Human Communication Research
Vol. 10, No. 1, Fall 1983, 55-79

COMMUNICATION NETWORKS AND THE DEVELOPMENT OF ROMANTIC RELATIONSHIPS
An Expansion of Uncertainty Reduction Theory

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This study sought to expand uncertainty reduction theory (Berger & Calabrese, 1975) by exploring network and dyadic correlates of uncertainty and stability in premarital romantic relationships. Respondents completed questionnaires and participated in telephone interviews three months later. Results generally showed that respondents experienced less uncertainty about their romantic partners and were less likely to break up when they communicated more often with their partners' family and friends, received greater support for their romantic relationship from family and friends, communicated more often with their partners, and perceived greater similarity to their partners. Uncertainty combined with the other variables to predict break ups over the three-month period with almost 90% accuracy. However, the presence of collinearities, the global focus of the study, and the inadequate data base for longitudinal analysis placed several limitations on the findings. These limitations are discussed in terms of the need for more specific research and further theoretical development.

Uncertainty reduction processes play a major role in theories of relationship development. Perhaps the most explicit example is Berger's uncertainty reduction theory (Berger 1979; Berger & Calabrese, 1975), which posits that interpersonal relationships develop as participants reduce uncertainty about each other. Uncertainty reduction is also

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integral, although often implicit, to theories that portray development in terms of forecasting positive reward/cost ratios (e.g., Altman & Taylor, 1973; Huesmann & Levinger, 1976), calculating equity considerations (e.g., Hatfield & Traupmann, 1981; Hatfield, Utne, & Traupmann, 1979), creating similar personal construct systems (e.g., Duck, 1973, 1976), or building consensual relationship definitions (e.g., Morton, Alexander, & Altman, 1976; Morton & Douglas, 1981). There are obviously differences among these theories, but no theory presumes that interpersonal relationships can develop when participants are unable to predict and explain each other's behavior.

GOALS OF THIS STUDY

Most attempts to explain relationship development have focused either on the participants' personal characteristics or on the pattern of interaction between the participants (Huston, Surra, Fitzgerald, & Cate, 1981). Berger and Calabrese's (1975) original formulation of uncertainty reduction theory, for example, considered only within-relationship or dyadic correlates of uncertainty. However, relationships do not spring from a social void. They are embedded in the ongoing social context created by the partners' communication networks. One goal of this study was to enhance our understanding of developing romantic relationships be expanding uncertainty reduction theory to include (1) the amount of communication between the individual and the partner's friends and family and (2) the extent to which members of the partners' networks express support for the romantic relationship. We also included two within-relationship variables already shown to predict uncertainty (see Berger & Calabrese, 1975; Parks, 1977, 1978) as benchmarks for assessing the importance of the network variables. These were (1) the amount of communication with the romantic partner and (2) the degree of perceived similarity to the romantic partner.

Another goal of this study was to expand the range of relational outcomes predicted by uncertainty reduction theory. Although the theory was originally limited to initial interactions (Berger & Calabrese, 1975), later research has loosely applied it to the entire relational life cycle. We sought to link uncertainty to the overall stability of romantic relationships. Such a linkage can be extrapolated from Berger and Calabrese's original theory. They posited that increased uncertainty should result in decreased attraction, nonverbal affiliative behavior, and verbal intimacy. Decreased attraction and intimacy, in turn, are major

causes of relationship termination (Burgess & Wallin, 1953; Hill, Rubin, & Peplau, 1976). Increased uncertainty also means that more time and energy must be expended to achieve understanding. Berger and Roloff (1982) have suggested that relationships are more likely to terminate under these conditions because the participants become weary of the increased demands on their time and energy. Therefore, any factor that influences uncertainty should also influence the overall stability of relationships.

In its most general form uncertainty reduction theory argues that relationships develop when participants are able to reduce uncertainty about each other and disintegrate when participants are unable to reduce uncertainty about each other. We explored this broader thesis by adopting a longitudinal research design. The network and dyadic variables were first used to predict uncertainty at two points in time. They were then used along with uncertainty to predict the overall stability of romantic relationships over a three-month period.

Amount of Communication with Partner's Network

Communication with the romantic partner's family and friends ought to reduce uncertainty and thereby promote relational stability in several ways. The partner's network is a rich source of third-party information. Members may comment on the partner's past actions and behavioral tendencies. They may supply ready-made explanations for the partner's behavior or serve as sounding boards for the individual's own explanations. Berger and his associates have shown that information about a person's more out-of-role, disinhibited behavior is especially potent in reducing uncertainty (Berger, 1979; Berger & Douglas, 1981; Berger, Gardner, Parks, Schulman, & Miller, 1976; Berger & Perkins, 1978). The partner's family and friends should be particularly useful since they are likely to have considerable experience with the partner's out-of-role behavior.

Communication with the partner's network can also reduce uncertainty by providing opportunities to observe the partner interact with others. Observing the partner with friends and relatives is probably more informative than watching the partner in solitary pursuits or in formal situations (see Berger, 1979; Berger & Douglas, 1981; Berger & Perkins, 1978).

Communication with the partner's network might also reduce uncertainty by assisting in the social comparison process. Titus (1980), for

example, found that communication with friends helped marital partners to (1) assess their own abilities and predict outcomes (e.g., "Seeing her problems makes me more aware of things I do that might be pitfalls"); (2) validate their self-images (e.g., "I'm a good husband compared to"); and (3) establish a frame of reference for evaluating their own relationship (e.g., "If I thought I was the only one with problems I'd throw up my hands and run, and knowing others have problems makes me keep going").

Finally, romantic partners usually expect to be introduced to each other's friends and families. Consequently, the failure to meet members of the partner's network may create uncertainty regarding the partner's feelings (e.g., "If I'm so important to you, how come you've never introduced me to your friends?"). Thus, contact with the partner's network can provide third-party and observational data about the partner, facilitate social comparison, and satisfy expectations. Since these factors should reduce uncertainty, we hypothesized that communication with the partner's network would be negatively related to uncertainty and positively related to relational stability.

Support from Partner's Networks

Several studies have linked support from the partners' networks to relationship development and stability. Past research has shown (e.g., Burr, 1973) that couples made a better marital adjustment when they received parental approval. Krain (1977) found that support from parents and friends was positively related to courtship progression. Other studies have found that support from others was positively related to romantic involvement and negatively related to premarital breakups (Lewis, 1973; Parks, Stan, & Eggert, 1983).

These findings might be explained by positing that support reduces uncertainty, which in turn facilitates relational development and stability. Support from the networks should help confirm the partners' perception that they have made the "right" relational choice and should therefore make them less uncertain about each other. On the other hand, disapproval implies a conflict or imbalance between the partners' feelings and the feelings of their close friends and families (see Cartwright & Harary, 1956; Davis, 1970; Heider, 1946; Newcomb, 1961). Partners should be more uncertain when this conflict or imbalance occurs than when members of the network express support for the relationship. Thus, support from close friends and family should create a state of balance reflected by reductions in uncertainty. These

considerations lead us to hypothesize that the amount of support received from the partners' networks would be negatively related to uncertainty and positively related to relational stability.

Amount of Communication with Partner

We believed that a more complete understanding of the network variables discussed above could be obtained if we included two variables that were part of Berger and Calabrese's (1975) original theory. The first of these was the amount of communication with the partner. Based on Berger and Calabrese's literature review and the results of more recent research (Parks, 1977, 1978), we hypothesized that the amount of communication between romantic partners would be negatively related to uncertainty and positively related to relational stability.

Perceived Similarity to Partner

One of the more compelling generalizations in the interpersonal attraction literature is that perceived and actual similarities lead to attraction (Berscheid & Walster, 1978). Berger and Calabrese (1975) argued that the connection between similarity and attraction was mediated by uncertainty. We extended this line of argument to hypothesize that the degree of perceived similarity to the romantic partner would be negatively related to uncertainty and positively related to relational stability.

METHOD

Subjects

The original sample (n = 246) consisted of volunteers contacted through undergraduate classes, campus newspaper advertisements, and handbills. The average participant was 19 years old (SD = 1.66). The sample contained equal numbers of males and females who were currently involved in heterosexual romantic relationships but were not living together. The duration of these relationships ranged widely but was positively skewed so that members of the median couple had known each other for 17.8 months and had been dating for 11.1 months.

A total of 172 individuals (70%) completed a follow-up interview three months after the initial data collection. Most of the attrition was attributable to the 55 participants who failed to give permission for the

follow-up interview. In order to assess any systematic changes in the sample as a result of attrition, we compared the Time 1 means on the major variables in the full sample (n = 246) to the corresponding means in the sample after attrition (n = 172). No significant differences were found.

Procedures

Time 1 data were collected with an extensive questionnaire. Participants were first asked to obtain a list of their romantic partner's network contacts. The list contained the names of the four family members and eight non-kin to whom the dating partner felt the closest. Once the respondent had obtained this list, he or she was asked to report the amount of communication with each member of the partner's network. Other parts of the Time 1 questionnaire contained measures of support from the networks, communication with the partner, perceived similarity to the partner, and uncertainty about the partner. Participants were also asked to indicate their willingness to engage in a follow-up interview by filling out a card with their name, address, and telephone number. All parts of the questionnaire were completed within a few days during the third week of the fall university term. This procedure not only reduced differences in when participants completed the questionnaire, but also minimized conflicts with holidays and examination periods.

Time 2 data were collected in telephone interviews approximately three months after the first data collection. Participants were contacted only if they had previously agreed to the interview. Follow-up interviews were quite brief, usually lasting no more than fifteen minutes. Interviewers asked if the respondent was still dating his or her original partner and administered a short form of the Time 1 uncertainty scale. All of the interviews were completed within a two-week period.

Measures

Amount of Communication with Partner's Network. We conceptualized communication with the partner's network as a combination of two factors. The first was the proportion of the partner's network contacts that the respondent had met face-to-face. The second was the average frequency of communication with the known members of the partner's network. Separate items asked participants to report how often they generally communicated with each known contact and how

often they had communicated with each known contact in the previous two weeks. Responses to these scales were summed across the network and averaged to yield a proportion. The final measure was constructed by averaging the two proportions noted above to yield a scale ranging from 0 to 100. Observed scores in the sample ranged from 0 to 78 (M = 41.87, SD = 17.23). Higher scores indicated that the participant had met more of the people in the partner's network and had communicated with them more often.

Support from Partners' Networks. Support was measured with Lewis's (1973) six-item scale regarding the extent to which the partners' families and friends expressed support, labeled the partners as a "a couple," and included them in their activities. Previous studies (Krain, 1977; Lewis, 1973) have supported the reliability and validity of the scale. Responses were recorded on five-point Likert scales and summed. Observed totals in the sample ranged over the entire scale. The average score (M = 19.93, SD = 6.02) was just slightly above the midpoint of the scale. Higher scores reflected greater support.

Amount of Communication with Partner. Two items were used to assess the amount of communication between the romantic partners. One was the number of days in the last two weeks in which the partners had talked face-to-face. The other was the percentage of free time that had been spent with the partner during the last two weeks. Responses were limited to the previous two weeks in order to balance the desire to obtain representative data against limits on the respondents' memories. The first item was turned into a proportion and averaged with the second to yield a scale ranging from 0 to 100. Observed scores in the sample ranged over the entire scale but tended to be above the midpoint (M = 61.27, SD = 26.41). Higher scores indicated that communication between the partners was more regular and consumed more of their free time.

Perceived Similarity to Partner. Participants were asked to report how much they agreed with five statements:

(1) My dating partner and I like a lot of the same things.
(2) We share a lot of the same attitudes about things.
(3) The two of us have very different values.

(4) The two of us are very similar.
(5) The two of us have a similar outlook on life.

Responses were noted on five-point scales. The third item was reversed and added to the others. Total scores in the actual sample ranged from 7 to 25 (M = 19.20, SD = 4.21). Higher scores reflected greater perceived similarity.

Uncertainty. Uncertainty at Time 1 was measured with an eight-item scale developed by Parks (1978), who found evidence for its reliability and validity. Respondents used five-point scales to show how much they agreed with the following statements:

(1) I do not know my dating partner very well.
(2) I am confident of my ability to accurately predict my dating partner's behavior.
(3) My dating partner often does or says things which surprise me.
(4) I have a very good idea of what my dating partner's values and preferences are.
(5) I often have trouble understanding why my dating partner does what he/she does.
(6) I can accurately predict what my dating partner's attitudes are.
(7) I can usually tell what my dating partner is feeling inside.
(8) I can accurately predict how my dating partner will respond to me in most situations.

Responses to items 2, 4, 6, 7, and 8 were reversed and added to the remaining responses to produce a total score. Totals observed in the sample ranged from 8 to 37 (M = 18.05, SD ¤ 6.09). Higher scores reflected greater uncertainty.

A short form of the Time 1 uncertainty scale was used at Time 2 because of the time constraints imposed by telephone interviews. Items 2, 6, and 8 were selected. Our analysis of the Time 1 scale showed that these items had the highest item-total correlations. Responses were recorded on seven-point scales, reversed, and summed. Total scores in the Time 2 data ranged from 3 to 21 (M = 9.31, SD = 3.67). Again, higher scores indicated greater uncertainty.

Relational Stability. Time 2 respondents were asked whether or not they were still "going out" with the romantic partner named at Time 1. The result was a nominal scale differentiating relationships that had broken up from those that had continued over the three month period.

RESULTS

The hypotheses were tested in several steps. After first checking the measurement reliabilities, we examined the relationships between the four independent variables at Time 1 and uncertainty at Time 1. We then used the four independent variables to predict uncertainty at Time 2. Finally, we explored the extent to which the Time 1 variables, including uncertainty, could discriminate between relationships that had subsequently continued and relationships that had terminated over the three-month period from Time 1 to Time 2.

Reliabilities

Generally acceptable internal consistencies were obtained for the measures of support ($\alpha = .77$), communication with the partner ($\alpha = .63$), perceived similarity ($\alpha = .82$), uncertainty at Time 1 ($\alpha = .80$), uncertainty at Time 2 ($\alpha = .81$). Although no reliability data were available on the number of known contacts in the partner's network, the two items measuring the amount of communication with network members were strongly correlated ($r = .70$).

Predicting Uncertainty at Time 1

The first test of the hypotheses involved entering the four independent variables into a regression equation to predict uncertainty at Time 1. All of the hypotheses were supported. Participants experienced less uncertainty about their romantic partners when they communicated more often with members of their partners' networks ($\beta = -.31$, $p < .0001$), received more support from the networks ($\beta = -.21$, $p < .001$), communicated more often with their partners ($\beta = -.14$, $p < .05$), and perceived more similarity between themselves and their partners ($\beta = -.18$, $p < .01$). Taken as a set, the independent variables proved to be strong predictors of uncertainty at Time 1 ($R = -.64$, $p < .001$).

Although the independent variables accounted for a sizeable proportion of the variance in uncertainty ($R^2 = .41$), their individual contributions were obscured by their correlations with each other (Table 1). Table 2 summarizes a commonality analysis that was used to clarify the contribution of each independent variable. Commonality analysis decomposes R^2 into a series of squared semipartial correlations representing all of the possible unique and common effects (see Kerlinger & Pedhazur, 1973; Seibold & McPhee, 1979). While

TABLE 1
Correlation Matrix for Time 1 Variables

Variable	*1*	*2*	*3*	*4*	*5*
Level of Uncertainty	1.00				
Communication with Partner's Network	−.59	1.00			
Support from Network	−.49	.52	1.00		
Communication with Partner	−.49	.57	.59	1.00	
Perceived Similarity	−.35	.32	.23	.24	1.00

NOTE: n's = 235-246; p's $<$ .001.

commonality analysis cannot solve the problem of multicollinearity, it does help isolate the problem by allowing the investigator to divide the total explained variance into the portion attributable to the unique or independent effects of each predictor and the portion attributable to the common effects created by collinearities.

Several general results were obtained from the commonality analysis. First, communication with members of the partner's network emerged as the best single predictor of uncertainty. Its unique effect was almost twice as large as any other unique effect and accounted for about 6% of the total variance. Furthermore, the network variables accounted for a greater portion of the variance in uncertainty than the dyadic variables. The unique effects for the network variables and the second-order commonality linking them accounted for 11% of the total variance (.057 + .026 + .027), while the corresponding sum for the dyadic variables was only 4% (.011 + .029 + .002). Finally, most of the explained variance could be attributed to the second- and third-order commonalities that joined the network and dyadic variables. These represented variance that could not be assigned clearly to either a given network or dyadic variable because of collinearities.

It is possible that these findings represent the influence of simple relationship duration rather than any direct connection between uncertainty and the independent variables. Although past studies have shown that associations among developmental variables are often unaffected by the length of the relationship (e.g., Dion & Dion, 1976; Milardo, 1982; Parks et al., 1983; Rubin, 1970; White, 1980), a rival explanation of such importance obviously warranted further inspection.

TABLE 2
Summary of Commonality Analysis for Regression on Uncertainty at Time 1

	Variables			
	(1)	*(2)*	*(3)*	*(4)*
Unique and Common Effects on Uncertainty	*Communication with Partner's Network*	*Support from Networks*	*Communication Communication with Partner*	*Perceived Similarity*
Unique to Variable 1	.057			
Unique to Variable 2		.026		
Unique to Variable 3			.011	
Unique to Variable 4				.029
Common to Variables 1 and 2	.027	.027		
Common to Variables 1 and 3	.032		.032	
Common to Variables 1 and 4	.022			.022
Common to Variables 2 and 3		.025	.025	
Common to Variables 2 and 4		.003		
Common to Variables 3 and 4			.002	.002
Common to Variables 1, 2 and 3	.099	.099	.099	
Common to Variables 1, 2 and 4	.011	.011		.011
Common to Variables 1, 3 and 4	.012		.012	.012
Common to Variables 2, 3 and 4		.003	.003	.003
Common to Variables 1, 2, 3 and 4	.048	.048	.048	.048

Therefore, we recomputed the regression discussed above and included relationship duration as the first independent variable. Results showed that the length of time partners had known each other was almost completely unrelated to uncertainty (β = –.02, n.s.). Moreover, the regression coefficients for the original variables were all significant and almost identical to those found in the first analysis (βs ± .02 of original values). Further tests showed that none of the zero-order correlations

between uncertainty and the independent variables differed significantly from the corresponding partial correlations, in which either the total length of the relationship or the length of the dating phase of the relationship had been controlled. Thus, the associations between uncertainty and the independent variables cannot be attributed to the duration of the relationship.

Predicting Uncertainty at Time 2

Evidence of time-ordered covariation is a necessary, though insufficient, requirement for causal interpretation (see Heise, 1975). While we could not rigorously satisfy this requirement with these data, we were able to conduct several exploratory analyses of the temporal relationship between uncertainty and the independent variables. The first of these used the four independent variables at Time 1 to predict uncertainty at Time 2, three months later. Three of the four hypotheses were supported. Participants reported significantly less uncertainty at Time 2 when they had communicated more often with members of their partners' networks at Time 1 ($\beta = -.28, p < .005$), received more support from the networks at Time 1 ($\beta = -.22, p < .01$), and perceived more similarity between themselves and their partners at Time 1 ($B = -.21, p < .01$). Contrary to our expectation, the amount of communication with the partner at Time 1 was not independently related to the amount of uncertainty at Time 2 ($\beta = -.01$, n.s.). As a group, however, the four independent variables were clearly related to the participants' level of uncertainty three months later ($R = -.54, R^2 = .30, p < .0001$).

Table 3 indicates that the individual contribution of each variable was confounded by collinearities. Commonality analysis was again used to clarify the interpretatation. The results are portrayed in Table 4. Several of its features warrant attention. First, the amount of communication with the partner's network continued to be the best single predictor of uncertainty. Its unique effect was larger than for those other variables. At the same time, the amount of direct communication with the partner had no unique effect, although it was related to uncertainty in the form of higher-order commonalities. The network variables were again better predictors of uncertainty than the dyadic variables. The unique effects for the network variables and the second-order commonality linking them accounted for almost 10% of the total variance in uncertainty at Time 2; the corresponding sum for the dyadic variables was only 4% and could be completely attributed to the unique effect for

TABLE 3
Correlation Matrix for Independent Variables at Time 1 and Uncertainty at Time 2

Variable	*1*	*2*	*3*	*4*	*5*
Level of Uncertainty	1.00				
Communication with Partner's Network	−.47	1.00			
Support from Networks	−.41	.50	1.00		
Communication with Partner	−.35	.59	.59	1.00	
Perceived Similarity	−.35	.30	.22	.23	1.00

NOTE: n's = 162-172; p's $<$ .001.

perceived similarity. Finally, uncertainty continued to be more a function of the common effects of network and dyadic variables than of either type of variable alone. Commonalities among the network and dyadic variables accounted for about 16% of the total variance and for more than half of the explained variance.

A second set of analyses was conducted to determine if the level of uncertainty at Time 1 affected the pattern of covariation between the independent variables and uncertainty at Time 2. In order to explore this possibility we first split the sample at the median level of uncertainty at Time 1 to form high and low groups. Then separate regressions were calculated to determine how uncertainty was correlated with the independent variables. Results for the low group showed that the independent variables were only weakly related to uncertainty at Time 2. The multiple correlation was not significant ($R = -.20$, n.s.) and perceived similarity was the only independent variable that was significantly related to Time 2 uncertainty ($\beta = -.27$, $p < .05$). Results for the high group showed a stronger relationship between the independent variables and uncertainty at Time 2 ($R = -.48$, $p < .001$). Communication with the partner's network ($\beta = -.35$, $p < .05$) and support from the networks ($\beta = -.26$, $p < .05$) were negatively related to uncertainty at Time 2. Communication with the partner and perceived similarity were not significantly related to Time 2 uncertainty. Great caution should be exercised when interpreting these results, since they are subject to the same multicollinearity problems that arose in the first analysis. None-

TABLE 4
Summary of Commonality Analysis for Regression on Uncertainty at Time 2

	Variables			
	(1)	*(2)*	*(3)*	*(4)*
Unique and Common Effects on Uncertainty	*Communication with Partner's Network*	*Support from Networks*	*Communication with Partner*	*Perceived Similarity*
Unique to Variable 1	.045			
Unique to Variable 2		.031		
Unique to Variable 3			.000	
Unique to Variable 4				.042
Common to Variables 1 and 2	.020	.020		
Common to Variables 1 and 3	.011		.011	
Common to Variables 1 and 4	.020			.020
Common to Variables 2 and 3		.008	.008	
Common to Variables 2 and 4		.004		.004
Common to Variables 3 and 4			.000	.000
Common to Variables 1, 2 and 3	.061	.061	.061	
Common to Variables 1, 2 and 4	.009	.009		.009
Common to Variables 1, 3 and 4	.007		.007	.007
Common to Variables 2, 3 and 4		.003	.003	.003
Common to Variables 1, 2, 3 and 4	.035	.035	.035	.035

theless, the independent variables as a set were more strongly related to uncertainty at Time 2 for participants who had high uncertainty at Time 1 than for participants who had low uncertainty at Time 1.

The results of the first two series of analyses appeared to lend support—albeit qualified—to the belief that the independent variables as a set predict uncertainty over time. However, we observed that the Time 1 and Time 2 uncertainty measures were rather highly correlated (r

= .59, $p < .001$). This raised the possibility that the findings obtained above were artifacts of the close relationship between the two uncertainty measures rather than the result of a true temporal association. If the Time 1 independent variables are genuinely predictive of uncertainty at Time 2, then they should be able to predict the uncertainty at Time 2 that cannot be predicted solely on the basis of uncertainty at Time 1. That is, they should be correlated with the *residual* uncertainty at Time 2. We calculated this residual uncertainty as the difference between the actual Time 2 uncertainty scores and the predicted values for Time 2 uncertainty scores based on a bivariate regression in which the Time 1 uncertainty measure was used to predict uncertainty at Time 2. Put simply, the residual measure represented the level of uncertainty at Time 2 that could not be predicted from a knowledge of uncertainty at Time 1. Further analysis showed that none of the Time 1 independent variables was significantly related to residual uncertainty at Time 2. Although the multiple correlation was significant ($R = -.24$, $p < .05$), the regression coefficients were all small and nonsignificant. While all of the findings reported in this section were exploratory, the results of this final analysis suggested that the actual temporal connection between uncertainty and the independent variables over the three-month period might be rather weak. More rigorous tests with complete data over more time periods are obviously required in order to obtain definitive results.

Predicting Breakups in Romantic Relationships

Approximately 30% (n = 52) of the relationships had been terminated by Time 2, and the remaining 70% (n = 120) had survived the three-month period. Differences between the breakup group and the survivors are displayed in Table 5. T-tests showed that those who broke up at Time 2 had experienced greater uncertainty, communicated less with their partners' networks, received less support from the networks, communicated less with their partners, and perceived less similarity to their partners at Time 1.

Multiple discriminant analysis was used to further analyze the differences between partners who had broken up or stayed together. Uncertainty was entered first because of its hypothesized role as a mediating variable. The four independent variables were left to vie for stepwise entry. This set of predictor variables proved to be strongly related to relational stability ($Rc = .73$, $p < .0001$). Significant

TABLE 5
Breakups Versus Stay-Togethers

Variable at Time 1	*Breakups M (SD)*	*Stay-Togethers M (SD)*	*t*	*p*	*Discriminant Coefficients*	*p*
Level of Uncertainty	21.79 (6.53)	15.60 (4.47)	7.30	<.0001	.13	<.001
Communication with Partner's Network	31.52 (16.92)	49.56 (11.80)	7.80	<.0001	-.13	<.001
Support from Networks	15.92 (5.07)	23.13 (4.66)	8.95	<.0001	-.33	<.0001
Communication with Partner	37.10 (21.78)	76.42 (17.33)	12.61	<.0001	-.69	<.0001
Perceived Similarity	17.31 (4.47)	19.93 (4.12)	3.73	<.0001	-.15	<.001

discriminant coefficients were obtained for all five variables (Table 5). The strongest predictors were communication with the partner (d = –.69, $p < .0001$) and support from family and friends (d = –.33, $p < .0001$).

The results of the discriminant analysis supported our extension of uncertainty reduction theory by showing that uncertainty was linked to relational stability. The more uncertain one was about his or her romantic partner, the greater the probability of relational termination (d = .13, $p < .001$). However, the results also indicated that the independent variables might be linked to relational stability in a direct fashion that could not be fully explained by the mediating effects of uncertainty. Since uncertainty entered the discriminant analysis first, effects for the remaining variables represented their direct association with relational stability after uncertainty had been statistically removed. Post hoc covariance analysis confirmed the presence of direct effects for three of the four independent variables. The associations between relational stability and communication with the network, support from the networks, and communication with the partner were significant even after uncertainty had been controlled. The effect of perceived similarity, on the other hand, appeared to be more heavily mediated by uncertainty. Perceived similarity was not significantly related to stability when uncertainty was controlled.

Several general conclusions emerged from these analyses. First, all of the variables, including uncertainty, were associated with the overall level of relational stability. Second, uncertainty appeared to mediate the association between perceived similarity and relational stability. Finally,

uncertainty reduction theory can only partially explain the links between relational stability and communication with the partner's network, support from the network, and communication with the partner. These variables seemed to be related to stability in ways that went beyond their ability to reduce uncertainty.

We also examined how accurately the discriminant function composed of the Time 1 variables could classify relationships according to whether they had stayed together or broken up over time. Since the group covariance matrices were unequal (Box's M = 35.15, $p < .01$), the individual group covariance matrices were used for classification. We found that uncertainty and the independent variables combined to predict relational outcomes three months later with surprising accuracy. The discriminant function correctly classified 90% of the Stay-Togethers and 83% of the Breakups. The overall percentage of correctly classified cases was 87.73%.

DISCUSSION

Research on relationship development has been repeatedly criticized for ignoring the broader social context in which development occurs (e.g., Huston & Burgess, 1979; Huston et al., 1981; La Gaipa, 1981; Parks, 1982; Parks et al., 1983; Ridley & Avery, 1979). Our results demonstrated both the value and the difficulty of examining dyadic and contextual influences at the same time. We were able to show that social network factors were significantly related to both the social cognitive activities of romantic partners and the overall stability of romantic relationships. We were able to account for a sizable portion of the variance in uncertainty at two points in time and predict breakups in romantic relationships over a three-month period with almost 90% accuracy. We also encountered difficulty sorting out the unique influences of dyadic and network factors. Our longitudinal analysis of uncertainty, although merely exploratory, failed to provide clear evidence of a temporal connection between uncertainty and our predictor variables. So, although these results map fertile territory for future research, they also survey a complex topography that deserves further examination, beginning with a careful review of the hypotheses.

The first hypothesis was supported. As predicted, communication with members of the partner's network was negatively associated with the individual's level of uncertainty about his or her romantic partner and positively associated with the overall degree of relational stability.

Further analysis, however, suggested several qualifications and directions for future research. First, the association between communication with the partner's network and uncertainty at Time 2 was strongest for respondents who had experienced high uncertainty at Time 1. Moreover, we failed to find strong evidence of a temporal connection between communication with the partner's network and uncertainty. Our analysis was also limited by its rather global character. We speculated that contact with the partner's network could reduce uncertainty by supplying third-party information, creating opportunities for observation of disinhibited behavior, promoting social comparison, or satisfying social expectations. Studies focusing on these specific modes of uncertainty reduction will be needed if the relationship between network contact and uncertainty is to be fully explicated. Finally, we found that communication with the partner's network appears to promote relational stability in ways that cannot be completely explained by uncertainty reduction theory. One possibility is that network contact functions as a "barrier force" by making it more difficult to terminate a relationship (Johnson, 1982; Levinger, 1976, 1979). If one becomes involved with the partner's friends and family, then terminating the romantic relationship could endanger a whole series of other relationships and activities. Becoming involved with the partner's network could also limit access to alternative partners (Parks et al., 1983).

The second hypothesis was also supported. Individuals who received more support for their romantic relationship from family and friends experienced less uncertainty at both points in time and were less likely to terminate their romantic relationship. However, these findings were subject to the same qualifications as were the results for the first hypothesis. The association between support and uncertainty at Time 2 was strongest for people who experienced high uncertainty at Time 1. There was little direct evidence of a temporal connection between support at Time 1 and uncertainty at Time 2. Moreover, we found that receiving support from people outside the relationship was associated with stability in ways not completely explained by uncertainty reduction theory. Expressions of support are obviously rewarding in their own right and might even cause the recipient to expect future social or material rewards from the supporters. They also constitute a barrier force, since terminating a relationship is probably more difficult when others support it. This constraint should be especially pronounced when there is extensive communication with network members (Ridley & Avery, 1979).

The third hypothesis was only partly supported. Although communication with the romantic partner was positively associated with stability, it was only weakly related to uncertainty. Communication with the partner was modestly, but significantly, related to uncertainty at Time 1, but was not uniquely related to uncertainty at Time 2. Moreover, there was no evidence of a direct temporal connection between the amount of communication with the partner at Time 1 and uncertainty at Time 2.

Since these findings appeared to challenge a central axiom of Berger and Calabrese's (1975) original theory, we explored several alternative explanations. We first considered the possibility that the findings were due to the comparatively low reliability of the communication measure. However, this explanation became less plausible when we observed that the communication measure was strongly related to both the network variables and relational stability. Any attenuation produced by measurement unreliability presumably would have affected these other correlations as well. We also wondered if communication and uncertainty might be related in some nonlinear way, but we dismissed this possibility when post hoc tests revealed no significant deviations from linearity. Perhaps the most plausible explanation for these findings is that the link between communication and uncertainty was simply obscured by multicollinearity. It was impossible to assess this relationship clearly, since the communication measure was so closely related to the network variables. While the association between the network variables and communication with the partner is substantively interesting on its own (see Parks et al., in press), the resulting collinearities probably precluded a clean test of our hypothesis. Laboratory methods may be needed in order to determine how uncertainty is influenced by direct communication with a partner versus communication with network members.

Our approach to the relationship between communication and uncertainty was also limited by its global focus. While writers have often assumed that the overall amount of communication reduced uncertainty, the evidence directly supporting this view is restricted to studies of initial interactions (see Berger & Calabrese, 1975). In a larger sense, the sheer volume oc communication may be less important than specific type or content. For instance, the amount of disclosive communication or verbal metacommunication may be more strongly related to uncertainty than is the overall amount of communication (Parks, 1977, 1978). Redundant or irrelevant information may not reduce uncertainty as much as new information (Jones & Thibaut, 1958); and some types of communication might even act as "disinformation" by increasing confu-

sion and uncertainty. Recent research on the cognitive uses of specific types of information may yield a more precise theoretical framework for understanding the link between communication and uncertainty (e.g., Berger, 1979; Berger & Roloff, 1982; Nisbett & Ross, 1980; Sillars & Scott, 1981).

In spite of its weak association with uncertainty, the overall amount of communication with the romantic partner was the strongest predictor of breakups. The more one communicated with his or her partner at Time 1, the lower the probability of relational termination at Time 2. Since this association was not strongly mediated by uncertainty, future research should explore additional explanations for the link between communication and stability. Regular allocations of free time for communication with the partner might, for example, lessen access to alternative partners and activities, or even foster a tacit commitment to continue or expand the relationship (Becker, 1960; Johnson, 1982; Levinger, 1976; Parks et al., 1983).

Results for the final hypothesis were generally consistent with uncertainty reduction theory. Berger and Calabrese (1975) argued that similarity was linked to relational outcomes because it reduced uncertainty. We found that perceived similarity was negatively related to uncertainty at both points in time, although the Time 2 relationship was not independent of the Time 1 relationship. Further analysis showed that, though perceived similarity might have some direct effect on relational stability, most of its association with stability was mediated by uncertainty. These results not only supported our extension of uncertainty reduction theory, but also might help explain why studies that did not explicitly account for the mediating role of uncertainty have generally reported rather weak associations between similarity and relational outcomes (e.g., Centers, 1975; Hill et al., 1976; Levinger, 1973; Levinger, Senn, & Jorgensen, 1970).

Any overall evaluation of this study must be set in the context of three general limitations. First, the task of sorting out network and dyadic influences on uncertainty was hampered by the collinearities among the independent variables. While the commonality analyses provided some clarification, a substantial portion of the variance in uncertainty at both points in time was entangled in ambiguous commonalities and could not be clearly attributed. As we have already noted, experimental research will probably be necessary to disentangle these commonalities. Second, the study was limited by its rather global level of analysis. While we would defend our broad focus as a useful starting point for research, we also believe that future research would profit from a more specific

analysis of the information obtained from direct contact with a person and from contact with a person's network. Finally, our longitudinal analysis of uncertainty was severely limited by the data and methods available in this study. Change scores of all kinds, including the residualized change scores used in our analysis, suffer from a variety of statistical and conceptual problems (Cronbach & Furby, 1970). A more definitive analysis could be conducted if data were gathered on all of the variables across several points in time (see Cook & Campbell, 1979).

This study began with a desire to expand Berger and Calabrese's (1975) original formulation of uncertainty reduction theory in two ways. In spite of limitations discussed above, both of our extensions were generally supported. Our first goal was to expand the theory so as to include the social context in which relational development occurs. We hypothesized that communication with the partner's family and friends and support received from the partners' networks would be negatively associated with uncertainty about the romantic partner. Both of these hypotheses were supported. While the results were subject to some ambiguities and qualifications, they generally showed that the network variables were associated with uncertainty as strongly as were dyadic variables like perceived similarity and direct communication with the partner.

We were also able to identify several areas in which more controlled and specific research would be fruitful. Some of these have already been noted. Another potentially useful line of research might explore the interaction between network and dyadic factors. Relationships tend to develop in several directions at once as individual experiences, dyadic interactions, and patterns of network contact change together (Milardo, 1982; Parks et al., in press). Participants must somehow synthesize all of these changes into an overall understanding of the relationship. Uncertainty might result when expected changes do not occur together (e.g., having extensive communication with the partner, but not being introduced to his or her friends). In this case uncertainty would not be reduced as much by any one factor operating alone as by an entire set of factors interacting within a larger cognitive matrix sensitive to events both within and beyond the romantic dyad.

Our second goal was to expand the range of relational outcomes predicted by uncertainty reduction theory. Although the theory was originally restricted to initial interactions, we hypothesized that it could be extended to predict the overall level of relational stability. This reasoning was supported when we found that uncertainty was positively associated with breakups in romantic relationships. We also found that uncertainty reduction theory provided a way to explain the association

between perceived similarity and relational stability. However, the theory could not fully explain the associations between relational stability and variables like communication with the partner's network, support received from those outside the relationship, and communication with the partner. This was hardly surprising, since our variables were pitched at a relatively high level of abstraction and since uncertainty reduction theorists (e.g., Berger & Roloff, 1982) have emphasized that social cognitive factors were only one of an entire series of factors governing the relationship development process. We have noted that these variables could operate as barrier forces that encourage individuals to remain in relationships even when they are quite uncertain about their partners. Other explanations are obviously possible given the vast number of theories relevant to the relationship development process. While no one study can explore all of these theories, we believe that this study was useful because it expanded and underscored the importance of uncertainty reduction and because it contributed to theoretical clarification by noting both the strengths and limits of a general explanatory principle.

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