnaire) and regardless of whether masculinity-femininity is considered unidimensional (people are classified as masculine or feminine) or as two separate dimensions. In the latter case, people are classified on the basis of one of these dimensions (high or low in masculinity or femininity) or on the basis of both dimensions (androgyous, sex-typed, cross-sex-typed), or androgyne is treated as an interaction effect.

We could not test whether sex role identity moderates the effect of sex on self-disclosure. There was not a sufficient number of studies reporting separate results on sex differences in self-disclosure for androgyous, masculine, feminine, and undifferentiated subjects to include sex role identity in the meta-analysis. Meta-analysis cannot be used to study the moderating effect of sex role identity until more studies are conducted that simultaneously examine the effect of sex and sex role identity on self-disclosure. Future research on sex differences in self-disclosure should incorporate sex role identity as an independent variable and report separate results for masculine, feminine, androgyous, and undifferentiated subjects.

The second limitation of this meta-analysis is that the generalizability of the results are questionable because of the artificial nature of research on sex differences in self-disclosure. As already indicated, almost all the observational studies of self-disclosure between strangers use subjects who have no prospect of future interaction. Self-disclosure theorists and researchers have long commented on the "stranger on the train" phenomenon and have indicated that the results of these studies may not be generalizable to the more typical situation of strangers who anticipate future interaction. Similarly, many of the observational studies use laboratory settings with confederates and experimental manipulations that are not representative of the self-disclosure typically encountered outside the laboratory. If the results of these studies are to be generalized beyond the experimental conditions, the manipulations of self-disclosure must be representative of conditions typically found outside the laboratory (Chelune, 1978). Future research on self-disclosure should make an attempt to study naturally occurring self-disclosure in the context of developing or established relationships.

Similarly, the validity of self-report research on self-disclosure is questionable. In questionnaire research, the actual behavior of the subject is not measured and hence not known. Consequently, the validity of the results rests on the questionnaire's ability to predict actual self-disclosure. The postdictive, concurrent, and predictive validity of self-disclosure questionnaires has not been demonstrated by research (Chelune, 1978; Cozby, 1973; Goodstein, & Reinecker, 1974). Thus, generalizations from self-report measures of self-disclosure to actual behavior may not be warranted.

A third limitation of this meta-analysis is that using a computer search to locate studies on sex-differences and self-disclosure is not infallible. Articles have been inadvertently omitted from this meta-analysis. The key terms used to search the databases were the appropriate ones as indicated in the instructions for each database. However, any study that was not coded with the key terms sex differences (or human sex differences in the case of Psychological Abstracts) and self-disclosure was not located through the computer searches. In particular, studies that did not mention that they examined sex differences in self-disclosure in the title or abstract were likely to be omitted from this meta-analysis. We tried to fill this gap by using other reviews of the literature on sex differences and self-disclosure to locate additional studies and by reading the review of literature and reference section of the articles and dissertations included in the meta-analysis to locate studies we had missed.

In addition, we were unable to include approximately 33% (25) of the dissertations on sex differences and self-disclosure because they were not available for loan. However, we can think of no reason why the results from these dissertations would be significantly different from the results of dissertations that were available.

A fourth limitation of this meta-analysis is that there were not enough studies of sex differences in self-disclosure to examine the interaction effects of sex of target, relationship to target, and measure of self-disclosure using study as the unit of analysis. Consequently, finding, rather than study, was used as the unit of analysis. Because of this, effect sizes are based on non-independent observations. Some researchers have argued that this does not matter, that the estimate of the mean effect size and variance of effect size is not altered by non-independence (Trace, 1985). However, Kenny (personal communication, 1990) indicated that using multiple findings from the same study does not affect mean effect size but does affect variance of effect size, causing more results to be significant.

A fifth limitation of this meta-analysis is that there were not enough studies published using other report of self-disclosure to test whether the results for this homogeneous subgroup held up when controlling for other variables. The results of this meta-analysis indicate that people perceive greater sex differences in self-disclosure in their partner's self-disclosure than they perceive in their own self-disclosure or objective observers perceive in others' self-disclosure. However, this meta-analysis was unable to test whether these results are spurious results caused by another variable that characterizes other-report studies.

The sixth limitation of this meta-analysis is that some of the subgroups that were used to test the two- and three-way interactions of sex of target, relationship to target, and measure of self-disclosure were based on small sample sizes (see Table 2). This was especially true for observational studies of self-disclosure between partners who have a relationship with each other. This is problematic because it lowers the probability for detecting differences between subgroups. Future observational studies of sex differences in self-disclosure need to use partners who have a relationship with each other (friends, spouses, parent-child) rather than strangers.

Conclusions

The results of this meta-analysis indicate that there are sex differences in self-disclosure and that these differences are moderated by sex of target and the interaction effect of relationship to target and measure of self-disclosure. However, the results of this meta-analysis also indicate that sex differences in
self-disclosure are small. The average effect size for sex differences in self-disclosure, across all studies in this meta-analysis, was $d = .18$. The largest effect size obtained in this meta-analysis was $d = .44$ for other-report measures of self-disclosure, and this effect size may be the result of sexual stereotypes. Cohen (1977) considered a $d$ of .20 a small effect size, a $d$ of .50 a medium effect size, and a $d$ of .80 a large effect size. Rosenthal and Rubin (1982) introduced the binomial effect size display as a means of determining the practical significance of an effect size. An effect size of $r = .10$ (which is the same as $d = .20$) yields a 10% increase in self-disclosure for females in comparison with males. Thus, using the average effect size found in this meta-analysis, if approximately 45% of men would disclose a particular item, approximately 55% of women would disclose the same information.

Jourard (1971) argued that men suffer major mental and physical health problems because the male role prohibits males’ self-disclosure:

> If self-disclosure is an empirical index of openness and if openness is a factor in health and wellness, then research in self-disclosure seems to point to one of the potentially lethal aspects of the male role. Men keep their selves to themselves and impose thereby an added burden of stress beyond that imposed by the exigencies of everyday life. (p. 36)

The results of this meta-analysis question whether the magnitude of sex differences in self-disclosure is capable of causing men the major health problems attributed to sex differences in self-disclosure. Similarly, the results question whether the magnitude of sex differences in self-disclosure is large enough to significantly affect therapeutic process and outcomes so that men are less likely to benefit from counseling and psychotherapy. Finally, these results question whether magnitude of sex differences in self-disclosure is large enough to significantly affect the development and maintenance of male–female relationships.

Whether the magnitude of sex differences in self-disclosure is theoretically meaningful and practically important is debatable. However, the results of this meta-analysis indicate that sex differences in self-disclosure are not as large as self-disclosure theorists and researchers have suggested. It is time to stop perpetuating the myth that there are large sex differences in men’s and women’s self-disclosure.

**References**


Goodstein, L. D., Goldstein, J. J., D’Oria, C. V., & Goodman, M. A.
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(Appendix follows on next page)
Appendix


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Highlen, P. S., & Johnston, B. (1979). Effects of situational variables on


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