Inclusion of Other in the Self Scale and the Structure of Interpersonal Closeness

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In 2 studies, the Inclusion of Other in the Self (IOS) Scale, a single-item, pictorial measure of closeness, demonstrated alternate-form and test–retest reliability; convergent validity with the Relationship Closeness Inventory (Berscheid, Snyder, & Omoto, 1989), the Sternberg (1988) Intimacy Scale, and other measures; discriminant validity; minimal social desirability correlations; and predictive validity for whether romantic relationships were intact 3 months later. Also identified and cross-validated were (a) a 2-factor closeness model—Feeling Close and Behaving Close—and (b) longevity–closeness correlations that were small for women versus moderately positive for men. Five supplementary studies showed convergent and construct validity with marital satisfaction and commitment and with a reaction-time-based cognitive measure of closeness in married couples; and with intimacy and attraction measures in stranger dyads following laboratory closeness-generating tasks. In 3 final studies most Ss interpreted IOS Scale diagrams as depicting interconnectedness.

Over the last decade, close relationships have become a topic of considerable interest to social psychologists. This topic now has its own journal, *The Journal of Social and Personal Relationships,* two organizations devoted to its study, several textbooks (Brehm, 1985; Duck, 1988b; Hendrick & Hendrick, 1983), its own *Annual Review of Psychology* chapter (Clark & Reis, 1988), and its own *Handbook* (Duck, 1988a). Interpersonal closeness has also become a significant variable in other research, such as Tesser's (1988) work on self-esteem maintenance; Sande, Goethals, and Radloff's (1988) work on actor–observer attributional biases differing according to closeness to other; and Bower and Gilligan's (1979) contrast of the cognitive processing of social information relevant to self and other, where other is either close or a stranger.

In the above research, closeness has generally been understood as what distinguishes among relationship categories, such as a close friend or parent versus a stranger. But given the increasing importance of the concept of closeness, it is not surprising that more precise definitions and measures have been attempted. In particular, the Relationship Closeness Inventory (RCI) by Berscheid, Snyder, and Omoto (1989) has attracted considerable attention. We begin by describing this measure in some detail, both because of its already wide usage and its being the basis of the methodology that follows.

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RCI

The RCI is a self-report questionnaire intended to measure closeness as a multidimensional construct consisting of amount of time spent together (*frequency*), variety of interactions engaged in together (*diversity*), and degree of perceived influence other has on one's decisions, activities, and plans (*strength*). (These dimensions correspond to three of the four properties of "interconnected activities" characteristic of close relationships described by Kelley et al., 1983. Berscheid et al., 1989, considered the fourth property, duration of the relationship, to be theoretically problematic.) The RCI Frequency subscale asks how many hours and minutes the subject spent with the other on a typical morning, afternoon, and evening. The RCI Diversity subscale is a checklist of 38 possible activities done alone with the other during the past week—for example, "went to a movie," "prepared a meal," or "attended class." The RCI Strength subscale includes 34 Likert-scaled items about other's influence on one's life (e.g., "how I spend my free time" and "my marriage plans"). The three scales are added to provide an overall RCI closeness score. Berscheid et al. hypothesized that these three properties provide a measure of closeness that applies across a variety of relationship types and addresses a core underlying meaning of closeness.

Berscheid et al. (1989) asked 241 undergraduates to complete the RCI for their "*closest, deepest, most involved, and most intimate relationship*" (p. 806). Subjects also completed other tests. One was a two-item Subjective Closeness Index that asked, "Relative to *all* your other relationships (both same and opposite sex), how would you characterize your relationship with this person?" and "Relative to what you know about other people's relationships, how would you characterize your relationship

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with this person?" (p. 799). In another, subjects rated the frequency of experiencing each of 12 positive affect terms (e.g., *elated* and *contented*) and 15 negative affect terms (e.g., *disappointed* and *angry*). Finally, of the 105 in this sample whose closest relationship was romantic, Berscheid et al. recontacted 74 by telephone 3 months and again 9 months later to determine whether the relationship had dissolved, and if so, how distressed the subject was about the breakup. In a secondary study, 75 undergraduates completed the RCI along with Rubin's (1970) Loving and Liking scales, for both a close and a nonclose other, and then completed the RCI again 3–5 weeks later.

Cronbach alphas for the RCI (from the primary study) and test–retest reliabilities (from the secondary study) ranged from .56 to .90 and were considered adequate. An initial indicator of validity was a significant difference for a close versus a nonclose other (secondary study). However, their "major predictive validity criterion" (p. 804), was how well RCI scores predicted whether romantic relationships were intact at the 3- and 9-month follow-up. The RCI did predict this outcome significantly ($r = .35$), and adding to the equation the longevity, the Subjective Closeness Index, and emotions ratings did not significantly improve the prediction. Finally, Berscheid et al. (1989) noted that RCI scores for closest other correlated only weakly with the Subjective Closeness Index, and not at all with the emotion ratings or the Rubin scales, indicating that the RCI taps aspects of closeness these other potential measures do not.

However, there are a number of common research situations in which the RCI may be less than ideal. First, the content of the RCI focuses on the North American college student situation (e.g., the selection of activities, the types of decisions and plans influenced, and in general the freedom to structure different amounts of time with others). Even in the common situation in which this group is the research population of choice or convenience, it would be preferable to have a measure permitting comparisons to populations differing in age, social class, and cultural traits. Second, the RCI takes 10–15 min to complete. Especially when closeness is not the main purpose of a study, this may be too much subject time, meaning that the variable is likely to go unmeasured. Third, the RCI is tightly linked to Kelley et al.'s (1983) model. Although reasonable and influential, the Kelley et al. approach does not seem to capture many of the cognitive and affective qualities often associated with closeness in social psychological theorizing (as described below).

Inclusion of Other in the Self (IOS) Scale

One solution to these limitations of the RCI—and to the limitations of other closeness measures that Berscheid et al. (1989) were attempting to improve on—seemed to lie in the creation of a single-item pictorial measure intended to tap directly people's sense of interpersonal interconnectedness. (Examples of such simple pictorial measures in other domains are Kunin's, 1955, Faces measure, widely used in organizational psychology, and Russell, Weiss, & Mendelsohn's, 1989, Affect Grid.) In the IOS Scale, respondents select the picture that best describes their relationship from a set of Venn-like diagrams each representing different degrees of overlap of two circles (see Figure 1). The figures were designed so that (a) the total area of each figure is constant (thus as the overlap of the circles increases, so does the diameter), and (b) the degree of overlap progresses linearly, creating a seven-step, interval-level scale.

The basic approach comes from the Venn-like diagrams of closeness presented by Levinger and Snoek (1972), which clearly influenced various theorists such as Altman and Taylor (1973), Berscheid and Walster (1978), and Aron and Aron (1986). Levinger (1988) also recently elaborated on this theme in a chapter on different types of love. A more complex version was proposed earlier by Lewin (1948, p. 90), who diagrammed relationships within the life space in terms of differing degrees of overlap between the differentiated region that represents the self and the region that to the individual represents the other. However, to our knowledge, Pipp, Shaver, Jennings, Lamborn, and Fischer (1985) are the only previous researchers to use such diagrams as part of a measure of closeness: They had adolescents draw a picture of two circles, one representing the self and one a parent "in relation to each other as you believe best illustrates your relationship with that parent . . ." (p. 993). Among other findings, Pipp et al. reported that closeness and amount of overlap of the circles were strongly related to scale ratings of love and friendship.

This idea of closeness as overlapping selves also seems consistent with a wide variety of approaches to closeness in the social psychology literature. For example, in the area of intimacy,

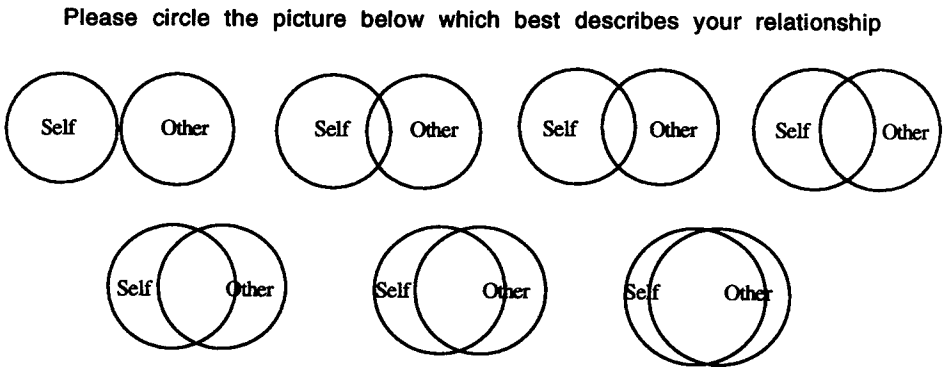

Figure 1. The Inclusion of Other in the Self (IOS) Scale.

which is often identified with closeness (e.g., Helgeson, Shaver, & Dyer, 1987), Reis and Shaver (1988) suggested that intimacy is mainly a process of an escalating reciprocity of self-disclosure in which each individual feels his or her innermost self validated, understood, and cared for by the other. McAdams's (1988) summary of the intimacy literature argued that most definitions of intimacy "converge on the central idea of *sharing that which is inmost* with others" (p. 18). Similarly, in the empathy model for explaining prosocial behavior, and in findings showing greater helping for those with whom the individual is in a close relationship (e.g., Clark, 1983), Wegner (1980) suggested that empathy may "stem in part from a basic confusion between ourselves and others" (p. 133), which he proposed may arise from an initial lack of differentiation between self and caregiver in infancy (Hoffman, 1976). Indeed, perhaps the most prominent idea in social psychology directly related to the present theme is the "unit relation," a fundamental concept in Heider's (1944, 1958) influential cognitive account of interpersonal relations. In more recent social cognition approaches, the connection of selves in a close relationship has been described by Greenwald and Pratkanis (1984) as the "collective" aspect of self. It is also related to Ickes, Tooke, Stinson, Baker, and Bissonette's (1988) idea of "intersubjectivity," which Ickes and his colleagues made vivid by citing Merleau-Ponty's (1945) description of a close relationship as a "double being" and Schutz's (1970) reference to two people "living in each other's subjective contexts of meaning" (p. 167).

The notion of closeness as an overlap of selves has also been popular more generally among psychologists, starting at least with James (1890/1948). For example, Bakan (1966) wrote about "communion" in the context of his expansion on Buber's (1937) "I-Thou" relationship. Jung (1925/1959) emphasized the role of relationship partners as providing or developing unavailable aspects of the psyche, leading to greater wholeness. Maslow took it for granted that "beloved people can be incorporated into the self" (1967, p. 103). And from a symbolic interactionist perspective, McCall (1974) described "attachment" as "incorporation of . . . [the other's] actions and reactions . . . into the content of one's various conceptions of the self" (p. 219).

Of course, in emphasizing a common theme we do not mean to imply that these approaches are all saying the same thing. An area of significant advance in the recent work in social psychology has been differentiating aspects of closeness. Indeed, a central outcome of the studies in this article is the identification and cross-validation of a provisional model of the differentiated structure of closeness. What we are suggesting, however, is that there is an aspect of closeness, the idea of interconnected selves, that is widely applicable to how social psychologists and others have understood closeness, and that a measure that focuses on this aspect may significantly overlap the closeness-type constructs proposed in each of these theoretical approaches.

The specific notion of closeness as including the other in the self (Aron & Aron, 1986; Aron, Aron, Tudor, & Nelson, 1991), which was the framework from which the IOS Scale was directly generated, posits that in a close relationship the individual acts as if some or all aspects of the partner are partially the individual's own. (There may in addition be some sense of a more general union of self and other.) Based on James' (1890/1948) influential tripartite division of the "empirical self," Aron and Aron (1986) emphasized that in close relationships the individual may perceive the self as including resources, perspectives, and characteristics of the other. These three categories appear to encompass many of the cognitive implications of closeness described in recent social psychology research literature. Specifically, Aron, Aron, Tudor, et al. argued that to the extent a partner is perceived as part of one's self, (a) regarding resources, benefiting other is seen as benefiting self, and thus allocations are "communal" (Clark & Mills, 1979) and there is a transformed two-person outcome matrix (Kelley & Thibaut, 1978); (b) regarding perspectives, actor–observer perspective differences are lessened, as shown by changes in attributional behavior (e.g., Sande et al., 1988), by changes in interpersonal behavior interpreted by Hogg and Turner (1987) as self and other being included in a single cognitive category, by better memory for close others' performance than for strangers' (e.g., Brenner, 1973), and by better memory for words associated with a close other than with a stranger (e.g., Bower & Gilligan, 1979); and (c) regarding characteristics, closeness represents a vicarious sharing of other's traits and abilities, as suggested by work on identification (e.g., Bank & Kahn, 1982; Reik, 1944), by Tesser's (1988) finding of "reflection" of other's successes (under certain circumstances) when other is close, and by Deutsch and Mackesy's (1985) interpretation of self–partner similarities in close relationships as due to mutual influence on each other's self-schemata, creating an overlap of traits between them. Finally, Aron et al. (1991) reported a series of laboratory studies demonstrating greater self–other overlap in each of James' three aspects of self when self and other are in a close relationship.

However, it should be emphasized that although the IOS Scale was inspired by the above model and by the general idea of closeness as self–other overlap, it is not necessarily linked to that specific model or even to that general idea. The IOS Scale is hypothesized to tap people's *sense* of being interconnected with another. That sense may arise from all sorts of processes, conscious or unconscious, and including the other in the self may or may not be one of these processes. The IOS Scale is intended to capture something in the respondent's perception of a relationship that is consistent with many theoretical orientations.

The Present Research

In the light of the above considerations, we conducted a series of studies to examine the utility of the IOS Scale, to provide additional insight into other measures of closeness (especially the influential RCI), and to explore the structure of closeness. The primary study was based on and partially replicated the Berscheid et al. (1989) study. As in their study, a sample of undergraduates answered a battery of questionnaires about their closest other and a subset of subjects whose closest relationship was romantic were followed up by phone interviews. We then conducted a replication study, which was similar (but without the

follow-up), to cross-validate key findings. We also arranged to include the IOS Scale as an adjunct measure in five studies being conducted for other purposes, but which included populations (married couples) or situations (experimental generation of closeness in a laboratory setting) for which most other measures of closeness, including the RCI, would not have been appropriate. Finally, we conducted three small studies exploring how subjects subjectively interpret the IOS Scale and the relation of those interpretations to their responses.

Primary Study

The approach of this study was inspired directly by Berscheid et al.'s (1989) primary study. The major difference—other than the inclusion of the IOS Scale—was the addition of still other closeness-type measures. The purpose of this study was to examine the IOS Scale's (a) reliability, (b) convergent and discriminant validity (in terms of correlations with other measures), (c) susceptibility to social desirability effects, and (d) predictive validity for reports about romantic relationships 3 months after the original testing. This study also provided an opportunity to explore the structure of closeness implied by the intercorrelations of various measures of the construct, plus a chance to examine the replicability of parts of the Berscheid et al. study.

Method

Subjects. Questionnaires were administered to 208 volunteers (nearly the entire class) during a regular session of an introductory cultural anthropology course. The sample included 150 women, 51 men, and 7 who failed to indicate their gender. Ages ranged from 18 to 47, with a mean of 19.7. Thirty-three (25 women, 5 men, and 3 unknown) selected a family member as their closest other (15 siblings, 15 parents, 2 children, and 1 grandparent), 76 (57 women, 18 men, and 1 unknown) selected a nonromantic friend, 92 (62 women, 27 men, and 3 unknown) selected a romantic partner (9 dating nonexclusively, 58 dating exclusively, 15 living together, 4 engaged, 3 married, 2 "long-distance romantic relationships," and 1 "close friend *and* dating,"), and 7 (6 women and 1 man) selected a closest other that fit none of these categories. (This distribution over family-friend-romantic relationship types selected was quite similar to that in the Berscheid et al., 1989, study.)

It should also be noted that women were relatively more likely than men to select a same-sex other when closest other was a family member (92% vs. 40%), $\chi^2(1, N = 30) = 8.11$, $p < .01$, or friend (75% vs. 33%), $\chi^2(1, N = 75) = 10.71$, $p < .001$. These choices suggest that women may be more likely to serve as close others, consistent with the findings of Wheeler, Reis, and Nezlek (1983).

Questionnaire and procedures. The questionnaire packet included two small four-page pamphlets (labeled *Part I* and *Part II*) and an envelope. Subjects completed Part I first and put it in the envelope before proceeding to Part II (to minimize comparing answers between the two parts—particularly the two IOS Scale versions). The Part I pamphlet began with instructions, as used by Berscheid et al. (1989), to complete this questionnaire for their closest relationship, followed by the IOS Scale, the RCI, and the Subjective Closeness Index. The first three pages of the Part II pamphlet included Berscheid et al.'s 27 positive and negative emotional tone items; Sternberg's (1988) Intimacy Scale (12 seven-point Likert-scale items based on the intimacy aspect of Sternberg's, 1986, triangular theory of love—for example, "I feel that X really understands me" and "I have a warm relationship with X"); an alternate, overlapping-diamonds version of the IOS Scale (on an inside page not easily seen by subjects while they complete Part I); and an Expected Distress Scale (consisting of the six items used by Berscheid et al. in their telephone follow-up interview, but phrased "if you were to break up with this person, how much do you think you would . . . ," to be completed only by subjects describing a romantic relationship). (Although the Sternberg test was not used in the Berscheid et al. study, it was added because it focused on a general aspect of closeness, self-disclosure-related intimacy, not addressed directly in the other measures. The Expected Distress Scale was added because it also addressed an otherwise unmeasured central aspect of intimacy and because it was directly related to the planned predictive validity assessment.) The last page of the Part II pamphlet included 17 of the highest loading items from Paulhus' (1984) factor analysis of several social desirability measures—an Impression Management Scale and a Self-Deception Scale—and a measure identical to the IOS Scale except that the two circles in each picture were labeled *anger* and *sadness* and subjects selected the picture that "best describes the extent to which anger and sadness are experienced together in your life."

For half the subjects the order of questionnaire sections was as described above; for the other half, the last three pages of the Part I pamphlet were exchanged with the first three pages of the Part II pamphlet. However, one of the two versions of the IOS Scale always remained on an inside page of the Part II pamphlet, and which version (circles or diamonds) went there rather than on the first page of the Part I pamphlet was also counterbalanced. (There were no significant differences in order on any of the major measures, nor were there any significant interactions of order with correlations between IOS Scale scores and other measures.)

Two-week retesting. Two weeks later the same class was administered a questionnaire consisting only of the IOS Scale (circle version). Of the subjects who completed the original version, 97 were attending class that day and completed the retesting.

Follow-up phone interviews. Three months later phone calls were made to all 76 subjects who had described a romantic relationship. A total of 47 were contacted (7 had given the wrong number, 9 were no longer at the number listed and no new number was available, and 13 could not be reached after repeated attempts at various times of the day and days of the week). Following the procedures of Berscheid et al. (1989), the individuals contacted by phone were first asked whether they had broken up with their partner. If they had, they were administered the six interview items about distress over the breakup. If the subject was still with the partner, the telephone interviewer administered the same six items but asked instead how upset the person thought he or she would be if they were to break up (this is the same as the Expected Distress Scale used in the original questionnaire). Only 9 of the subjects reached had broken up. However, as seen below, even this unequal 38–9 split was sufficient to yield some interesting results in relation to other variables.

Results and Discussion: Psychometric Properties of the IOS Scale

Reliability. As Russell et al. (1989) noted, it is obviously not possible to conduct item analyses or interitem consistency measures on a single-item scale. One solution they recommended was simply to evaluate validity, because reliability necessarily places an upper bound on validity. We agree. But we also attempted to approximate some conventional methods of testing reliability. First, the use of the two versions of the IOS Scale

(circles and diamonds) was intended to provide a kind of alternate-form reliability check. The alpha for the entire sample was .93; for the subgroups the figures were .87 for family, .92 for friendship, and .95 for romantic relationships. Note that considerable care was taken to minimize the opportunities for direct comparisons, and about 15 min and considerable other questioning occurred between the two versions. (In all subsequent analyses for this primary study, results are based on the average of the two versions.)

As yet another kind of reliability check (test–retest), we computed correlations between the original and the 2-week retesting. They were $r = .83$ overall ($n = 97$); .85 ($n = 13$) for family; .86 ($n = 31$) for friendship; and .85 ($n = 48$) for romantic relationships. (The *n*s for relationship types do not add up to the overall *N* because 5 subjects in this group rated relationships other than family, friendships, or romantic relationships.)

Internal-consistency reliabilities were computed for the other measures used in this study. The alpha for the RCI (that is, among its three subscales) was .66, and for the Strength subscale, .88—both of which agree closely with Berscheid et al.'s (1989) results. However, the alpha in this study of .85 for their Frequency subscale (that is, the consistency of ratings of time spent with other in morning, afternoon, and evening) considerably exceeded Berscheid et al.'s .56. This difference may be due to our using instructions (as suggested by Berscheid et al., 1989, for future use of their scale) to consider only the previous week when reporting time spent together (instead of for a "typical day" as was used in their study). Indeed, 52% of the subjects said the preceding week had not been "typical." Also, 31% of the subjects indicated they had spent no time at all with the other during the past week (but omitting these cases still produced an alpha of .73). In our study the alpha of .91 for the Sternberg Intimacy Scale was very close to the figures reported by Sternberg (1988) and by Hendrick and Hendrick (1989) when using this scale. On the Expected Distress scale, the alpha was .83.

Correlations of the IOS Scale with other measures. Table 1 shows the correlations among the various closeness-relevant measures. As can be seen from the first row of correlations, the IOS Scale was significantly associated with each of the other measures, except the RCI Frequency subscale and the negative emotions ratings. (Throughout this article, all significance tests of correlations and differences between correlations are two-tailed.) This pattern supports the concurrent validity of the IOS Scale; that is, what it measures overlaps in a general way with other measures, each of which has either obvious face validity or some degree of empirical validity of its own. (On the other hand, the IOS Scale's correlation with these measures is clearly below the maximum that could be expected from the reliabilities involved. This may be interpreted as indicating that the measure is not merely redundant with existing measures. Berscheid et al. (1989) made this kind of argument in the context of the low-to-moderate correlations of the RCI with the other closeness-type measures they used.)

Considering the three relationship types separately, the correlations with the IOS Scale tended to be highest for romantic and lowest for family. However, this tendency was not entirely consistent over the different scales and was significant in only a few cases. The correlations of the IOS Scale with other scales were lower for women than for men on every scale, with significant differences ($p \leq .05$) for the RCI Strength subscale (.29 vs. .56), the Sternberg scale (.36 vs. .73), and the positive emotions ratings (.35 vs. .73). None of the other gender differences in correlations approached significance. (We also examined whether there was any tendency for gender of the other to play any special role, as suggested by the tendency noted above of both genders to select women as closest others and on the basis of the findings of Wheeler et al., 1983. However, none of these analyses yielded any significant advantage over using subject's own gender, even when only the friendship group was considered.)

Convergent and discriminant validity. Campbell and Fiske (1959) argued that a "novel" measure should correlate more highly with (a) other measures of the same construct that use different methods (convergent validity) than (b) other measures that use the same method but measure a different construct (discriminant validity). The convergent validity of the IOS Scale has already been described in the previous section, which indicates significant correlations between the IOS Scale and measures of closeness that are primarily verbal and multi-item. The anger–sadness overlapping circles measure was included

Table 1
Correlations Among IOS Scale and Other Closeness Measures (Primary Study, N = 208)

Scale	1	2	3	4	5	6	7	8	9
1. IOS Scale	—	.22**	.09	.16*	.36**	.34**	.45**	.45**	−.02
2. RCI Total		—	.90**	.88**	.50**	.07	.00	.10	.07
3. RCI Frequency			—	.71**	.18**	−.01	−.04	.01	.03
4. RCI Diversity				—	.27**	.08	.05	.15*	−.07
5. RCI Strength					—	.26**	.13	.16*	.24**
6. Subjective Closeness Index						—	.64**	.41**	−.12
7. Sternberg Intimacy Scale							—	.64**	−.34**
8. Positive Emotions About Other								—	−.28*
9. Negative Emotions About Other									—
M	4.74	14.06	4.85	4.49	4.68	12.03	74.14	61.72	−83.55
SD	1.48	5.52	3.12	2.17	1.58	1.68	10.13	11.38	13.55

Note. IOS = Inclusion of Other in the Self; RCI = Relationship Closeness Inventory.
* $p < .05$. ** $p < .01$. Significance tests were all two-tailed.

specifically to permit a test of discriminant validity—it shares the method of the IOS Scale but operationalizes a quite different construct. Its correlation with the IOS Scale was .09 (far from significant). Furthermore, this lack of correlation was not due to the anger–sadness measure simply producing random responses; it did correlate significantly with negative emotions felt ($r = .22$) and the Self-Deception scale ($r = -.31$), and women scored significantly higher (more overlap) than men. (The psychological significance of these correlations may well be of interest in its own right, but a discussion of this issue is beyond the scope of this article.)

Social desirability. The IOS Scale correlated −.04 with the Self-Deception Scale and .05 with the Impression Management Scale, neither figure approaching statistical significance. These low correlations suggest that IOS Scale scores are not greatly influenced by social desirability response sets. For purposes of comparison, we made parallel computations for the other main measures used. The correlations for the RCI were similarly low (−.03 and .01, respectively). For the Subjective Closeness Index and the Sternberg Intimacy Scale, the correlations with the Impression Management Scale were slightly higher ($r = .08$ and .11), although still not approaching significance; but the correlation with the Self-Deception Scale was nearly significant for the Subjective Closeness Index ($r = .12$, $p < .10$) and attained significance for the Sternberg Scale ($r = .14$, $p < .05$).

Predictive validity. Table 2 shows the correlations of the IOS Scale and the other measures with (a) whether those in the romantic group who were reached by telephone follow-up were still with their partner, and (b) among those who were, how distressed they now felt they would be if the relationship were to break up. (Actual distress, for those who did break up, was also assessed, but the n of this group was too small for any meaningful analysis.) As can be seen from the table, the IOS Scale significantly predicted whether the couple was still together ($r = .46$, $p = .001$). The only other measures to do so were the Sternberg Intimacy Scale and negative emotions. The RCI Diversity and Strength subscales did not predict outcome significantly in this study, although both did in the Berscheid et al. (1989) study. However, that study had a larger and better distributed sample (in terms of proportion not still together) in their follow-up comparison, giving their analysis greater power. Also, in the Berscheid et al. (1989) study some of the breakups were not noted until the 9-month follow-up (our study included only a 3-month follow-up). On the other hand, the discrepancy was probably not due to differences in the samples used in the two studies, because the means on the RCI and other scales used in both studies were about the same. The average length of romantic relationships for men was less in our study (3.5 years overall for their study; 3.3 for women and 2.1 for men in ours), but whether subjects were still together was not much related to longevity ($r = -.12$, *ns*).

The 38 subjects who were still together at follow-up in our study included 28 women and 10 men; however, the 9 who had broken up were all women. (The comparable gender distribution was not given in the Berscheid et al., 1989, study.) Thus, to be sure that the predictive validity results were not biased by this gender difference, we also calculated the prediction using only women subjects (making a 28–9 split). This analysis yielded nearly identical results for the IOS Scale ($r = .45$, $p < .01$) and for the other scales (e.g., for the overall RCI, $r = -.09$).

As also can be seen from Table 2, for those who were still together, the IOS Scale correlated significantly ($r = .34$, $p < .05$) with the Expected Distress Scale at follow-up (for women only, $r = .51$, $p < .01$). The only other measures to reach significance were the RCI Strength subscale and the Expected Distress Scale administered at the original testing, this last being a kind of test–retest reliability, at least among those who were still together.

Thus the IOS Scale seemed to have a reasonable level of predictive validity, being at least as strong as the other measures examined in this study.

Table 2
Correlations of 3-Month Follow-Up Measures With IOS Scale and Other Closeness Measures

Scale	Whether still in the romantic relationship ($n = 47$)	If still together, expected distress if relationship ended ($n = 38$)
IOS Scale	.46**	.34*
RCI total	−.06	.31
RCI Frequency	−.06	.03
RCI Diversity	−.11	.17
RCI Strength	.06	.44**
Subjective Closeness Index	.21	.02
Sternberg Intimacy Scale	.36*	.06
Positive Emotions	.22	.04
Negative Emotions	−.38**	−.10
Expected Distress	.23	.60**

Note. IOS = Inclusion of Other in the Self; RCI = Relationship Closeness Inventory.
* $p < .05$. ** $p < .01$.

Results and Discussion: Structure of Closeness

To understand better what aspects of closeness the IOS Scale may be tapping, as well as to gain some more general insight into the nature of closeness, we conducted a series of exploratory factor analyses of the six main measures: the IOS Scale, the three RCI subscales, the Subjective Closeness Index, and the Sternberg Intimacy Scale. The most parsimonious pattern seemed to be a two-factor model. (The six eigenvalues for a principal components analysis were 2.15, 1.69, .79, .67, .42, and .28. Thus the two-factor model is indicated both from a scree test and from Kaiser's rule, and it accounts for 64% of the total variance.) Table 3 shows structure coefficients for a solution with an oblique rotation (interfactor correlation = .11). As can be seen from the table, the first factor, which we labeled *Feeling Close,* had high unique loadings for the Subjective Closeness Index and the Sternberg Intimacy Scale. The second factor, *Behaving Close,* had unique high loadings for the RCI Frequency and Diversity subscales. The IOS Scale and the RCI Strength subscale had high or moderate loadings on both factors. (The appropriateness of considering the IOS Scale as loading on the Behaving Close factor is analyzed further below.)

Table 3
Factor Loadings for Main Closeness Measures (Oblique Rotation)

Scale	Feeling close	Behaving close
Sternberg Intimacy Scale	.78	−.09
Subjective Closeness Index	.77	.00
IOS Scale	.72	.21
RCI Strength	.55	.43
RCI Frequency	−.00	.89
RCI Diversity	.13	.91

Note. IOS = Inclusion of Other in the Self; RCI = Relationship Closeness Inventory.

We also conducted a series of latent variables analyses to compare possible interpretations of the above results. An oblique two-factor model with paths to the six variables as described above was tested with a generalized least squares solution using EQS (Bentler, 1989).[1] This solution converged well and yielded near-perfect Bentler–Bonett Normed and Nonnormed Fit Indexes (.99 and .98, respectively) and average absolute standardized residuals that were less than .05. All of the posited paths from factors to variables were significant, including the path from the Behaving Close latent variable to the IOS Scale ($z = 2.05$, $p < .05$). However, the covariance of the two latent variables was not significant, with a standardized covariance of only .04. Forcing the two latent variables to be uncorrelated (equivalent to an orthogonal-rotation factor analysis) again produced a close fit (both fit indexes were .99; average absolute standardized residuals < .05), and again all posited paths were significant. But this model was not significantly different from the model with the latent variables correlated. Although parsimony would favor the uncorrelated solution in this case, we were reluctant to reject an interpretation that permits the two factors to be correlated, as it seemed theoretically unreasonable that these two aspects of closeness are completely unrelated.

Of course, because the factor analysis and follow-up latent variable modeling were exploratory, any conclusions must be tentative pending cross-validation. Nevertheless, the obtained pattern is quite suggestive. It would seem to indicate that, at least among the measures studied, there are two underlying types of closeness—a kind of subjective closeness and a kind of objective closeness—and that both the IOS Scale and the RCI Strength subscale appear to be general measures somehow tapping both to some extent. In the case of the IOS Scale, which is intended to measure a person's sense of direct interconnectedness with another, it seems quite reasonable that this sense should be a function of both the degree of felt intimacy (Feeling Close) and the quantity and variety of interaction (Behaving Close), although it would probably be expected to be more closely related to the former. In the case of RCI Strength, it is not entirely clear why the extent that a person perceives her or himself to be influenced by another should be a direct function of felt intimacy. One possibility is that its substantial loading on the Feeling Close factor is due to it being the most subjective of the RCI subscales, permitting the respondent to give Likert-style ratings of degree of influence felt—ratings that may well be impacted by the feeling of closeness.

Results and Discussion: Closeness and Relationship Longevity

An additional issue deserves consideration. Berscheid et al. (1989) noted that whereas Kelley et al. (1983) had emphasized duration of relationship as an indicator of closeness, the link is probably not a simple one. Indeed, in their study the RCI's correlation with length of relationship was negative overall—a result due mainly to significant negative correlations on all three subscales for the friendship group (the RCI correlation with longevity for romantic relationships, $r = .00$; for family, $r = .23$.)

In our study we decided that in the analysis of the longevity data it would make little sense to include those selecting a family member as their closest other because in virtually all such cases the length of time known was simply the age of the subject. Furthermore, as longevity was found by Berscheid et al. (1989) to have a different impact on friendship and romantic relationships, these groups were considered separately. Also, as is typical of time-related variables, longevity was highly skewed (and kurtotic) in both the romantic and friendship groups. Thus we used a log transformation that yielded a distribution quite close to normal. (Using the nontransformed scores produced generally similar correlations.) The correlations of the transformed longevity score with the IOS Scale and the other measures are shown in Table 4 for each relationship type, overall and by gender. Also shown for each measure is the effect size (and its significance) for the difference between the correlations for women and for men.

As can be seen from the table, the overall correlation of the IOS Scale with longevity for both relationship types was near zero. However, the breakdown by gender suggested—significantly so for the romantic group—that the association with length of relationship was different for women and men. Lon-

[1] The EQS program, like all latent-variable structural equation modeling programs, is very sensitive to violations of multivariate normality (Breckler, 1990). Two of the variables in this study, the Subjective Closeness Index and the Sternberg Intimacy Scale, were moderately skewed and kurtotic, which created a significant multivariate kurtosis. Although the degree of nonnormality was not so large as to make the bivariate correlations reported elsewhere in this article particularly suspect—if anything it would probably simply lead to their being underestimated—the implications for the EQS analysis were more serious. Thus in this analysis we used a square root transformation for both suspect variables. (To permit direct comparisons, the transformed versions of these two variables were also used in the factor analysis results reported above and were used in the EQS analyses in the replication study, reported later in this article.) This had the effect of making their individual distributions near normal and the overall index of multivariate normality also within a reasonable range: The normalized estimate of Mardia's coefficient, which is distributed as a standard normal deviate, was −.11. (In the replication study, Mardia's coefficient was larger, −1.55, but still not significantly different from 0, and within an acceptable range according to Bentler, 1989.) However, as a check, the analyses were also conducted using the original values for these two variables, and the results were virtually identical.

Table 4
Correlations of IOS Scale and Other Measures With Relationship Longevity (Primary Study)

Measure	Friendship				Romantic			
	Total	Women	Men	Difference[a]	Total	Women	Men	Difference
n	75[b]	57	18		92	62	27	
Years known[c]								
M	7.24	7.82	4.86		3.29	3.91	2.30	
SD	16.37	15.96	19.25		10.42	11.34	8.32	
Scale								
IOS Scale	.01	−.08	.17	−.10	.00	−.11	.46*	−.27**
RCI total	−.13	−.27*	.30	−.24*	.02	.01	.06	−.04
RCI Frequency	−.20	−.28*	.09	−.16	−.08	−.07	−.07	.00
RCI Diversity	−.19	−.30*	.12	−.18	−.06	−.07	−.14	.05
RCI Strength	.15	−.01	.54*	−.24*	.31**	.23	.47*	−.21*
Subjective Closeness Index	.26*	.19	.39	−.11	.19	.15	.46*	−.10
Sternberg Intimacy Scale	.14	.09	.16	−.07	−.03	−.19	.43*	−.26*
Positive Emotions	.11	.18	−.13	.14	−.11	−.21	.33	−.23*
Negative Emotions	−.08	−.13	.13	−.11	.13	.21	−.10	.14
Expected Distress Scale					.04	−.16	.46*	−.29**

Note. IOS = Inclusion of Other in Self; RCI = Relationship Closeness Inventory.
[a] Partial correlation for interaction term (Longevity × Gender) in predicting closeness measure in multiple regression equation.
[b] The number of cases overall is more than the sum of the numbers for each gender because a few subjects failed to indicate their gender.
[c] All longevity computations are based on log of number of years known. However, means and standard deviations have been transformed back to ordinary years.
* $p \leq .05$. ** $p \leq .01$.

gevity was slightly negatively associated with IOS Scale scores for women, but clearly positively for men. This same general pattern was observed on most of the other measures. Again, as with the overall pattern of correlations considered in the previous section, these gender differences were not predicted (nor were these differences uniformly significant), so they must be interpreted cautiously pending replication. It should also be kept in mind in interpreting these results that in both the Berscheid et al. (1989) study and in this one, *longevity* refers to the respondent's report of how long they have "known" the other person, not how long they have had a friendship or romantic relationship with that person. (We also checked whether including other's gender added any significant additional variance to own gender; in these analyses, it did not.)

Replication Study

This study attempted to replicate the main findings of the primary study regarding convergent and discriminant validity and to provide an opportunity to cross-validate the provocative exploratory findings regarding a possible two-factor model of closeness and the gender differences in correlations with longevity. The major difference from the primary study was that this study did not include follow-ups for checking test–retest reliability or for assessing predictive validity.

Method

Subjects. Questionnaires were completed anonymously by 88 undergraduates (67 women, 18 men, and 3 who did not indicate their gender) during a regular class session. Ages ranged from 18 to 39, with a mean of 20.92. For 34 subjects (22 women, 11 men, and 1 unknown), the closest other was a friend; for 51 (42 women, 7 men, and 2 unknown), the closest other was a romantic partner (1 dating casually, 35 dating exclusively, 10 living together, 4 engaged, and 1 married); and for the remaining 3 (all women), the closest other was a family member (in each case a sibling). As in the primary study, there was the same tendency, although not significant this time, for women to be relatively less likely to select an opposite sex friend (18%) than for men (36%).

Questionnaire. The questionnaire was the same as that used in the primary study, with four main exceptions. First, to minimize extraneous variance (to compensate for the smaller sample size), we asked subjects to select the person "of their own age" with whom they had the closest relationship. (It is probably due to this modification that only 4% of this sample selected a family member as their closest other—compared with 16% in the primary study and 14% in the Berscheid et al., 1989, study.) Second, we modified the RCI Frequency subscale. Some subjects in the primary study seemed to have trouble estimating the average time spent together during the last week in the morning, afternoon, and evening, because of great differences between days (especially between weekend days and weekdays). Thus, we instructed them instead to give the time spent together on each of the preceding 7 days.[2] Third, the emotions ratings and the second version of the IOS

[2] RCI raw scores on each subscale are converted using special tables provided in Berscheid, Snyder, & Omoto's (1989) article. These tables are based on a square root transformation and are intended to make scores more nearly normal and also to put all three subscales onto the same 10-point scale, making it easy to sum them for a total RCI score. However, the changed version of the Frequency subscale used in this replication study had the unexpected result that subjects reported

Scale were not included (this made room for including some additional personality scales at the end, which were used as part of a different study). Finally, on the basis of the lack of any order-effect interactions in the primary study, all versions of the questionnaire were administered in a single order: IOS Scale, RCI, Subjective Closeness Index, Sternberg Intimacy Scale, Expected Distress Scale, and personality scales (including social desirability and the anger–sadness circles measure).

Results and Discussion: Psychometric Issues

Reliabilities for other scales. The alphas were all about the same as in the primary study: RCI overall = .74, RCI Frequency = .92, RCI Strength = .78, Sternberg Intimacy Scale = .85, Expected Distress Scale = .80. (The modified version of the RCI Frequency subscale performed as well as the unmodified version, and when its reliability was computed eliminating the 25 cases in this sample with 0 frequency, the alpha remained at .92. Of course, alphas based on more elements will typically be higher: in this case, the 7 days versus the three-element morning-afternoon-evening division of the original version.)

Correlations of the IOS Scale with other measures. Table 5 shows the correlations among the various measures. The IOS Scale was moderately and significantly correlated with each of the other measures (except Diversity, for which $p = .06$). The pattern of correlations was roughly comparable to that of the primary study (see Table 1). (The differences that did appear are probably mainly due to there being many fewer subjects in this study describing a relationship with a family member.) In any case, these results replicate the original support for the concurrent validity of the IOS Scale. And, as we noted in the context of the primary study results, the lack of a high correlation (a correlation approaching the maximum expected from the reliabilities) of the IOS Scale with any of these other closeness-related measures also supports the unique contribution of the IOS Scale to measuring closeness.

As in the primary study, correlations were higher between the IOS Scale and the RCI subscales for subjects describing a romantic partner, as compared with those describing a nonromantic friend (there were too few in this study to examine the pattern for those describing a family member); but the difference between these two groups for the other scales was less consistent. Regarding gender, the differences were largely inconsistent, except that the correlation between the IOS Scale and the Subjective Closeness Index was significantly lower for women than men (.12 vs. .52, $p < .05$).

Convergent and discriminant validity. Again, as discussed in the primary study, convergent validity in this case amounts to the same thing as concurrent validity, which was cross-validated in this replication study, as noted in the previous section. The discriminant validity—a lack of correlation with a measure with shared method, but different substance—was also replicated. The correlation with the anger–sadness circles was −.07. And once again, this was not due to the anger–sadness measure producing random results, because it did correlate significantly ($p < .05$) with other measures (including $r = -.32$ with the Self-Deception Scale, −.27 with the Impression Management Scale, as well as −.30 with the RCI overall and similar correlations with each of its subscales).

Social desirability. Correlations of the IOS Scale with the two social desirability scales (.17 with the Self-Deception Scale and .02 with the Impression Management Scale) were again not significant. Similar results were obtained for the RCI and its subscales (except for a positive correlation of the Impression Management Scale with the Diversity subscale, $r = .26$, $p < .05$, and a surprising negative correlation of the Self-Deception Scale with the Strength subscale, $r = -.41$, $p < .01$; in the primary study, this correlation was also negative, $r = -.15$, $p < .05$). The Subjective Closeness Index and the Sternberg Intimacy Scale also had results similar to those in the primary study, with the latter having a moderate and significant correlation with the Self-Deception Scale ($r = .32$, $p < .01$).

Results and Discussion: Structure of Closeness

A major purpose of this replication study was to cross-validate the two-factor model of closeness suggested by the exploratory analyses in the primary study. A confirmatory analysis was conducted, testing the model shown in Figure 2 using EQS. A generalized least squares solution converged with no difficulty, yielded normed and nonnormed fit indexes of .99 and average absolute standardized residuals < .05, and indicated that the hypothesized model could not be rejected, $\chi^2(6, N = 81) = 10.64$, $p = .10$. As can be seen from the figure, the two crucial paths for the IOS Scale were both significant ($p < .05$), and they were more evenly balanced than in the primary study, with standardized path coefficients of .26 from Feeling Close and .25 from Behaving Close. The path coefficients to the Subjective Closeness Index and the Sternberg Intimacy Scale from Feeling Close were both high and significant, and the path coefficients to the three RCI subscales from Behaving Close were also all significant. Thus, all of these paths were significant and in the same direction as in the model suggested by the results of the primary study. The two remaining paths, however, differed from those expected from the primary study factor analyses. The RCI Strength subscale had substantial, significant paths from both latent variables in the primary study; but in this confirmatory analysis it only had a significant path from the Behaving Close factor. Its path from Feeling Close was slightly negative (−.07) and clearly nonsignificant. Finally, the correlation between the two latent variables, which was low in the primary study, was significant and of moderate size in the confirmatory analysis (.35). (A model in which the two latent variables remain uncorrelated was easily rejected, $\chi^2[7, N = 81] = 17.18$, $p < .05$; and that model is also significantly worse than the model allowing them to be correlated, $\chi^2[1, N = 81] = 6.54$, $p < .05$.) Finally, a model with a single latent variable was tried and was easily rejected, $\chi^2(9, N = 81) = 25.49$, $p < .01$.

larger amounts of time than were obtained in the original version, probably because subjects included sleep times. Thus, instead of using the Berscheid et al. table for the Frequency subscale, we applied a square root transformation directly to the obtained times (total minutes) for all correlations involving this scale and used the sum of z scores of the three scales (as transformed) to compute the total RCI. However, we also carried out linear transformations of the resulting Frequency scores (dividing by 7) and the RCI total of z scores (multiplying by 2 and adding 14) to make their means reported in Table 5 comparable to those in Table 1.

Table 5
Correlations Among IOS Scale and Other Closeness Measures (Replication Study, N = 88)

Scale	1	2	3	4	5	6	7
1. IOS Scale	—	.33**	.35*	.20	.25*	.31**	.23*
2. RCI total		—	.85**	.88**	.70**	.28*	.15
3. RCI Frequency			—	.75**	.32**	.27*	.11
4. RCI Diversity				—	.38**	.33**	.15
5. RCI Strength					—	.09	.08
6. Subjective Closeness Index						—	.55**
7. Sternberg Intimacy Scale							—
M	4.45	14.22	4.39	4.95	5.16	12.05	75.95
SD	1.56	4.82	3.52	2.16	1.29	1.81	6.89

Note. IOS = Inclusion of Other in the Self; RCI = Relationship Closeness Inventory.
* $p < .05$. ** $p < .01$.

Thus, the confirmatory analysis supported the two-factor model. On the basis of the measures used in these studies, closeness seems to be at least two-faceted: behaving and feeling. This pattern is of considerable interest in its own right and suggests that behavior and emotion in the area of close relationships may be less tightly interconnected than may have been assumed. It also suggests that measures like the RCI that focus on objective aspects of close relationships may be getting at something quite different from measures like the Sternberg Intimacy Scale that focus on the emotional and subjective aspects of closeness. The degree to which the two factors (latent variables) are themselves correlated was sufficiently inconsistent between the two studies that the possibility that these two factors are nearly orthogonal cannot be confidently ruled out, even though, as noted earlier, this seems theoretically unlikely. (It is possible that the higher correlation between the latent variables in this replication study, compared with the primary study, arises somehow from the lack of many family members as closest other. However, an analysis of the primary study data excluding subjects whose closest other was a family member yielded a correlation between the two latent variables of only .03.)

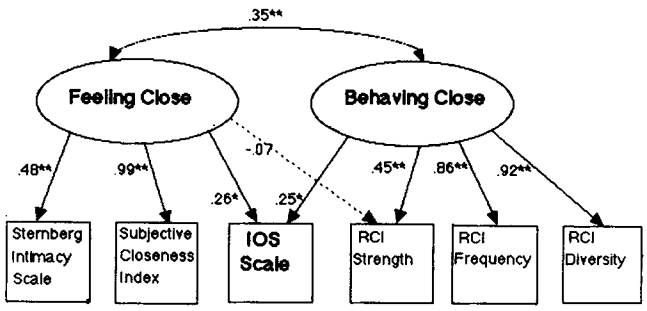

Figure 2. Covariance latent variable model for six measures of closeness (confirmatory factor analysis) for replication study data. (For overall model, Bentler–Bonett normed and nonnormed fit indexes = .99, average absolute standardized residuals < .05. Numbers are standardized path coefficients. The dotted path was part of the predicted model, but was not significant. IOS = Inclusion of Other in the Self; RCI = Relationship Closeness Inventory. *$p < .05$. **$p < .01$.)

The results of the confirmatory analysis are also important in supporting the suggestion that the IOS Scale assesses an aspect of closeness that taps, to some extent, both factors. (That is, the IOS Scale may partially reflect both factors, as well as other aspects of closeness not assessed by any of the standard closeness measures used in these analyses, such as a direct sense of interconnectedness.) This quality of being a rather general measure of closeness, especially in combination with its brevity, makes the IOS Scale particularly handy for research not mainly focused on close relationships, as well as in any circumstance in which a nonspecific measure of closeness is called for.

Regarding the RCI Strength subscale, given the discrepancy between the findings of the primary and replication studies regarding its ability also to tap both factors, any interpretation of its status in this regard must await further replication. But this subscale does seem to stand out from the other RCI subscales both in having the lowest correlation with them and in its generally higher associations with other measures. It is also unique among them in content, being more directly tied to cognitive factors of the kind normally associated with interdependence theory. These considerations all suggest that, pending additional data, it may be wise when using the RCI not to rely exclusively on the overall index in lieu of subscale scores.

Results and Discussion: Closeness and Relationship Longevity

As shown in Table 6, the basic pattern observed in the primary study of small negative correlations between longevity and closeness measures for women and moderate positive correlations for men was replicated in this study, although the women's correlations were often slightly positive and the overall pattern was reversed for the Strength subscale in the friendship group. Nevertheless, the direction of differences (as shown by the negative signs of the difference terms) was consistent in both groups for every scale and subscale, except the Strength subscale. Moreover, in spite of the small *n*s, in the romantic group, combining the IOS Scale, the RCI, the Sternberg Intimacy Scale, the Subjective Closeness Index, and the Expected Distress Scale, yielded a strong overall gender difference in correlations, partial $R = .53$, $F(5, 36) = 2.76$, $p < .05$. (The

Table 6
Correlations of IOS Scale and Other Measures With Relationship Longevity (Replication Study)

Measure	Friendship				Romantic			
	Total	Women	Men	Difference[a]	Total	Women	Men	Difference
n	34[b]	22	11		51	42	7	
Years known[c]								
M	12.13	12.90	13.46		2.39	3.60	0.33	
SD	8.07	8.19	8.25		9.05	5.43	38.27	
Scales								
IOS Scale	.27	.16	.44	−.12	.18	.03	.38	−.09
RCI total	−.06	−.08	−.01	−.04	.20	−.08	.57	−.23
RCI Frequency	−.21	−.31	.07	−.19	.16	−.10	.59	−.28
RCI Diversity	−.29	−.38	−.03	−.20	.21	−.11	.69	−.29
RCI Strength	.28	−.40	−.02	.22	.03	−.04	−.15	.00
Subjective Closeness Index	.04	−.22	.39	−.32	.26	.04	.49	−.17
Sternberg Intimacy Scale	.30	.17	.55	−.20	.24	.00	.74	−.22
Expected Distress Scale					.26	.13	.22	−.04

Note. IOS = Inclusion of Other in the Self; RCI = Relationship Closeness Inventory.
[a] Partial correlation for interaction term (Longevity × Gender) in predicting closeness measure in multiple regression equation.
[b] The number of cases overall is more than the sum of the numbers for each gender because a few subjects failed to indicate their gender.
[c] All longevity computations are based on log of number of years known. However, means and standard deviations have been transformed back to ordinary years.

parallel analysis for the friendship group, which had a smaller sample size, was not significant.)

These data, combined with the primary study data, may suggest that the longer a man knows his closest friend or romantic partner, the closer he feels; but for a woman, closeness is either unrelated or even negatively related to longevity.

Secondary Studies

The primary and replication studies were based on the Berscheid et al. (1989) procedures in which college students described their closeness in various relationships. However, one of the main reasons for developing the IOS Scale was to provide a measure that could be applied (a) with other populations and (b) for relationships created experimentally. We arranged to have the IOS Scale administered in conjunction with five other studies, each of which had its own substantive rationale and has had its results reported elsewhere. Three of these studies used a variety of married-couple samples and the other two attempted to generate closeness in a laboratory setting using college student samples.

Secondary Study 1

McKenna (1989) administered the IOS Scale as part of a cross-sectional study of the interaction of boredom susceptibility and marriage length on marital satisfaction. McKenna's sample included 291 subjects, mainly young married individuals recruited through day-care centers and older married individuals who completed a newspaper survey. The results of interest here are the correlations of the IOS Scale with three measures of marital quality: $r = .62$ with the Dyadic Satisfaction subscale of Spanier's (1976) Dyadic Adjustment Scale; $r = -.60$ with a scale developed by McKenna to measure how bored the subject felt with the relationship; and $r = .57$ with McKenna's scale of how excited the subject felt in the relationship. All of these correlations were clearly statistically significant ($p < .001$) and supported the concurrent validity of the IOS Scale, as marital quality is presumably related to closeness.

Secondary Study 2

Griffin (1990) examined the relationship of reported sexual fantasy to measures of marital commitment and satisfaction. He administered a battery of questionnaires, which also included the IOS Scale, to 171 married individuals attending a Christian couple's retreat. The IOS Scale correlated significantly ($p < .001$) with both of the two scales Griffin used to measure commitment: $r = .51$ for the 85 wives and .52 for the 86 husbands with Rusbult's (1983) scale, and $r = .54$ for wives and .51 for husbands with a modified version of Sabatelli and Cecil-Pigo's (1985) scale. It also correlated significantly ($p < .001$) with the Marital Satisfaction scale of the Enriching and Nurturing Issues, Communication and Happiness (ENRICH; Olson, Fournier, & Druckman, 1982): $r = .64$ for wives and .61 for husbands. Again, these correlations with marital commitment and satisfaction provide additional evidence for the general concurrent validity of the IOS Scale, because it is reasonable to consider both variables as conceptually related to closeness. Second, the husband–wife correlation on the IOS Scale (computed for 78 complete couples) was .32 ($p < .01$), providing a kind of construct validity. (Berscheid et al., 1989, also used

correspondence between partners as an indicator of construct validity for closeness, in their case using RCI scores and romantic partners).

Finally, Griffin (1990) also administered the two social desirability scales based on the Paulhus (1984) factor analysis. The correlations of the IOS Scale with these for wives were .22 for the Self-Deception Scale and .16 for the Impression Management Scale; the corresponding correlations for husbands were .20 and .15. The raw magnitudes of these correlations were higher than might be desired, and the correlation with the Self-Deception Scale for wives just reached significance at $p = .05$. This is, however, a sample in which high levels of conventionality are to be expected. And these correlations with the IOS Scale were in most cases lower than were the corresponding correlations of the two social desirability scales with the other measures used: For the Rusbult (1983), *r*s were .30 and .29 for wives and .10 and .24 for husbands; for the Sabatelli and Cecil-Pigo (1985), .47 and .28 for wives, .29 and .18 for husbands; and for marital satisfaction, .46 and .32 for wives and .25 and .29 for husbands.

Secondary Study 3

As part of a larger investigation of the cognitive implications of close relationships, Aron et al. (1991) had 10 married individuals first rate themselves and their spouses on 90 trait adjectives and then perform a reaction-time task in which they made me–not-me decisions when presented with each of these 90 traits on a computer screen. The rationale of this study was that if other's traits are incorporated in the self in a close relationship, then there should be slower responses (due to greater confusion) on a me–not-me task when a trait is true of self but not of spouse (or vice versa) than when it is true or false of both. The result of interest here is that these subjects also completed the IOS Scale, and their scores correlated $r = .59$ ($p < .05$) with the degree of difference in reaction time to traits that were the same versus different between self and spouse. This provides yet another kind of construct validity for the IOS Scale.

Secondary Study 4

In this study, Melinat (1991) had 48 mixed-gender stranger dyads each spend 1.5 hr carrying out a series of interaction tasks explicitly designed to create intimacy (such as self-disclosure exercises and role playing being romantic partners), manipulating how dyads were matched and the risks they were encouraged to take. The results of interest here are the correlations between the IOS Scale (a 5-step version was used) and other closeness and attraction measures also administered to the subjects, individually, after their interaction. These correlations provided a check on concurrent validity in the context of a study in which closeness was experimentally generated rather than already existing in an ongoing relationship. The correlations of the IOS Scale, for women and men respectively, were .72 and .63 with the Subjective Closeness Index; .39 and .53 with Rubin's (1970) Liking scale; .59 and .36 with Rubin's Love scale; and .66 and .41 with Byrne's (1971) Interpersonal Judgment Scale. (All of these correlations were significant at $p \leq .01$.) Melinat also used the two social desirability scales based on the Paulhus (1984) factor analysis. Their correlations with the IOS Scale were .01 and .02 for the Self-Deception Scale and .26 and .17 for the Impression Management Scale, none of which were significant. (The correlations with social desirability tended to be higher for the other measures. For example, using averages for the pairs, for Self-Deception the correlations were .01 on the Subjective Closeness Index, .28 for the Rubin Liking Scale, .20 for the Rubin Love Scale, and .25 for the Interpersonal Judgment Scale; the corresponding correlations for the Impression Management Scale were .29, .51, .40, and .31.)

Secondary Study 5

Aron, Aron, Melinat, and Vallone (1991) replicated the Melinat (1991) study, using same-gender matchings and a less elaborate postexperimental questionnaire. For the 33 female pairs and the 20 male pairs, respectively, the correlations with the IOS Scale (5-step version) were .79 and .72 with the Subjective Closeness Index, .84 and .82 with a single-item general closeness measure, and .78 and .53 for the Interpersonal Judgment Scale (all $ps \leq .02$).

Studies of How Respondents Interpret the IOS Scale

Just how do respondents understand the overlapping circles in the IOS Scale? Perhaps the strongest answer is embedded in its correlations with other measures. Thus, from the findings described already, it seems that the IOS Scale measures a general aspect of closeness, what we would call a kind of interconnectedness, that taps aspects of both subjective feelings of closeness and objective interaction.

A separate question, however, is how do respondents consciously construe the measure? We were especially concerned about whether some may interpret the overlapping circles as a loss of individual identity, because in some of our testings a few subjects brought up issues of this kind. Thus, in the first two of the following studies, subjects first completed the IOS Scale with regard to a close other, then gave a free-response account of what the measure means and rated Likert-scale items about how much the overlapping circles represent each of six specific possible meanings (one of which emphasized loss of individual identity). A third study investigated a related issue (also raised directly by a few of our subjects) of whether under some conditions respondents might find other combinations of circle sizes to be more descriptive of their relationship than the those available in the standard IOS Scale. In that study we created a computerized version of the IOS Scale, in which subjects could freely vary the size of each circle.

Subjective Meaning of the IOS Scale, Study 1

Method

Thirty-six undergraduates (23 women and 13 men; mean age = 20.61, range = 16–25) completed the questionnaire anonymously during a regular class session. Three subjects (2 women and 1 man) selected a family member as their closest other, 9 (all women) selected a nonromantic friend, and 24 (12 women and 12 men) selected a romantic partner. On the first side of the questionnaire, after completing the IOS Scale for their closest relationship, subjects were instructed: "This

question, above, involving the overlapping circles, has been used in many studies of relationships. We are trying to understand what these diagrams mean to people. Please write *briefly* what these diagrams mean to you." On the second side, they were instructed to rate each of six questions on a 4-point scale from *not at all* to *very much.* Each question began, "To me the overlapping circles represent . . ." and ended with (a) "the degree of union of myself and the other person," (b) "the degree to which I include the other person into myself," (c) "the degree to which my partner includes me into his or her self," (d) "the degree of closeness of myself and the other person," (e) "the degree to which I have lost my own unique identity to the other person or the relationship," and (f) "the degree to which I have expanded myself through being in the relationship with the other person." (It might have been useful also to ask whether the circles represented "the degree to which the other person has lost her or his unique identity to me or the relationship." However, it is possible that such a question would not have yielded any different results from Question e, because an inspection of the free-response data indicated that this idea never appeared separately from own loss of identity.)

Content Analysis

Each phrase in the free-response answer was typed onto a separate sheet before the analysis. A preliminary review of a subset of these phrases, in combination with the findings of the previous studies and our specific interest in the issue of losing self and independence, suggested five categories: (a) Feeling Close (care, trust, loving each other, affection, enjoying each other's company, etc.), (b) Behaving Close (behavioral interaction, including spending time together, doing activities together, sharing material resources, etc.), (c) Connection (interconnections of selves, interdependence, integration of lives—except for purely material integration of resources—etc.), (d) Independence–Identity (loss of boundaries, loss of self, dependence, etc. and the opposites of these), and (e) Similarities (common values, interests, etc.). All coding was done blind, and as a check on reliability, the first 48 phrases were independently coded by two raters, yielding adequate interjudge agreement on all categories (Cohen's kappas were .74 for Feeling Close, .83 for Behaving Close, .94 on Connectedness, and 1.00 for both Independence–Identity and Similarities).

Results and Discussion

The top half of Table 7 on the left side shows the proportion of subjects giving each type of phrase on the basis of the content analysis. A one-way, repeated measures analysis of variance (ANOVA) yielded a significant difference overall, $F(4, 140) = 15.75$, $p < .001$, with subsequent protected t tests indicating that the Connectedness category was significantly more common than any of the other categories. The bottom half of Table 7 on the left side shows the mean ratings for each of the six scales. Again, the overall ANOVA was significant, $F(5, 175) = 11.22$, $p < .001$, with subsequent t tests indicating that the ratings for the circles representing loss of unique identity were significantly lower than for any of the other five proposed meanings. The results of these two analyses suggest that (a) whereas a substantial minority of subjects did spontaneously think of independence and identity issues when presented with the IOS Scale, the majority did not; and (b) even when asked about this possibility (at least regarding one's own loss of identity), its salience rating was less than for any of the alternative interpretations.

Table 7
Proportion of Respondents Giving Each Type of Phrase in Content Analysis and Mean Responses to Six Scales on Possible Meanings of the IOS Scale

Measure	Study 1 (undergraduates; $n = 36$)	Study 2 (retired professional women; $n = 19$)
Content analysis		
Feeling Close	$.25_b$	$.28_b$
Behaving Close	$.19_b$	$.28_b$
Connectedness	$.86_a$	$.67_a$
Independence-Identity	$.36_b$	$.28_b$
Similarities	$.19_b$	$.22_b$
Rating scales		
Union	2.97_a	3.68_a
I Include Other in Self	2.56_{bc}	3.05_b
Other Includes Me in Self	2.64_{bc}	2.81_b
Closeness	2.75_{ab}	3.58_a
Loss of Unique Identity	1.75_c	1.95_c
Expand Self Through Relationship	2.11_d	2.79_b

Note. Four one-way analyses of variance (for content analyses and rating scales for each study) were all significant at $p < .01$. In each of the four sections, percentages or means in a column with any common subscripts are not significantly different.

Finally, we examined whether there was any relation between ratings on the IOS Scale and interpreting the scale as representing independence or identity issues. The correlation with whether an independence theme appeared in the open-ended description was .08 and the correlation with the rating scale on losing identity was −.06. (We also inspected the distributions and the joint distributions of the IOS Scale with each of these variables and observed no noticeable curvilinear pattern, nor did there appear to be any systematic tendency to avoid using extreme IOS Scale levels associated with these Independence–Identity variables or any pattern of differences in variances in IOS Scale scores associated with these variables.)

We considered it possible, however, that issues of separateness and maintaining boundaries might be especially salient for women (on the basis of recent psychoanalytic–object relations perspectives, e.g., Chodorow, 1978, as well as notions such as "merging" and "fusion" from family systems theory, e.g., Olson, Russell, & Sprenkle, 1983, which have sometimes suggested that these themes arise more often for women). And, indeed, 11 of the 23 women, but only 2 of the 13 men, mentioned Independence–Identity themes in their free-response answer, $\chi^2(1, N = 36) = 3.79$, $p = .05$. (This was partially due to women mentioning more themes overall. But even controlling for whether each of the other five themes was mentioned, the partial correlation of .29 between an Independence–Identity theme being mentioned and gender was nearly significant, $p = .10$.) Women also rated the loss of identity question somewhat

higher than men (1.91 vs. 1.46), but this difference was not significant. In any case, even among the women, the correlations of the IOS Scale with the identity variables were both near zero (−.03 for mentioning the Independence–Identity theme and .06 for loss of identity). Thus, there was no evidence that seeing the loss-of-identity questions as related to identity made any difference in how it was used, even among women. (And once again, there were no apparent consistent patterns of difference among means or variances or curvilinear relationships associated with the independence and identity variables for the women-only data. We also checked correlations and all of these other relationships, looking at romantic relationships only, and again found no links between IOS Scale scores and the independence and identity variables. However, there were too few subjects to check for patterns using only women rating romantic relationships.)

Subjective Meaning of the IOS Scale, Study 2

Rationale

The previous study suggested that women might be more prone to see the overlapping circles of the IOS Scale in terms of identity or independence. If such a tendency exists, and if it is due to women having to struggle against cultural gender-role stereotypes to be independent, then we reasoned that the tendency should be strongest in women who have had to spend a lifetime struggling for such independence. And we thought that this should be especially true among the cohort of North American women who have had careers who are now in their 60s and 70s, who were thus first developing those careers in the 1950s.

Method

We administered the same questionnaire to a group of 19 mainly retired United States professional women who were attending a meeting of an association of university women. Ages ranged from 60 to 84, with a mean of 69.33. Four selected a family member as their closest other (2 children, a sister, and an unspecified family member), 3 selected a nonromantic friend, and 12 selected a romantic partner (a spouse for 11 of the 12).

Results and Discussion

As shown in the right side of Table 7, the pattern of the percentages of these women mentioning each of the five themes, and the pattern of means for the six scales was virtually the same as was observed for the mixed-gender undergraduate sample. The correlation of IOS Scale score with whether an Independence–Identity theme appeared in the free-response description was −.10 and with the rating scale on losing identity was .11. (Correlations using just those rating romantic partners were similarly low. Nor were there any other patterns linking IOS Scale scores and independence and identity variables in this sample or among the romantic subsample.) Again, these results are virtually identical to those obtained from the mixed-gender undergraduate sample.

Subjective Meaning of the IOS Scale, Study 3

Rationale

A few subjects in the primary and replication studies commented that their relationship was not well described by the IOS Scale diagrams because of the specific sizes of the two circles (especially the fact that self and other are shown as the same size). This possibility of size of circles being important was also suggested by Levinger (1988). Thus, we explored the effect of using a computerized version of the IOS Scale that gave respondents independent control over the size and location of each circle. (Indeed, the procedure implicitly encouraged subjects to create asymmetrical diagrams by having subjects, during the phase in which they familiarize themselves with using the program, try various possibilities of overlap of asymmetrical circles. This assured we would have sufficient cases to examine the correlates of such asymmetries).

Method

Twelve individuals (6 women and 6 men) were recruited from the undergraduate psychology subject pool and completed the tasks individually at a campus computer laboratory. Their ages ranged from 18 to 23, with a mean of 20.82. When subjects arrived they were placed at a Macintosh computer and thoroughly familiarized with using the IOS Scale program by carrying out a series of tasks that required them to move the circles in many possible positions using many different circle sizes. Each subject then completed three series of tasks (order was counterbalanced): for their closest family member, for their closest nonromantic friend, and for their closest romantic partner (if they did not have one, they could skip that series; three subjects did not complete this section). For each series, subjects determined who their closest other was in the given category, made a computer diagram describing their relationship, then completed a questionnaire that included the RCI and the Subjective Closeness Index.

Results

Whether a subject used different sized circles was essentially uncorrelated with the nearness of the centers of the circles (a computer-version measure intended to be equivalent to the printed-version IOS scale score), $r = .04$.[3] (Considering only the ratings of romantic relationships, where asymmetries might be especially salient, this correlation was .20, which although not significant given the small n, is certainly suggestive.) Scores on the other measures did show some tendency to be associated

[3] To simplify this discussion, we report only within-subject correlations computed by taking all pairs of responses and partialing out subject number as a coded nominal variable; also we report as the equivalent to IOS Scale scores the distance between the centers of the circles (reversing signs of correlations so that higher scores represent greater closeness). We did compute correlations using other approaches (e.g., between-subjects correlations of scores on each variable averaged over conditions and median and average of r-to-z transformed between-subjects correlations computed for each condition), as well as using other indices based on the computer diagrams (such as various measures of percentages of overlap, and also distance controlling for average circle size). These alternative approaches all produced similar outcomes. For example, for this correlation, the alternative analysis methods yielded rs ranging from .01 to .09.

with whether subjects used different-sized circles (for the RCI overall, $r = .40$, $p = .07$; for the subscales, Frequency, .36; Diversity, .41; Strength, .12; and for the Subjective Closeness Index, $r = .37$, $p = .09$). The average size of the two circles used (as opposed to the difference between them) was also not much related to nearness of the centers of the circles ($r = .12$) and was also only weakly related to the RCI (overall RCI, $r = .15$; Frequency, −.26, Diversity, −.04) but did tend to be positively related to the RCI Strength subscale ($r = .52$, $p < .05$) and the Subjective Closeness Index ($r = .43$, $p < .05$). These various results suggest, ironically, that asymmetry and variations in overall circle size seem not to matter much for the IOS-Scale-type score but do seem to be related to other measures of closeness. (These other measures of closeness, incidentally, had intercorrelations among themselves, and alphas of about the same magnitudes as were found in the primary and replication studies, suggesting that they were performing in about the same way in this study.) However, the null hypothesis results (that is, the low correlations) must be interpreted especially cautiously given the small sample size.

General Discussion

The main outcomes of this series of studies are the support for the utility of the IOS Scale and the provisional identification of a two-factor model of closeness, as well as an apparent gender difference in the link of closeness and relationship longevity. Regarding the IOS Scale, we have presented evidence for the psychometric and substantive suitability of the IOS Scale as a measure of closeness that can be completed rapidly and yet is not particularly susceptible to social desirability response set effects, is appropriate to a variety of populations and research circumstances, and is consistent with diverse theoretical orientations to closeness. Specifically, in the primary study there was support for both alternate-form and test–retest reliability, substantial indications of its concurrent validity with other existing measures of closeness and predictive validity for relationship maintenance 3 months later, and clear indications of its discriminant validity and its lack of correlation with social desirability scales. The replication study permitted cross-validation of the concurrent and discriminant validity and the low correlation with social desirability scales. The pattern of correlations among measures observed in the primary study and cross-validated in the replication study (the theoretical implications of which will be reviewed below) also suggest that the IOS scale is an unusually broad index of closeness, in that it taps significantly into both the feeling close and behaving close aspects, although possibly more strongly into the former. In the series of secondary studies, the IOS Scale was shown to have good concurrent validity with measures of marital satisfaction and commitment, with cognitive measures of closeness, and with measures of emotional closeness and attraction regarding a relationship created in the laboratory. The studies on how subjects perceive the IOS Scale found that it was consciously interpreted mainly in terms of interconnectedness of self and other. However, a minority of individuals (more often women than men) found independence and identity a highly salient interpretation of the diagrams. (This whole issue may well be a fruitful area for further research.) Nevertheless, the extent to which this interpretation was made seems to have been largely independent of how the IOS Scale was actually used. Similarly, on the basis of the computer study, the fixed and equal sizes of the circles in the ordinary version of the IOS Scale do not seem to affect how people use the scale.

On the surface, the IOS Scale may seem to be just a fancy version of a simple question of how close one feels to the other. However, throughout this series of studies, the IOS Scale has performed quite differently from the Subjective Closeness Index, which is, in fact, just two simple questions about how close one feels to the other. The Subjective Closeness Index, compared with the IOS Scale, had a different pattern of correlations with other measures of closeness, generally higher correlations with social desirability measures, and was substantially less successful as a predictor of relationship maintenance or of expected distress among individuals still with their partners 3 months later. Moreover, the Subjective Closeness Index clearly correlated exclusively with the Feeling Close factor and not at all with the Behaving Close factor, whereas the IOS Scale correlated with both (although, in the primary study, but not the replication study, more highly with Feeling Close). Thus, the two approaches seem to be quite distinct empirically. Furthermore, we think they are quite conceptually distinct. Diagrams of this kind have been used by Levinger (and earlier by Lewin), as discussed in the introduction, just because they portray so vividly the sense of interpersonal connectedness that our subjects in the meaning studies indicated in their descriptions. We would even speculate that pictorial measures of this kind may bypass verbally encoded schemata that more strongly emphasize feeling close and instead call forth a more deeply structured (perhaps from infancy) sense of self–other union.

The major practical implication of these results is that the IOS Scale seems to be a potentially widely useful measurement technique in research on close relationships. We feel it is especially appropriate in situations in which subject time is at a premium, in which comparability across diverse populations and situations is a goal, in which subjects are not highly literate or verbal (although, admittedly, we have not yet tested this possibility), or in which a general measure of closeness or one that emphasizes the interconnectedness of selves aspect is most theoretically relevant.

However, under conditions in which time is less constricted, there may often be advantages of using other measures (instead of or in addition to the IOS Scale) that are targeted to particular populations or to particular aspects of closeness other than the general sense of connectedness or overlap of selves. For example, the Sternberg Intimacy Scale, the Subjective Closeness Index, and, in the case of romantic relationships, the Expected Distress Scale, may tap a kind of subjective feeling of intimacy more specifically. Similarly, the RCI Frequency and Diversity subscales would clearly be expected to do a better job of pinpointing interactional density. The RCI Strength subscale (which may, like the IOS Scale, also tap more diverse aspects of closeness), would seem to be especially relevant to the interdependence view of closeness, although its application without modification outside of the college student context may be problematic. (And of course measures of satisfaction, commitment, attraction, and the like are even more specific.)

In terms of theoretical implications of these studies, the key

result is that the major measures we used seem to fall into two clear factors of feeling close, including the Sternberg Intimacy Scale and the Subjective Closeness Index; and Behaving Close, including the three RCI subscales. This pattern appeared in the exploratory analyses in the primary study and was cross-validated in the confirmatory analysis in the replication study. If further research, using other measures, continues to support this pattern, this two-dimensional scheme might well provide helpful guidance in the exploration of this new social psychological territory of close relationships. In particular, it calls forth parallels to long-standing issues in other areas of social psychology, such as the link between attitudes and behaviors. These issues are also relevant to the development of diary measures of closeness, such as the Rochester Interaction Record (Wheeler & Nezlek, 1977) and the Iowa Interaction Record (Duck, Rutt, Hurst, & Strejc, 1991).

Another particularly interesting result in terms of its theoretical implications was that in romantic and friendship relationships there was some evidence of a positive correlation between longevity and closeness for men, suggesting closeness may build over time; but for women closeness and longevity seem largely unrelated. This was a purely exploratory finding in the primary study that was cross-validated in the replication study. The result appears to be fairly robust in that it was observed on quite a variety of closeness measures and for both romantic and friendship relationships and appears to hold up over and above gender of other. On the other hand, these correlations, especially in the replication study, were based on small subsamples (in one case as few as 7 subjects), so that further replication would certainly be warranted before drawing strong conclusions. Furthermore, it is important to bear in mind that this is a cross-sectional and not a longitudinal finding, so that a variety of explanations of the apparent pattern are possible; for example, perhaps women are more likely to stay in relationships that do not increase in closeness as time goes by. However, the most likely explanation of the apparent pattern, it seems to us, is that women's expectations of closeness focus on emotional issues that do not necessarily increase very rapidly after the initial phases of a relationship and may even decline as idealizations are shattered or ongoing conflicts and mundane requirements of interaction interfere with more intimate personal activities. For men, on the other hand, who may be less able to get close quickly, the ongoing interaction may permit a slow process of building trust, making increasingly greater closeness possible.

In conclusion, we have presented data from 10 studies that support the utility of a single-item pictorial measure of closeness. In addition, we identified a provisional two-dimensional structure of closeness that could have far-reaching theoretical implications. Finally, we noted a tentative pattern in which passage of time in romantic and friendship relationships is associated with little change in closeness for women but increased closeness for men.

References

Altman, I., & Taylor, D. A. (1973). *Social interaction: The development of interpersonal relationships.* New York: Holt, Rinehart & Winston.

Aron, A., & Aron, E. N. (1986). *Love as the expansion of self: Understanding attraction and satisfaction.* New York: Hemisphere.

Aron, A., Aron, E., Melinat, E., & Vallone, R. (1991, May). *Experimentally induced closeness, ego identity, and the opportunity to say no.* Paper presented at the International Network Conference on Personal Relationships, Normal, IL.

Aron, A., Aron, E. N., Tudor, M., & Nelson, G. (1991). Close relationships as including other in the self. *Journal of Personality and Social Psychology, 60,* 241–253.

Bakan, D. (1966). *The duality of human existence: Isolation and commitment in Western man.* Boston: Beacon Press.

Bank, S. P., & Kahn, M. D. (1982). *The sibling bond.* New York: Basic Books.

Bentler, P. M. (1989). *EQS structural equations program manual.* Los Angeles: BMDP Statistical Software.

Berscheid, E., Snyder, M., & Omoto, A. M. (1989). The Relationship Closeness Inventory: Assessing the closeness of interpersonal relationships. *Journal of Personality and Social Psychology, 57,* 792–807.

Berscheid, E., & Walster, E. H. (1978). *Interpersonal attraction* (2nd ed.). Reading, MA: Addison-Wesley.

Bower, G. H., & Gilligan, S. G. (1979). Remembering information related to one's self. *Journal of Research in Personality, 13,* 420–432.

Breckler, S. J. (1990). Applications of covariance structure modeling in psychology: Cause for concern? *Psychological Bulletin, 107,* 260–273.

Brehm, S. S. (1985). *Intimate relationships.* New York: Random House.

Brenner, M. (1973). The next-in-line effect. *Journal of Verbal Learning and Verbal Behavior, 12,* 320–323.

Buber, M. (1937). *I and thou.* New York: Scribners.

Byrne, D. (1971). *The attraction paradigm.* San Diego, CA: Academic Press.

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin, 56,* 81–105.

Chodorow, N. (1978). *The reproduction of mothering: Psychoanalysis and the sociology of gender.* Berkeley: University of California Press.

Clark, M. S. (1983). Reactions to aid in communal and exchange relationships. In J. D. Fisher, A. Nadler, & B. M. DePaulo (Eds.), *New directions in helping* (Vol. 1, pp. 281–304). San Diego, CA: Academic Press.

Clark, M. S., & Mills, J. (1979). Interpersonal attraction in exchange and communal relationships. *Journal of Personality and Social Psychology, 37,* 12–24.

Clark, M. S., & Reis, H. T. (1988). Interpersonal processes in close relationships. *Annual Review of Psychology, 39,* 609–672.

Deutsch, F. M., & Mackesy, M. E. (1985). Friendship and the development of self-schemas: The effects of talking about others. *Personality and Social Psychology Bulletin, 11,* 399–408.

Duck, S. (1988a). *Handbook of personal relationships: Theory, research and interventions.* Chichester, England: Wiley.

Duck, S. (1988b). *Relating to others.* Chicago: Dorsey.

Duck, S. W., Rutt, D. J., Hurst, M., & Strejc, H. (1991). Some evident truths about everyday communication: All conversations are not created equal. *Human Communication Research, 18,* 228–267.

Greenwald, A. G., & Pratkanis, A. R. (1984). The self. In R. S. Wyer & T. K. Srull (Eds.), *Handbook of social cognition* (Vol. 3, pp. 129–178). Hillsdale, NJ: Erlbaum.

Griffin, J. J. (1990). *Sexual fantasy, extramarital affairs, and marriage commitment.* Doctoral dissertation, California Graduate School of Family Psychology, San Rafael, CA.

Heider, F. (1944). Social perception and phenomenological causality. *Psychological Review, 51,* 358–374.

Heider, F. (1958). *The psychology of interpersonal relations.* New York: Wiley.

Helgeson, V. S., Shaver, P., & Dyer, M. (1987). Prototypes of intimacy

and distance in same-sex and opposite-sex relationships. *Journal of Social and Personal Relationships, 4,* 195–233.

Hendrick, C., & Hendrick, S. (1983). *Liking, loving, and relating.* Monterey, CA: Brooks/Cole.

Hendrick, C., & Hendrick, S. S. (1989). Research on love: Does it measure up? *Journal of Personality and Social Psychology, 56,* 784–789.

Hoffman, M. L. (1976). Empathy, role taking, guilt, and development of altruistic motives. In T. Lickona (Ed.), *Moral development and behavior.* New York: Holt.

Hogg, M. A., & Turner, J. C. (1987). Intergroup behaviour, self-stereotyping and the salience of social categories. *British Journal of Social Psychology, 26,* 325–340.

Ickes, W., Tooke, W., Stinson, L., Baker, V., & Bissonnette, V. (1988). Naturalistic social cognition: Intersubjectivity in same-sex dyads. *Journal of Nonverbal Behavior, 12,* 58–84.

James, W. (1948). *Psychology.* Cleveland, OH: Fine Editions Press. (Original work published 1890)

Jung, C. G. (1959). Marriage as a psychological relationship. In V. S. DeLaszlo (Ed.), *The basic writings of C. G. Jung* (R. F. C. Hull, Trans.; pp. 531–544). New York: Modern Library. (Original work published 1925)

Kelley, H. H., Berscheid, E., Christensen, A., Harvey, J. H., Huston, T. L., Levinger, G., McClintock, E., Peplau, L. A., & Peterson, D. R. (1983). Analyzing close relationships. In H. H. Kelley, E. Berscheid, A. Christensen, J. H. Harvey, T. L. Huston, G. Levinger, E. McClintock, L. A. Peplau, & D. R. Peterson (Eds.), *Close relationships* (pp. 20–67). New York: Freeman.

Kelley, H. H., & Thibaut, J. W. (1978). *Interpersonal relations: A theory of interdependence.* New York: Wiley.

Kunin, T. (1955). The construction of a new type of attitude measure. *Personnel Psychology, 8,* 65–77.

Levinger, G. (1988). Can we picture love? In R. J. Sternberg & M. L. Barnes (Eds.), *The psychology of love* (pp. 139–158). New Haven, CT: Yale University Press.

Levinger, G., & Snoek, J. D. (1972). *Attraction in relationship: A new look at interpersonal attraction.* Morristown, NJ: General Learning Press.

Lewin, K. (1948). The background of conflict in marriage. In G. Lewin (Ed.), *Resolving social conflicts: Selected papers on group dynamics* (pp. 84–102). New York: Harper.

Maslow, A. H. (1967). A theory of metamotivation: The biological rooting of the value-life. *Journal of Humanistic Psychology, 7,* 93–127.

McAdams, D. P. (1988). Personal needs and personal relationships. In S. Duck (Ed.), *Handbook of personal relationships: Theory, research and interventions* (pp. 7–22). New York: Wiley.

McCall, G. J. (1974). A symbolic interactionist approach to attraction. In T. L. Huston (Ed.), *Foundations of interpersonal attraction* (pp. 217–231). San Diego, CA: Academic Press.

McKenna, C. (1989). *Marital satisfaction and sensation seeking in the first ten years of marriage: Self-expansion versus boredom.* Doctoral dissertation, California Graduate School of Family Psychology, San Rafael, CA.

Melinat, E. D. (1991). *Intimacy: Negotiating closeness and distance.* Doctoral dissertation, California Graduate School of Family Psychology, San Rafael, CA.

Merleau-Ponty, M. (1945). *Phenomenologie de la perception.* Paris: Gallimard.

Olson, D. H., Fournier, D. G., & Druckman, J. M. (1982). *PREPARE-ENRICH: Counselors manual.* Minneapolis: Prepare-Enrich, Inc.

Olson, D. H., Russell, C. S., & Sprenkle, D. H. (1983). Circumplex model of marital and family systems: VI. Theoretical update. *Family Process, 22,* 69–83.

Paulhus, D. L. (1984). Two component models of socially desirable responding. *Journal of Personality and Social Psychology, 46,* 598–609.

Pipp, S., Shaver, P., Jennings, S., Lamborn, S., & Fischer, K. W. (1985). Adolescents' theories about the development of their relationships with parents. *Journal of Personality and Social Psychology, 48,* 991–1001.

Reik, T. (1944). *A psychologist looks at love.* New York: Farrar & Rinehart.

Reis, H. T., & Shaver, P. (1988). Intimacy as interpersonal process. In S. Duck (Ed.), *Handbook of personal relationships: Theory, research and interventions* (pp. 367–389). New York: Wiley.

Rubin, Z. (1970). Measurement of romantic love. *Journal of Personality and Social Psychology, 16,* 265–273.

Rusbult, C. E. (1983). A longitudinal test of the investment model: The development (and deterioration) of satisfaction and commitment in heterosexual involvements. *Journal of Personality and Social Psychology, 45,* 101–117.

Russell, J. A., Weiss, A., & Mendelsohn, G. A. (1989). Affect grid: A single-item scale of pleasure and arousal. *Journal of Personality and Social Psychology, 57,* 493–502.

Sabatelli, R. M., & Cecil-Pigo, E. F. (1985). Relational interdependence and commitment in marriage. *Journal of Marriage and the Family, 47,* 931–945.

Sande, G. N., Goethals, G. R., & Radloff, C. E. (1988). Perceiving one's own traits and others': The multifaceted self. *Journal of Personality and Social Psychology, 54,* 13–20.

Schutz, A. (1970). *On phenomenology and social relations.* Chicago: Chicago University Press.

Spanier, G. B. (1976). Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and the Family, 38,* 15–28.

Sternberg, R. J. (1986). A triangular theory of love. *Psychological Review, 93,* 119–135.

Sternberg, R. J. (1988). *Construct validation of a triangular theory of love.* Unpublished manuscript, Yale University, Department of Psychology.

Tesser, A. (1988). Toward a self-evaluation maintenance model of social behavior. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 21, pp. 181–227). San Diego, CA: Academic Press.

Wegner, D. M. (1980). The self in prosocial action. In D. M. Wegner & R. R. Vallacher (Eds.), *The self in social psychology* (pp. 131–157). New York: Oxford University Press.

Wheeler, L., & Nezlek, J. (1977). Sex differences in social participation. *Journal of Personality and Social Psychology, 45,* 742–754.

Wheeler, L., Reis, H. T., & Nezlek, J. (1983). Loneliness, social interaction, and sex roles. *Journal of Personality and Social Psychology, 45,* 943–953.

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