Social Network Typologies and Mental Health Among Older Adults

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In this study, we test the robustness of previous social network research and extend this work to determine if support quality is one mechanism by which network types predict mental health. Participants included 1,669 adults aged 60 or older from the Americans' Changing Lives study. Using cluster analysis, we found diverse, family, and friends network types, which is consistent with the work by Litwin from 2001. However, we found two types of restricted networks, rather than just one: a nonfamily network and a nonfriends network. Depressive symptomatology was highest for individuals in the nonfriends network and lowest for individuals in the diverse network. Positive support quality partially mediated the association between network type and depressive symptomatology. Results suggest that the absence of family in the context of friends is less detrimental than the absence of friends in the context of family, and that support quality is one mechanism through which network types affect mental health.

RESEARCH indicates that social relations have a powerful impact on mental health (Antonucci, 2001; Krause, 2001; Russell & Cutrona, 1991), but most of this research has examined the effects of isolated aspects of social relations, such as total network size (e.g., Bukov, Maas, & Lampert, 2002; Krause, Liang, & Keith, 1990; Larson, Mannell, & Zuzanek, 1986; Sugisawa, Shibata, Hougham, Sugihara, & Liang, 2002). Although this approach is valuable and informative, there are both theoretical and empirical reasons to suspect that "adding up" individual aspects of networks (e.g., network size) does not equate to the effect of being embedded in a network with a particular *array* of attributes (e.g., small network size or frequent contact with children; see Antonucci & Akiyama, 1987; Bosworth & Schaie, 1997; Magai, Consedine, King, & Gillespie, 2003). Instead, it may be more informative to examine *types* of social networks and their mental health implications, especially among older adults for whom social relations may be particularly heterotypic (Bosworth & Schaie; Magai et al.). According to Adams and Blieszner (1995), there is likely to be considerable variation in patterns of social relations and their adaptiveness for older adults, and it may be best to consider this adaptiveness in terms of network typologies.

In spite of the theoretical evidence to support the existence and import of network types, to our knowledge very little research has examined the influence of network types on well-being. Those few studies vary widely in their definitions of social network and methods of network analysis (e.g., Litwin, 2001; Takahashi, Tamura, & Tokoro, 1997; Wenger, 1997), making it difficult for us to draw firm conclusions about network types and their mental health implications. Furthermore, almost all existing network typology studies have been conducted in Europe and Israel. Because social networks are likely shaped by societal structures and cultures, comparative cross-national studies are essential for the generalization of research findings beyond individual societies (Fischer & Shavit, 1995). For instance, studies carried out in Europe demonstrate that network types have practical implications for health assessment, prediction, and prevention (Wenger). An examination of whether similar network types exist among elderly people living in the United States and whether these network types are equally predictive of well-being will contribute to our knowledge of the generalizability of these findings by extending analyses to another national context. Finally, no known network typology studies to date have empirically examined possible mechanisms by which these network types may affect mental health. In the current study, we attempt to address these gaps in the literature first by replicating a network typology study conducted by Litwin. Because of a lack of consistency across studies in terms of available measures and analytical approaches, replications in which similar variables and methods are used constitute an important first step to establishing whether particular network types and their mental health implications are robust across cultures. Second, given that the quality of social relations has generally been found to have a greater impact on well-being than has structural characteristics of social networks (Antonucci, 2001), we extend this replication by examining one possible mechanism by which network types may influence mental health: namely, perceived quality of relations.

Theoretical Background

In the present study, we use the convoy model (Kahn & Antonucci, 1980) as a general framework for understanding why individuals might belong to different social network types. According to the convoy model, individuals are surrounded by a network of people. The composition and quality of the network is shaped over time by factors that are personal (age, gender, and personality) and situational (role expectations, resources, and demands; see Antonucci, 2001). The "optimal" level of social embeddedness clearly varies by individual, especially among a heterotypic elderly population (Adams & Blieszner, 1995). For example, Krause and colleagues (1990) found that extroverted older adults tend to make more social contacts (especially friendships) than do introverted older adults. Thus, although older individuals have about half as many social relationships as do younger individuals, older individuals with very restricted networks may have always

preferred such restricted networks and may not have experienced large reductions in network size over time. In terms of gender, women report providing more support, having more frequent contact with network members, being more satisfied with their friends, and having larger and more multifaceted social networks than do men (Antonucci, 1985, 1990).

According to the convoy model of social relations (Antonucci, 2001), role expectations are situational factors that influence the composition of and support from an individual's network. Some researchers believe that it is multiple roles (e.g., worker, spouse, churchgoer, friend, club member, and neighbor) that promote greater social connectedness and integration (Moen, 2001), which, in turn, can improve psychological health directly (e.g., by reducing isolation) or more indirectly (e.g., by providing social support). This role enhancement perspective of role theory is consistent with the expectation that an individual embedded in a diverse network would have better mental health outcomes than would an individual in a more restricted network.

Similar to the convoy model, Weiss' (1974) theory of the functional specificity of relationships posits that different relationships perform various functions for individuals. These functions include attachment (normally provided by spouses and very close family or friends), social integration (provided by social activity groups), reliable alliance (provided by kin), guidance, reassurance of worth (e.g., from work colleagues), and opportunity for nurturance (e.g., to children). Although the salience of these provisions may vary both interindividually and intraindividually, all are essential for adequate personal adjustment. Thus, one might expect an individual in a network in which all of these provisions are met (e.g., a diverse network with support from a variety of sources) to have better mental health outcomes than an individual in a more restricted network. In sum, each individual has a social convoy shaped by personal and situational factors, and empirical evidence suggests that individuals' social convoys can be grouped into certain types of social networks that have implications for well-being.

Empirical Evidence for Network Typologies and Their Implications for Well-being

In addition to theoretical support, there is also empirical evidence for the existence of certain network types and their implications for mental health. For instance, Wenger (1997) created a social network typology through a longitudinal, qualitative analysis of older adults and developed five support network "types," which have been replicated in several European countries (Wenger, 1996). Wenger (1997) argued that individuals in the "locally integrated" support network, characterized by informal help to and from local family, friends, and neighbors and involvement in community groups, are the least at risk for mental health problems such as loneliness and depression. In contrast, elderly individuals in the "private restricted" support network, characterized by an absence of local kin and no local source of informal support, are most at risk.

Other network typology researchers have employed cluster analysis as a means of determining network types. Cluster analysis is a promising statistical strategy for examining multiple combinations of social relationships (Litwin, 1997). In his examination of a large sample of community-dwelling older Jewish persons (more than 60 years of age) residing in Israel,

Litwin (2001) used the following variables to determine types of social networks: current marital status, number of proximate children, and frequency of contact with children, contact with friends, contact with neighbors, attendance at a synagogue, and attendance at a social club. Litwin found a typology of five networks: (a) diverse, (b) friends, (c) neighbors, (d) family, and (e) restricted. He found that individuals in the restricted and family networks had the lowest average morale, whereas those in the diverse and friends networks had the highest morale. These findings are consistent with theoretical speculations that having a variety of people in one's network is better for psychological health than is having a very restricted network, and with previous research indicating that interactions with friends may be more self-esteem enhancing than interactions with kin (Adams & Blieszner, 1995). Thus, it appears that there are several relatively robust networks across studies (i.e., diverse, restricted, friend or community focused, family focused), and that these networks have implications for well-being.

Quality of Relations as a Mechanism

This question remains: How does belonging to certain types of social networks influence well-being? In the present study, we extend our replication of the link between network type and well-being to examine one possible mechanism through which such network types may have their effect: namely, perceived quality of relations. There exists both theoretical and empirical evidence to substantiate the claim that perceived quality of relations mediates the association between network type and well-being. From the role context perspective of role theory, it is hypothesized that only those roles that provide social support (rather than the total number of roles) are important facilitators of health. This is consistent with the idea that quality of relationships may be driving the effect of social networks on mental health. Furthermore, there is empirical evidence suggesting that support quality varies by network type. In their study of Israeli adults aged 75 and older, Litwin and Landau (2000) conducted a cluster analysis using social variables and uncovered four network types: (a) kin, (b) family intensive, (c) friend focused, and (d) diffuse ties. They found that the family intensive network type was the least supportive, whereas the diffuse ties network type, characterized by a fairly large network consisting of a variety of potential sources of support, was the most supportive. These differences in supportiveness by network type imply that supportiveness or support quality may be one reason for the mental health benefits of belonging to particular social network types. Finally, the quality of social relations has generally been found to have a greater impact on well-being than structural characteristics of social networks (Antonucci, 2001), offering further evidence for the importance of relationship quality in the association between network type and mental health.

Research Questions and Hypotheses

In the present study, we were first interested in determining if we would find network typologies similar to those of Litwin (2001) by using similar variables in a representative sample of American older adults. Because of the possibility of cultural differences between Israeli and American social networks (e.g., Antonucci, 1990; Fischer & Shavit, 1995), we did not expect to find an identical set of network types. However, given the

robustness of certain network types in the literature (e.g., Litwin; Litwin & Landau, 2000; Wenger, 1997), we hypothesized that we would find a diverse network, a family network, a friends network, and a restricted network.

If a fairly similar set of network typologies were identified, we further wanted to establish if they influenced mental health in similar ways. Because morale was not available in the present data set, we used depressive symptomatology as our measure of mental health. Like Takahashi and associates (1997), we assumed that although social network components are affected by customs, values, and cultural–historical factors, the associations between patterns of social networks and psychological well-being are more similar. Therefore, we hypothesized that the influence of social networks on mental health would reflect previous findings and theoretical speculation (e.g., Litwin, 2001; Moen, 2001; Weiss, 1974). We hypothesized that individuals in the most diverse network would have lower depressive symptomatology than would those in the most restricted network. In addition, because friendships have often been found to be more important than family relations for well-being (Adams & Blieszner, 1995), we predicted that a friend-dominant network would fare better than a family-dominant network.

Finally, because of research showing that support quality may vary by network type (Litwin & Landau, 2000) and that the quality of social relations may have a greater impact on well-being than do structural characteristics of social networks (Antonucci, 2001), we hypothesized that the perceived quality of individuals' relationships would mediate the association between network type and depressive symptomatology.

METHODS

Design and Participants

Data for the present study are from the first wave of a longitudinal panel study, Americans' Changing Lives (ACL; see House, 1995). The data were collected in 1986 by the Survey Research Center at the University of Michigan on a stratified, multistage, area probability sample of noninstitutionalized persons aged 25 and older and living in the coterminous United States. African Americans and persons aged 65 and older were sampled at twice the rate of non-African Americans and persons under the age of 60. Therefore, all data were weighted. The weights reflect differential response rates and variation in probabilities of selection into the sample. We analyzed data only from adults aged 60 and older in the present study, resulting in a sample size of $N = 1,669$. The average age was 70.4 ($SD = 7.4$), with a range from 60 to 96 years. Approximately 58.8% ($n = 982$) of the participants were female, and 9% ($n = 150$) of the participants identified themselves as Black.

Measures

Sociodemographics.—We established gender and race from dichotomous variables (1 = male, 2 = female; 1 = Black, 2 = non-Black). We measured education on a six-category scale, from 0 to 8 years of education to 17 or more years. Family income ranged from 1 (<$5,000) to 10 (>$80,000). Functional health ranged from 1 (most severe level) to 4 (no functional impairment).

Social network variables.—We dichotomized marital status into married (1) or not married (widowed, divorce, separated, or never married; 0). We also included the total number of children. We measured frequency of contact with children, contact with friends, attendance at religious services, and attendance at meetings on a scale from 1 (never) to 6 (more than once a week).

Psychological well-being.—We measured depressive symptomatology with the Iowa short form (Kohout, Berkman, Evans, & Cornoni-Huntley, 1993) of the Center for Epidemiological Studies Depression Scale (Radloff, 1977). This form uses 11 of the 20 items from the original scale and three rather than four response categories. It is internally consistent (Cronbach's $\alpha = 0.81$) and highly correlated with the 20-item scale ($r = .95$; Kohout et al.). The traditional cutoff score for significant depressive symptomatology of 16 for the 20-item version translates to approximately 8 for the short form. Participants rated how often in the past week they had experienced a series of affective, somatic, and interpersonal symptoms of depression from 0 (hardly ever) to 2 (most of the time). We created a composite total by taking the sum of these items, resulting in a score that ranged from 0 to 22. The Cronbach's alpha in the present study is $\alpha = 0.80$.

Perceived quality of relations.—We assessed the perceived quality of relations by using measures of perceived support and perceived negative relations. Perceived support is a mean index of six items, two items from three types of relationships (child, spouse, and friends or relatives) concerning the degree to which these individuals make the respondent feel loved and cared for, rated on a scale from 1 (not at all) to 5 (a great deal; Cronbach's $\alpha = 0.64$). Perceived negative relations is a similarly constructed index assessing the degree to which the respondent considers his or her support network to be demanding or critical (Cronbach's $\alpha = 0.69$).

Analyses

In the first step of our analyses, we used K-means cluster analysis in order to determine network types. In this analysis, initial cluster centers are assigned for each of the criterion variables and are then iteratively updated until a prespecified number of optimal groups are achieved based on distances between these cluster centers (Hair & Black, 2000). We used Euclidean distance (Milligan & Cooper, 1987) as our distance measure and selected five clusters for derivation in order to be as consistent as possible with the original formulation (Litwin, 2001). Before conducting the cluster analysis, we standardized the variables into t scores to eliminate effects caused by scale differences (Hair & Black). We conducted the cluster analysis by using the FASTCLUS program in SAS, which is a non-hierarchical clustering program designed for large data sets that also handles weighted data within the clustering procedure.

We then examined the relationships between the background variables and network types. This examination acts as a test of criterion validity of the cluster solution (Hair & Black, 2000). Clear links have been found between sociodemographic variables and social relations (e.g., Antonucci, 1985, 2001; Krause et al., 1990; Lang, 2001; Levin, Taylor, & Chatters, 1994;

Table 1. Network Type by Delineating Characteristics and Frequencies ($N = 1,669$)

| | Delineating Characteristic | | | | | | |
Network Type	Married	No. of Children	Contact With Children	Religious Services Attendance	Contact With Friends	Meetings Attendance	Frequency (%)
Nonfamily, restricted							
(means in *t* scores)	**0.30 (43.48)**	**0.28 (37.90)**	**0.20 (30.11)**	3.26 (48.31)	4.15 (48.62)	2.66 (49.12)	16
Nonfriends							
(means in *t* scores)	0.69 (51.56)	3.02 (51.25)	4.84 (52.05)	**2.30 (43.07)**	**2.25 (36.29)**	**1.47 (42.70)**	16
Family							
(means in *t* scores)	0.55 (48.63)	**6.45 (68.02)**	**5.36 (54.48)**	**4.56 (55.41)**	4.43 (50.45)	2.49 (48.18)	12
Diverse							
(means in *t* scores)	0.73 (52.37)	2.59 (49.17)	5.23 (53.86)	**4.87 (57.13)**	4.86 (53.27)	**4.64 (59.80)**	32
Friends							
(means in *t* scores)	0.66 (50.86)	2.71 (49.73)	**5.41 (54.70)**	2.46 (43.98)	**5.22 (55.60)**	1.65 (43.66)	24

Notes: Means are reported on both the original scale and as standardized to an overall mean of 50 and a standard deviation of 10. Means approximately half a standard deviation above or below the mean (representing defining peaks of the clusters) are shown in bold.

Newsom & Schulz, 1996; Wenger, 1996), as well as between sociodemographics and social network types (e.g., Litwin, 2003).

In the third step of our analyses, we examined the association between network type and depressive symptomatology. We performed a multiple regression analysis with depressive symptomatology as the dependent variable and network types as predictor variables. To control for any possible unequal distributions within clusters, we also included age, gender, income, education, race, and functional health as predictors.

Finally, in the last step of our analyses, we tested our hypothesis that relationship quality (perceived support and negative relations) mediates the association between network type and depressive symptomatology. We based the tests of the mediational hypotheses on the definition by Baron and Kenny (1986) and Kenny, Kashy, and Bolger (1998) of a mediator (*complete* mediation occurs only when the effect of the independent variable on the dependent variable is reduced to zero when the mediator is controlled for). We calculated Sobel mediation tests (Sobel, 1982) in order to test for the significance of partial mediation.

RESULTS

We begin with a description of the network types, followed by an explanation of the bivariate associations between the network types and sociodemographic variables. We then present the results of a series of multiple regression analyses testing for outcome differences and mediation effects.

Network Types

We found five distinct network types: nonfamily–restricted, nonfriends, family, diverse, and friends. The characteristics of these five network types and their relative frequencies are shown in Table 1 and Figure 1.

Individuals in the nonfamily–restricted network had the most limited social ties compared with individuals in other networks. Members of this network were unlikely to be married or to have children, and if they did have children they had the least contact with them. Furthermore, this was the only cluster for which values on every criterion variable were below the overall mean for the sample. This network made up about 16% of the sample.

The nonfriends network also comprised 16% of the sample and was distinguished by its low scores on frequency of contact with friends, attendance at meetings, and attendance at religious services. Individuals in this network were slightly above the mean on family variables (likelihood of being married, total number of children, and frequency of contact with children).

The family network was the least prevalent of all the network types (12%), and it was characterized by very high scores on total number of children (with an average of about six children for the individuals in this cluster), frequency of contact with those children, and frequency of attendance at religious services.

The diverse network was the most prevalent (32%) and the most extensive of all the networks. This network was distinguished by having values above the sample mean on almost all criterion variables (with the exception of total number of children). The values for frequency of attendance at meetings and religious services were especially high in this network.

Finally, the friends network (24% of the sample) was characterized by its high score on frequency of contact with friends. Individuals in this network also had fairly frequent contact with children, but they attended meetings and religious services relatively infrequently.

Bivariate Associations

Individuals in the different network types varied on all of the background variables (see Table 2). According to chi-square tests, the gender distribution across network types differed slightly, with 60% to 70% females and 30% to 40% males in each network except for the nonfriends network, in which men made up a little more than half (53%). In terms of race, the largest proportions of Black Americans were found in the nonfamily–restricted cluster and in the family cluster, whereas the smallest proportion was in the friends cluster.

The results of analyses of variance showed that the average age, education, income, and functional health of respondents differed significantly by network type (see Table 2). Tukey pairwise comparisons revealed that the oldest individuals were in the nonfamily–restricted network and were significantly older than individuals in the family, diverse, and friends networks. Individuals in the nonfriends network were significantly older than those in the family and friends networks, and individuals in the friends network were significantly younger than those in the diverse network. Individuals in the diverse network had significantly higher income than those in all other clusters, and those in the nonfriends network had significantly higher income than those in the family network. We found the
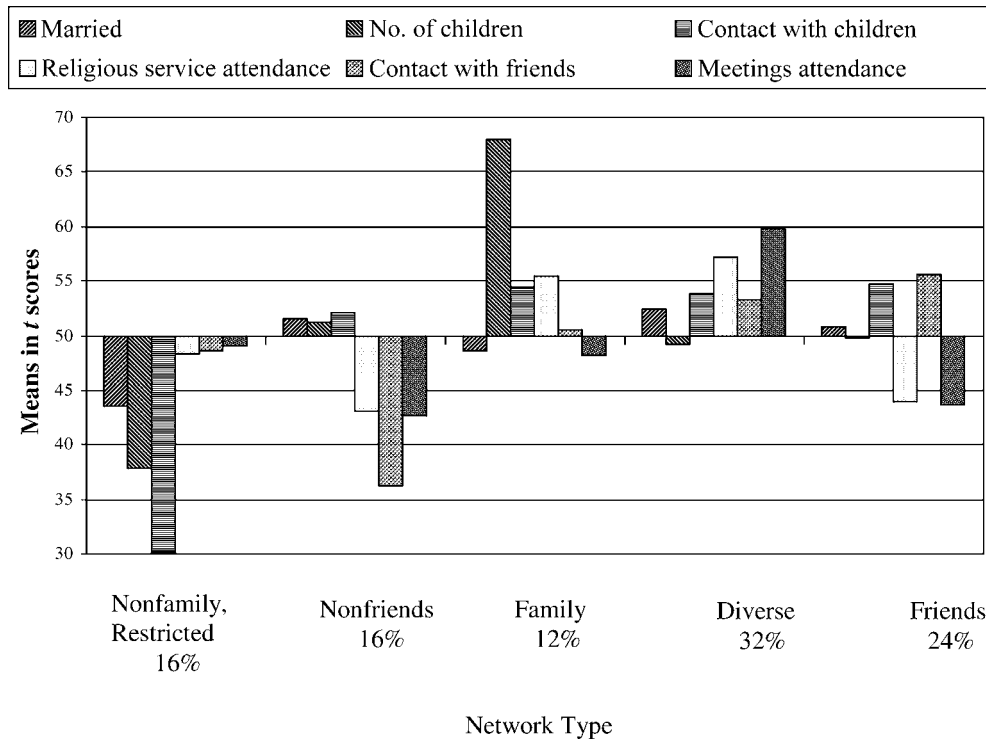
Figure 1. Mean scores in criterion variables by network type. (The bar graph shows the relative mean scores for each of the criterion variables for each of the five network types. These scores are shown in *t* scores, which are standardized to have an overall $M = 50$ and $SD = 10$, for ease of comparison across network types.)

lowest educational attainment among those in the family network, who reported significantly lower education than those in all other networks except the nonfriends network. Individuals in the diverse network had significantly higher education on average than those in all other networks. Finally, individuals in the nonfriends networks reported the lowest functional health.

We found depressive symptomatology to be related to the sociodemographic and background variables. Bivariate relationships between sociodemographic variables and depressive symptomatology can be found in Table 3. Being older, female, or black was correlated with higher depressive symptomatology,

and income, education, and functional health were all significantly negatively correlated with depressive symptomatology.

Multiple Regression Analysis

We performed a regression analysis with depressive symptomatology as the outcome variable and the network types, along with the control variables age, gender, income, education, race, and functional health, as predictor variables. We entered the network types and the categorical background variables as dichotomous dummy variables, and the nonfamily–restricted network was the comparison group.

Table 2. Sociodemographics, Functional Health, and Depressive Symptomatology by Network Type

	Network Type					
Characteristic	Nonfamily, Restricted ($n = 150$)	Nonfriends ($n = 151$)	Family ($n = 107$)	Diverse ($n = 291$)	Friends ($n = 226$)	Statistic
Gender (%)						
Men	37.3	53.0	36.4	39.9	39.4	
Women	62.7	47.0	63.6	60.1	60.6	$\chi^2 = 11.1^*$
Race (%)						
Black	16.1	8.6	16.8	6.8	4.0	
Non-Black	83.9	91.4	83.2	93.2	96.0	$\chi^2 = 25.6^{***}$
Age, M (SD)	72.4_a (7.5)	$71.7_{a,c}$ (8.5)	$69.2_{b,c}$ (6.8)	70.3_c (6.8)	68.9_b (7.0)	$F = 13.1^{***}$
Education,[†] M (SD)	2.6_b (1.5)	$2.4_{a,b}$ (1.4)	2.2_a (1.3)	3.0_c (1.5)	2.6_b (1.3)	$F = 17.7^{***}$
Income,[†] M (SD)	$3.6_{b,c}$ (2.4)	3.8_b (2.7)	3.2_c (2.2)	4.5_a (2.4)	$4.0_{b,c}$ (2.3)	$F = 13.3^{***}$
Functional health,[†] M (SD)	$3.2_{a,b}$ (1.1)	3.2_a (1.1)	$3.3_{a,b}$ (1.0)	3.5_b (0.9)	3.4_b (0.9)	$F = 7.5^{***}$
CES-D,[†] M (SD)	4.7_b (4.2)	5.1_b (4.1)	$4.4_{a,b}$ (3.9)	3.4_a (3.1)	$3.8_{a,c}$ (3.5)	$F = 12.9^{***}$

Notes: CES-D = Center for Epidemiologic Studies–Depression scale. For continuous variables, means in the same row that do not share subscripts differ at $p < .05$ in the Tukey comparison.
*$p < .05$; ***$p < .001$.
[†]Scale ranges: education (1–6), income (1–10), functional health (1–4; 4 = good), CES-D (0–22).

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Table 3. Depressive Symptomatology Scores by Sociodemographic and Background Characteristics: Pearson Correlations

Variable	Depressive Symptoms r
Age	.12**
Gender[a]	.10**
Race[b]	−.08**
Income	−.24**
Education	−.20**
Functional health[c]	−.42**

Note: Table data are pairwise deletions.
**$p < .01$.
[a]1 = male, 2 = female; [b]1 = Black, 2 = Non-Black; [c]scale range: 1–4, 4 = good.

Individuals in the diverse network scored significantly lower on depressive symptomatology than did individuals in the restricted network (Table 4). Individuals in the friends network also had significantly lower depressive symptomatology than those in the restricted network. Finally, individuals in the nonfriends network had significantly more depressive symptoms than those in the restricted network. The family network was not significantly different from the restricted network in predicting depressive symptomatology. Although functional health was clearly the strongest predictor of depressive symptomatology, the network types were as predictive as several of the other background characteristics (e.g., gender).

Mediation Analyses

In order to examine whether perceived relationship quality mediates the association between network type and depressive symptomatology, we conducted two mediation analyses separately by perceived support and perceived negative relations. Although negative relations had a direct positive effect on depressive symptomatology ($\beta = 0.20$, $p < .001$), there was no evidence for mediation by negative relations, because the association between network type and negative relations was not significant. There was evidence, however, for partial mediation by perceived support, because the significant beta coefficients relating network types to depressive symptomatology were reduced after we included perceived support

Table 4. Depressive Symptomatology by Background Characteristics and Network Type: Multiple Regression Analysis ($N = 1,669$)

Variable	b	SE	β
Age	−0.02	0.01	−0.04
Gender	0.47	0.17	0.06**
Race	−0.15	0.30	−0.01
Education	−0.22	0.07	−0.08**
Income	−0.14	0.04	−0.09**
Functional health	−1.41	0.09	−0.37***
Diverse network	−0.45	0.15	−0.08**
Friends network	−0.36	0.16	−0.06*
Nonfriends network	0.66	0.18	0.10***
Family network	−0.19	0.21	−.03
Restricted network	—	—	—
F score			43.86***
Adjusted R^2			0.21

Note: Diverse, Friends, Nonfriends, and Family represent dummy codes for these network types; the Nonfamily, restricted network is left out of the analysis as the comparison group.
*$p < .05$; **$p < .01$; ***$p < .001$.

Table 5. Summary of Mediation Analyses for Perceived Support Predicting Depressive Symptomatology

Variable	B	SE B	β
Step 1			
Restricted	—	—	—
Nonfriends	0.66	0.18	0.10***
Family	−0.19	0.21	−0.03
Diverse	−0.45	0.15	−0.08**
Friends	−0.36	0.16	−0.06*
Step 2			
Restricted	—	—	—
Nonfriends	0.57	0.18	0.09**
Family	−0.12	0.20	−0.02
Diverse	−0.31	0.14	−0.06*
Friends	−0.25	0.16	−0.04
Perceived support	−1.10	0.12	−0.21***
ΔR^2			0.04

Notes: Age, sex, race, education, income, and functional health were controlled for in every analysis. Nonfriends, Family, Diverse, and Friends represent dummy codes for these network types; the Nonfamily, restricted network is left out of the analysis as the comparison group.
*$p < .05$; **$p < .01$; ***$p < .001$.

in the model (Table 5). As we already mentioned, the family network did not differ significantly in depressive symptomatology from the nonfamily–restricted network; however, for the other three network types, differences in perceived support appear to at least partially explain the differences with the nonfamily–restricted network in depressive symptomatology, as evidenced by a series of Sobel tests that we conducted separately for each of these dummy-coded network variables: nonfriends, $z = 2.90$, $p < .01$; diverse, $z = −3.85$, $p < .001$; friends, $z = −3.30$, $p < .001$.

DISCUSSION

The person-centered typology approach used in the present study offers a way to examine social relationships in their naturally complex and aggregate state, which is consistent with social relations theories stressing the importance of multiple relationships and their functional specificity (such as the convoy model by Kahn & Antonucci, 1980, and the functional specificity theory by Weiss, 1974). In general, results indicate that certain network types are quite robust, even across samples and cultures. In addition, these network types have implications for psychological well-being, above and beyond several sociodemographic and background variables. Finally, perceived support may be one mechanism through which these network types affect well-being.

As predicted, we found a diverse network, a family network, and a friends network, which appear to be similar across several cultures and studies (e.g., Litwin, 2001; Wenger, 1997). There are also differences in network types across studies. Litwin uncovered a "neighbors network," which is small and largely neighbor based. It is likely that we did not find this network type because we did not have a variable concerning the frequency of contact with neighbors. Furthermore, rather than just one "restricted" network (Litwin) or "private-restricted" network (Wenger, 1997), we found two different types of restricted networks: the nonfamily network, characterized by very few (if any) children and a low likelihood of being married, and the nonfriends network, characterized by very low

frequency of contact with friends. It may be that these two different types of restricted networks (nonfamily and non-friends) are unique to the American culture, given that most previous network typology studies have been conducted in Europe and Israel. Perhaps in other cultures the family environment is more intricately linked with the community environment, so that not having family implies an overall restricted network. Research conducted by Fischer and Shavit (1995) indicates that Israeli networks are in fact denser (more interconnected) than are American networks.

In spite of the differences in network types, we can, as predicted, draw conclusions that are very similar to those of the original study (Litwin, 2001) regarding the mental health implications of network membership. First, our diverse network had the best outcomes in terms of depressive symptomatology and our restricted networks the worst, findings that support other studies conducted in different cultures. Consistent with Weiss' (1974) functional specificity theory and the role enhancement perspective (Moen, 2001), having many sources of support or performing many roles in terms of both the family and the surrounding community appears to be best for mental health.

Second, we found that individuals in our nonfriends restricted network had significantly higher depressive symptomatology than did those in our nonfamily restricted network. In Litwin's study, diverse and friends network types that had the highest relative morale scores were also the only network types to include friendship ties. Both sets of findings are consistent with literature suggesting that friendships may be more influential than family relations on well-being (Adams & Blieszner, 1995). Although family relationships are also important, they are generally obligatory. Friendships, in contrast, are optional (Antonucci & Akiyama, 1995) and may therefore be important for feelings of autonomy. Friends may provide emotional intimacy and companionship, integration into the community and broader society, and reaffirmation of self-worth. The results of our study are consistent with other research (e.g., DuPertuis, Aldwin, & Bosse, 2001) suggesting that the absence of family in the context of some community support (e.g., friends) is less detrimental than the absence of friends in the context of familial support. Furthermore, it is possible that individuals in the nonfriends network have higher depressive symptomatology not only because they lack the companionship of friends, but also because they are more generally socially isolated. Compared with individuals in other network types, individuals in the nonfriends network meet with friends and attend community functions and religious services relatively infrequently. According to the broader social integration literature (e.g., Berkman & Syme, 1979; Krause et al., 1990; Sugisawa et al., 2002), it is this lack of social integration that negatively influences health.

Finally, we found that perceived support partially mediated the association between network type and depressive symptomatology, as we predicted. This is consistent with research showing that the *quality* of social relations may have a greater impact on well-being than do structural characteristics of social networks (Antonucci, 2001), and that support quality may vary by network type (Litwin & Landau, 2000). Thus, it seems that the mental health benefits of belonging to a diverse or a friend-focused network (as compared with a more family-focused or restricted network) may at least partially be due to the fact that

individuals in these networks perceive being more loved and cared for by their network members than do individuals in more restricted networks.

Future Research and Implications

Our cross-sectional analyses prevent us from precluding the possibility of reverse causality; for example, it could be that people who foster positive and supportive relationships or who are less depressed are also more likely than others to have varied, diverse networks. Longitudinal research is needed to explore this possibility, as well as the possibility of cohort effects. The present study indicates that some network types may be culture bound; it is possible that network types are cohort bound, as well.

One of the most important steps in future research will be to determine the key variables that should be included in any cluster analysis of older adults' social relationships. We included frequency of attendance at religious services in the analyses of the present study as an indication of interaction with others in order to be consistent with the original formulation (Litwin, 2001). However, because religiosity is so highly correlated with religious attendance and both have been shown to be adaptive in later life above and beyond their association with social support (Magai et al., 2003), it is possible that the mental health benefits of belonging to a certain network (e.g., one high on church attendance) may be due to variation in religiosity. Furthermore, it is clear that the frequency of contact variables that we used in the present study could be confounded with variables such as number of family versus number of friends in the network. Unfortunately, these variables were not available in the present data set. Future research should include such variables in order to explore this possibility. Because network typology research has typically focused on only the structural aspects of social networks (e.g., network size), an important next step in the research will be to derive network typologies including both structural *and* functional aspects of social relations (e.g., emotional support). The present study indicates that individuals in different networks vary in the quality of support received. It may also be the case that individuals with similar structural constellations of relationships vary in the quality of support they receive from those networks.

Finally, future research should clarify the extent to which outcome differences by network type are due to qualitative differences in the network types versus differences in the total amount of support received. For example, it is possible that individuals in the two restricted networks in the present study (nonfamily and nonfriends) are at the greatest risk for depression simply because they have less support overall. As already mentioned, the inclusion in future research of variables such as number of family and number of friends could also help evaluate this possibility. It is likely some combination of *both* network type membership and total amount of support that influences well-being.

Network typologies may also have important practical implications. In addition to being correlated with mental health, network types are also correlated with health service utilization (Litwin, 1997; Wenger, 1997). Social service programs may be more successful if they are directed at different groups of elders with different social-network-based needs rather than at a homogenous group of older individuals (Rodeheaver, 1985).

In conclusion, our study suggests that there are some network typologies that are quite robust, in addition to the existence of more culturally specific network types. Furthermore, these network typologies have important implications for mental health, controlling for a variety of sociodemographic and background variables. Finally, our study indicates that perceived support may be one mechanism through which network typologies affect mental health. This study offers evidence for the theoretical and practical significance of network typologies in the field of social relations and health, both in the United States and in other parts of the world.

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