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Self-Disclosure and Liking: A Meta-Analytic Review

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Self-disclosure plays a central role in the development and maintenance of relationships. One way that researchers have explored these processes is by studying the links between self-disclosure and liking. Using meta-analytic procedures, the present work sought to clarify and review this literature by evaluating the evidence for 3 distinct disclosure–liking effects. Significant disclosure–liking relations were found for each effect: (a) People who engage in intimate disclosures tend to be liked more than people who disclose at lower levels, (b) people disclose more to those whom they initially like, and (c) people like others as a result of having disclosed to them. In addition, the relation between disclosure and liking was moderated by a number of variables, including study paradigm, type of disclosure, and gender of the discloser. Taken together, these results suggest that various disclosure–liking effects can be integrated and viewed as operating together within a dynamic interpersonal system. Implications for theory development are discussed, and avenues for future research are suggested.

> Wanting Mary to like him more, John told her that he sometimes felt insecure with women who were so capable but that he really wanted to work on those feelings. Believing that John was really opening up to her, Mary realized she liked John, and her responses to him made him believe that he was winning her over. Mary told John she wasn't as self-confident as he perceived her to be, she too had doubting moments. . .

Self-disclosures, such as those conveyed by John and Mary above, involve the act of revealing personal information about oneself to another. Such actions have been viewed as central to the development of close relationships (Altman & Taylor, 1973) and to the maintenance of psychological well-being (Jourard, 1964). Since Jourard's (1964, 1971) pioneering work, self-disclosure has been the focus of theoretical discussion and research inquiry in a number of disciplines, including psychology, communication, and sociology. Although the self-disclosure literature is extensive and complex, most of the empirical work within psychology has addressed a small number of self-disclosure phenomena. This article will focus on one of these: the relation between self-disclosure and liking (for more general reviews, see Derlega, Metts, Petronio, & Margulis, 1993; Chelune, 1979; Cozby, 1973; Goodstein & Reinecker, 1974).

Interest in the relationship between self-disclosure and liking can be traced to the early work of Jourard (1959), who found a positive association between liking for another person and disclosure to that person in a sample of nursing students and faculty. Since then, a number of studies have confirmed that we disclose more to those whom we initially like (e.g., Certner, 1973, Fitzgerald, 1963; Worthy, Gary, & Kahn, 1969), and that we tend to like those who disclose personal information to us (e.g., Archer, Berg, & Runge, 1980; Daher & Banikiotes, 1976; Taylor, Gould, & Brounstein, 1981). However, the relationship between self-disclosure and liking is not always a positive one. Many studies have indicated little or no association (e.g., Broder, 1982; Ehrlich & Graeven, 1971; Horenstein & Gilbert, 1976; Kohen, 1975; McAllister, 1980; Runge & Archer, 1988), whereas others have demonstrated a negative relation under some conditions (e.g., Archer & Berg, 1978; Cozby, 1972; Dalto, Ajzen, & Kaplan, 1979; Rubin, 1975).

Thus, despite a long history, researchers have failed to uncover a reliable pattern. As a result, the disclosure–liking literature has been described as disorganized, confused, and somewhat "muddled" (Berg, 1987). One factor that has contributed to this confusion is that researchers have not clearly distinguished among several different disclosure–liking relations (Berg, 1987; Kleinke, 1979; Miller, 1990). As a result, studies that have examined "the" disclosure–liking effect often have been concerned with very different intrapersonal and interpersonal phenomena (Archer, 1980; Miller, 1990). It is possible to distinguish among at least three disclosure–liking relations: (a) Do people like others who disclose to them more than others who do not? (b) Do individuals disclose more to people whom they initially like? (c) Do individuals like others as a result of having disclosed to them? As shown in Figure 1, these effects differ in the source of disclosure, the source of liking, and the causal direction assumed to underlie their association. Effect 1 is an interpersonal link involving the behavior of one person and the perceptions of another, whereas Effects 2 and 3 are intrapersonal links involving the disclosure and liking of one individual.

Although there are other possible disclosure–liking relations (see Berg, 1987, and Miller, 1990), these three have received the

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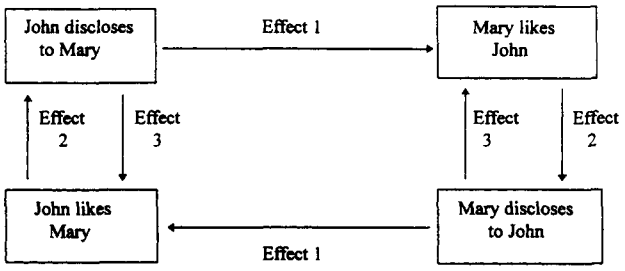

Figure 1. Model illustrating three disclosure–liking effects for two actors, John and Mary.

most research attention. The relation between a person's level of disclosure and a recipient's liking for the discloser (Effect 1) has been of special interest to social psychologists, and studies that have explored this effect make up the largest portion of the literature. This is most often the relation of interest when researchers refer to the *disclosure–liking hypothesis.* The other effects, however, are equally important for understanding the role of self-disclosure in social interaction, and each has received some independent research attention. Moreover, many studies that were designed to test the first effect have been confounded by one or more of the other effects. Thus, a critical step in organizing and integrating the literature in this area is to clearly distinguish among different disclosure–liking relations.

The primary goal of this article is to review and clarify the disclosure–liking literature by evaluating the evidence for each different disclosure–liking effect. To accomplish this, we identified studies that addressed each effect and conducted a separate meta-analysis for each set of findings. Our secondary goal, whenever possible, was to identify the conditions under which each effect is enhanced or attenuated. Thus, using past research and theory as a guide, we explored several variables that may moderate the relationship between disclosure and liking and may account for inconsistent findings among studies.

Effect 1: Do We Like Others Who Disclose to Us?

How do people perceive others who engage in self-disclosure? To address this question, one must treat self-disclosure as an independent variable and assess a recipient's liking for the discloser. Before considering the mechanisms that might be responsible for this effect, it is useful to consider how self-disclosure has been defined and operationalized.

Conceptually, self-disclosure has been defined as any information about oneself that a person verbally communicates to another person (Cozby, 1973; Wheeless, 1976). This includes both descriptive information (such as one's political affiliation) and evaluative information (such as how one feels about starting college). Any communication, then, can vary in the degree of self-disclosure present. Degree of disclosure is typically evaluated along the dimensions of depth (quality) and breadth (quantity). Depth refers to the intimacy level of the disclosure, whereas breadth refers to the amount of information exchanged (Altman & Taylor, 1973). The most common method of operationalizing self-disclosure is to manipulate or measure its level of intimacy (depth) such that intimate topics (e.g., one's feelings about marriage) are considered higher levels of disclosure than are less intimate topics (e.g., one's favorite musical group). Disclosure breadth is typically operationalized as the amount of time spent talking about oneself or the number of self-relevant statements made during an interaction.

Although a variety of paradigms have been used to study self-disclosure and liking, studies can be grouped into four general categories. Many early studies were *relationship surveys* of people in ongoing relationships who reported how much disclosure they had received from another and how much they liked that other (e.g., Halverson & Shore, 1969; Jourard, 1959). Researchers then moved into the lab, where levels of self-disclosure could be more carefully observed or manipulated. In contrast to earlier work, lab studies primarily have involved disclosure between strangers at the earliest stages of relationship development (Kleinke, 1979). The majority of these have used what we label an *acquaintance* paradigm, which involved subjects who were actively engaged in (or believed they were engaged in) an interaction with one or more others (e.g., Brewer & Mittelman, 1980; Chaikin, Derlega, Bayma, & Shaw, 1975; Jones & Archer, 1976). In the typical study, the discloser was a confederate whose communication was manipulated to be either high or low in intimacy. The remaining lab studies have used what we label an *impression-formation* paradigm (e.g., Berg & Archer, 1980; Bradac, Hosman, & Tardy, 1978; Chaikin & Derlega, 1974). In contrast to acquaintance studies, subjects in these studies either read information about a target's typical disclosing behavior or simply observed a discloser interacting with one or more partners. Thus, subjects in these studies were asked to form an impression of the discloser without interacting with him or her. Finally, a handful of experimental *field studies* have been conducted that involved a confederate disclosing to strangers in public places (e.g. Archer & Berg, 1978; Rubin, 1975). These studies are contrasted from laboratory experiments because, unlike lab studies, self-disclosure in these settings was unexpected and not explicitly sanctioned.

Given the various contexts within which disclosure has been studied, why should higher levels of intimacy or greater amounts of disclosure lead to increased attraction for the discloser? Two general models have been used to explain this disclosure–liking effect. The first considers self-disclosure as a social exchange in the context of ongoing relationships. The most extensive theoretical work in this area was presented by Altman and Taylor (1973), who view self-disclosure as a critical component in the formation of relationships. Their theory of social penetration suggests that relationships develop through gradual increases in the depth and breadth of self-disclosures. The degree of self-disclosure exchanged between partners may be viewed as a barometer of developing closeness (Taylor, 1979). According to this approach, disclosure is viewed as a rewarding or positive outcome for the recipient because it communicates the discloser's liking and desire to initiate a more intimate relationship. Thus, consistent with models of social exchange, people should be more attracted to those who provide them with more rewarding outcomes (Worthy et al., 1969).

The second theoretical approach used to explain this disclosure–liking relation stems from information-processing models of attraction, which suggest that liking is determined by having positive beliefs about an individual; the more favorable the be-

liefs, the greater the attraction (Ajzen, 1977; Dalto et al., 1979). According to this approach, the link between self-disclosure and liking is mediated by the formation of positive beliefs about the discloser. For example, people who disclose more intimately may be viewed by others as more trusting, friendly, and warm (Ajzen, 1977). Consistent with this, there is some experimental evidence that people form more positive impressions of others who are willing to share personal information about themselves, compared with others who are less open (e.g., Davis & Sloan, 1974; Jones & Archer, 1976; Kleinke & Kahn, 1980).

In summary, social exchange and information processing models provide a theoretical basis for predicting that individuals will be more attracted to others who are willing to share information about themselves. Nevertheless, most researchers in this area acknowledge that, under some conditions, self-disclosure may not be viewed as personally rewarding by a recipient and may not lead to favorable impressions of a discloser. A number of situational and contextual variables have been suggested to moderate the link between disclosure and liking.

Appropriateness of the Disclosure

Although sharing personal information may signal the discloser's interest in developing a more intimate relationship, there are times when this may be viewed as inappropriate. Altman and Taylor (1973) suggested, for example, that disclosing personal information at the earliest stages of a relationship (such as a first encounter) may be too much, too soon. As a result, the disclosing person may be viewed as maladjusted and less likeable. In general, there appear to be fairly strict social rules governing what information is appropriate to reveal and in what contexts (Derlega & Grzelak, 1979). To the extent that intimate disclosure is seen as a violation of these norms, sanctions in the form of unfavorable evaluations may result.

Gender Differences

The importance of social norms in judging the appropriateness of disclosure has led some researchers to suggest that the disclosure–liking link should be stronger for female than for male disclosers (Chelune, 1976; Derlega & Chaikin, 1976; Kleinke & Kahn, 1980). Traditional sex-role stereotypes suggest that women are more skillful communicators and are more concerned with issues of intimacy than are men. Thus, an intimate disclosure by a man may violate expectations and be seen as less appropriate than a similar disclosure by a woman. As a result, men may be viewed as maladjusted if they *do* disclose, whereas women may be viewed as maladjusted if they do *not* disclose (Chelune, 1976; Derlega & Chaikin, 1976).

There is also reason to expect differences between female and male recipients of disclosure. Because women tend to disclose more than men (see Dindia & Allen, 1992, for a meta-analysis of sex differences in disclosure), women may perceive disclosure as more diagnostic of developing closeness and more socially rewarding than would men. In addition, because of traditional sex-role stereotypes, men may feel more threatened by unsolicited intimate conversation. As a result, the relationship between disclosure and liking may be stronger for female recipients than for male recipients.

Finally, sex differences may be even more complex, requiring that we consider the gender of both the discloser and the recipient. Men and women may hold different views regarding the value of disclosure from same-sex and opposite-sex partners. Unfortunately, existing theory and research offer little guidance with respect to this issue. On the one hand, because men are stereotyped as being less likely to disclose and more selective about choosing targets for self-disclosure (Derlega & Chaikin, 1976), a man who is willing to speak intimately about himself may be particularly valued by women (Collins & Read, 1990). Thus, we might expect that the relation between disclosure and liking would be most pronounced for women evaluating men. On the other hand, because intimacy is viewed as somewhat risky (Petronio & Martin, 1986), both sexes may be most comfortable receiving disclosure from a same-sex partner. Thus, we might expect that the disclosure–liking relation would be stronger for same-sex pairs than for opposite-sex pairs.

Attributions for the Disclosure

Another variable viewed as central to the disclosure–liking relation is the recipient's attribution for the discloser's behavior (Archer & Berg, 1978; Jones & Archer, 1976; Jones & Gordon, 1972; Wortman, Adesman, & Herman, 1976). There are at least three attributions one can make when a person discloses intimate information. A *dispositional* attribution is made when the behavior is seen as the result of a person's normal tendency to disclose at a particular level (e.g., "She's a friendly person"). A *situational* attribution is made when the behavior is viewed as the result of an environmental cue specifying what is expected (e.g., "She's doing what the experimenter asked her to do"). Finally, a *personalistic* attribution is made when the disclosure is seen as the result of some special quality of oneself, the recipient (e.g. "She trusts me").

In general, people are perceived more favorably if they appear to be selective about to whom they disclose (Kleinke, 1979). According to this approach, the relation between self-disclosure and liking should be most pronounced when a recipient makes a personalistic attribution for the discloser's behavior. That is, when people perceive that they have been personally selected for intimate disclosure, they feel trusted and liked and are more apt to evaluate the discloser favorably (Wortman et al., 1976).

Content of the Disclosure

Features of the disclosure itself may also moderate the disclosure–liking relation. One such feature is the relative intimacy level of the disclosure. Several authors have suggested that the positive impact of disclosure on liking may break down at extreme levels of intimacy (Archer & Berg, 1978; Brewer & Mittelman, 1980; Cozby, 1972). Revealing information that is highly intimate may sometimes be evaluated as inappropriate and a violation of social norms, especially if it occurs between strangers. Such disclosure may be more of a burden than a social reward, leaving the recipient embarrassed and unsure about how to respond. Unusually high disclosure can also elicit *reactance* (Brehm, 1966) when a recipient feels social pressure to reciprocate at an equally intimate level (Archer & Berg, 1978; Cozby, 1972; Rubin 1975, 1976). Indeed, one of the most con-

sistent findings in the experimental literature is that people who receive intimate disclosure feel obligated to respond with a personal disclosure of equal intimacy (see Kleinke, 1979, for a review of the disclosure-reciprocity effect). Thus, Cozby (1972) argued for a curvilinear relationship between disclosure and liking, in which liking is expected to be strongest when the level of disclosure is moderate and weakest when the level is either extremely low or extremely high.

Summary and Overview

In sum, a variety of variables have been suggested to enhance or attenuate the relation between self-disclosure and liking. Therefore, in addition to our general prediction that high disclosers would be evaluated more favorably than low disclosers, we derived a more detailed set of predictions that takes into account other features of the interaction or the context within which it takes place. (a) We expected the disclosure–liking effect to vary according to the study paradigm that was used. Because disclosure and liking are expected to increase together over the course of a relationship (according to social penetration theory), the relationship between disclosure and liking was expected to be most pronounced for relationship survey studies involving people in ongoing relationships. Among laboratory studies involving strangers, we expected that those using an acquaintance paradigm would obtain stronger effects than those using an impression-formation paradigm. We reasoned that because subjects in impression-formation studies were simply passive observers, many of the variables thought to enhance the disclosure–liking effect were absent. For example, passive participants had little basis for feeling liked or trusted by the discloser or for feeling that they were specially chosen for intimate disclosure (a personalistic attribution). Finally, we expected field studies to demonstrate the weakest effects, because these involved disclosure between strangers in public places, a behavior that is more apt to be viewed as socially inappropriate. (b) We predicted that disclosure–liking effects would be stronger for female than for male disclosers and for female than for male recipients of disclosure. Given limitations in theory and research, we made no predictions regarding the interaction of discloser and recipient sex. (c) We predicted that disclosure–liking effects would be stronger under conditions of personalistic than nonpersonalistic attributions. We directly examined attributions for the discloser's behavior by analyzing a small set of studies that specifically manipulated attributions for the discloser's behavior. (d) We also wanted to examine whether extreme levels of intimacy would reduce the discloser–liking relation. Ideally, we would rate the intimacy level of the stimuli used in each study and test for a curvilinear relation between intimacy level and effect size magnitude. Unfortunately, most studies provided no detail on the content of the disclosure. Thus, we examined a small set of studies that varied high, medium, and low disclosure. We predicted that the disclosure–liking effect would be stronger under conditions of moderate disclosure and weaker under conditions of high disclosure. (e) Finally, on an exploratory basis, we examined whether the disclosure–liking effect was stronger in studies that operationalized disclosure in terms of depth (intimacy level) rather than breadth (amount of information or time spent talking).

Method

Literature Search Procedure

First, we located articles through a computer search of *Psychological Abstracts* (1955–1992), looking under the keywords *self-disclosure, liking, attraction,* and *reciprocity.* In addition, an extensive list of references was provided by two published bibliographies (Moss, 1977; Rosenfeld, 1979). Finally, we located additional studies through a backward search of the reference section of each article until no new references were found. All relevant studies available in published form were considered for the analysis. These included journal articles, research reports in book chapters, and published conference or symposia papers.[1] We then evaluated studies from this large pool of references to determine if they were appropriate for the present analysis.

General Inclusionary Criteria for Studies

To be included in this review, a study had to meet each of the following general criteria. (a) The study had to contain either a manipulation or self-report measure of self-disclosure (studies could be correlational or experimental). Only studies that varied either the amount (breadth) of disclosure (such as time spent talking or number of statements made), or the intimacy level (depth) of disclosure (such as superficial vs. personal topics) were included.[2] (b) The study had to contain a measure or manipulation of liking or attraction toward a target. In all cases, liking was measured through some form of self-report. Liking was often assessed with a single item, but a number of studies included multi-item scales, such as Byrne's (1971) Interpersonal Judgement Scale, or Rubin's (1973) liking scale. We excluded studies that measured constructs other than liking or attraction. For instance, some studies measured only impressions of the target, such as how well-adjusted the target appeared or how friendly or trusting he or she seemed.[3] (c) We excluded

[1] Although some meta-analysts include unpublished studies (such as dissertations), this did not appear to be necessary in the present case. The primary reason for including unpublished work is to reduce bias in the sample that may result from editorial preferences toward particular findings (Glass, McGaw, & Smith, 1981). For instance, there may be a bias toward significant findings so that studies demonstrating an effect are more likely to get published than are studies that report no effect. However, in the present case such a bias seems unlikely, for several reasons. First, the disclosure–liking literature is characterized by inconsistent findings, and many published studies have failed to obtain a significant disclosure–liking effect. Thus, there does not appear to be any bias against publishing nonsignificant outcomes. Second, in many studies the disclosure–liking relationship was not the central focus of the research. Therefore, it is less likely that the significance or lack of significance for this effect would exert a systematic bias on published research. As such, the considerable time and expense needed to gather the relevant unpublished work (there were hundreds of dissertations on self-disclosure) seemed too costly, given what appears to be a small risk of publication bias.

[2] An example of a study excluded because of this criterion is Jones and Gordon (1972). In this study the researchers varied the timing of the disclosure (either early or late in a conversation) and whether the content of the disclosure was positive or negative. However, they did not vary the amount or intimacy level of the disclosure.

[3] An example of a study excluded because of this criterion is Davis and Sloan (1974). In this study the dependent measure consisted of an interview reaction checklist, made up of 14 items, such as how friendly the interviewer was, how cold or distant she was, and so on. In this case, no assumptions were made about which item, or combination of items, could be readily taken as a measure of liking.

studies that had used either a clinical population or a therapy analogue. For example, some studies examined the impact of therapist self-disclosure on client evaluations and therapy outcomes. Although this is an important area of disclosure research, the social dynamics and role expectations active in such a context may be very different from those operating in an acquaintance situation, which is the focus of this review.[4] (d) The report had to include sufficient statistical information so that an effect size could be estimated.[5] All studies included in each meta-analysis are listed in Appendix A.

Criteria for Effect 1 (Liking Others Who Disclose)

If a study met the general criteria, we then examined it to determine which disclosure–liking effect(s) had been tested. (Because some studies measured more than one disclosure–liking relation, studies could contribute an effect size to more than one disclosure–liking analysis.) Next, we categorized studies into three general classes: (a) *correlational studies* were self-report questionnaires that provided no basis for causal inference, (b) *strong experiments* were experimental studies that manipulated the variables of interest and adequately controlled for confounding variables, thus allowing for the inference of a causal relation between disclosure and liking, and (c) *weak experiments* were laboratory or field studies that manipulated the variables of interest but did not have adequate control over confounding variables, thus precluding firm conclusions about causality.

To be included under Effect 1, a study had to have a measure or manipulation of a target's disclosure and a measure of the subject's liking or attraction for that target. Forty-five publications and 50 independent studies fit these criteria. We then divided the studies into the three categories: (a) Correlational studies involved self-report questionnaires in which subjects indicated the amount of disclosure they received from another (such as a classmate) and the amount they liked that other. Also included in this category were studies that measured an individual's self-reported disclosure to a recipient (such as a roommate) and the recipient's self-reported liking for the discloser. (b) To be categorized as a strong experiment, a study had to meet a specific set of criteria. First, it had to manipulate high and low disclosure and then measure the subject's liking for the discloser. In addition, liking had to be assessed *prior* to any reciprocal disclosure by the subject, to avoid confounding Effect 1 with Effect 3. That is, because people tend to match the intimacy level of an initial disclosure (the *disclosure-reciprocity effect*) and tend to like people to whom they disclose (Effect 3), it was impossible to determine whether liking assessed after reciprocal disclosure had been caused by receiving disclosure, sending disclosure, or both. Some studies included reciprocal disclosure but measured liking at several points during the interaction. In these cases, we used only liking measured before the subject reciprocated in the analysis. Finally, in many studies the subject was the first speaker in the interaction, followed by the target speaker (usually a confederate), whose disclosure was manipulated. We categorized these studies as strong experiments only if the subject's initial disclosure level had not been manipulated by the experimenter. (c) All experimental studies that did not meet these criteria were categorized as weak experiments.

Variables Coded From Each Study

We recorded the following information for each study: (a) study paradigm (coded either as a relationship survey, an acquaintance paradigm, an impression-formation paradigm, or a field study;[6] (b) gender of the subject; (c) gender of the discloser; (d) type of disclosure measure or manipulation (coded either as depth or breadth); (e) type of liking or attraction measure (e.g., single-item rating scale, Rubin's liking scale); (f) for lab studies, whether the target and subject had an acquaintance or meeting period before their interaction; (g) the procedure and nature of the interaction between the subject and the target (e.g., passing notes, speaking over an intercom); (h) whether the interaction was reciprocal or one-way; and if reciprocal, the order in which the subject and target spoke; (i) any other variables of interest that had been manipulated or measured and that might account for variation in effect size but that were included in only a small number of studies (such as attribution for the discloser's behavior). Unfortunately, many reports were incomplete, resulting in missing data for a number of variables.

All variables were coded by Nancy L. Collins and were obtained from information provided in each research report. To assess reliability, a subset of 30% (25) of the articles was coded by a second independent rater (an advanced undergraduate student). Agreement was high, ranging from 81% to 100% across all coded categories, with an average agreement rate of 94%.

Meta-Analytic Procedures

Computing effect sizes. Effect size estimates were computed with DSTAT (Johnson, 1990), a statistical software program for meta-analysis. Additional analyses not available through this program were conducted using procedures described by Rosenthal (1984); Glass, McGaw, and Smith (1981); and Hedges and Olkin (1985). The primary effect size index used in this review was Cohen's d, which represents the difference between the means of two groups (e.g., high and low disclosure) divided by the pooled (within-group) standard deviation and corrected for bias

[4] An example of a study excluded because of this criterion is Dies (1973). In this study, clients from psychotherapy groups were asked to indicate their perception of how much their group leader self-disclosed. They were then asked to rate their leader on a variety of dimensions, including friendliness, sensitivity, helpfulness, and so on.

[5] An example of a study excluded because of this criterion is Berg (1984). In this study, college roommates reported the amount of disclosure given and received, and rated their liking for their roommate. The relation between liking and disclosure was analyzed as part of a multiple regression analysis in which disclosure was only one of several variables used to predict liking. Multiple Rs and beta weights were reported, but zero-order correlations were not. Because a beta weight from a multiple regression cannot be unambiguously transformed into an effect size (Rosenthal, 1984), this study could not be included.

[6] Studies were categorized as relationship surveys if they involved a self-report questionnaire that simply measured disclosure and liking among people involved in an ongoing relationship. For example, studies within this category sampled friends, acquaintances, roommates, or work partners. Studies were categorized as acquaintance studies if the subject was engaged in (or believed he or she was engaged in) an interaction with a partner (a confederate or another subject). The interaction need not be face to face, and the subject need not actually meet his or her partner. However, the subject must be under the *belief* that he or she is interacting with another person. Examples of an acquaintance paradigm would be having a subject talk to another over an intercom, or having groups of subjects pass self-descriptive notes to one another. In contrast, studies were categorized as impression-formation studies if the subject was simply a bystander or an observer of an interaction between other people, or if the subject simply received information about some target person's disclosing tendencies. Examples of impression-formation studies would be having subjects read a scenario describing an interaction between two people on a train, watching a video of a person being interviewed, or reading a questionnaire in which a target describes what he or she would be willing to reveal to another person in conversation. Finally, a study was coded as a field study if it involved the manipulation of disclosure targeted toward individuals in natural settings. An example of a field study would be having confederates disclose intimate or nonintimate information to patrons waiting in an airport.

(Hedges, 1981). Thus, d is simply a standardized mean difference that can be interpreted in the same manner as any standard score.

Because means and standard deviations often are not reported, d can be estimated from a variety of commonly used statistics. In the present case, d was estimated from F statistics for main effects (with df numerator = 1), t statistics, correlation coefficients (Pearson r, rho, or phi), F statistics from interactions when corresponding cell means and sample sizes were provided, or probability levels for a main effect or specific comparison of interest. If a study reported that an effect was not significant but provided no other statistical information, the effect size was estimated to be zero (Rosenthal, 1984).

Although our emphasis is on d, the r corresponding to each d also is presented, because many studies used continuous measures; thus, r is more appropriate and more readily interpreted. The effect size r is interpreted in the same manner as any correlation coefficient and was taken directly from each study or computed from d with a simple transformation formula.

Because we were interested in identifying variables that may moderate the relationship between disclosure and liking, studies that had used factorial designs could contribute more than one effect size to a particular disclosure–liking relation.[7] This was done only if the additional independent variable was relevant to the present analysis. For example, if a study crossed level of disclosure (high vs. low) with gender of the discloser, separate effect sizes were computed for male and female disclosers. On the other hand, if the study included several *dependent* measures of the same construct (such as two measures of liking), then the effects were averaged.[8]

Summary analysis of effect sizes. After we estimated effect sizes, we calculated and tested for significance the mean weighted effect. This provided an estimate of the magnitude of the overall effect across all studies. Each effect size was weighted by the reciprocal of its variance (see Hedges & Olkin, 1985), a procedure that gives greater weight to effect sizes that are more reliably estimated. Next we tested the homogeneity of the effect sizes to determine whether each set of ds varied more than might be expected on the basis of sampling error. Homogeneity is tested by Q_w, the within-class goodness-of-fit statistic. This statistic has an approximate chi-square distribution with $k-1$ degrees of freedom, where k is equal to the number of effect sizes. If Q_w is statistically significant, then significant variance among effect sizes is indicated (Hedges & Olkin, 1985), which suggests the need to explore moderator variables that may account for differences in outcomes across studies.

Tests of categorical models. If the hypothesis of homogeneity had been rejected, we tested categorical models by dividing the effect sizes into classes on the basis of study characteristics and comparing the mean effect size between classes. For example, we compared the mean effect for studies that had used male disclosers with the mean for studies that had used female disclosers. Categorical model testing is an analysis of variance (ANOVA) analogue. This test results in Q_b, the between-class goodness-of-fit statistic, which is analogous to an F test in an ANOVA. This statistic has an approximate chi-square distribution with $p-1$ degrees of freedom, where p is the number of classes (Hedges & Olkin, 1985). Like ANOVA, if there were more than three levels of a variable, contrasts between specific pairs of means were then conducted.[9]

Results

Summary Analysis

As shown in the first row of Table 1, the mean weighted effect size was $d = .281$ ($r = .139$), which differs significantly from zero. This indicates that across a variety of methods, higher levels of target disclosure are associated with greater liking for the target. However, we cannot infer a causal relation, because this includes correlational studies and some poorly controlled experiments. Thus, we examined the mean effect size for each of the three categories of studies.

Table 1
Effect 1: Summary of Effect Sizes

Category	k	Mean d^+	Mean r^+	Homogeneity within (Q_w)
Full sample	94	0.281*	.139	406.69**
Correlational studies	6	0.845*	.389	31.03**
Strong experiments	57	0.272*	.135	220.57**
Weak experiments	31	0.191*	.095	121.13**

Note. k = number of effects sizes, d^+ = mean weighted effect size; r^+ = correlation corresponding to mean weighted effect size.
* $p < .05$. ** $p < .01$.

As shown in the lower panel of Table 1, the mean effect for correlational studies was considerably larger than for the full sample, $d = .845$ ($r = .389$). The means for strong ($d = .272$, $r = .135$) and weak experiments ($d = .191$, $r = .095$) were smaller, but both were significantly greater than zero. Post hoc comparisons indicated that the means for strong and weak studies did not differ from each other ($z^2 = 2.11$, $p > .30$), but both were significantly smaller than the mean for self-report studies ($z^2 = 27.95$, $p < .001$, and $z^2 = 33.76$, $p < .001$). Taken together, these results provide evidence for an overall positive relation between disclosure and liking. Furthermore, the set of well-controlled experimental studies allows us to infer a causal relation: In first encounters, higher disclosure leads to increased liking.

Although the summary effects are of interest, they must be qualified in view of the substantial variability in effect sizes

[7] When studies are allowed to contribute more than one effect size, nonindependence among sampling units becomes a potential problem. As a result, some meta-analysts (e.g., Rosenthal, 1984) have recommended that each study provide only a single pooled effect size. However, as Glass et al. (1981) noted, when studies are used as the unit of analysis, findings are aggregated above the level at which many interesting relationships can be studied. This was particularly likely in the present analysis, in which we were interested not just in an overall effect but in identifying variables that may moderate the disclosure–liking relations.

[8] An example of a study in which several dependent measures were pooled is Skotko (1980). In this study, transcripts of conversations were coded for self-disclosure in several ways, resulting in five measures of disclosure. They had coders rate the intimacy level of the disclosure, the amount of time spent talking, the total number of personal statements made, and the relative number of personal versus impersonal statements made. In addition, subjects who participated in the interaction rated their own perception of the intimacy level of their partner's disclosure. In this case, an effect size was computed for each disclosure measure, and the five effect sizes were then averaged.

[9] In all cases, we used the Scheffe multiple comparison procedure to provide protection against inflated Type I error. This procedure involves testing the square of the standardized contrast $[z(y)]^2$, which is distributed as a chi-square. Each z^2 is compared with the 95% critical value of the chi-square distribution with l' degrees of freedom, where l' is equal to the number of contrasts *or* the number of groups minus 1—whichever quantity is smaller (see Hedges & Olkin, 1985, p. 160–162).

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- .9 |
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- .4 | 1
- .3 | 1 6 6
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+ .2 | 0 0 2 3 4 4 4 4 4 7 7 8 9
+ .3 | 0 1 1 2 3 3 4 4 4 4 4 5 6 6 9 9
+ .4 | 0 1 4
+ .5 | 1 5 5 5 6 7 7 9
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Figure 2. Effect 1: Stem-and-leaf display of 94 effect sizes (r).

across studies. As shown in the last column of Table 1, the homogeneity statistic (Q_w) for the full set of studies and for studies within each category was significant, indicating substantial within-group variation. Indeed, a review of the 94 individual effect sizes, shown in a stem-and-leaf display in Figure 2, reflects substantial variation both in the magnitude and direction of effects across studies. In the following sections we explore whether various moderator variables can account for some of this variability, by testing them in categorical models.

Categorical Model Testing

Study paradigm. The analysis of study paradigm revealed a significant between-classes effect (Q_b = 79.29, p < .001). As shown in the first panel of Table 2, the largest mean effect was obtained for relationship surveys that had involved people in ongoing relationships. The next category, acquaintance studies, involved subjects who interacted (or believed they were interacting) with a live partner in a laboratory setting. The mean effect for this category was significantly greater than zero, but, as predicted, was smaller than the mean for studies involving ongoing relationships (z^2 = 18.02, p < .001). The next category, impression formation, involved subjects who did not actively engage in an interaction but simply observed or read about a target who disclosed at either a high or low level. This category obtained a small but statistically significant mean effect. However, as predicted, this effect was significantly smaller than that for studies that had used either an acquaintance paradigm (z^2 = 11.50, p < .001) or a self-report questionnaire (z^2 = 34.88, p < .001). The final category, field studies, was the only one to obtain a significant negative effect, indicating that higher levels of disclosure were related to *less* liking in this context. This mean effect was significantly different from the remaining three categories (all p's < .001). Moreover, the nonsignificant homogeneity statistic indicates that this negative association is consistent across this set of studies.

Sex differences. First, we examined whether disclosure–liking effects would be stronger for female than for male disclosers. As shown in the second panel of Table 2, the mean effect size for female disclosers was significantly larger than the mean effect for male disclosers (Q_b = 8.53, p < .05). Moreover, the mean effect for male disclosers did not differ significantly from zero. However, there remained a significant amount of within-group variance within each gender group.

These results provide some evidence that disclosure is more likely to lead to liking when the discloser is female than when the discloser is male. However, this finding may be misleading, because some studies included both male and female disclosers but reported only the pooled effects. This occurred either because they did not test for gender differences or because they tested for differences and found none. Thus, to provide a more adequate survey of sex differences, we counted the occurrence of significant sex differences in studies that included both male and female disclosers. Of the 50 studies, only 15 used both male and female disclosers, and only 11 of these tested for sex differences. Of these, 4 (36%) reported stronger effects for female disclosers, 1 (9%) reported stronger effects for male disclosers, and 6 (55%) reported no sex difference. Once again, there is some evidence of sex differences in the predicted direction, but the difference appears to be inconsistent.

We then explored whether recipient (subject) sex accounted for variations in effect size. An analysis of mean effects for sex of subject revealed no differences within the full sample of studies or within any of the three study categories. We then looked more closely at studies that used both male and female subjects. Of the 50 total studies, only 27 used both male and female subjects, and 21 of these analyzed for sex differences. Of these, only 3 (16%) showed sex differences, all of which found stronger effects for female subjects. Thus, there appears to be little evidence for global differences between male and female recipients of disclosure.

A final possibility was that discloser sex may interact with recipient (subject) sex. Ideally, this would be tested by comparing effect sizes for studies grouped according to a 2 (discloser sex) × 2 (recipient sex) matrix. Unfortunately, this matrix was not easily completed with the available studies. Most studies either had subjects paired with same-sex partners or reported

Table 2
Effect 1: Categorical Models of Various Moderators

Category	k	Mean d^+	Mean r^+	Homogeneity within (Q_w)
Study paradigm				
Relationship survey	6	0.845*	.389	31.03**
Acquaintance	54	0.378*	.186	126.63**
Person perception	28	0.191*	.095	163.48**
Field study	6	−0.308*	−.152	6.23
Sex of discloser				
Female	53	0.304*	.150	207.77***
Male	24	0.105	.052	90.01***
Sex of subject × sex of discloser				
Female/female	33	0.485*	.236	123.04***
Female/male	2	−0.265	−.132	22.99**
Male/male	15	0.247*	.123	49.68***
Male/female	2	0.098	.049	0.04
Attribution for disclosure				
Personalistic	10	0.453*	.221	22.65**
Nonpersonalistic	12	0.228*	.113	8.89
Level of disclosure				
High–Low	7	−0.010	−.005	29.42**
Medium–Low	7	0.089	.044	26.58**
Disclosure manipulation or measure				
Depth	72	0.324*	.160	262.76***
Breadth	22	0.195*	.097	138.30***

Note. k = number of effects sizes; d^+ = mean weighted effect size; r^+ = correlation corresponding to mean weighted effect size.
* $p < .05$ ** $p < .01$. *** $p < .001$.

pooled effects only. Thus, to keep from reducing the numbers even further, we present results for the full sample only. As shown in the third panel of Table 2, the overall between-group difference was significant (Q_b = 24.29, $p < .01$). However, this must be viewed with caution, given that two cells (those for opposite-sex partners) contained only two observations. If we examine the effects for same-sex pairs only, we see that the mean effect for female partners (d = .485, r = .236) was larger than that for male partners (d = .247, r = .123), although this difference did not reach significance (z^2 = 5.78, $p < .12$). Finally, the within-group variance for studies within same-sex pairs remained significant.

Attributions for the disclosure. There was a small number of studies that specifically manipulated attributions for the target's disclosure. Thus, we can examine effect sizes for this set of studies, comparing effects under conditions of personalistic disclosure with those resulting from non-personalistic disclosure. The results of this analysis are presented in the fourth panel of Table 2. The mean effect size for conditions in which a personalistic attribution was made was d = .453 (r = .221), and the mean for nonpersonalistic was d = .228 (r = .113). Although this difference is in the predicted direction, the contrast did not reach significance (Q_b = 2.25, p = .13). Thus, these studies provided some evidence that the relation between disclosure and liking may be stronger if the recipient believes that the disclosure was given because of something unique or special about him- or herself.

Relative level of disclosure. To test whether the disclosure–liking relation breaks down at extreme levels intimacy, we examined a small set of studies that manipulated low, medium, and high disclosure intimacy. In these cases, the low-disclosure group was treated as a control or baseline group, and two effect sizes were calculated: one comparing the low with moderate disclosure and a second comparing the low with high.

As shown in the fifth panel of Table 2, the mean effect size for both groups was small (d = −.010 for high–low disclosure; d = .089 for medium–low disclosure), and neither differed significantly from zero. A closer look at these studies revealed that two (Archer & Berg, 1978; Rubin, 1975) used the field study paradigm that contributed strong negative effects to the high–low and medium–low categories, accounting for the relatively small mean effects. As for the remaining three studies, only one (Cozby, 1972) showed the predicted pattern, finding that highly intimate disclosure led to less liking than did moderately intimate disclosure. Thus, for the set of studies included here, there was not strong evidence that high disclosure lead to less liking relative to moderate disclosure. This finding must be viewed with caution, however, given the small number of studies and the difficulty in comparing disclosure levels from one study to the next.

Depth versus breadth of disclosure. Finally, on an exploratory basis, we wanted to examine whether the type of disclosure manipulation (depth vs. breadth) might account for some variation. As shown in the last panel of Table 2, studies that measured or manipulated disclosure in terms of intimacy level resulted in greater attraction than those that manipulated quantity of information (Q_b = 5.60, $p < .05$). This difference remained significant even when correlational studies and field studies (which all measured intimacy of disclosure) were removed from the analysis. Thus, operationalizing disclosure in

terms of intimacy level produces stronger liking effects than does operationalizing disclosure in terms of time spent talking or the number of self-relevant statements made.

Discussion

Do we like others who disclose to us? As the current meta-analysis suggests, apparently so. Although this effect was strongest in questionnaire studies that had involved ongoing relationships, similar and significant effects occurred among strangers in laboratory settings. Within well-controlled experimental studies, causal links may be inferred: higher levels of self-disclosure lead to increased liking for the discloser. Nevertheless, the relationship between disclosure and liking varied substantially among studies. On the basis of the literature reviewed, what variables appear to enhance or attenuate this disclosure–liking effect?

Study paradigm accounted for a significant amount of variability in outcomes. As predicted, self-report studies that had involved people in ongoing relationships resulted in the largest mean effect. Laboratory studies that had used acquaintance or impression-formation tasks resulted in weaker but significant positive effects, and field studies obtained a significant *negative* association between disclosure and liking. Although the mechanisms responsible for these differences are not entirely clear, the pattern was consistent with our predictions based on information-processing models of attraction (Ajzen, 1977) and models of relationship development, such as social penetration theory (Altman & Taylor, 1973). For example, the fact that laboratory studies that had used an acquaintance paradigm (in which interaction actually or ostensibly took place) obtained stronger effects than studies that had used an impression-formation paradigm suggests that disclosure is viewed as a positive reward and that liking occurs when the recipient believes he or she has been personally singled out for intimate disclosure. Furthermore, in experimental studies in which attributions for the target's disclosure had been directly manipulated, disclosure–liking effects tended to be stronger when subjects had been induced to make a personalistic attribution for the discloser's behavior. Nevertheless, that disclosure–liking effects were still significant for impression-formation studies in which no interaction had taken place is consistent with information-processing models of attraction (Ajzen, 1977). In other words, observers appear to develop more positive beliefs about others who are willing to disclose personal information about themselves. Finally, the fact that intimate disclosure resulted in decreased liking in field studies suggests that disclosing to a stranger in public may be viewed as extremely inappropriate and a severe violation of social norms. Perhaps any rewarding aspects of receiving disclosure (e.g., perceiving that you are liked by the discloser) are overridden by the negative impressions formed about someone who discloses personal information to a stranger. Feelings of reactance and concerns about privacy (Altman, Vinsel, & Brown, 1981; Derlega & Chaiken, 1977) may also have been particularly likely in field settings. Whatever the mechanisms, it is clear that the relationship between the discloser and the recipient, and the nature of their interaction, will play an important role in determining the impact of disclosure on liking.

Differences in social norms governing the disclosures of men and women raised the possibility that there might be sex differences in disclosure–liking effects. There was only weak evidence that disclosure–liking effects are stronger for female disclosers than for males disclosers, but when differences did occur, they were in the direction of stronger effects for women. However, there was no evidence for differences between male and female subjects (recipients of disclosure). Thus, men and women do not seem to differ overall in the extent to which they like others as a result of receiving self-disclosure. Finally, the interaction of subject and discloser sex could not be adequately tested, given the lack of studies reporting opposite-sex comparisons. However, the pattern of differences was in the direction of larger effects for same-sex female pairs as compared with same-sex male pairs. It is worth noting that this pattern is consistent with research on gender differences in the amount of disclosure: Compared with male same-sex friendships, female same-sex friendships are characterized by more frequent and more intimate disclosure (e.g., Caldwell & Peplau, 1982; Wheeler, Reis, & Nezlek, 1983). Clearly, more research is needed before we are able to draw firm conclusions about sex differences in disclosure and liking. Yet, on the basis of the studies reviewed here, it seems unlikely that global differences between men and women will be uncovered. The effect of gender will undoubtedly interact with such things as the stage of the relationship, the content of the disclosure, the context within which the disclosure takes place, the sex-role orientation of the partners, and so on.

The importance of social norms and reactance processes also led to the prediction that the disclosure–liking relation might break down at very high levels of disclosure. Unfortunately, this pattern was difficult to test given the available research, because the relative levels of disclosure were simply not comparable across studies. Moreover, most research reports provided insufficient detail on the topics discussed, thus precluding even a post hoc rating of intimacy levels. It is likely that variation in disclosure–liking effects may be partly a function of differences in the manipulation of self-disclosure levels. Clearly, greater detail in future work regarding the specifics of disclosure would be helpful. Still, among studies that had incorporated levels of disclosure within their respective designs, evidence for the level of disclosure moderating the disclosure–liking relation was not strong.

Finally, the way that self-disclosure was operationalized (depth vs. breadth) accounted for a significant amount of variation in study outcomes. Studies that varied the intimacy level of disclosure obtained stronger liking effects than those that varied the amount of information given or the time spent talking. Although the reasons for this difference are not yet clear, it is likely that the mechanisms thought to enhance liking are more strongly communicated by the quality of one's disclosure than by the quantity of information revealed.

The variables we explored in our meta-analysis clearly do not exhaust the possible moderators of this disclosure–liking effect. There were several additional variables that we were unable to adequately test given the current literature. For instance, Berg (1987) suggested that when an intimate disclosure is perceived as an act of responsiveness, we may be more attracted to the discloser. However, as he noted, the nature of the partners' interaction must provide some basis for interpreting a disclosure

as responsive; in laboratory studies, the partners must have either met each other and become acquainted, or there must have been an opportunity for reciprocal disclosure in which a subject spoke first. Unfortunately, research paradigms differed so greatly there was little possibility for uncovering systematic differences between studies with or without partner meetings. In addition, most studies either had not allowed reciprocal disclosure or had the target, usually a confederate, speak first. Even in studies that had allowed the subject to speak first, the confederate's disclosure was often predetermined and thus could not truly be responsive to prior disclosure by the subject. Nevertheless, two studies (Berg & Archer, 1983; Davis & Perkowitz, 1979) that specifically dealt with responsiveness provided support for its importance in understanding disclosure–liking effects, a potentially fruitful area for continued research.

A second variable we intended to explore was the content (positive or negative) of the disclosure. Unfortunately, information regarding specific content was rarely provided in research reports, thus precluding even post hoc analyses. Nevertheless, several studies that varied the content within their respective designs do suggest that it may play an important role. For instance, Dalto et al. (1979) found that, overall, people who revealed negative information were liked less than those who revealed positive information. Within the negative information condition, however, those who revealed more intimate information were liked more than those who revealed less intimate information (see also Derlega, Harris, & Chaikin, 1973; Horenstein & Gilbert, 1976). This suggests that social penetration and impression-formation processes may make independent contributions to liking.

A third variable that is important to consider includes cultural and individual differences in the extent to which disclosure is viewed as rewarding and appropriate. Clearly, personality factors, cultural norms, and personal values will play a role in determining how self-disclosure is interpreted and appraised and in how one feels about the discloser. For example, Mikulincer and Nachshon (1991) used a laboratory acquaintance paradigm to study the impact of self-disclosure on adults with different attachment styles. Results showed that the disclosure–liking effect was strong and positive among secure and anxious subjects, but for avoidant subjects (who are generally uncomfortable with closeness and intimacy), high levels of disclosure led to decreased liking for the discloser.

What can we conclude, then, about the variables that moderate the relation between self-disclosure and liking? Although currently no one theoretical position is able to explain the overall findings, any future theoretical frameworks might wish to consider the following: A person's disclosure may have a positive, neutral, or negative impact on the recipient. Moreover, this impact is not simply a function of the absolute level of disclosure; rather, it is apt to depend on a variety of additional variables, including (a) whether disclosure is appropriate in the context, (b) whether a partner is perceived as responding to us personally (e.g., liking us, caring about us, being responsive to us), (c) the quality and quantity of the information disclosed, (d) the content of the information disclosed, (e) the sex of the discloser and recipient, and (f) whether the recipient generally has positive beliefs about individuals who disclose or about the value of receiving disclosure.

Old issues in disclosure may need to be thought through more carefully as well. For example, what makes a behavior engaged in by another rewarding or punishing? Perhaps we should take into account more explicitly what the recipient desires when he or she receives disclosure from another. Do we want to get close to others? If so, then to the extent that their disclosure suggests that we are developing a more intimate relationship, the disclosure should be perceived as rewarding. However, if our goal is to maintain privacy or distance, then disclosures should be perceived as intrusive. Thus, theoretical approaches may wish to consider the goals of both partners in an interaction (Miller & Read, 1987).

Researchers may also need to pay closer attention to the nature of the interactions that take place in each study. Unfortunately, widely different studies (e.g., acquaintance vs. person-perception paradigms) are often treated as if they were testing the same social processes. As a result, there is a good deal of conceptual ambiguity regarding the mechanisms responsible for the disclosure–liking link in various settings. On a more general level, many laboratory studies have little in common with more natural settings (Skotko, 1980). Subjects often interact with partners who are never even seen, and communication often takes place in controlled sequences and through odd channels (such as passing notes, speaking over an intercom, and writing essays). As a result, social norms and conversational rules that operate in more natural settings are simply not permitted to function in many laboratory settings. Thus, although laboratory paradigms have the strength of increased internal validity, we must continue to critically assess their external validity.

Effect 2: Do We Disclose More to People We Like?

To whom do we disclose? Because self-disclosure is often risky, it seems reasonable that people will be selective when sharing intimate information with others. Jourard (1964) suggested that people are more inclined to disclose to others who are trusted and liked. This intrapersonal disclosure–liking effect treats one's own liking as an independent variable and one's own self-disclosure as a dependent variable.

Once again, interest in this effect emerged from a more general concern with the role of self-disclosure in the development of close relationships. Altman and Taylor's (1973) social penetration theory suggests that a discloser anticipates a benefit in allowing others to know more about him- or herself. Thus, self-disclosures are seen as instrumental to some outcome (Taylor, 1979). Consistent with this view, Worthy et al. (1969) reasoned that self-disclosure is rewarding to a recipient and that people will give more rewards to those whom they like. Thus, any determinant of liking may serve as an antecedent to high levels of disclosure (Lynn, 1978). Initial liking may result from a variety of sources, such as perceived similarity, mere exposure, proximity, and so on.

Most studies that have addressed this disclosure–liking relation have been self-report studies of people in ongoing relationships. Although these studies offer valuable information, they cannot be used to draw causal inferences about the effect of liking on disclosure. For instance, a positive correlation between liking and disclosure may result from one's own disclosure having caused liking (as we describe in the next section) or from

Table 3
Effect 2: Summary of Effect Sizes

Category	k	Mean d^+	Mean r^+	Homogeneity within (Q_w)
Full sample	31	0.717*	.338	850.68**
Correlational studies	16	1.105*	.481	636.37**
Strong experiments	8	0.449*	.219	7.39
Weak experiments	7	0.277*	.137	49.26**

Note. k = number of effects sizes; d^+ = mean weighted effect size; r^+ = correlation corresponding to mean weighted effect size.
* $p < .05$. ** $p < .001$.

some third variable, such as proximity, having caused increases in both liking and disclosure. There was, however, a small number of experimental studies that manipulated initial liking (by manipulating perceived similarity, or providing false feedback) and then measured subsequent disclosure. We review both types of studies but treat them separately.

What variables might moderate this disclosure–liking relation? Once again there is reason to believe that gender differences may account for variability in effect size; however, existing research and theory do not offer strong guidelines for predicting the direction of these differences. One the one hand, because women are stereotyped as being more open (Kleinke, 1979), they may be more likely than men to use disclosure as a tool for communicating liking. Thus we might expect that the relation between disclosure and liking would be stronger for female subjects (disclosers) than for male subjects. On the other hand, women tend to disclose more than men (Dindia & Allen, 1992), so they may be less discriminating. Thus, we might expect that the disclosure–liking relation would be somewhat larger for men.

Method

All data collection and coding procedures were identical to those described for Effect 1, except for the specific criteria that were used for locating studies for this disclosure–liking relation. To be included under this effect, a study had to have a measure or manipulation of the subject's liking for a target and a measure of the subject's disclosure toward that target. Twenty-two studies met these criteria. Most of these studies were self-report studies that had measured past disclosure to a target and liking for that target.[10] There was, however, a small set of studies that manipulated the subject's initial liking (through such things as false feedback) and then measured subsequent disclosure. We categorized these as strong experiments. Some studies measured liking prior to disclosure but did not specifically manipulate liking. For instance, subjects in one study viewed a videotape of a person talking about social issues, followed by a measure of liking for the target, followed by a measure of willingness to disclose to the target. In this circumstance, it is possible that liking and disclosure were both caused by some third variable (such as perceived similarity), or that people who tend to like others also tend to disclose to others. In such cases, these studies were categorized as weak experiments.

Results

Summary Analysis

As shown in Table 3, the mean effect size for the full sample of studies was $d = .717$ ($r = .337$), which differs significantly from zero. The full sample was then broken down into three classes of studies, revealing a relatively large mean effect for correlational studies ($d = 1.105$; $r = .484$), and somewhat reduced effects for strong ($d = .449$; $r = .219$) and weak ($d = .277$; $r = .137$) experiments. The between-class effect was significant ($Q_b = 157.66$, $p < .001$). Post hoc contrasts indicated that the mean effect size for strong and weak experiments did not differ from each other ($z^2 = 4.09$, $p = .13$), but both were significantly smaller than the mean for correlational studies ($z^2 = 72.79$, $p < .001$; $z^2 = 134.45$, $p < .001$).

The test for homogeneity for the full sample and for the three kinds of studies are presented in the last column of Table 3. The test for homogeneity was significant in all cases except for strong experiments. Variability among the 31 effect sizes can be seen in the stem-and-leaf display shown in Figure 3.

Sex Differences

We began by examining the mean effect for male and female subjects (disclosers) in the full sample of studies. As shown in Table 4, the mean effect size for women was substantially larger than that for men. However, this large difference appears to be due to a disproportionate number of correlational studies that used female subjects. Correlational studies, overall, revealed much larger effects than experimental studies, thus this large gender difference may simply reflect this difference. To test this, we broke down the sample into correlational studies and experimental studies and then examined sex differences within each group. (Strong and weak experimental studies were combined to maintain a reasonable number of cases in each group).

As shown in Table 4, there is no difference between male and female subjects for experimental studies, but there is a large sex difference for correlational studies ($Q_b = 130.72$, $p < .001$). A review of the effect sizes for the correlational studies indicated one study (Fitzgerald, 1963) that contributed two unusually large effect sizes to the female group. In addition, the sample size for this study ($n = 300$) was much larger than that of any other study. As a result, this study seemed to be contributing disproportionately to the mean effect for female correlational studies. Thus, we removed these two outliers and recomputed the mean effect for female correlational studies. When this was done, the mean effect for female subjects was reduced to $d = .470$ ($r = .229$), which is considerably smaller and which no longer differs from the mean effect for correlational studies that used male subjects ($d = .388$, $r = .190$). In summary, there is little evidence that men and women differ in their tendency to disclose to people they like. Almost all studies used same-sex pairs, thus an analysis by target sex would be redundant, and the Subject × Target interaction could not be tested.

[10] In some correlational studies subjects were asked to report how much they liked various partners and how much they had disclosed to them in the past. Such studies could be used to test either Effect 2 (we disclose to those we like) or Effect 3 (we like those to whom we have disclosed). All such studies, however, were intended to test Effect 2 and were therefore included in that analysis. We acknowledge that causal conclusions cannot be drawn from these studies, and we were careful to distinguish them from well-controlled experimental studies that allowed us to discriminate the two effects.

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+ .5 | 1 1 6 7 8
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+ .7 | 5 6
+ .8 | 5
+ .9 |
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Figure 3. Effect 2: Stem-and-leaf display of 31 effect sizes (r).

Discussion

Overall, the meta-analysis for this disclosure–liking relation provided evidence for significant positive effects in ongoing relationships and weaker, although significant, effects in initial encounters among strangers in laboratory settings. Well-controlled experimental studies provided a basis for inferring a causal link in stranger interactions: Liking others leads us to disclose more to them. Thus, there is some evidence that liking regulates disclosure in first encounters. Nevertheless, the magnitude of this effect suggests that initial liking accounts for only a limited amount of variation in disclosing behaviors in these circumstances.

Table 4
Effect 2: Sex of Subject Differences

Category	k	Mean d^+	Mean r^+	Homogeneity within (Q_w)
Full sample				
Female	16	1.041*	.461	655.92***
Male	11	0.382*	.172	23.97**
Correlational studies				
Female	10	1.452*	.588	449.42***
Male	6	0.389*	.191	6.24
Experimental studies				
Female	6	0.383*	.188	0.50
Male	5	0.294*	.146	17.07**

Note. k = number of effects sizes, d^+ = mean weighted effect size; r^+ = correlation corresponding to mean weighted effect size.
* $p < .05$. ** $p < .01$. *** $p < .001$.

What mechanisms are responsible for this effect? One possibility is that we want others to know we are attracted to them, so we disclose in an effort to communicate liking or to create a favorable impression. Or, perhaps when we are interested in knowing more about a person we like, we disclose with the hope that our disclosure will be reciprocated. Indeed, Jourard (1959) suggested that the easiest way to get others to talk about themselves is to talk about oneself. Disclosure may also be used as means for social validation, where such validation would be especially rewarding from individuals that we like. Disclosure about one's fears or personality weaknesses may also serve an important function in developing and maintaining intimacy (Reis & Shaver, 1988) and in regulating social interaction. For instance, work by Swann, Stein-Seroussi, and Giesler (1992) suggested that individuals are more comfortable interacting with partners who have an accurate perception of them (whether positive or negative), because such interactions are more likely to run smoothly. Thus, self-disclosure is one way that we can communicate to others about our personal vulnerabilities, thereby reducing the risk that our interactions will be fraught with misunderstandings and failed expectations. Whatever the mechanisms, it seems clear that disclosure may serve a number of functions. Unfortunately, little empirical work has addressed this issue. If, as suggested by social penetration theory (Altman & Taylor, 1973) as well as more recent theoretical work (Archer, 1987; Derlega & Grzelak, 1979; Duck & Miell, 1986; Miller & Read, 1987), disclosures are used instrumentally to achieve goals (e.g., to get others to like us, or to facilitate smooth interactions) then research is needed to explore how this operates.

Along similar lines, greater conceptual clarity is needed in thinking about and investigating this disclosure effect. For example, laboratory studies typically do not allow subjects to choose *whom* to disclose to; rather, it is a choice of *what* to disclose, given a particular partner. Yet in everyday life we may often wish to disclose problems and troubles; here the issue is not *what* to disclose but *to whom* one will choose to disclose this information. Partner selection processes that occur in more

natural settings are not permitted in laboratory studies. This creates additional differences between studies concerned with ongoing relationships and those concerned with stranger interactions.

Although it seems reasonable that people will disclose to someone they like rather than someone they do not like, it does not necessarily follow that liking always leads to disclosure or that disclosure is always preceded by liking. With respect to the latter, there is good evidence that disclosure often occurs in the absence of liking (see Archer, 1979; Derlega, Harris, & Chaikin, 1973; Ehrlich & Graeven, 1971). Thus, there may be many motivations for disclosure, only one of which may be initial liking for a potential recipient.

Effect 3: Do We Like People as a Result of Disclosing to Them?

Does disclosing to someone affect how we subsequently feel about that person? This intrapersonal effect treats one's own disclosure as an independent variable and one's own liking as a dependent variable. The existence of this association is important to establish, because many studies have confounded this effect with other effects. For instance, in a number of studies concerned with Effect 1 (liking people who disclose), a target's disclosure was manipulated; the subject was then allowed to disclose before measuring his or her liking for the target. In these situations, high disclosure by the target is likely to result in high reciprocated disclosure by the subject (the disclosure-reciprocity effect). As a result, liking for the target may be due either to the target's initial disclosure (Effect 1), to the subject's return disclosure (Effect 3), or to some combination of the two. Thus, determining whether there is a causal relationship between own disclosure and subsequent liking is of special interest.

What mechanisms might be responsible for this effect? Once again, we can return to the early work of Jourard (1959), who was interested in the importance of self-disclosure for psychological well-being. Jourard suggested that the act of self-disclosure is personally rewarding, cathartic, and a necessary component of a healthy personality. He reasoned that positive feelings resulting from revelation of the self become associated with the recipient and lead to liking. More recent work by Pennebaker and his colleagues (Pennebaker, 1985; Pennebaker & Beall, 1986; Pennebaker, Keicolt-Glaser, & Glaser, 1988) has suggested that disclosing about traumatic experiences may be beneficial to physical as well as to psychological well-being.

However, there is little evidence that self-disclosure in general is rewarding (see Archer, 1980, for a discussion), and there are many times when it may be quite uncomfortable or distressing. As Taylor (1979) noted, intimacy is simultaneously rewarding and risky. For instance, revealing one's vulnerabilities or weaknesses to others may lead to embarrassment or anxiety about rejection. Disclosing intimate information may also elicit *objective self-awareness* (Duval & Wicklund, 1972), a state in which people compare their actual self with their ideal self, of which they often fall short. Heightened self-awareness may be especially likely to occur in studies that involve interaction in front of a videocamera, a procedure that has been shown to increase self-awareness. Consistent with this, Archer, Hormuth, and Berg (1982) studied self-disclosure under conditions of heightened self-awareness and found that self-aware subjects enjoyed the interaction less, avoided intimate topics, and felt worse about themselves. In sum, disclosing to others can elicit negative feelings about the self, which may result in less liking for a listener, particularly when one reveals a personal weakness or a failure.

A second explanation for this effect draws from Bem's (1967, 1972) theory of self-perception. Bem has argued that in situations where one's opinions are ambiguous, people may refer back to their own behavior to infer their attitudes. This may be especially likely in first encounters, which are often ambiguous and which make it difficult for people to determine why they are acting as they do (Archer, 1980). Chaikin and Derlega (1974) reasoned that people who voluntarily disclose intimate information about themselves to a relative stranger may infer that they like the target person if no better explanation is available. However, as Berg and Archer (1983) noted, for the *self-perception effect* to occur a discloser must feel that his or her behavior was voluntary, otherwise other cues (e.g., complying with the experimenter's request) provide a better explanation for the disclosing behavior.

Method

All procedures were identical to those described for Effect 1, except for the specific criteria that were used for locating studies for this disclosure–liking relation. To be included under this effect, a study had to have manipulated a subject's disclosure to a target, followed by a measure of liking for the target. In addition, the measure of liking had to have been taken *prior* to any reciprocal disclosure by the target (otherwise Effect 3 is confounded with Effect 1). Five studies met these criteria. In this case, we categorized all of the studies as strong experiments.

Results

The mean effect size for the full sample ($k = 5$), all of which were experimental studies, was $d = .317$ ($r = .156$), which differs significantly from zero. This indicates that there is an overall positive relation between initial disclosure and subsequent liking for the target. People who were induced to disclose at a higher level tended to like their partner more than people who did not disclose or who disclosed at lower levels.

The test for homogeneity was significant ($Q_w = 22.71$, $p < .001$), indicating substantial variation in effect sizes. A review of the five effect sizes revealed three studies with effect sizes of zero and two studies with fairly large effect sizes. Thus, we looked more closely at the nature of the studies for suggestions as to why they may have differed.

If the effect is due to self-perception processes, we might expect an effect only in cases where the subject believed he or she acted freely. Of course, this is impossible to determine, but a review of the research procedures could be suggestive. Unfortunately, there did not appear to be any reason to believe that studies that showed an effect differed on this dimension compared with studies that showed no effect.

Discussion

Although only a few studies tested this effect, the meta-analysis revealed a significant positive relation between one's own disclosure to a target and subsequent liking for that target. Fur-

thermore, because all these studies fit the criteria of strong experiments, a causal relation between disclosure and liking could be inferred: More intimate disclosures lead the discloser to have greater liking for the recipient of that disclosure.

This relation was important to establish, because this effect has often been confounded with other effects, especially in studies designed to test Effect 1. Although findings are consistent with a self-perception interpretation, additional work is needed before we can draw any firm conclusions about the mechanisms responsible for this effect. Nevertheless, the idea that simply disclosing to another can increase liking has some potentially important applications to other areas of research in social psychology. For example, if disclosure leads to liking, then perhaps liking between people can be increased by providing opportunities for self-disclosure. This may be particularly relevant to work on inter-group relations. If groups can be brought together in settings that foster the exchange of personal information, then liking among group members may be increased (Brewer & Miller, 1984). It may be enough to simply bring groups into contact, because proximity alone may lead to disclosure (Festinger, Schachter, & Back, 1950; Segal, 1974). In addition, once groups are brought together in an environment that provides opportunities for disclosure, other disclosure–liking effects may serve to increase positive feelings as well. That is, not only will we tend to like people to whom we disclose (Effect 3), we may also grow to like people who disclose to us (Effect 1).

General Discussion and Conclusions

Although disclosure–liking research has a long and productive history, it is apparent that a great deal of work remains to be done before we fully understand the role of self-disclosure in social interaction and in relationship development and maintenance. The present review sought to assist in this effort by clarifying a number of conceptual ambiguities and by carefully distinguishing among different disclosure–liking relations. Overall, the meta-analyses revealed significant positive relations for all three disclosure–liking effects. However, some effects were clearly more powerful than others. The strongest disclosure–liking relation was obtained for Effect 2, which is an intrapersonal link between how much we like a person and how much we disclose to that person. It is interesting to note that Effect 3 (liking a person as a result of having disclosed to him or her) was as strong as Effect 1 (liking a person who has disclosed to us).

Although well-controlled experimental studies tended to obtain stronger effects than weaker experimental studies, when comparisons could be made across different types of research methodologies, correlational studies always obtained the strongest mean effect. Why? Correlational studies differed from experimental studies in a number of ways. The most critical difference is that the former were almost always concerned with disclosure processes in established relationships, whereas experimental studies were primarily concerned with disclosure and liking between strangers. Although, as this review suggests, it is important not to overlook the impact of self-disclosure among strangers in first encounters and in situations where no interaction takes place, the fact that disclosure–liking effects were strongest in established relationships is not surprising: Such relationships provide an opportunity for the emergence of all three effects over time. Indeed, as Derlega et al. (1993) noted, it is difficult to imagine how relationships could develop and progress without self-disclosure.

The fact that there were significant effects for each disclosure–liking relation fits with Miller's (1990) recent work, which examined mutual influences in ongoing relationships. In that work, sorority sisters indicated the extent to which they disclosed to, received disclosure from, and liked every other woman in their sorority. All possible disclosure–liking effects at the dyadic level (unique influences of one partner on another) were significant. These findings, along with the current findings, support the idea that disclosure–liking effects do not operate independently but result from a dynamic system of intra- and interpersonal mutual influences. Let us consider how we can advance our understanding of such dynamic processes.

During conversations and interactions, partners' disclosures and liking for one another may create feedback loops. For example, early on in the relationship, the more John discloses to Mary, the more Mary likes him, and the more John is encouraged in the relationship. As Mary discloses to John (perhaps because she likes him and wants him to like her), the more John likes her, and the more he discloses to Mary, and so the process continues. Thus, rather than thinking of causality as operating in only one direction, we assume that variables have reciprocal effects on each other.

Although such systems and process conceptualizations are certainly far from new in psychology, methodologies to explore dynamic systems and processes have lagged behind. Recent work that has used computer simulations (Miller, Bettencourt, DeBro, & Hoffman, 1993) has suggested an exciting new technology that allows us to explore our theoretical assumptions and their implications for emergent behavior: These patterns can be compared with actual findings from empirical work, affording insights into underlying processes. For example, we wondered why our experimental (stranger) interactions produced more variable and less strong relationships overall between disclosure and liking, compared with our correlational (mostly close-relationship) data. One difference between the findings for the correlational and experimental results involves the amount of time that individuals have known one another. Neither we nor anyone else, however, could realistically keep a lab study going long enough to see if such pairs over time would be similar to pairs in our close-relationship, correlational data.

However, if we could simulate our experimental findings and then run the interaction out over a longer period of simulation time, corresponding to a longer relationship time frame, we could examine whether the experimental data might more closely mirror the correlational data (from more enduring relationships). Miller and Collins (1994) did just that. On the basis of the results from the experimental data from stranger interactions in the current meta-analysis, they ran a computer simulation using a dynamic modeling tool, STELLA (Richmond, Peterson, & Vescuso, 1987). Results indicated that simply increasing the amount of time, alone, would be sufficient to produce stronger correlations between disclosure and liking, assuming that there were no random variables (e.g., with the potential for adverse consequences) operating as the relationship progressed.

Although we reasoned that such random variables are apt to be common in all relationships (e.g., a disclosure misconstrued,

a message not delivered, a facial expression not understood), in the initial phases of a relationship these random variables might have more of an impact on the meaning of the disclosure for the relationship. Why? First, single behaviors, or even behavioral sequences, often have a wide latitude of possible meaning (Miller & Read, 1991). If our partner looks down and away and discloses minimally, that could mean a lot of different things to a partner: "The sun is in his eye," "He's having trouble following this," "He's shy," "He's a snob." "He's rejecting me," "He hated what I just said about myself and doesn't know what to say now," "He's being nice and pretending he didn't hear what I just said," and so forth. This variability in interpretation is considerable: The meaning of short sequences—not being as constrained by other information we have about this person—is apt to vary considerably across different judges and, initially, even over time for the same judge.

In general, as relationships progress, single behaviors are apt to result in much less change in our overall mental model of the other. All things being equal, one behavior among five is more heavily weighted than that same behavior among 500. "Off" behavior may be ignored, dismissed, or not even processed; other behaviors are easily assimilated into preexisting models of the other that are apt to be conservative and resistant to change (Miller & Read, 1991). This analysis suggests that if we incorporate a random variable into our simulations and run our simulations on our stranger data again, random variables affecting how disclosures are construed will create more initial variability across numerous runs of the program in the short term. That was indeed the case, mirroring the variability among short laboratory studies with strangers.

An additional difference between our experimental and correlational data sets involved the nature of the relationship itself and its implications for the meaning of disclosures in those relationships. To the extent that another's disclosures trigger negative inferences early on, relationships are less likely to survive. Among close friends, selection processes have already removed those pairs who are likely to construe each other's disclosures negatively. Thus, of those who are left, the meaning of disclosures is apt to be more consistently positive, and thus high levels of disclosure are likely to be associated with more liking.

Dynamic computer simulations such as this not only afford new methods for answering old questions but also challenge the user to think more dynamically about relationships and about the very nature of our variables. For example, let's consider the variable of disclosure. To model such a variable, we need to think about how it accumulates and the rate at which we disclose to another, compared with how much new information we have to disclose. How much we have to disclose to another is based on a lifetime of experiences. We can disclose about those experiences faster than we can build up new ones to talk about, and once we disclose, we can't take it back. Therefore, it is apparent that (a) the total amount of disclosure is cumulative and cannot diminish (except for memory losses, etc.), (b) the amount of additional information that we have to disclose to another typically decreases over time, and (c) the rate of new disclosures (proportion of what is disclosed divided by the "new stuff" the person could disclose) to another can go up or down. Different measures of disclosure may be more sensitive to cumulative versus short term fluctuations in ongoing relationships (Thorne & Miller, 1994). For example, a measure of how much the person discloses the "new stuff" he or she has to disclose might be a more sensitive measure of day-to-day fluctuating levels of disclosure in continuing relationships.

Now let's consider our second variable, liking. Liking for a partner can go up or down. We have tended to act, however, as if liking could simply increase or decrease linearly over time. Psychologically, that doesn't seem quite right. Initially in a relationship, there is more room for bigger changes in liking for one's partner; as relationships progress, increases in liking seem to approach some sort of limit, or asymptote. Similarly, as we move toward this limit in liking, we may have farther to fall in our liking of another—further increases in liking may be more difficult to come by than decreases in liking. When we begin to think dynamically, implicit assumptions about our variables become apparent.

Dynamic approaches allow us to model a variety of nonlinear effects. For example, in addition to going in one direction—up or down—disclosure and liking may well oscillate over time. That is, although the general pattern over time may involve increases in intimacy, it seems psychologically reasonable that for many people, oscillating between seeking greater intimacy and pulling back may be a typical pattern (Altman, 1975; Derlega & Chaikin, 1977; Rawlins, 1983). These goal-correction systems that result in emergent behaviors in which discrepancies between what an individual wants (e.g., a high level of acceptance) and currently has (e.g., low levels of acceptance) drive his or her actions (e.g., disclosing behaviors) are often implicit in dynamic systems. We need to take a closer look at the possible intra- and interpersonal goals, beliefs, and resources that affect emergent disclosing behaviors (Miller & Read, 1987).

Although the present review does not enable us to draw clear conclusions regarding the mechanisms underlying the various disclosure–liking relations, one general theme has continued to emerge: Disclosers and recipients appear to share a common understanding that self-disclosure communicates something more than the actual content of what gets exchanged. Disclosing to another communicates that we trust that person to respond appropriately, that we value his or her opinions and responses, that we are interested in knowing them and having them know us, and so on (Derlega et al., 1993). Thus, the three disclosure–liking effects reviewed here rely heavily on the idea that self-disclosure serves an important symbolic function in interpersonal relating. Moreover, this suggests that additional disclosure–liking effects should emerge as well. For example, we would expect that recipients of disclosure will perceive that the discloser likes them and trusts them. Consistent with this idea, several studies have provided preliminary evidence that people feel more liked by a partner who discloses to them compared with a partner who does not disclose or who discloses less intimate information (Archer et al., 1980; Davis & Perkowitz, 1979; McAllister & Bregman, 1986). Clearly, how individuals construe the meaning of disclosure matters and needs to be examined in greater detail in the future.

Although this review has focused on a relatively narrow set of self-disclosure phenomena, it is important to recognize the central role that disclosure–liking processes have in broader models of interpersonal relations. For example, self-disclosure has been an important feature of research and theory on attrac-

tion, friendship, intimacy, trust, social support, and many other topics in social and personality psychology. Yet our ability to incorporate self-disclosure phenomena into broader, more dynamic models of personal and interpersonal functioning will depend on our ability to specify disclosure–liking processes with greater conceptual clarity and empirical precision. We hope that this review will contribute to that effort.

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Appendix

Studies Used in the Meta-Analysis

Effect 1

Archer & Berg (1978)
Archer, Berg, & Runge (1980)
Berg & Archer (1980)
Berg & Archer (1983)
Bradac, Hosman, & Tardy (1978)
Brewer & Mittelman (1980)
Broder (1982)
Certner (1973)
Chaikin & Derlega (1974)
Chaikin, Derlega, Bayma, & Shaw (1975)
Chelune (1976)
Cozby (1972)
Critelli & Dupree (1978)
Critelli, Rappaport, & Golding (1976)
Cunningham & Strassberg (1981)
Curran & Loganbill (1983)
Daher & Banikiotes (1976)
Dalto, Ajzen, & Kaplan (1979)
Davis & Perkowitz (1979)
Derlega & Chaikin (1976)
Derlega, Harris, & Chaikin (1973)
Derlega & Stepien (1977)
Derlega, Walmer, & Furman (1973)
Dion & Dion (1978)
Halverson & Shore (1969)
Horenstein & Gilbert (1976)
Johnson & Noonan (1972)
Jones & Archer (1976)
Jourard (1959)
Jourard & Landsman (1960)
Kahn & Rudestam (1971)
Kohen (1975)
Lawless & Nowicki (1972)
Lynn (1978)
McAllister (1980)
McAllister & Bregman (1983)
Mikulincer & Nachshon (1991)
Petty & Mirels (1981)
Rubin (1975)
Runge & Archer (1988)
Skotko (1980)
Sote & Good (1974)
Taylor & Belgrave (1986)
Taylor, Gould, & Brounstein (1981)
Taylor & Hinds (1985)
Winum & Banikiotes (1983)
Worthy, Gary, & Kahn (1969)

Effect 2

Archer & Berg (1978)
Archer & Burleson (1980)
Brockner & Swap (1976)
Broder (1982)
Burger (1981)
Certner (1973)
Critelli & Dupree (1978)
Critelli, Rappaport, & Golding (1976)
Derlega, Winstead, Wong, & Hunter (1985)
Ehrlich & Graeven (1971)
Fitzgerald (1963)
Gelman & McGinley (1978)
Jourard (1959)
Jourard & Landsman (1960)
Jourard & Lasakow (1958)
Knecht, Lippman, & Swap (1973)
Kohen (1975)
Lynn (1978)
Pearce, Wright, Sharp, & Slama (1974)
Pederson & Higbee (1969)
Rubin (1975)
Worthy, Gary, & Kahn (1969)

Effect 3

Archer, Berg, & Runge (1980)
Berg & Archer (1983)
Burger (1981)
Kleinke (1975)
McAllister (1980)

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