

## **Psychological Dimensions of Social Networks: A Multimethod Analysis<sup>1</sup>**

**Barton J. Hirsch<sup>2</sup>**

*University of Oregon*

*Two exploratory studies are reported which sought to identify important psychological dimensions of social networks. Both studies investigated the social networks of college students, using as subjects the same 16 male and 16 female students. The first study employed multiple regression to generate predictor variables to students' ratings of satisfaction with their social network. The second study assessed how structurally contrasting social networks might function as natural support systems during a period of environmentally induced stress (final examinations). Results from the first study suggest that multidimensional relationships are an important source of social network satisfaction. Results from the second study indicate that social networks can provide considerable quantities of support to individuals under stress. Denser or more integrated social networks furnished substantially greater quantities of support, though less satisfying emotional support. Discussion centers on delineating those social networks which best promote personal growth and enhance adaptation under stress.*

The field of community psychology investigates the interaction of individuals and social structures for the promotion of positive mental health and the prevention of mental disorders. To accomplish this aim adequately, community psychologists must develop conceptual and methodological tools with which to

<sup>1</sup> This article is based on a thesis presented to the University of Oregon. The author is grateful to members of his thesis committee, which included James G. Kelly, Lonnie R. Snowden, and Fred Fosmire. Appreciation is expressed to Lewis R. Goldberg for suggesting use of the Personality Research Form. Financial support was provided by the Graduate School and the School of Community Service and Public Affairs of the University of Oregon. An abbreviated version of the second study reported in this article was presented at the meeting of the American Psychological Association, San Francisco, August 1977.

<sup>2</sup> Correspondence should be addressed to the author at the Social Ecology Laboratory, Department of Psychiatry and Behavioral Sciences, Stanford University, Stanford, California 94305.

analyze informal social structures, as well as formal groups, organizations, and institutions. Informal social structures have received little attention, attributable in part to the lack of such tools. This paper reports two studies which adapted social network (SN) analyses from allied social sciences as a methodology with which to study informal social structures (for reviews of SN analyses in these disciplines, see Barnes, 1972; Mitchell, 1974; Whitten & Wolfe, 1973).

In its most inclusive sense, the SN is defined as the set of all others with whom one has social interactions. Social network may be used in a more restricted manner to refer only to the set of presently significant others with whom one has social interactions.

Historically, interest in SNs was related to their possible role in the treatment of mental disorders that had already developed. Social networks, for example, were seen as accounting for much spontaneous remission of psychological symptoms (Bergin, 1971), as well as making an important contribution to the rehabilitation of exhospital patients (Fairweather, Sanders, Cressler, & Maynard, 1969). Interventions directly into the assembled SNs of psychiatric patients have been reported by a number of crisis-oriented family therapists (e.g., Erickson, 1975; Speck & Attneave, 1973).

The potential importance of SNs to the development of positive mental health and the prevention of mental disorders has been increasingly recognized (Kelly, Snowden, & Muñoz, 1977). Individuals with strong natural support systems have been hypothesized to be less likely to develop psychological or physiological disorders when under stress than are individuals with weak or nearly nonexistent support systems (e.g., Caplan, 1974; Cassel, 1975). At present, however, hypotheses concerning SNs have not advanced beyond this fairly global level.

Research on SNs has similarly been concerned with their more global characteristics. Most studies have assessed the ability of the SN to provide social support. Almost everyone can name individuals who have supported them in the past, or to whom they would turn in the future for everyday or crisis support (e.g., Litwak & Szelenzi, 1969; McKinlay, 1973; Wellman, Craven, Whitaker, Stevens, Shorter, DuToit, & Bakker, 1973). Several studies have attempted to investigate more directly the relationship between social support and mental health. Thus, Maddison and Walker (1967) found that measures of social support discriminated good from bad outcome widows, while Tolsdorf (1976) found that hospitalized schizophrenics had fewer supportive relationships and valued support less than did nonpsychiatric hospital patients. Though suggestive, the value of all the research cited above is constrained by an almost exclusive reliance on suspect retrospective or prospective data.

Although the global nature of much of the theory and research on SNs may have helped to call attention to the field, they are also responsible for the lack of definitive, substantive contributions. Particularly disconcerting has been

the failure to conceptualize adequately, let alone measure, the distinctly psychological dimensions of SNs. The present studies were therefore designed to be exploratory, with their principal goal being the identification of psychologically important SN functions and variables. In order to explore the relative merits of alternative methodologies for SN analyses, it was decided to conduct what may heuristically be considered two separate studies. Both studies investigated the SNs of college students, using as subjects the same 16 male and 16 female students.

### STUDY #1: PSYCHOLOGICAL CHARACTERISTICS OF PERSONALLY SATISFYING SOCIAL NETWORKS

This study sought to identify the more important psychological characteristics of personally satisfying SNs. Multiple regression was considered best suited for assessing the relative importance of various SN variables. Using a self-report measure of overall satisfaction with one's SN (SN satisfaction) as the criterion, several possible predictors were evaluated via correlational analysis. Possible predictors were included on grounds of face validity. The variable, "relationship dimensionality," was adapted from the anthropological literature as a measure of the interactional structure of relationships. A relationship for any given student was termed *multidimensional* if and only if it involved engaging in a number of different kinds of activities or behaviors important to that student (e.g., engaging in shared recreational events, verbal sharing of personal concerns, having intellectual discussions, etc.). A unidimensional relationship for any student, by contrast, involved doing no more than one kind of activity with the other that was considered important.<sup>3</sup> From a social exchange point of view, multidimensional relationships will in general be more important than unidimensional relationships (Kapferer, 1969), and therefore warrant attention as a possible important source of SN satisfaction.

Social network variables were assessed via semistructured interviews, with interviewer ratings quantified to enhance predictability. Personality dimensions of possible relevance to SN satisfaction were measured with the Personality Re-

<sup>3</sup> Derived from social exchange considerations, the concept of multidimensional relationships is similar to that of multiplex relationships as used by the anthropologist Kapferer (1969). Multiplex relationships have alternatively been used to define relationships that cut across formal roles – friends, neighbors, and kin (Mitchell, 1969). These latter distinctions were not seen as relevant to this study. To avoid possible confusion, as well as introduce a less technical term, it was decided not to employ the term *multiplex*.

search Form (PRF), an instrument based on Murray's system of needs which has proven strong psychometrically (Jackson, 1967).

### STUDY #2: THE SOCIAL NETWORK AS A NATURAL SUPPORT SYSTEM

As discussed previously, natural support systems have been hypothesized to be an important factor mediating the effect of stress on individuals or groups. Previous work on the SN as a natural support system, however, has suffered from a number of serious inadequacies. Principal among these has been that alternative kinds of SN are often not delineated, so that the construct sometimes appears to have a ubiquitous, amorphouslike content lacking in analytical power. Hoping to generate more differentiated thinking, the present study adopted SN analyses as a framework for the study of natural support systems. Social network analysis specifies structural dimensions along which SNs may differ, enabling one to distinguish alternative SNs.

Previous reviews of the sociological and anthropological literature have identified density as the most important structural feature of a SN (e.g., Whitten & Wolfe, 1973). The density of a SN is defined as the total number of relationships that exist among the members of an individual's SN as a proportion of the total possible number of such relationships (Mitchell, 1969). As an individual by definition has a relationship with all members of his or her SN, these relationships are not included in calculating SN density. Thus, for example, if all the members of person A's SN are friends with each other, the density = 1.00; if none are friends with each other, then the density = 0.

Few psychologically relevant research studies have investigated SN density. One large survey study reported a significant relationship between SN density and the reported availability of everyday and crisis support (Wellman et al., 1973). Increasing SN density appears to have been a goal of those who have made crisis interventions into SNs (Erickson, 1975). Tolsdorf (1976) did not find any significant difference in the density of the SNs of hospitalized schizophrenics as compared to nonpsychiatric hospital patients.

This study sought to assess the relative ability of structurally contrasting SNs to function as a natural support system. As the principal methodological limitation of previous research has been the absence of designs focusing on assessment of SNs during periods of *in vivo* stress, the present study was particularly concerned with assessing how such contrasting SNs functioned during an actual period of stress. Subjects were involved in either high or low density SNs. The quantity and quality of social and emotional support students received from their SN was assessed daily for 27 days on standardized log forms. Data were collected before, during, and after an environmentally induced stress (final exams) in a mixed design. Given the lack of previous research, this study was intended to generate rather than investigate specific hypotheses.

## METHOD

### *Design*

The first study utilized a multiple regression design with college students' ratings of SN satisfaction serving as the criterion variable. The study took place at Time 1. In the second study, at Time 2, male and female students in high or low density SNs completed logs daily over a 27-day period. Data were collected before, during, and after final examinations in a mixed ANOVA design.

### Subjects

The 16 male and 16 female college student subjects ranged in age from 19 to 27 ( $\bar{X} = 22.2$ ,  $SD = 2.3$  years). Three students were married (two male and one female). All students lived off campus and had at least one final exam that quarter. Students listed a mean of 7.8 people ( $SD = 2.7$ ) as members of their SN. Group profiles indicated that these students were well within the normal range on all PRF personality scales.

Students were recruited via announcements to psychology classes and newspaper ads for a study on friendships. They were told that they would be paid \$11 each for their participation. Based on  $n = 142$ , students in the initial subject pool had a mean density = .36 ( $SD = .22$ ) and a mean SN satisfaction rating (on a 1-9 scale) of 5.6 ( $SD = 1.77$ ).

An absolute  $z$  score of .30 on density served as the initial selection criterion. It proved impossible to meet this criterion for all students, and a median split was therefore performed. Two students stopped reporting data during the course of the second study and were dropped from all analysis in that study. Three students who reported not receiving any emotional support for at least one 9-day period were not included in the analysis of satisfaction with emotional support received (they were included in all other analysis).

### Instruments<sup>4</sup>

#### *Study No. 1*

*Social Network Questionnaire (SNQ)*. In addition to providing basic demographic data, this self-report questionnaire measured students' SN satisfaction and the density of their SN. Students listed in matrix form up to 15 significant others with whom they were likely to interact at least once during any 2- to 3-week period. They then put an X in those boxes where the relevant individuals

<sup>4</sup>Copies of all instruments are available from the author.

were themselves friends with each other, using the same criteria that had been employed in listing them initially. Density was calculated by the following formula:  $X =$  number of Xs on the matrix, and  $N =$  number of people listed in the SN.

$$\text{Density} = X/[N(N-1)/2]$$

Students were then asked to consider the individuals they had listed as their SN and to rate on separate 1–5 scales both how satisfied they were overall with their SN and how much change they would like to see in it. The latter score was subtracted from the former to give the rating of SN satisfaction.

*Social Network Rating Scale (SNRS).* An interview format was deemed the most efficient method of assessing a number of often complex SN variables. Rather than rely solely on qualitative interview data, the SNRS was developed to quantify interviewer impressions so as to enhance predictability. Items were developed on the basis both of theoretical considerations and results from pilot interviews. Interviewee ratings often formed a major part of the data base from which interviewer ratings were generated.

*Personality Research Form (PRF):* A 22-scale, 440-item objective personality test which includes two validity scales (Jackson, 1967). In contrast to most other standard personality inventories, this test was constructed for normal samples, thus making it more suitable for our students.

### Study No. 2

*Daily Interaction Rating Form (DIRF):* A self-report questionnaire on which students tracked daily the quantity and quality of social and emotional support received. Social support was measured by the amount of time they spent interacting with specific individuals and their overall satisfaction with those interactions. Emotional support was operationalized in terms of interactions which involved sharing feelings or personal concerns. Names of individuals listed as SN members on the SNQ were dittoed on the forms (one form per day). Space was provided for students to list significant interactions with others who were not named on the SNQ. Students estimated the amount of time spent with each person that day and rated on a 1–7 scale how satisfied they were with the interaction overall. If the interaction involved sharing feelings or personal concerns, they then rated on an additional 1–7 scale how satisfied they were with that particular dimension of the interaction. Students also indicated which individuals, if any, they had interacted with in groups.

### Procedure

Students who met the predetermined selection criteria on the SNQ were invited to participate in the study. After signing informed consent forms, stu-

dents were individually interviewed for approximately 1 hour each by the investigator, who then filled out the SNRS. Beginning March 1, students began filling out the DIRF and handed them in daily (weekend data were recorded daily and handed in the following Monday). The "before finals" period lasted for nine calendar days. Beginning March 10, and continuing for a total of nine calendar days, the "during finals" period started. Final exams actually began on March 15. Students went on quarter break from March 19 to March 28; no data were collected during this period. On March 29, the first day of registration for spring quarter, the "after finals" period started and continued for a total of nine calendar days. Weekly phone contact was maintained with students to gather contextual information and to reinforce them for collecting and handing in data. Phone calls were made to students who forgot to hand in their data for more than three consecutive days. At the conclusion of the study, students filled out debriefing forms and were paid \$11 each.

### STUDY NO. 1: RESULTS AND DISCUSSION

The strongest predictor of SN satisfaction was students' satisfaction with their multidimensional relationships ( $r = .80, p < .001$ ). Other prominent predictors included: having fixed roles in relationships with SN members ( $r = -.56, p < .001$ ), having a group feeling when together with SN members ( $r = .52, p < .001$ ), and engaging in a variety of activities with SN members ( $r = .52, p < .001$ ). The only PRF personality dimension to significantly predict SN satisfaction was cognitive structure ( $r = -.29, p = .05$ ), which, if not a chance finding, suggests that highly satisfied students had a greater capacity to tolerate ambiguity.

A stepwise multiple regression analysis was then performed on SN satisfaction to determine the two best predictors. These two predictors were: (a) students' satisfaction with their multidimensional relationships, and (b) having fixed roles in relationships with SN members (this being negatively associated with SN satisfaction). These two predictors had a multiple  $R = .85$ , accounting between them for over two-thirds of the variability in ratings of SN satisfaction ( $R^2 = .72$ ).

These results suggest that multidimensional relationships play a very important role in SNs. By definition, multidimensional relationships involve an individual in a number of activities of importance to that individual. It is suggested that the more satisfying multidimensional relationships are those that more successfully facilitate engaging in a wide repertoire of behaviors (though the determinants of success in this matter cannot presently be specified). This interpretation is consistent with other findings from the interviewer rating scale. For example, relationships without fixed roles (the second most important predictor) similarly may be seen to encourage diverse interactions and relationship styles. Indeed, engaging in a variety of activities with SN members was itself a significant predictor of SN satisfaction. It appears, therefore, that the most per-

sonally satisfying SNs for these students are those that best promote diversity and, thereby, personal growth. Whether more variegated SNs also most successfully enhance adaptation under stress is a question that is considered in the second study.

## STUDY NO. 2: RESULTS

### *Level of Stress*

Level of stress significantly affected total amount of social support received, as measured by total time spent with others; amount of emotional support received, as measured by time involving sharing of feelings or personal concerns; and satisfaction with emotional support received, as measured by rated satisfaction with that aspect of their interactions which involved disclosure of feelings or personal concerns (see Table I). Scheffe post hoc comparisons indicate that for both total time spent receiving social support ( $F(2, 44) = 16.96$ ,  $S^2 = 10.28$ ,  $p < .01$ ) and time spent receiving emotional support ( $F(2, 44) = 7.66$ ,  $S^2 = 6.44$ ,  $p < .05$ ), there was no significant difference between before and during-finals data, with a significant increase in time spent after finals. Satisfaction with emotional support, on the other hand, progressively increased

Table I. Main Effect of Level of Stress on DIRF Variables

Variable	Before finals	During finals	After finals	F value <sup>c</sup>
Mean daily amount of time <sup>a</sup>				
1. Social support	328	351	417	7.77 <sup>f</sup>
2. Emotional support	198	202	238	3.38 <sup>d</sup>
3. Social support in group situation	73	73	83	1.12
4. Proportion of group social support (Time 3/Time 1)	.20	.21	.19	.13
Mean daily satisfaction with: <sup>b</sup>				
1. Social support	5.12	5.19	5.24	.96
2. Emotional support	5.11	5.33	5.50	4.10 <sup>e</sup>

<sup>a</sup>Time data are in minutes.

<sup>b</sup>Satisfaction data are on 1-7 scale.

<sup>c</sup>df for satisfaction 2 = 2, 38; df for all other analyses = 2, 44.

<sup>d</sup> $p < .05$ .

<sup>e</sup> $p < .03$ .

<sup>f</sup> $p < .001$ .



with each time period, being least before finals and greatest after finals ( $F(2, 38) = 7.12, S^2 = 6.5, p < .05$ ).

There was no significant stress  $\times$  density interaction effect.

### *Sex Differences*

Women and men differed significantly in the amount of support they received, with women receiving substantially more of both social (423 vs. 308 minutes,  $F(1, 22) = 5.29, p < .04$ ) and emotional support (273 vs. 153 minutes,  $F(1, 22) = 9.69, p = .005$ ). There were no significant sex differences regarding satisfaction with either social or emotional support, though men did tend to be slightly more satisfied with their emotional support (5.40 vs. 5.26,  $F(1, 19) = .97$ ).

### *Density*

Density had a wide-ranging effect on DIRF variables. Students in high density SNs received significantly more social and emotional support than did students in low density SNs. As can be seen in Table II, these differences were

**Table II.** Main Effect of Density on DIRF Variables

Variable	Low density	High density	<i>F</i> value <sup>c</sup>
Mean daily amount of time <sup>a</sup>			
1. Social support	311	437	4.92 <sup>d</sup>
2. Emotional support	167	273	5.35 <sup>d</sup>
3. Social support in group situation	54	105	6.96 <sup>f</sup>
4. Proportion of group social support (Time 3/Time 1)	.16	.26	6.65 <sup>f</sup>
Mean daily satisfaction with: <sup>b</sup>			
1. Social support	5.17	5.22	.02
2. Emotional support	5.53	5.06	6.08 <sup>e</sup>

<sup>a</sup>Time data are in minutes.

<sup>b</sup>Satisfaction data are on 1-7 scale.

<sup>c</sup>*df* for satisfaction 2 = 1, 19; *df* for all other analyses = 1, 22.

<sup>d</sup> $p \leq .04$ .

<sup>e</sup> $p \leq .03$ .

<sup>f</sup> $p \leq .02$ .

also quite substantial, amounting to approximately 2 hours more per day. Students in high, in contrast to low, density SNs also received a significantly greater amount and proportion of their social support in group situations.

Although there was no main effect for satisfaction with social support received, students in low, in contrast to high, density SNs reported a significantly higher mean satisfaction with their emotional support. As low density students spent less time receiving emotional support but were more satisfied with what support they got, it was thought a negative association between amount and quality of emotional support might account for their greater satisfaction. A partial correlation analysis, however, indicated that this was not the case. Amount of emotional support received and satisfaction with emotional support received were not significantly related ( $r = -.10, p = .32, n = 25$ ). The relationship of density to the amount of emotional support received ( $r = .36, p < .04, n = 25$ ) was essentially unchanged after partialing out the effect of satisfaction with emotional support (partial correlation =  $.35, p < .04, n = 25$ ). Similarly, the relationship of density to satisfaction with emotional support ( $r = -.40, p = .02, n = 25$ ) was essentially unchanged after partialing out the effect of amount of emotional support received (partial correlation =  $-.39, p < .03, n = 25$ ).

Density was positively associated with scores on the social desirability scale of the PRF ( $r = .32, p < .04, n = 32$ ).

## STUDY NO. 2: DISCUSSION

### *Final Exams*

Although it had been assumed that only the during-finals period would be stressful, these data do not support that interpretation. Instead, it appears that both the before- and during-finals periods were stressful. Data analyses indicate no significant differences between those periods on two important time measures. Moreover, phone conversations with students suggested that most of them were troubled by upcoming exams from the initial days they began taking data. Obtaining more extensive, objective data on the stressfulness of these periods may have avoided the need for these relatively post hoc conclusions. On the other hand, it is equally possible that in the process of obtaining such data, students might have obtained knowledge of "final exams" as an independent variable in the study, which, in turn, could have had a reactive effect on the daily data provided.

Students responded to this stress largely by withdrawing from social interaction, as compared to the after-finals data. This withdrawal was a relative one only, as students still spent a good deal of time with others. Moreover, this relative withdrawal was probably adaptive, given the need to study.

The finding that satisfaction with emotional support was highest in the after-finals period is not too surprising, as students no doubt shared more positive feelings, no longer having to be concerned with finals. More interesting is the finding that students were more satisfied with the support received during- rather than before-finals, suggesting that it may be more difficult to provide effective support in anticipation of a stressful event. This difficulty may be a function of two factors. First, it may be more difficult to communicate focused empathy in response to the more free-floating anxiety likely experienced in the face of a still somewhat distant threat. During finals, students' concerns were likely more concrete, increasing the probability of on-target responses.

The second factor which may be operative is that in the period preceding an anticipated stressful event, there may be more perceived degrees of freedom regarding possible coping strategies, and hence greater conflict and disagreement among SN members regarding optimum responses. For example, in the before-finals period there may very well have been conflict or disagreement between students and SN members, or between alternative SN members, regarding how much time to spend together versus studying alone. In the midst of finals, with fewer degrees of freedom, the reasonableness of spending less time together was probably more evident.

While such initial disagreements may be concurrently experienced as less satisfying, they may also function as a means of brainstorming possible solutions, possibly leading to enhanced flexibility and the formulation of a superior coping strategy (e.g., George, 1974). Thus, initial disagreements may at times ultimately prove more adaptive than initial unanimity. Determining the conditions under which this may occur is an important task for future research.

### *Sex Differences*

The greater amount of social and emotional support received by women tends to confirm popular stereotypes that women invest more time and energy in creating intimate interpersonal relationships than do men. On the other hand, contrary to popular stereotypes, women were clearly not more satisfied with their emotional support than were men. This latter finding may be an outgrowth of emerging cultural values which encourage less traditional sex roles. Men able to more completely self-disclose may have been seen as promoting more varied sex roles; thus, the intrinsic satisfaction they derived from such interactions may have been augmented by the knowledge that they were engaging in behaviors highly valued by the campus community. Alternatively, there may be sex differences in the topics about which men and women choose to share their feelings, with men perhaps seeking support regarding only less threatening subjects. A perhaps even more basic question to be pursued in future research is whether there are sex differences regarding the value of support in enhancing adaptation under stress.

### *Density*

The large number of significant and substantial between-groups differences impel us to regard density as a critical SN variable. Students in high density SNs were found to receive considerably more social and emotional support. Despite this greater commitment in time, students in higher density SNs were significantly more dissatisfied with the emotional support they received. It is hypothesized that this deleterious consequence of membership in high density SNs is related to a decreased probability of receiving empathic communications in situations of intranetwork conflict.

This interpretation centers around the fact that, by definition, it is likelier that persons A, B, and C, have relationships with each other in high density SNs. Thus, if A and B are in conflict and A seeks support from C, anything C communicates may affect both the C-A as well as C-B relationship. In such situations, the preferred strategy for C may be to provide ambiguous feedback, minimizing the risk of offending either party. Not wishing to agree or to appear to agree with A, and thereby to at least implicitly condemn B, C may often fail to communicate empathic understanding of A's feelings. Thus, social exchange considerations may dictate communication strategies which result in more superficial and less trustworthy support for members of high density SNs.

If the poorer emotional support provided by high density SNs is related to intranetwork conflict, then one would expect that in situations which call for the adoption of superordinate goals, and the consequent minimization of conflict, high density SNs would provide improved support. One such situation may occur during the initial stages of mourning. At this time it is culturally prescribed that SN members attempt to suspend evidence of disharmonies which, it is felt, might denigrate the memory of the deceased and place additional burdens on his or her family.

In the absence of superordinate goals, two alternative strategies may increase the supportiveness of high density SNs. Both strategies could be employed in interventions into SNs. In the first, empathic communications are clearly distinguished from those which communicate in addition agreement with the subject's point of view. Individuals or groups could be trained to provide and elicit such communications, with norms developed for their utilization. The second strategy is designed to reap maximum benefit from such segregation among SN members as does exist in high density SNs. Specifically, in this strategy supportive relationships are developed with SN members who do not have relationships with the other members of one's SN. Thus, segregated SNs may allow one part of the network to serve as a source of support against stresses in other parts of the network.

The importance of maintaining some segregation among SN members is further highlighted by considering changes that may affect the fit between per-

sons and SNs over time. Initially, members of any SN likely have diverse expectations regarding norms and roles they will adopt (e.g., Merton, 1968). Over time, high density SN members will have considerable opportunity to develop shared expectations regarding what they will and will not do together. Norms develop for interaction, and individuals develop their particular role within the group. Norms no doubt develop in low density SNs as well regarding patterns of interaction. However, given the greater segregation among SN members, there may be a greater variety of norms and available roles across low density SNs.

The greater variation in norms and roles that may distinguish low density SNs suggests that they may be more adaptive under conditions of change. Such change may result, for example, from altered individual preferences or from the major upheaval that characterizes many life crises. Three reasons may account for the possible greater adaptability of more variegated, low density SNs. First, dyadic norms and roles may be more amenable to change than group norms and roles. Second, as one's interests or needs change, there will be a higher probability of finding individuals to satisfy one's changing requirements in more variegated SNs. Finally, if varied input can result in the formulation of superior coping strategies (as discussed previously), then having access to diverse role-partners may enhance one's ability to cope with change (see also Coser, 1975; Sieber, 1974).

Both low density SNs and multidimensional relationships appear to favor more varied interactions and greater role complexity. While this tends to imply an inverse relationship between density and relationship dimensionality, it is suggested that the relationship is somewhat more intricate. In SNs in which one's multidimensional partners all share common interests, it is likely that over time these individuals form a dense SN (e.g., Granovetter, 1973). Our previous analysis suggests that these SNs typically grow less multidimensional and more stultifying. On the other hand, those individuals who accumulate diverse interests and roles (see Coser, 1975; Sieber, 1974) will find that their multidimensional partners do not all share similar interests. It is less likely that dissimilar partners will form a dense SN. Alternatively, in such SNs individuals may form dense clusters on the basis of common interests, with these different clusters segregated from each other. Thus, a lower density SN characterized by several dense clusters may most effectively promote personal growth and enhance adaptation without sacrificing a sense of community.

### *Assessment of Social Networks*

This investigation was particularly concerned with evaluating the utility of daily assessment of person-SN interactions during an extended period of *in vivo* stress. There are possible undesirable consequences of collecting such data: re-

ording daily data — and, for these subjects, participating in the interview for the first study — may have a significant reactive effect on the data provided. Though hard data are not available, debriefing of students after completion of the studies suggests that this is unlikely. The advantages of an *in vivo* assessment strategy, on the other hand, are substantial. Such data are an actual sample of person—SN interactions under stress, and are therefore subject to less inference than are retrospective or prospective data. Very rich, detailed data are available, with investigators able to assess those variables of importance to their particular project. For example, research on other populations will likely want to assess supports from family and work associates, and the interaction of these networks with the friendship network as analyzed in the present studies. Finally, *in vivo* data will be essential for ongoing assessment of the efficacy of future preventive interventions designed to create stronger, more supportive SNs. It is hoped that these studies serve as an impetus to the development of such interventions.

## REFERENCES

- Barnes, J. A. Social networks. *Addison-Wesley module in anthropology*, 1972, 26, 1-29.
- Bergin, A. E. The evaluation of therapeutic outcomes. In A. E. Bergin & S. L. Garfield (Eds.), *Handbook of psychotherapy and behavior change: An empirical analysis*. New York: Wiley, 1971.
- Caplan, G. *Support systems and community mental health*. New York: Behavioral Publications, 1974.
- Cassel, J. Social science in epidemiology: Psychosocial processes and “stress” theoretical formulation. In E. Struening & M. Guttentag (Eds.), *Handbook of evaluation research* (Vol. 2). Beverly Hills, Calif.: Sage Publications, 1975.
- Coser, R. L. The complexity of roles as a seedbed of individual autonomy. In L. A. Coser (Ed.), *The idea of social structure: Papers in honor of Robert K. Merton*, New York: Harcourt Brace Jovanovich, 1975.
- Erickson, G. The concept of personal network in clinical practice. *Family Process*, 1975, 14(4), 487-498.
- Fairweather, G. W., Sanders, D. H., Cressler, D. L., & Maynard, H. *Community life for the mentally ill: An alternative to institutional care*. Chicago: Aldine, 1969.
- George, A. Adaptation to stress in political decision making: The individual, small group, and organizational contexts. In G. Coelho, D. Hamburg, & J. Adams (Eds.), *Coping and adaptation*. New York: Basic, 1974.
- Granovetter, M. The strength of weak ties. *American Journal of Sociology*, 1973, 78, 1360-1380.
- Jackson, D. N. *Personality research form manual*. Goshen, N.Y.: Research Psychologists Press, 1967.
- Kapferer, B. Norms and the manipulation of relationships in a work context. In J. C. Mitchell (Ed.), *Social networks in urban situations*. New York: Humanities Press, 1969.
- Kelly, J. G., Snowden, L. R., & Muñoz, R. F. Social and community interventions. *Annual Review of Psychology*, 1977, 28, 323-361.
- Litwak, E., & Szelenzi, I. Primary group structures and their functions: Kin, neighbors and friends. *American Sociological Review*, 1969, 34, 465-481.
- Maddison, D., & Walker, W. Factors affecting the outcome of conjugal bereavement. *British Journal of Psychiatry*, 1967, 113, 1057-1067.
- McKinlay, J. B. Social networks, lay consultation, and help-seeking behavior. *Social Forces*, 1973, 51(3), 275-292.

- Merton, R. *Social theory and social structure* (Enl. ed.). New York: Free Press, 1968.
- Mitchell, J. C. The concept and use of social networks. In J. C. Mitchell (Ed.), *Social networks in urban situations*. New York: Humanities Press, 1969.
- Mitchell, J. C. Social networks. *Annual Review of Anthropology*, 1974, 3, 279-300.
- Sieber, S. Toward a theory of role accumulation. *American Sociological Review*, 1974, 39, 567-578.
- Speck, R. V., & Attneave, C. L. *Family networks*. New York: Pantheon, 1973.
- Tolsdorf, C. Social networks, support, and coping: An exploratory study. *Family Process*, 1976, 15(4), 407-417.
- Wellman, B., Craven, P., Whitaker, M., Stevens, H., Shorter, A., DuToit, S., & Bakker, H. Community ties and support systems: From intimacy to support. In L. Bourne, R. MacKinnon, & J. Simmons (Eds.), *The form of cities in central Canada*. Toronto: University of Toronto Press, 1973.
- Whitten, N. E., Jr., & Wolfe, A. W. Network analysis. In J. J. Honigman (Ed.), *Handbook of social and cultural anthropology*. Chicago: Rand McNally, 1973.