Social Support Scales: A Methodological Note

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Abstract

The relationship between social support and depression has implications for researchers studying schizophrenia. In this article, the authors attempt to conceptualize social support and assess the reliability and validity of its various measures. They then evaluate the ability of social support, along with stressors, to explain psychiatric symptoms. Representative data from a community survey of adults, ages 17–70, suggest that social support measures show strong relationships to depression and other psychiatric symptoms. The implications of these and other findings for the study of schizophrenia are discussed.

The concept of social support has become a focal point in research for its potential contribution to the epidemiological explanation of illness. This is especially evident within the framework of the stressor-illness model. In this model, the relationship between stressors—usually measured with a stressful life events scale—and certain forms of illness—especially psychiatric symptoms and depression—has been well documented (Dohrenwend and Dohrenwend 1974). To a lesser extent, this relationship has also been demonstrated for schizophrenic patients (Brown and Birley 1968; Beck and Worthen 1972; Brown et al. 1973; Jacobs, Prusoff, and Paykel 1974; Jacobs and Myers 1976; Schwartz and Myers 1977). Yet, the stressors usually account for less than 10 percent of the variation of any illness measure studied. Thus, investigators recognize the importance of incorporating additional factors to increase the explanatory power of the model (Rabkin and Struening 1976; Dohrenwend and Dohrenwend 1978). It has been further suggested that some of these factors may serve as mediating or buffering factors between the stressors and illness (Cassel 1974; Kaplan 1975; Cobb 1976; Rabkin and Struening 1976; Dean and Lin 1977; Kaplan, Cassel, and Gore 1977; Dohrenwend and Dohrenwend 1978). One significant factor that has emerged is the role of social support.

Schizophrenia researchers have similarly considered the role played by social factors in the various manifestations, hospitalizations, relapses, treatments, and rehospitalizations of schizophrenia (Faris and Dunham 1939; Kohn and Clausen 1955; Mishler and Scotch 1963; Beck 1978; Hammer, Makiesky-Barrow, and Gutwirth 1978). The more recent discussions and studies have attempted to focus on the social networks surrounding an individual, and the supportive functions they provide when the individual is confronted with crisis situations (Beels 1978).

The purpose of the present article is threefold. First, it will identify the essential research tasks in the efforts to link social support and schizophrenia. Second, it will describe some of the efforts currently being made to develop reliable and valid measures of social support in the context of the stressor-illness model. And, third, it will suggest directions and issues for future research on social support and schizophrenia.

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It has been pointed out that social factors and stressors may be differentially linked to schizophrenia and other forms of psychiatric illnesses (Mechanic 1972; Paykel 1974). Our own research efforts, however, have concerned general psychiatric and physical illnesses rather than schizophrenia. Thus, the specific data we present may or may not be applicable to schizophrenia. We will attempt, however, to show how the various approaches presented may have implications for researchers interested in the relationships between social support and schizophrenia.

Social support is defined as "support accessible to an individual through social ties to other individuals, groups, and the larger community" (Lin et al. 1979, p. 109). It is related but not identical to the concept of social networks. Social networks, as usually defined, describe the direct and indirect ties linking a group of individuals over certain definable criteria, such as kinship, friendship, and acquaintances. Social networks provide the structural framework within which support may or may not be accessible to an individual. Thus, social support extends beyond the structural characteristics of social networks and identifies the resources that are available to the individual in a crisis.

Research Tasks in the Linkage Between Social Support and Schizophrenia

To validate the relationships between social support and schizophrenia, several tasks are required. Presently, the development of these various tasks is uneven; in some areas, substantial progress has been made, and in others, not even reasonable discussions have surfaced. These tasks can be identified as: (1) the theoretical explanations as to *why* social support is expected to affect schizophrenia, (2) empirical measures of the concepts, (3) demonstrations of empirical relations among the variables and identification of the magnitudes of the relations, (4) specifications of the causal sequences of the relations, and (5) development of pragmatically useful social support inventories and analyses.

Empirical observations about effects of family life and support (Brown, Birley, and Wing 1972; Gould and Glick 1977), network size and density (Pattison et al. 1975; Tolsdorf 1976; Sokolovsky et al. 1978), and frequency and asymmetry of interactions (Cohen and Sokolovsky 1978) have suggested a relationship between social support and schizophrenia.[1] Yet, there is little understanding of why social support should affect schizophrenia. In an earlier article (Lin et al. 1979), we have hypothesized that social support either acts as a *preceding factor* reducing the likelihood of certain events occurring (e.g., divorce), or serves as a *buffer* against the exacerbation of response to life changes, by providing the information needed to reduce or eliminate drastic psychological or physical consequences of life changes (e.g., how to locate a marriage counselor or where to find a job). This hypothesis is consistent with the active-reactive, formative-mediating, process-triggering distinctions made in the schizophrenia literature. Each theoretical formulation deduces certain empirical hypotheses which can be verified. A study of a Chinese-American population (Lin et al. 1979) found a substantial and negative effect of social support on general psychiatric symptoms and a very weak mediating effect of social support between stressors, as measured by the Holmes and Rahe Social Readjustment Rating Scale (Holmes and Rahe 1967), and the symptoms. Similar findings appeared in our study of a community sample (Lin, Dean, and Ensel 1979; Dean, Lin, and Ensel, in press). Presently, it seems that social support has a substantial independent effect on illness, while it also serves as a buffer against potential effects of stressful events. Further research is needed to elaborate conceptual issues involved in the two explanatory formulations.

Until recently, there has been little work on the systematic development of social support scales. Most researchers used ad hoc items for their predictive validity relative to any illness measures used. Other studies have resorted to the use of surrogate indicators such as marital status and other sociodemographic variables (Myers, Lindenthal, and Pepper, 1975; Pearlin and Johnson 1977).

[1] We will use schizophrenia as a general and undifferentiated term, describing a variety of symptoms and manifestations of behaviors. We will postpone the tasks of linking specific social supports and different forms of schizophrenia to the time when more definitive definitions and measures of the latter become available (see some recent progress in Wing, Cooper, and Sartorius 1974; Spitzer, Endicott, and Robins 1975).

Few studies using the same social support indicators have been reported, and these were not designed for scale assessment or development (Berle et al. 1952; Holmes, Joffe, and Ketcham 1961; Moriwaki 1973). Measures of social networks have now been used, and scale development of other social support factors has emerged. Much more effort is needed to develop reliable and valid scales of social support, and to elaborate the relationships between social networks and social support.

The relationships between various social support measures and schizophrenia remain to be specified. There is no lack of demonstration of a significant relationship between a specific measure of social support and some measure of schizophrenia. However, in most cases, the empirical data either came from the schizophrenic population exclusively or a matched case-control design. Analysis of these data relied upon significance tests of pair-wise or cell-wise comparisons. Unfortunately, neither of these types of data allow a precise statement about the magnitude of the relationships.

Once the relationships have been uncovered and specified, there is the further problem of establishing causal orders among the variables. Descriptive and observational data (Garrison 1978) contribute to an understanding of the detailed dynamic processes involved. However, a rigorous test of the active-reactive explanation requires more precise and reliable information obtainable from controlled time-series data. Statistical techniques have not completely resolved the specification problems in time-series panel data. Nevertheless, it is quite clear that unless systematic longitudinal data are gathered, the issue of cause and effect will remain unclear.

Finally, if and when the relationships between social support scales and forms of schizophrenia are specified, it will become important to develop social support inventories. Health workers can use those inventories to identify inadequate areas of social support for an individual, thereby enabling health workers to construct the necessary support systems for the individual. The inventories and analyses will then bring the fruits of research on the stress-social, support-schizophrenia model to bear on the preventive and treatment services. The fact that we are still far from such a pragmatic state should not hinder us in exploring other tasks.

The next section will discuss some ongoing efforts to develop reliable and valid scales of social support. Since the validation of the scales was conducted in terms of the Center for Epidemiologic Studies Depression (CES-D) Scale, the social support scale validity for schizophrenia remains to be demonstrated. However, we feel the conceptualization and procedure used should be informative as to the task of developing reliable and valid social support scales for the etiological analysis of schizophrenia. These efforts are part of a research program designed to investigate the relationships of social support and stressors to psychiatric symptoms and physical illness. Thus, the results to be reported here are tentative and will be updated periodically in the next few years. Our work is guided by contributions made by other researchers, as well as conceptualizations of our own. Our intention was to examine a variety of existing and potential scales and subject them to rigorous testing.

Selection of Social Support Items

Basically, we included four groups of social support items: (1) the Medalie-Goldbourt family problem items, (2) the Lowenthal-Haven-Kaplan confidant items, (3) the neighborhood and community satisfaction items, and (4) some newly constructed instrumental-expressive support items. The first three groups of items were scales used or proposed by others; the last group of items was derived from our own conceptualization that social support should reflect the primary functional areas.

Medalie and Goldbourt (1976) regarded their scale as a measure of "family problems." Conversely, it is assumed to measure good family relationships, as well as love and support provided by the spouse. Positive scores were found to be associated with a significantly lower risk of developing angina pectoris among men, even in the presence of biological risk factors.

Lowenthal and Haven (1968) viewed the presence of a "confidant" as an indicator of the availability of an "intimate relationship." Studying an elderly population, they concluded that the presence of an intimate relationship reduced the risk of depression in the context of gradual role losses, as well as the traumas of retirement and widowhood. Subsequently, Moriwaki (1973) found a direct relationship between the number of confidants and psychological well-being in a commu-

nity population of retired persons. Kaplan's (1975) proposed scale items focus attention on other potentially significant attributes of confidant relationships.

The supportive environment for an individual in the neighborhood and the larger community is the third area examined. The structural effects on illness have long been observed and documented (Leighton 1963). Yet, most of the past efforts considered communities as units of analysis. When such structural effects were measured at the individual level, the items tended to be combined with other types of social support items to form an overall scale. In a recent study of Chinese-Americans in Washington, D.C. (Lin et al. 1979), satisfaction with neighborhood and community most effectively predicted the presence of *fewer* psychiatric symptoms. Thus, it seemed feasible to construct a scale of neighborhood and community satisfaction for the individual level of analysis.

Finally, implicit in most existing social support scales are both the expressive and instrumental dimensions. Conceptually, social support serves both functions. We define an instrumental relationship as one in which the relationship is used to achieve an end that is distinguishable from the relationship itself—for example, to seek a job, to look for a doctor, or to get financial help. An expressive relationship, on the other hand, serves both as the means and the end. It does not have any extrinsic purpose other than what it may mean to the individuals maintaining such a relationship (e.g., friendship). Much of the existing literature on social support mixes the two types of relationships. Yet, there is a need to distinguish the two functions, in case they show differential effects on measures of illness. Since there is a lack of empirical measures, we decided to explore items that might examine the two dimensions of social support. (See appendix for a list of survey questions used in our research.)

The study was conducted in the Albany-Schenectady, Troy area with a sample of adults, aged 20 and over. The 99 respondents were drawn from a modified area probability sample, in which two consecutive households came from each sampled block. Those interviewed were predominantly white (90 percent), and the majority were women (74 percent). Respondents were normally distributed across age categories, with a mean age of 42.

The majority of those interviewed were married (58 percent), 11 percent were either separated or divorced, 20 percent were widowed, and 10 percent had never been married. A large number of them (79 percent) had lived in their county of residence over 10 years, and over one-half (55 percent) had lived at their present residence for more than 5 years.

One-third (33 percent) of the respondents had not completed high school and slightly less than that (31 percent) had gone beyond high school. Forty-five percent were employed, 8 percent were unemployed, 12 percent were retired, and one-third (33 percent) considered themselves to be primarily keeping house. Occupational positions of those employed ranged from professional/technical to service workers with a median prestige score of 36.5. Income distribution was fairly even with a median family income between $10,000 and $14,999.

Development of Scales

Medalie-Goldbourt Items. These items, which were taken from Medalie and Goldbourt's (1976) study of angina pectoris among men, focused on the following family problems: (1) family problems in the past, (2) family problems at present, (3) effects of spouse/children not listening or opposing, and (4) whether spouse shows his/her love. While these same items were used, the original response categories were modified. In the original Medalie and Goldbourt study, each item had two response categories: (0) for no serious problems or no problems at all, and (1) for very serious or serious problems. In our study, we constructed four response categories for each item. The first two items consisted of: (1) no problems at all, (2) no serious problems, (3) yes, serious problems, and (4) yes, very serious problems. Responses for the third item were: (1) never happens, (2) does not affect me especially, (3) upsets me quite a bit, and (4) upsets me very much. The response categories for the fourth item were: (1) loves me and shows it often, (2) loves me and shows it occasionally, (3) loves me but never shows it, and (4) does not love me. The rationale for having more response categories was simply to increase the sensitivity of the measure by providing more response categories. A total scale score was constructed for each respondent, by summing the responses over the four items.

As can be seen in table 1, all items correlated highly (between .590 and .765) with the total score. All inter-item correlations were in the positive direction and all except two of the correlation coefficients were significant at the .05 level. The fourth item—spouse not showing love—seems to have a slightly weaker relationship with the total score, as compared with other items. Nevertheless, as a whole, there seems to be internal consistency, as reflected in the convergent validity of the scale items. However, as most of these items concerned married persons, the scale's application to a general population was limited. In our study, only 57 of the 99 respondents qualified to respond to these items.

Lowenthal-Haven-Kaplan Items. This is a battery of 11 items, 3 of which were taken from the Lowenthal-Haven (1968) study dealing with the availability of a confidant. The scale included: (1) "Is there someone you confided in or talked to about yourself or your problems?" (2) Name and relationship of this person. (3) "In the past year, has there been any change in your relationship with this person?" The other eight items were taken from Kaplan (1975) dealing with various aspects and relationships with confidants—size, reachability, density, content, directedness, durability, frequency, and intensity. In the study, each respondent was asked to identify as many confidants as he or she wished—i.e., "During the past 12 months, have you had anyone that you could trust and talk to?" and "How many people have you been able to trust and talk to?" Those who identified one or more confidants were asked to write down the names of up to three persons to whom they were most likely to talk. The interviewer did not ask to see names. Then, a series of questions were asked relative to each confidant listed. Thus, the data yielded three sets of responses to the items relating to the three persons.

To date, our analyses have concentrated on responses regarding the first confidant named. We will present the internal consistency among the seven Kaplan-type items. Responses for these seven items are as follows: (1) Durability (number of years known). (2) Frequency of contact (most or all of the time, occasionally or a moderate amount of time, some or a little of the time, rarely, never). (3) Density, "How often have you talked with this person when you had a problem?" (most or all of the time, occasionally or a moderate amount of time, some or a little of the time, rarely, never). (4) Directedness, "How often has this person talked over his/her problem with you?" (most or all of the time, occasionally or a moderate amount of time, some or a little of the time, rarely, never). (5) Reachability, "How easy has it been to get hold of this person?" (very easy, easy, somewhat easy, not very easy, not easy at all). (6) Content, "How freely have you been able to talk about anything you wished with this person?" (very freely, freely, somewhat freely, not very freely, not freely at all). (7) Importance, "How important would you say this person is to you?" (very important, important, somewhat important, not very important, not important at all).

All items, except durability, had five ordinal response categories. Before a summated scale could be constructed, we grouped the durability item responses—number of years—into four categories, each of which covered 25 percent of the responses (2 to 15 years, 16 to 30 years, 31 to 45 years, and 46 to 60 years). For larger samples, the responses should be grouped into five categories so that the number of response categories would be completely comparable to those of the other confidant items. Again, a total scale score was computed for

Table 1. Inter-item and item-total correlations of the Medalie-Goldbourt items

Response categories (n = 57)	Items 1	2	3	4	Total scale	$\bar{X}$	SD
Family problem—present	1.000	.703	.259	.126[1]	.6904	1.28	.49
Family problem—past		1.000	.260	.209[1]	.7335	1.43	.59
Spouse/kids not listening			1.000	.373	.7647	2.12	1.26
Spouse not showing love				1.000	.5901	6.09	1.73

[1] Not significant at the .05 level.

each respondent by summing the scores over the seven items.

Table 2 shows that item-total correlations ranged from .279 to .822. Among the inter-item correlations, 12 of the 21 coefficients were not significant. Obviously, these items do not constitute a unidimensional scale. The relationships between these items and the dependent variables were examined individually. It was hoped that such analysis would identify specific confidant characteristics which contribute to the prediction of the dependent variables.

Neighborhood and Community Satisfaction Items. Two items on satisfaction with neighborhood and community were incorporated into the study: (1) "On the whole, how satisfied are you with this neighborhood?" (very satisfied, somewhat satisfied, somewhat dissatisfied, and very dissatisfied). (2) "On the whole, how satisfied are you with living here in this community?" (very satisfied, somewhat satisfied, somewhat dissatisfied, and very dissatisfied). The means and standard deviations of the two items were 1.59 and 1.57, and .89 and .90, respectively. The responses tended to be concentrated in the positive categories, as expected. We decided to use the two items (the zero-order correlation between them being .67) to construct a summated scale of community-neighborhood satisfaction.

Instrumental-Expressive Support Items. Incorporated in the study was a set of 26 items focusing on the activities and aspects which might provide (or jeopardize) either instrumental or expressive support to the respondent. Since we felt there was a need to construct new scales, we composed a number of items, based on their face validity, which described respondents' instrumental and expressive support systems. One objective in constructing these items was to make them capable of describing the various modes of support despite differences that might be attributable to sociodemographic characteristics— e.g., marital and, employment status. In other words, we wanted to make the items applicable across demographic subsets, and status and role characteristics of respondents. Following a general introduction ("Would you tell me how often you have been bothered by these problems over the past 12 months?"), each respondent was asked the 26 items. The response categories were: most or all of the time, occasionally or a moderate amount of time, some or a little of the time, rarely, and never. The responses were subjected to a factor analysis—orthogonal solution, varimax rotation, and a limiting eigenvalue of one or higher—and resulted in a five-factor solution. The five factors identified were: (1) monetary problems, (2) lack of companionship, (3) demands, (4) communication problems, and (5) no children. The items highly loaded on each of the five factors are presented in table 3 with the last factor having only a single highly loaded item.

We could have constructed factor scores by using a regression formulation with beta weights assigned to each contributing item. This approach would have made complete use of the information contained in the data matrix. However, it also assumes that the items in the matrix have substantive reasons to be self-contained. There was no reason to assume that the items we constructed were self-containing. Thus, we decided to identify the items most representative of each factor and to construct a summated

Table 2. Inter-item and item-total correlations among the Kaplan items

Responses regarding first confidant ($n = 84$)	Items							Total scale	$\bar{X}$	SD
	1	2	3	4	5	6	7			
Durability	1.000	−.124	−.156	.069	−.022	.156	.139	.279	2.97	1.01
Frequency		1.000	.522	.338	.319	.244	.052	.620	1.44	.86
Density			1.000	.750	.164	.088	.094	.753	1.83	1.14
Directedness				1.000	.246	.146	.180	.822	1.92	1.25
Reachability					1.000	.200	.033	.457	1.27	.70
Content						1.000	.212	.411	1.23	.50
Importance							1.000	.353	1.21	.56
Total score								1.000	11.88	3.42

Table 3. Item-total correlations of Instrumental-Expressive support scales

Items	Loading on instrumental/ expressive factors[1]
Monetary problems	**Factor I**
Problems managing money	.809
Deciding how to spend money	.790
Not enough money to do things	.875
Not enough money to get by	.828
Lack of companionship	**Factor II**
No close companion	.720
Not happy with marital status	.834
Not enough close friends	.664
Problems with spouse/ex-spouse	.811
No one to show love/affection	.823
Too dependent on others	.543
Demands	**Factor III**
Too many responsibilities	.833
No one to depend on	.782
Too many demands	.793
Unsatisfactory sex life	.722
Communication problems	**Factor IV**
Problems communicating	.627
Problems with children	.805
Unsatisfying job	.753
No one to understand problems	.738
Conflicts with those who are close	.781
Not having children	**Factor V**
	.794

[1] All coefficients were significant at the .001 level

indicator from these items for each factor (see table 3). These computations resulted in five constructed variables identifying the instrumental and expressive support factors. It seemed clear that monetary problems and demands were instrumental dimensions, whereas lack of companionship, communication problems, and problems with no children were expressive dimensions. The decision was to use these five constructed instrumental-expressive support scales either separately or in the functional groups (instrumental versus expressive).

Scale Validation Procedures

The Dependent and Control Variables. The validation process began with the identification of the dependent variable, then proceeded to an examination of each set of independent variables with the dependent variable, and, finally, concluded with a tentative construction of a model, in which all the independent variables were examined simultaneously for the dependent variable. Also incorporated were several sociodemographic variables and stressful life events, as other independent variables in validating the social support scales.

Selection of the Dependent Variables.[2] Two instruments were used to measure psychiatric symp-

[2] Our study incorporated a number of other illness measures as potential dependent variables.

History of illness was monitored with a checklist of 55 diseases and conditions covering the major organ systems of the body. Residual categories were used to tap disorders not included on the list. Scores for past history ranged from 0 to 13, with a mean score of 1.32. Thirty-seven percent of the respondents acknowledged no history of illness, 30 percent stated they had had one illness, and 32 percent two or more illnesses.

A substantially modified version of the Cornell Medical Index (Brodman, et al. 1958), developed through consultation with medical specialists at Albany Medical College, was used to measure physical symptomatology. This index consisted of 81 symptoms (73 for women; 63 for men) which cover the body's major organ systems. Total scores for the last month ranged from 0 to 37. Thirty-six percent of the respondents experienced two or fewer symptoms, 35 percent between three and seven, and 29 percent had nine or more of the symptoms.

Help-seeking behavior was assessed with a series of questions asking respondents how often they had sought treatment for illness from health professionals and health facilities in the last 12 months.

Validation of social support scales relative to these illness measures is being carried out.

tomatology: The Center for Epidemiologic Studies Depression (CES-D) Scale (Markush and Favero 1974; Radloff 1977), and the Gurin Scale (Gurin, Veroff, and Feld 1960), a general psychiatric symptom inventory.

The CES-D Scale consists of 20 items that were answered on a 4-point scale—none of the time to all of the time—with a possible range from 0 to 60; higher scores indicated depressed mood.

The Gurin Scale is a 20-item index with a 4-point response (often, sometimes, hardly ever, never) and a possible score range of from 20 (maximum severity) to 80 (complete absence of symptoms).

The zero-order correlations between the independent variables and these two dependent variables were consistent and in the same directions. For parsimony, subsequent analyses focused on the depression scale as the dependent (criterion) variable.

The Sociodemographic Variables. Selected sociodemographic variables included sex, age, marital status (married versus not married), occupational prestige, and family income. Only marital status and income showed significant relationships with the depression scale. Thus, it was decided to further explore marital status and income along with other independent variables in the modeling process.

Stressful Life Events. The other set of independent variables crucial in our research concerned stressful life events. Much analytical work has been done on stressful life events, with more recent discussions focusing on the issue of negative (undesirable) events versus total events, number of events to be studied, and subjective versus objective evaluations. In the study, our strategy was as follows: (1) include the original Holmes and Rahe (1967) items (excluding Christmas), so that we could replicate the original findings; (2) add items recently proposed by Rahe (1975), along with items used by Myers (1972); and (3) expand certain items to reflect positive or negative effects. Further, stressful life events were examined for each respondent for two time periods (last 6 months and the previous 6 months) to obtain the temporal sequence of events. Finally, these questions were asked relative to the respondent and their significant others.

The data were simply summed for each of the four variables: (1) total unweighted score of stressful life events (SLE) which occurred to the respondent in the last 6 months (SLE-S6), (2) in the previous 6 months (SLE-S12), (3) total unweighted score of stressful life events which occurred to the respondent's significant others in the last 6 months (SLE-O6), and (4) in the previous 6 months (SLE-O12). Past research has shown that weighted and unweighted total scores do not show substantial difference in their relations to the illness symptoms, and that negative-event total scores, and all-event total scores have about the same amount of effect on illness symptoms (that is, the zero-order correlation remains about .19 to .23). Consequently, we did not construct weighted or negative item scores, focusing on only nonweighted sums. Eventually, such scales will be constructed and studied in detail.

We also did not attempt to measure subjective definitions of desirability or magnitudes of events in the pretest. If the ultimate interest is to gauge the causal relationships between stressors and illness, it would be more efficient, as pointed out by Dohrenwend et al. (1978), to construct scales that reflect environmental input rather than individualized resultant evaluations. In the future, however, we intend to incorporate subjective evaluations of respondent's events.

Initial Validation

The zero-order correlations between selected independent and dependent variables are presented in table 4.

Stressful Life Events. Four scales of stressful life events (SLE) were analyzed: (1) SLE to self, last 6 months, (2) SLE to self, 6–12 months ago, (3) SLE to significant others, last 6 months, and (4) SLE to significant others, 6–12 months ago. Only the first two scales were significantly related to the depression scale. Since these two scales correlated significantly (.36) and the first scale yielded a correlation slightly higher than the second scale in its relationship to the dependent variable, we decided to focus on the first scale (SLE to self, last 6 months) as the indicator of stressful life events in further modeling. This decision is consistent with previous studies in which life changes to the respondent in the last 6 months were used as the measure of stressors.

Social Support Scales. A large number of social support scales and items were examined in con-

Table 4. Zero-order correlations between selected independent variables and the dependent variable (CES-D Scale)

Independent variables	Coefficient (*n*)	*p*
Sociodemographic Variables		
Sex	.08 (99)	NS
Age	−.02 (98)	NS
* Marital status (not married versus married)	−.21 (98)	.020
Occupational prestige	−.17 (76)	NS
* Income (X_{10})	−.45 (78)	.001
Stressful Life Events		
* To self, last 6 months (X_9)	.31 (99)	.001
To self, 6–12 months ago	.20 (99)	.020
To significant others, last 6 months	.02 (99)	NS
To significant others, 6–12 months ago	−.02 (99)	NS
Social Support Scales		
The Medalie-Goldbourt Scale	.42 (57)	.001
The instrumental-expressive support scales		
* (a) Community and neighborhood satisfaction (X_5 and X_6)	−.38 (97)	.001
* (b) Monetary problems (X_1)	.46 (97)	.001
* (c) Demands (X_2)	.43 (90)	.001
* (d) Lack of companions (X_3)	.32 (68)	.004
* (e) Communication problems (X_4)	.37 (69)	.001
(f) No children	.03 (64)	NS
Confidant characteristics		
Durability of confidant (X_7)	−.11 (84)	NS
* Directedness with confidant (X_8)	−.22 (84)	.020

* Scales and items retained for model validation.

junction with the depression scale. The Medalie-Goldbourt Scale, identifying family problems with a focus on spouse and children, showed a substantial relationship with the depression scale (.42). Among the instrumental and expressive scales—monetary problems, demands, community and neighborhood satisfaction, communication problems, and lack of companionship—showed significant relationships with the depression scale. Two of the seven confidant items showed significant relationships with the depression scale: the durability of the confidant (number of years knowing the confidant), and directedness with the confidant ("How often has this person talked over his problems with you?"). None of the other Lowenthal-Haven-Kaplan items, including number of confidants and former confidants, showed significant correlations with the depression scale.

These results are encouraging as reflected in the effectiveness of many of the instrumental-expressive support scales. The Medalie-Goldbourt Scale, in fact, was highly correlated with some of the instrumental-expressive support scales—its correlations with monetary problems, demands, communication problems, and lack of companionships were all greater than .55. Apparently, both the instrumental-expressive support items and the Medalie-Goldbourt Scale examined a similar dimension. However, the instrumental-expressive support scales seemed to: (1) tap specific areas of support (or the lack of it) rather than general problems, and (2) apply to most respondents rather than just the married respondents. Thus, the decision was to focus on the instrumental-expressive support scales in the modeling process.

Validation in the Modeling Process

After making the decisions about the specific independent and dependent variables to be included in the modeling process, we considered all the relationships between the selected independent variables and the dependent variable—the depression scale—simultaneously. These variables are indicated by asterisks in table 4.

The modeling procedure involved the construction of a regression model for the dependent variable, with the selected independent variables. The models were refined as we eliminated independent variables that did not exceed a regression coefficient of

Table 5. Final regression model

Independent variables	Dependent variable (depression)		
	Metric coefficients	SE	Standardized coefficients
Family income (X_{10})[1]	−.915	.240	−.366
Stressful life events (X_9)	.519	.289	.175
Social support			
Monetary problems (X_1)	.252	.217	.138
Demands (X_2)	.487	.240	.235
Community and neighborhood satisfaction (X_5 and X_6)	−.961	.526	−.180
Constant	42.32		
Error of estimate	6.66		
R^2			.450

[1]The variable legends refer to those in table 4.

.10. To minimize problems of multicolinearity, some independent variables (e.g., occupational status) were eliminated because of their high correlation with another independent variable (e.g., family income). The final regression model is presented in table 5.

The model in table 5 suggests four aspects of social support, along with family income and stressful life events, as the significant predictors of depression. Family income is the most significant contributor, accounting for more than a quarter of the explained variance (.3 of .46) in depression. The four social support scales accounted for a combined 66 percent of the explained variance, independent of family income. Stressful life events contributed an additional 3 percent to the explained variance.

To assess the direct and indirect effects of the various independent variables and the effects of social support, independent of those from the sociodemographic variables and stressful life events, we constructed the standardized reduced form equations (see table 6*a*) and decomposed for the depression scale the direct and indirect effects from the various independent variables (see table 6*b*). We assumed that both the sociodemographic variables and the stressful life events *causally* preceded the social support items. Thus, the estimates of the effects of social support on depression are conservative ones.

Clearly, family income had a primarily direct effect on depression, while stressful life events affected depression both directly and indirectly through social support (or the lack of it). When the indirect effects of family income and stressful life events through (the lack of) social support were

Table 6*a*. Coefficients of standardized and reduced form structural equations for depression (CES-D)

Predetermined variables	Structural equation		
	1	2	3
Family income	−.449	−.453	−.366
Stressful life events		.313	.175
Social support			
Monetary problems			.138
Demands			.235
Community and neighborhood satisfaction			−.180

Table 6*b*. Decomposition of effects for depression (CES-D)

Predetermined variables	Total effects	Indirect SLE[1]	Effects via social support	Direct effects
Family income	−.449	.004	−.087	−.366
Stressful life events	.313	—	.138	.175
Social support				
Monetary problems	.138	—	—	.138
Demands	.235	—	—	.235
Community and neighborhood satisfaction	−.180	—	—	−.180

[1]SLE = Stressful life events.

excluded, the indirect and direct effects of social support remained substantial. If we ignored the signs of the coefficients, the total independent effect of social support on depression would be .328.

Since the two instrumental support scales (monetary problems and demands) were strongly correlated (r =. 583), the colinearity had reduced the significance of their independent contributions to the dependent variable (see the relatively high standard errors in table 5). We then reconstructed the model, using an analysis of latent covariance structures. This approach allows the incorporation of multiple indicators of each variable. Because it estimates both measurement errors and equation (relational) errors, it probably constitutes the most powerful and precise statistical tool for social scientists today. In this model, monetary problems and demands were considered to be indicators of the unobserved variable—instrumental support. Also, in order to confirm the weak contributions of the expressive support scales (lack of companions and communication problems), and directedness with a confidant, we allowed them to reappear in the model (where expressive support was indicated by the lack of companions and communication problems). The result of this analysis (using a maximum likelihood solution) is presented in figure 1.

As can be seen, the structural equation model essentially confirms our regression results: the significant independent variables being instrumental support, community and neighborhood satisfaction, and income. The contribution of instrumental support was increased because of the grouping of monetary problems and demands as its indicators. Stressful life events were not significant in their effects on depression. This model is remarkably consistent with the raw data, as reflected in the chi-square statistic.

The final model suggests that both objective support (income) and social support (mostly instrumental, but also satisfaction with the community and neighborhood) have a much greater effect on depression than stressful life events.

Discussion

The data, while preliminary, suggest that our efforts at constructing social support scales are yielding promising results. Social support measures clearly exert strong effects on depression and other psychiatric symptoms (we have obtained similar results for the Gurin Scale as the dependent variable). Nevertheless, we must offer the following cautions as we proceed to improve and use the social support measures. These cautions apply to the development of any precise, reliable, and valid scales.

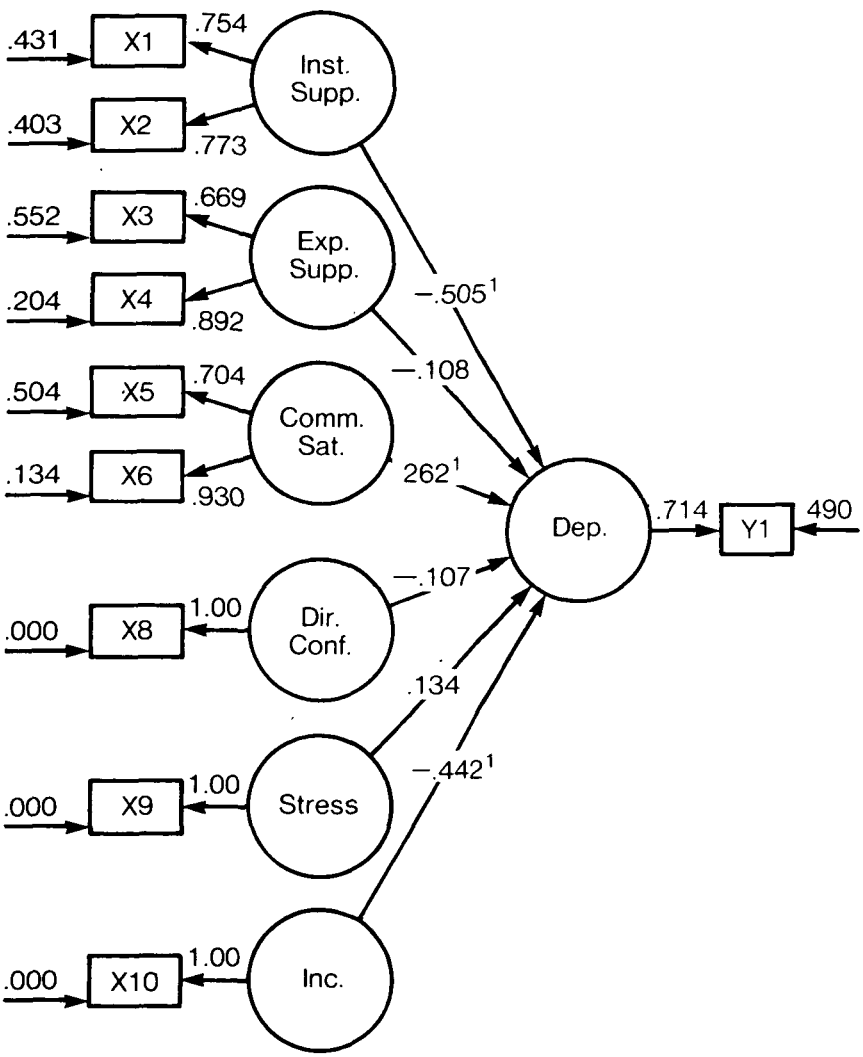
First, *scales that do not predict or explain one criterion variable may predict or explain other criterion variables.* In our study, the Lowenthal-Haven-Kaplan network (confidant) items did not adequately predict depression either as a group or individually. Obviously, further conceptualization is called for and new items must be explored. Because these items are derived from sound conceptualization, it would be premature to discard them from further epidemiological analyses. It may well be that they predict and explain different types of outcomes of schizophrenia.

Similarly, our study included a large number of items on the respondents' involvement in primary and secondary group activities and their relations to these groups in times of need (which persons, groups, clubs, or organizations the respondents would go to in time of need, such as financial matters, illness, work problems, and transportation.) Preliminary analysis did not uncover any significant contribution from these items to the dependent variables. Again, we are

refining and retaining some of these items in the research program for further examination.

Likewise, the diminished effects of expressive support scales in the final analysis on depression do not eliminate the need to verify their potential contributions to the etiology of schizophrenia. It is hypothesized that schizophrenia may be more affected by failure of expressive relations than other types of psychiatric disorders. The expressive support scales may, therefore, prove to be important social support indicators.

Figure 1. The structural equation model of depression



[1]Significant, .05 level.

Note—Chi square with 21 *df* = 13.0568
Probability level = .9068.
For notation on ×1 to ×10, see Table 4. Inst. Supp. = Instrumental Support; Comm. Sat. = Community Satisfaction; Dir. Conf. = Directedness With Confidant; Stress = Stressful Life Events; Inc. = Income; Dep. = Depression; Y1 = CES-D Scale.

Secondly, *the scales one constructs inevitably are restricted to the items selected for investigation.* Items which form clusters and thus scales are neither the only nor necessarily the best items possible. Other items, which do not fall into the clusters, may either, in fact, be substantively "meaningless," or simply reflect the investigator's selection of items in the first place. There is no reason to assume that items which do not fit in any scales are automatically bad items. It may merely reflect the fact that not enough items examining the same substantive dimensions were included for scaling. Thus, it is essential that the investigator examine further these "isolated" items and be aware of their nonexclusive nature.

For example, of the 26 instrumental-expressive support items, only 20 items loaded highly on the five dimensions. The other six isolated items were either bad items or representative of dimensions not tapped well by other items. If the latter were true, then these items might be unreliable (in the convergent sense), but nevertheless valid indicators of some unknown dimensions of expressive-instrumental support. To examine this possibility, we looked at the zero-order correlations between these items and depression, and found that two of the items were significantly correlated with depression. These two items were then entered into the regression equation along with the other independent variables as

shown in table 5. The addition of these two items increased the explained variation of depression from 45 percent (see table 5) to 51 percent, as shown in table 7. Since these estimates do show substantial standard errors, they are rather unreliable. However, the analysis warrants the further exploration of other instrumental-expressive support dimensions as suggested by these items.

We also recognize that further effort should be made to tap more objective measures of social support. The failure to relate the confidant items to depression does not necessarily mean that an individual's network is not an important factor in predicting schizophrenia. We believe that further explorations of social network and resource characteristics will be fruitful. For example, one theory (Lin, Ensel, and Vaughn 1979; Lin, Vaughn, and Ensel 1979) suggests that an individual with weak rather than strong ties is better shielded from the stressful effects associated with instrumental needs (e.g., looking for or finding a job, having financial security, taking care of acute illness). If certain types or outcomes of schizophrenia hinge on the meeting of such instrumental needs, then the extended network concepts (weak ties, ties to people dissimilar to oneself) rather than the intimate network concepts (density, strong ties) should be more useful. It is also essential to identify the resources embedded in the various parts of an individual's network. For example, studies of job-seeking activities found that it is the higher-status ties which may enable one to secure a prestigious job. Thus, resource characteristics (status, prestige, power, wealth, etc.) of the ties in the network should receive research attention.

Third, *scaling should not be restricted to certain analytic strategies.* We have reported results from analyses based on linear relations. This does not mean that one should not examine curvilinear relations. We have compiled extensive cross-tabulations to explore these relations, but our efforts have not yet generated systematic findings. We will continue to explore the complex alternative relations, applying different transformations. It is important not to be bound by the readily available patterns of responses forced by the items and response categories we constructed.

Finally, significant statistical relations do not automatically indicate causal relations. While family background (such as income) seems to precede illness temporally and causally, we are unsure about the causally preceding nature of stressful life events and so-

Table 7. Regression analysis with two additional social support items

Independent variables	Dependent variable (depression)		
	Metric coefficient	SE	Standardized coefficient
Family income	−.923	.241	−.369
Stressful life events	.544	.282	.183
Social support			
Monetary problems	.107	.219	.059
Demands	.358	.237	.173
Community and neighborhood satisfaction	−.976	.512	−.183
"Not enough responsibility"	1.875	.858	.213
"Too controlled by others"	.717	.789	.102
Constant	49.36		
Error of estimate	6.41		
R^2			.506

cial support measures. In our study, the respondent was asked to recall the life events and social support activities for a period of time before the current episode of illness. Such an approach—inevitable in any cross-sectional investigation—is subject to measurement errors related to actual errors of recall and distorted current-state perceptions and interpretations of past events and activities. We are especially concerned about the causal relationship between social support measures and illness. It is conceptually, as well as empirically, viable to argue for their mutual influences. The near-ideal test of temporal causality requires longitudinal data. It is hoped that the social support measures presented here will be examined with longitudinal data to verify their causal effects on illness measures.

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Appendix

Survey Questions

Instrumental-Expressive

The following is a list of problems that people sometimes have.

Would you tell me how often you have been bothered by these problems over the past 6 months.

1. Most or all of the time.
2. Occasionally or a moderate amount of time.
3. Some or a little of the time.
4. Rarely or none of the time.
8. DK
9. NA

(1) Having problems managing money
(2) Not having a close companion
(3) Having too many responsibilities
(4) Not having people you can depend on
(5) Too many demands on your time
(6) Not having a satisfactory sex life
(7) Having problems communicating with others
(8) Not seeing enough of people you feel close to
(9) Deciding on how to spend money
(10) Not having enough responsibilities
(11) Having too little leisure time
(12) Not having enough money to do the things you want
(13) Problems with children
(14) Not having a satisfying job
(15) Feeling too controlled by others
(16) Not having enough money to get by on
(17) Dissatisfied with your marital status (single, married)
(18) Not having enough close friends
(19) Problems with spouse/ex-spouse
(20) Not having someone who shows you love and affection
(21) Feeling too dependent on others
(22) Not having children
(23) Problems with in-laws/relatives
(24) Not having someone who understands your problems
(25) Having too much time on your hands
(26) Conflicts with people who are close to you

Community-Neighborhood Satisfaction

(1) In general, how satisfied are you with this neighborhood?

a. Very satisfied
b. Somewhat satisfied
c. Somewhat dissatisfied
d. Very dissatisfied
e. DK
f. NA

(2) On the whole, how satisfied are you with living here in this community?
a. Very satisfied
b. Somewhat satisfied
c. Somewhat dissatisfied
d. Very dissatisfied
e. DK
f. NA

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