

Loneliness, Social Interaction, and Sex Roles

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Forty-three male and 53 female college seniors maintained the Rochester Interaction Record for 2 weeks, providing information about every social interaction of 10 minutes or more. Subjects then completed the revised UCLA (University of California, Los Angeles) Loneliness Scale and the Personal Attributes Questionnaire, measuring sex-role orientation. For both sexes, loneliness was negatively related to the amount of time spent with females and to the meaningfulness of interaction with males and females. However, meaningfulness with males was more important than meaningfulness with females. Femininity was negatively related to loneliness for both sexes and partially mediated the above relationships. There were sex differences, however, in the extent to which variables overlapped in predicting loneliness. For example, a large group of nonlonely males was characterized *both* by having meaningful relationships with males and by spending time with females, whereas a second group of nonlonely males was characterized simply by having meaningful relationships with males. The largest group of nonlonely females was characterized simply by having meaningful relationships with males, but another sizable group was characterized simply by spending time with females. Females doing both accounted for very little of the variance.

The flurry of research on loneliness in the last few years has been impressive: Two measures of loneliness have been developed (Rubenstein & Shaver, 1980; Russell, Peplau, & Cutrona, 1980; Russell, Peplau, & Ferguson, 1978); Shaver and Rubenstein (1980) have investigated the childhood antecedents of adult loneliness; two edited volumes have appeared (Hartog, Audy, & Cohen, 1980; Peplau & Perlman, 1982); and Peplau, Russell, and Heim (1979) have proposed an attributional theory of loneliness.

Loneliness has been shown to correlate with low self-esteem; shyness; feelings of alienation; external locus of control; the belief that the world is not a just place (Jones, Freemon, & Goswick, 1981); inhibited sociability (Horowitz & French, 1979); boredom, restlessness, and unhappiness (Perlman, Gerson, & Spinner, 1978); and dissatisfaction with social relationships (Russell et al., 1978).

In a recent important study, Russell et al. (1980) demonstrated that loneliness (as measured by the revised UCLA [University of California, Los Angeles] scale) was predicted by three factors: affiliation motivation, social risk taking, and negative affect (social desirability was unrelated). With these four factors entered first into a hierarchical regression analysis, a self-labeling loneliness index still related to loneliness after eliminating the variance accounted for by the four factors. Thus loneliness appears to be a distinct psychological experience.

The focus of this article is the relationship between loneliness and actual social behavior. In the Russell et al. (1980) study the concurrent validity measure consisted of some retrospective questions about social behavior in the previous 2 weeks, the number of close friends subjects felt they had, and the nature of the subjects' dating or marital status. Partialing out the four factors, loneliness related to amount of time alone each day ($r = .27$), the number of times dinner was eaten alone ($r = .31$), the number of weekend evenings alone ($r = .31$), and the number of close friends ($r = -.27$). In addition, students who were not dating were more lonely than those who were romantically involved.

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Rubenstein (1979; also partially reported by Rubenstein & Shaver, 1980), in a newspaper survey in three United States cities, found correlations between loneliness measured by the NYU (New York University) scale and frequency of seeing closest friends ($r_s = .13$ to $.20$), hours per week socializing ($r_s = .12$ to $.15$), number of groups and organizations participated in ($r = .20$), and number of close friends ($r_s = .18$ to $.28$).

The weakness in the Russell et al. (1980) and the Rubenstein (1979) studies is in their making the dependent variable, actual social behavior, operational. It is difficult for people to report accurately their behavior over the previous 2 weeks or in a typical week. Memory is faulty, mood affects memory, and people probably do not encode the details of socializing very precisely. What is remembered is very global.

There is a method (Reis, Nezlek, & Wheeler, 1980; Wheeler & Nezlek, 1977) that provides an accurate and detailed measure of social behavior over a period of time, the Rochester Interaction Record (RIR). Subjects complete a short fixed-format record for every interaction of 10 minutes or longer that occurs during a specified interval. In this article, social behavior measured in this way is related to loneliness; sex differences in these relationships are explored; and the mediating influence of sex role is implicated.

The specificity of the RIR provides information about two vital distinctions that, although central to understanding the role of social participation in the experience of loneliness, have not yet been adequately addressed. The first is the difference between quality and quantity of interaction. For example, both the Russell et al. (1980) and the Rubenstein (1979) studies found that lonelier people had fewer close friends. We do not know whether this refers to the sheer number of social contacts the subjects had or the degree of involvement these contacts entailed. Rubenstein and Shaver (1980) suggested that the affective aspects may be the most important. The RIR yields indexes of the number of interaction partners, frequency of contact, time spent socializing, and length of each contact. These quantity measures are independent of the affective variables it furnishes: intimacy, disclosure, satisfaction, and pleasantness. Given the personality char-

acteristics shown to relate to loneliness, we would expect the qualitative aspects of socializing to be more central to loneliness, although quantity would seem to be relevant as well.

The second distinction refers to the gender of one's partner. Males and females differ widely in their effectiveness as social partners; females generally are more socially responsive, empathic, and intimate (Andersen & Bem, 1981; Deaux, 1976; Maccoby & Jacklin, 1974). If females are capable of providing more of the experiences that stave off loneliness, then we would expect the time a person spends with them to predict loneliness. On the other hand, because males are typically less proficient at supplying such affect, the *quality* of a person's time with males ought to be related to loneliness. Interestingly, Russell et al. (1980) and Rubenstein (1979) did not distinguish between same- and opposite-sex friends in their reports.

Taking these two distinctions together, our major hypothesis is that loneliness will be inversely related to the quantity of interaction with females and to the quality of interaction with males. This should be true for both sexes, although it may not be equally true. It is possible, for example, that quantity of interaction with females has a stronger effect for males than for females. We have no hypothesis about the relationship of these predictor variables with each other. Although we predict that they are related in the same way to loneliness, we cannot predict whether they will be independent of one another or related.

This research is also concerned with the mediating role of psychological femininity. Ever since social psychologists first began to conceptualize sex-role orientation as dichotomous scales, rather than a single bipolar continuum (Constantinople, 1973), femininity has stood for expressive-affiliative traits. Numerous studies have demonstrated that femininity is related to the sorts of positive interpersonal behaviors referred to earlier, for example, empathy (Spence & Helmreich, 1978) and nurturance (Bem, Martyna, & Watson, 1976). This is true for both male and female subjects. On the other hand, masculinity shows little or no relation to affiliation, when measured orthogonally from femininity. Given the definition of loneliness as the relative absence of meaningful social participation, our subsidiary

DATE _____	TIME _____	AM _____	LENGTH: _____	HRS _____	MIN _____				
		PM _____							
INITIALS _____	IF MORE THAN 3 OTHERS: _____								
SEX _____	# OF FEMALES _____	# OF MALES _____							
INTIMACY:	SUPERFICIAL	1	2	3	4	5	6	7	MEANINGFUL
I DISCLOSED:	VERY LITTLE	1	2	3	4	5	6	7	A GREAT DEAL
OTHER DISCLOSED:	VERY LITTLE	1	2	3	4	5	6	7	A GREAT DEAL
QUALITY:	UNPLEASANT	1	2	3	4	5	6	7	PLEASANT
SATISFACTION:	LESS THAN EXPECTED	1	2	3	4	5	6	7	MORE THAN EXPECTED
INITIATION:	I INITIATED	1	2	3	4	5	6	7	OTHER INITIATED
INFLUENCE:	I INFLUENCED MORE	1	2	3	4	5	6	7	OTHER INFLUENCED MORE
NATURE:	WORK	TASK	PASTIME	CONVERSATION	DATE				

Figure 1. The Rochester Interaction Record.

hypothesis is that psychological femininity will relate negatively to loneliness and be responsible in part for the effects described under the major hypothesis, particularly quality of interaction with males.

Method

Subjects and General Overview

Subjects were 43 males and 53 females enrolled in a moderately sized, academically oriented, private northeastern university. All were seniors, and all lived on campus. They completed the interaction records for a period ranging from 7 to 18 days ($M = 14.53$, $SD = 1.98$) in November, chosen to minimize conflict with holidays and examinations. All records were adjusted by computing indexes on a per day or per interaction basis. Loneliness was assessed following an interview at the end of the record-keeping period.

Procedure

Subjects were recruited from a student directory for a "research project on social interaction." The only requirement was that they had to be a senior living on campus. During a brief meeting, the importance of understanding interaction patterns was explained, and the students' role as collaborators in this naturalistic research was stressed. They were also told they would be paid \$20 for their participation. However, they were asked to volunteer only if the opportunity to engage in the research itself was sufficiently interesting. No other academic or extrinsic incentives were provided.

The interaction record, a sample of which is shown in Figure 1, was to be completed for every interaction that lasted 10 minutes or longer. An interaction was defined as any encounter with another person(s) in which the participants attended to one another and adjusted their behavior in response to one another. Examples were provided (e.g., sitting next to someone in a lecture was not appropriate, whereas talking during the lecture for 10 minutes was), and the various categories were discussed until everyone felt comfortable with the forms. A more detailed description may be found in an article by Wheeler and

Nezlek (1977). It was suggested to subjects that they fill out the records at a uniform time, such as before going to sleep. A scratch sheet was provided to facilitate memory. To encourage daily recording, subjects were asked to return their completed forms and pick up blank ones every few days. Throughout the study, a collaborative, nondeceptive atmosphere was maintained, which we believe aided the gathering of valid data. Confidentiality of the records was emphasized and closely guarded throughout.

At the conclusion of the record-keeping period, a brief interview with one of the researchers was held. During that session, the interviewer probed for difficulties, ambiguities, and potential sources of inaccurate data. In particular, subjects were urged to inform us of anything that might have impeded their accuracy. Based on their responses, the data of five participants were discarded. Immediately following the interview, participants completed a number of personality scales, among which the revised UCLA Loneliness Scale (Russell et al., 1980) and the Personal Attributes Questionnaire (PAQ; Spence & Helmreich, 1978) were included.¹ The total loneliness score was computed so that a high number corresponded to greater loneliness, and the alpha internal consistency (reliability) coefficient for our sample was .93. The 24-item PAQ was used, so that high scores indicated greater femininity and masculinity. Alpha was .73 for the femininity scale, .61 for masculinity.

Construction and Nomenclature of Interaction Variables

From the raw interaction records, composite indexes were created in the following manner: *length*—mean reported length of all interactions; *per day*—mean reported

¹ The NYU Loneliness Scale (Rubenstein & Shaver, 1980) was also administered 2 weeks subsequent to the UCLA scale. Because it uses the word *loneliness* in each item whereas the UCLA scale does not use the word at all, the NYU scale was expected to produce more defensive, and hence weaker, correlations. It did so, and we have presented only data from the UCLA scale. The two scales always produced relationships in the same direction.

number of interactions per day; *time per day*—mean reported length summed across all interactions per day; *list*—number of different individuals interacted with during the entire record-keeping period, corrected for the number of days; and *percentage*—percentage of all interactions falling into each category. *Intimacy, self-disclosure, other-disclosure, pleasantness, satisfaction, initiation, and influence* were all computed as the mean value reported across all interactions. *Nature* was scored as the proportion of all interactions in each of the five categories.

Each of these categories was then subdivided in accordance with the sex composition of the encounter: *same sex*—interactions including up to three other persons of the same sex, and *opposite sex*—interactions including up to three members of the opposite sex. *Mixed sex* and *group* categories were also calculated but are not presented here for the sake of simplicity. However they produced results consistent with those reported. The same- and opposite-sex categories were then further divided to distinguish very close from less close relationships.

In order to examine the impact of the type of relationship, subjects were asked to label each of their three most common same-sex and three common opposite-sex social contacts using the following categories: same-sex best friend, same-sex friends, boyfriend/girlfriend, opposite-sex platonic best friend, and opposite-sex friend. A number of other categories existed for others, but produced too small frequencies for meaningful analysis. The three-most-common-partners criterion has in the past been shown to include the majority of important relationships. Each of the interaction quality indexes were computed separately for each of the above categories. When subjects reported more than one person in a category, the mean of all qualified persons was used.

It should be noted that some of the categories listed above contained no observations for some subjects. These entries were treated as missing data in the analysis.

Results

The mean loneliness score for females was 41.7; for males, 45.8, $F(1, 94) = 3.0, p < .10$.² Russell et al. (1980) also found males to be more lonely ($p < .001$) in their Study 1 but suspected a sampling bias because sex differences are not usually found. They considered their data from Study 2, showing no sex differences, to be normative. Thus, our marginal sex difference is not inconsistent with previous results.

Quantitative Interaction Indexes and Loneliness

Table 1 presents correlations between loneliness and several objective interaction indexes: (a) percentage of all interactions that were with same sex only or opposite sex only, (b) total time per day spent in interaction with same sex only or opposite sex only, (c) number of

Table 1
Correlations Between Loneliness and Objective Interaction Indexes

Objective interaction indexes by sex	Males (n = 43)	Females (n = 53)	Test of difference (p)
Percentage			
Same	.23*	-.24*	<.05
Opposite	-.35**	.30**	<.01
Time per day			
Same	-.06	-.38**	ns
Opposite	-.46***	.15	<.01
No. of interactions per day			
Same	.04	-.25*	ns
Opposite	-.32**	.12	<.05
Average length			
Same	-.06	-.03	ns
Opposite	-.29*	.16	<.05
No. of different partners			
Same	-.08	-.08	ns
Opposite	-.19	.07	ns

* $p < .10$, two-tailed. ** $p < .05$. *** $p < .01$.

interactions per day with same sex only or opposite sex only, (d) average length of interactions with same sex only or opposite sex only, and (e) total number of same- and opposite-sex interaction partners. Most of the correlations are negative, because a high score on the loneliness scale indicates greater felt loneliness.

For both sexes, the strongest relationship was with time per day spent with females; spending more time with females was related to less loneliness. Time per day is simply a multiplicative function of number of interactions per day and average length of these interactions. It is clear from Table 1 that number per day with females related more strongly to loneliness than did average length, particularly for female subjects. Number of different interaction partners did not relate significantly to loneliness for either sex.

Percentage of interactions that were same sex only and opposite sex only produced the expected negative correlations for both sexes

² A 1-5 response format was used for the UCLA scale rather than the original 1-4 format for comparability with the other scales. Thus, the loneliness means are correspondingly higher than in previous studies.

between loneliness and interactions with females. In addition, however, it produced positive correlations for both sexes between loneliness and interaction with males. This is an interesting result, particularly for females, and is consistent with the logic of our hypothesis: Women who allocated more of their social time to males were more lonely.

Qualitative Interaction Indexes and Loneliness

Table 2 presents the correlations between loneliness and the qualitative interaction indexes. The final column lists the results of Fisher's z' test of the difference between independent correlations. Greater intimacy, self-disclosure, other-disclosure, pleasantness, and satisfaction, whether in same-sex or opposite-sex interactions, were related to less loneliness for both males and females. Although these correlations were consistently higher for males, they were not significantly so, except for same-sex self-disclosure. Because the five affective quality indexes correlated highly with each other, a single overall meaningfulness composite was created as the simple sum of these variables and is shown as the first variable in Table 2.

For males only, having other people initiate the interaction, particularly females, was negatively related to loneliness, and females were less lonely if other females influenced the interaction more.

Sex Differences in Qualitative Interaction Indexes

We have examined two sets of data above. The first set indicated that for both males and females, more interaction with females was related to less loneliness. The second set indicated that for both males and females and for both male and female partners, disclosure, intimacy, pleasantness, and satisfaction were related to less loneliness. The implication is that both sexes need the same qualities in their interactions in order to avoid loneliness but that females are more adept at providing them. If this is the case, males interacting with males should report lower levels of intimacy, disclosure, and quality, in comparison with the reports of any interaction involving a female. These data are presented in Table 3.

Table 2
Correlations Between Loneliness and Subjective Interaction Indexes

Subjective interaction indexes by sex	Males (n = 43)	Females (n = 53)	Test of difference (p)
Overall meaningfulness			
Same	-.58***	-.31**	ns
Opposite	-.52***	-.46***	ns
Intimacy			
Same	-.46***	-.33**	ns
Opposite	-.48***	-.44***	ns
Self-disclosure			
Same	-.57***	-.21*	<.05
Opposite	-.47***	-.35**	ns
Other-disclosure			
Same	-.60***	-.30**	ns
Opposite	-.53***	-.32**	ns
Pleasantness			
Same	-.40**	-.26*	ns
Opposite	-.31**	-.32**	ns
Satisfaction			
Same	-.27*	-.19	ns
Opposite	-.24*	-.38***	ns
Initiation			
Same	-.28*	-.05	ns
Opposite	-.35**	.01	<.08
Influence			
Same	.00	-.33**	ns
Opposite	-.05	-.20*	ns

* $p < .10$. ** $p < .05$. *** $p < .01$.

The overall meaningfulness composite, intimacy, self-disclosure, other-disclosure, pleasantness, and satisfaction, all show the same pattern; as a post hoc Duncan test indicated, the male same-sex cell was significantly different from the other three cells, each of which involves a female.

This general sex difference in the meaningfulness of same-sex interactions might be qualified by the nature of the relationship. That is, it might be hypothesized that females interact more meaningfully in general whereas males are close only with a best friend. To examine this and related possibilities, interactions were classified according to the subjects' definition of that relationship (see Table 4). We performed post hoc tests on the sex difference, and the results clearly indicate that the sex difference in same-sex interactions remains similar, regardless of the nature of the relationship. Males were less close to their

same-sex best friend and to other friends than females. In contrast, opposite-sex interactions revealed no specific differences. Thus the sex difference found appears to be a general one. We might also note that the relationship categories themselves reveal the decreasing levels of meaningfulness that would be expected.

The Role of Femininity

Our subsidiary predictions were that loneliness would be negatively related to femininity and that femininity would in part be responsible for other relationships between loneliness and social interaction (see Table 5 for relevant data). Our first prediction was clearly confirmed; loneliness and femininity were significantly correlated for both males and females. More feminine people were less lonely.

We next examined the relationship of femininity and the two summary measures, meaningfulness and time per day. (Time per

day can be considered as a summary measure of interaction quantity because it combines length and frequency per day.) As the data in Table 5 indicate, for males, meaningfulness in both same- and opposite-sex interaction was positively and significantly correlated with femininity, whereas for females, these relationships were positive but not significant. In terms of the quantity of interaction, femininity was correlated with time spent with females for both sexes.

The strength of the mediating role of femininity was determined by partial correlations. Uncontrolled, time with females and meaningfulness with males accounted for 38% of the variance in males' loneliness. When femininity was controlled, this figure dropped to 31%. Thus, only 7% of the variance in loneliness attributable in interaction style was mediated by femininity. The same analysis produced similar results for females. Meaningfulness with males and time with females

Table 3
Mean Sex Differences in Subjective Interaction Indexes

Subjective interaction indexes by sex	Males	Females	<i>p</i> values		
			Sex of subject (S)	Same-opposite sex of partner (P)	S × P
Overall meaningfulness					
Same	18.82	22.07	.01	.01	.01
Opposite	21.38	22.07			
Intimacy					
Same	3.35	4.32	.01	.01	.01
Opposite	4.17	4.30			
Self-disclosure					
Same	3.13	3.98	.01	.01	.01
Opposite	3.79	3.88			
Other-disclosure					
Same	3.25	4.14	.01	.01	.01
Opposite	3.86	4.15			
Pleasantness					
Same	4.79	5.08	<i>ns</i>	.01	.01
Opposite	5.10	5.10			
Satisfaction					
Same	4.29	4.55	.01	.01	<i>ns</i>
Opposite	4.45	4.64			
Initiation					
Same	3.92	3.98	.01	<i>ns</i>	.02
Opposite	3.84	4.23			
Influence					
Same	4.02	3.97	<i>ns</i>	<i>ns</i>	.01
Opposite	3.92	4.19			

together accounted for 32% of the variance in loneliness. When femininity was controlled, the percentage fell to 29%, leaving only 3% mediated by femininity. It should be noted that masculinity did not correlate with loneliness for either sex.

Regression Analyses

The next set of analyses was designed to investigate the interplay of these factors in producing loneliness. That is, we wished to see whether people high in time spent with females were also high in meaningfulness with males or whether these influences operated independently. Accordingly, we performed a series of regression analyses, which are depicted in Figure 2. As before, summary variables were used to represent both interaction quality and quantity. The meaningfulness composite was used to characterize general quality. Time per day, a composite of frequency and length, stood for quantity.

The figure shows an amazing degree of similarity between the sexes, as well as some important differences. The same three variables, a quantitative interaction index, a qualitative interaction index, and a personality measure, contributed to the loneliness of both sexes with virtually the same magnitude. Although neither the regression coefficients nor the variances in loneliness explained by the three predictors (female $R^2 = 38\%$; male $R^2 = 41\%$) differ between the sexes, the pattern of correlations does. The difference is that meaningfulness with males is related strongly to both femininity and time with females for males but is unrelated for females. This suggested the need to examine this interplay further, which is done following a brief note concerning the role of meaningfulness with females.

The relationship between meaningfulness with females and loneliness has been ignored to this point, despite the substantial correlation of these variables shown in Table 2. We have done this both for theoretical reasons and be-

Table 4
Sex Differences in Interaction in Specific Relationship Categories

Subjective interaction indexes	Same sex		Opposite sex		
	Best friend	Friend	Boyfriend/ girlfriend	Platonic	Friend
Overall meaningfulness					
Males	19.77	18.50	22.67	21.67	20.60
Females	22.70	21.28	24.06	23.40	20.41
<i>p</i>	.005	.005	.01	.01	<i>ns</i>
Intimacy					
Males	3.68	3.34	4.79	4.26	3.79
Females	4.57	4.19	5.02	4.65	3.97
<i>p</i>	.005	.005	<i>ns</i>	<i>ns</i>	<i>ns</i>
Self-disclosure					
Males	3.38	3.03	4.16	3.74	3.53
Females	4.05	3.74	4.38	4.15	3.44
<i>p</i>	.005	.005	<i>ns</i>	<i>ns</i>	<i>ns</i>
Other-disclosure					
Males	3.53	3.19	4.20	4.00	3.57
Females	4.30	3.93	4.55	4.35	3.67
<i>p</i>	.005	.005	<i>ns</i>	<i>ns</i>	<i>ns</i>
Pleasantness					
Males	4.99	4.77	5.20	5.34	5.18
Females	5.25	4.97	5.40	5.46	4.95
<i>p</i>	.10	.10	<i>ns</i>	<i>ns</i>	<i>ns</i>
Satisfaction					
Males	4.19	4.17	4.32	4.33	4.53
Females	4.53	4.45	4.71	4.79	4.38
<i>p</i>	.005	.01	<i>ns</i>	.10	<i>ns</i>

Note. The *p* values refer to post hoc tests of the sex difference.

Table 5
Correlations with Femininity

Variables	Males	Females
Loneliness	-.39***	-.36***
Time per day		
Same sex	-.06	.30**
Opposite sex	.25*	-.26*
Meaningfulness		
Same sex	.34**	.17
Opposite sex	.35**	.11

* $p < .10$. ** $p < .05$. *** $p < .01$.

cause meaningfulness with males correlated more highly with loneliness than did meaningfulness with females. At this point, however, it is appropriate to add meaningfulness with females to the regression analyses to determine whether it is itself an important predictor of loneliness. Doing so changes the squared multiple correlation for females from .3769 to .377 and for males from .411 to .414, indicating that meaningfulness with females adds virtually nothing unique to the prediction based on meaningfulness with males, time with females, and femininity.

On the other hand, adding meaningfulness with males to the regression equation already containing meaningfulness with females, time with females, and femininity does increase the squared multiple correlation predicting loneliness. For females, squared multiple correlation increases from .28 to .377; the increase for males is from .374 to .414.

Semipartial correlation analyses. The use of semipartial correlations (Cohen & Cohen, 1975) allows us to determine the percentage of loneliness variance accounted for by each variable by itself and the percentage of variance shared by two or more variables. These percentages are shown in Table 6.

Although Table 6 is consistent with previous analyses, as it should be, it more clearly highlights sex differences in the correlates of loneliness. The major difference is that, for males, meaningfulness in interaction with males overlaps substantially as a predictor of loneliness with both time spent with females and with femininity, although the latter two do not overlap as predictors. For females, meaningfulness with males predicts loneliness largely by itself.

This says that there is a group of males who have meaningful relationships with other males, who also spend time with females, and who are not lonely. This is the 11% shared variance of Table 6. These males are not distinguished by sex-role orientation. The concurrence of these factors accounts for virtually none of the variance in females. There is another, smaller, group of males who score high on the femininity scale and who have meaningful relationships with other males and who are not lonely. These males, corresponding to the 5% shared variance of Table 6, are not distinguished by the amount of time they spend with females. Again females are unlikely to share these characteristics.

The greatest percentage of variance for females who are not lonely is 17%, stemming from simply having meaningful relationships with males. This large main effect is also shared by males (12% variance).

Discussion

In summarizing our results, we find that the strongest predictor of loneliness was interaction meaningfulness. The more meaningful one's interactions, the less lonely one was. Time spent socializing related to loneliness such that the more a person interacted with females, the less lonely he or she was. Time spent with males was not related to loneliness. Finally, femininity also resulted in less loneliness, although this trait did not seem to mediate the effects of interaction time and meaningfulness.

Although we have been focusing on sex differences, perhaps most striking is the sex sim-

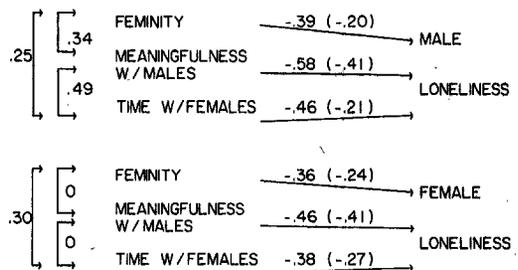


Figure 2. Path diagrams for predicting loneliness. (The numbers in parentheses are standardized regression coefficients. The remaining numbers are simple correlations, and correlations not significant at $p < .10$ have been replaced by zeros.)

Table 6
*Sex Differences in Percentage of Loneliness
 Variance Related to Major Variables*

Variables	Females	Males
Meaningfulness with males (A)	17	12
Time with females (B)	7	3
Femininity (C)	6	3
A + B	1	11
A + C	0	5
B + C	4	1
A + B + C	3	6
Total	38	41

Note. Numbers in the table are squared semipartial correlations. A + B is the proportion of variance predicted by A and also predicted by B (shared variance). A is the proportion of variance predicted uniquely by A.

ilarity in these data. For both females and males, the same factors served to preclude loneliness. Indeed, the regression weights in Figure 2 are remarkably similar. Differences emerge only when sex of target is taken into account. The amount of time spent interacting with male partners does not matter. Instead, those interactions must be meaningful for it to help stave off loneliness. This was primarily a function of the intimacy and disclosure scales. In contrast, interaction with female partners per se seems to be beneficial. Meaningfulness with females is also advantageous, but a number of considerations suggest that a conceptual focus on time with females and meaningfulness with males is more useful. For one, although the differences were not significant, interaction quality with males consistently correlated more highly with loneliness than the same scales for females. For another, when meaningfulness with females was added to the regression equations, virtually no increase in squared multiple correlation resulted, whereas adding meaningfulness with males to the equation already containing meaningfulness with females resulted in substantial increases in squared multiple correlation. Thus, in terms of adding discriminable, specific information, time with females and meaningfulness with males seem to be the pertinent variables.

In fact, the pattern of means shown in Tables 3 and 4 both bolsters this contention and helps to explain it. Clearly, male-male interactions were less meaningful, even when one's partner

was one's best friend. Interactions involving a female were more meaningful, with no added benefit if both partners were female. Hence, it appears that females contribute meaningfulness and emotional closeness to an interaction, regardless of whether they are interacting with another female or male. This suggestion has been offered by others, such as Rubenstein and Shaver (1982) in their discussion of relationships. In a more empirical vein, both the nonverbal and self-disclosure literatures repeatedly demonstrate that interactions including at least one female show more signs of intimacy and closeness (Deaux, 1976; Mayo & Henley, 1981). Perhaps females elicit latent intimacy behavior from males. Alternatively, they may simply add intimacy themselves, which is experienced by both partners.

The provision of meaningfulness may have a threshold, in that for everyday social interaction, only a certain quantity is required to preclude loneliness; anything beyond that level is superfluous. Because the mean level for females is higher, extra levels in intimacy are not useful in predicting loneliness. However, because a given interaction with a female is more likely to reach this level of closeness, the more one spends time with them, the more of these benefits one accumulates. Males are less adept at providing this loneliness-reducing meaningfulness. As it is a rarer experience, intimacy in interaction with males may predict loneliness better. Or perhaps even more strongly, because meaningfulness with males is encountered less frequently, it may have greater reward value in much the manner of an adaptation-level contrast (Helson, 1964). This is an intriguing possibility, as it suggests that the relative absence of intimacy contributions by males makes it all the more valuable. Regardless, it would appear that those males who do provide meaningfulness are particularly desirable as persons who help their partners to be less lonely.

This point is supported by our analyses of shared variance. Recall that meaningfulness with males and time with females produced a sizable proportion of shared variance in males, indicating that the same males tend to possess both characteristics: Men high in meaningfulness are likely to spend more time with women, whereas men low in meaning-

fulness tend to have little contact with women. As we suggested, it may be that they learn these skills from women. Their desirability as partners, insofar as avoiding loneliness is concerned, would be reinforced by this asset.

These data also provide the first evidence of which we are aware that demonstrates greater well-being among persons high in femininity. As we hypothesized, this relationship was to be expected, because expressiveness (a behavioral label for the Spence & Helmreich, 1978, femininity scale) ought to be valuable in facilitating social interaction. However, most prior studies have found that masculinity predicts greater well-being, and femininity, when it is significant, predicts poorer well-being (Lubinski, Tellegen, & Butcher, 1981). The resolution, as presented by Ford (Note 1), stems from noting that most prior studies have measured essentially masculine aspects of well-being. He hypothesized that dimensions involving emotional contact and cohesion should relate to femininity (but not masculinity). This is exactly what we found.

Although our conclusions rely on the variables of time with females and meaningfulness with males, it should be clear from the preceding arguments that loneliness is essentially a qualitative phenomenon. Furthermore, it is primarily one of emotional contact. In our analyses of both loneliness correlates and sex differences, the intimacy, self-disclosure, and other-disclosure scales produced stronger patterns than satisfaction and pleasantness, two qualitative indexes less closely related to emotional ties. The benefit of interaction time with females depends on a relatively high level of meaningfulness as a baseline. This is contrary to most lay explanations of loneliness, which often focus on quantitative factors. We believe this divergence highlights the value of objective methods, such as the RIR, which bypass the effects of memory and other distortions, stereotypes, and naive psychology and give specific details about social interaction rather than global summaries. It is important to know that loneliness is not due to physical isolation from others but instead to the absence of a sufficient dose of meaningfulness.

In agreement with this statement, the two previous studies using techniques similar to the RIR (Jones, 1981; McCormack & Kahn, Note 2), although suffering from sample sizes,

have shown that college students of high and low degrees of loneliness are differentiated by the amount of social contact with intimate others rather than by just any social contact.

Jones, Hobbs, and Hockenbury (1982) have implicated a specific class of conversational behaviors termed *partner attention*, a deficiency of which leads to loneliness. Although Jones et al. did not find sex differences in partner attention, they used only heterosexual pairs. Our data would suggest that partner attention would be higher in same-sex female pairs than in male pairs, leading to an overall higher level among females than among males.

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