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# Spousal Network Overlap as a Basis for Spousal Support

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# Abstract

The role social network structure plays in facilitating flows of support between spouses is often overlooked. This study examined whether levels of support between spouses depended on the degree of overlap between spouses' networks. Network overlap may enhance spouses' support capacities by increasing their understanding of each other's support needs and their ability to coordinate support for each other. Data on 1,490 married older adults from the National Social Life, Health, and Aging Project were examined. Analyses revealed that when one's spouse had more contact with one's other network members, one was more likely to (a) view the spouse as a reliable source of support, (b) open up to the spouse, and (c) discuss health issues with the spouse. These results suggest that spousal support is not only a function of relationship quality or obligations—it also is a structural phenomenon that depends on spouses' connectedness to each other's networks.

#### Keywords

aging; marriage; relationship quality; social networks; social support; spousal roles

The presence of strong social network ties and access to social support are often conflated in empirical research, insofar as many scholars assume that stronger social ties (e.g., kin ties) automatically yield greater social support (Berkman & Glass, 2000; Iida, Seidman, Shrout, Fujita, & Bolger, 2008; Kana'iaupuni, Donato, Thompson-Colón, & Stainback, 2005; Smith & Christakis, 2008). As a result, few studies have considered the role that specific features of social networks play in facilitating flows of support within certain types of social relationships.

Marital relationships, in particular, are noted for the unusually high levels of support that flow within them, including informational, instrumental, and especially emotional forms of support (Dehle, Larsen, & Landers, 2001). These types of support enhance well-being because they facilitate coping and adaptation and therefore help buffer against the stresses of negative events (see Thoits, 2011). Research on the determinants of spousal support has focused primarily on individual-level factors, such as gender; and the presence of stressors such as health problems, as well as relationship-level factors, such as marital quality (see Dehle et al., 2001; Iida et al., 2008; Schwarzer & Gutiérrez-Doña, 2005). In this vein, the extraordinary supportiveness of spouses has been attributed mainly to spouses' extensive role obligations; their emotional closeness; their ability to infer and anticipate each other's support needs; and circumstantial factors, such as physical proximity (Thoits, 2011; Verhofstadt, Buysse, Ickes, Davis, & Devoldre, 2008). Few scholars have considered whether spouses' involvement in each other's networks contributes to the high levels of support in marital relationships.

This study builds on research that views spousal support as a product of supradyadic factors, namely, the broader social networks to which spouses are connected (Ashida & Heaney,

2008; Felmlee, 2001). The extent to which spouses are connected to each other's network members—that is, the degree of *spousal network overlap* (illustrated in Panel A of Figure 1) —is likely to be particularly important. Research shows that spouses tend to be highly connected to each other's networks (Kalmijn, 2003). Couples often benefit as a unit from sharing network ties, because they contribute to partners' sense of couplehood and increase the social costs of dissolving a marriage (Bryant & Conger, 1999; Felmlee, 2001; Kearns & Leonard, 2004; Sprecher & Felmlee, 2000). Beyond this, maintaining open lines of communication with one's spouse's contacts is likely to increase one's capacity to provide support to one's spouse, for several reasons.

For one, contact with one's spouse's network increases one's access to information about and understanding of the spouse's everyday life. This increases *empathic understanding*, or the ability to infer and anticipate a person's support needs (Thoits, 2011). Network overlap also solidifies marital capital by increasing spouses' opportunities to exercise informal control over each other, such as indirect monitoring of health-related behaviors (DiMatteo, 2004). Furthermore, maintaining strong connections to mutual network members facilitates coordination of collective support efforts. Shared network members are invested in both parties, so they are especially likely to be responsive to one spouse's efforts to recruit support on behalf of the other (Sprecher, Felmlee, Orbuch, & Willetts, 2002). Thus, it is when spouses' networks overlap that those networks can most fully realize their potential as support systems. This is implied in research on support convoys (Antonucci & Akiyama, 1987b).

It is particularly important to study the implications of spousal network overlap for older adults. Spousal support is crucial for older adults' well-being, in part because older adults are more likely to face stressful life events such as retirement, bereavement, and health problems (see Choi & Ha, 2011). Moreover, these experiences alter the structure of older adults' social networks (Cornwell, Laumann, & Schumm, 2008), which may in turn disrupt support processes. Interestingly, spousal network overlap tends to increase over the life course. Research has documented couples' increasing investment in each other's social circles as a means of demonstrating mutual commitment (Kalmijn, 2003; Milardo, 1982); in response to increasing preferences for close, emotionally rewarding contacts (Carstensen, 1992); and as a consequence of transitions such as health decline and retirement that can lead to the loss of more peripheral social ties (Cornwell, 2009).

The extent to which spousal network overlap affects spousal support in the context of the turbulence of later life is thus extremely important, but poorly understood. The overarching hypothesis of this study (Hypothesis 1) was that older adults would perceive higher levels of (multiple forms of) spousal support when their spouses and their other network members are strongly connected to each other.

#### Method

#### Sample

This study used data from the National Social Life, Health, and Aging Project (NSHAP), a nationally representative study funded by the National Institutes of Health and conducted by the National Opinion Research Center in 2005 – 2006. NSHAP includes interviews with 3,005 noninstitutionalized older Americans (ages 57 – 85) about their health and social lives. It used a multistage area probability design that oversampled by race and ethnicity, age, and gender (see O'Muircheartaigh, Eckman, & Smith, 2009). The final response rate was 75.5%.

#### Measures

Spousal support-Support was measured in terms of respondents' appraisal of support availability (Wethington & Kessler, 1986). NSHAP did not include a complete battery of partner support measures, but it did include measures that capture general access to instrumental, affective, and informational dimensions of support, which are important to older adults (see Choi & Ha, 2011; Seeman & Berkman, 1988). Two items were drawn from the spousal support-strain scale developed by Schuster, Kessler, and Aseltine (1990). The first item asked, "How often can you rely on [spouse's name] for help if you have a problem? Would you say hardly ever, some of the time, or often?" Only 45 respondents answered hardly ever or never, so this category is collapsed with "sometimes." The second item was "How often can you open up to [spouse's name] if you need to talk about your worries? Would you say hardly ever, some of the time, or often?" Only 62 respondents said hardly ever or never, so this category was collapsed with sometimes. NSHAP also asked about health-specific informational support. Informational support is often viewed as an emotional support function to the extent that it stems from concern rather than role obligations (Barry, Bunde, Brock, & Lawrence, 2009). Following Antonucci and Akiyama (1987a), respondents were asked "Suppose you had a health problem that you were concerned about, or needed to make an important decision about your own medical treatment. How likely is it that you would talk with [spouse's name] about this: Would you say very likely, somewhat likely, or not likely?" All but 93% of respondents answered very *likely*. The univariate properties of these measures and the other variables described below are shown in Table 1.

Spousal network overlap—Following the General Social Survey (see

http://www3.norc.org/GSS+Website/), NSHAP interviewers asked respondents to name the people "with whom you most often discussed things that were important to you" over the last 12 months. This name generator tends to elicit names of strong, frequently accessed, long-term contacts through whom social influence is likely to operate and that are thought to be particularly important to older adults (Cornwell et al., 2008). Respondents were allowed to name up to five confidents in response to this question, which were recorded in Roster A. In cases where married respondents did not include the spouse among the confidants listed in Roster A, the spouse was recorded in Roster B for future reference. Respondents were asked how often they interact with each confidant, as well as how frequently each confidant interacts with each of their other confidants. Frequency was reported on a 9-point scale that ranged from 0 (have never spoken to each other) to 8 (every day). NSHAP did not ask respondents about spouses' other network ties, but it did ask about spouses' connections to respondents' confidants. In this analysis, degree of spousal network overlap was measured as the average of a respondent's ordinal assessments of how often the spouse interacted with the respondent's confidants. As discussed above, more frequent contact increases the capacity for monitoring, control, and coordination of support. Respondents' perceptions of spousal network overlap may also shape their perceptions of their spouses' support capacities. Research has demonstrated that individuals' perceptions of network ties are often as important when studying individual outcomes as more objective measures of network structure (Krackhardt, 1987). Alternative measures of spousal network overlap that place less weight on the frequency of contact between network members also were tested. A count of the number of confidants to whom one's spouse was connected was not significant. A count of the number of confidants whom one's spouse contacted frequently (e.g., weekly) was significant in some, but not all, models.

**Other social resources**—The association between perceived spousal network overlap and support may be affected by the availability of other social resources. The number of nonspouse confidants a respondent reported was controlled for in all models, because having

more network ties increases one's capacity to provide support (e.g., Haines, Hurlbert, & Beggs, 1996). The average assessment of how often a respondent interacted with his or her other confidants also was included. NSHAP also asked respondents about the extent to which they could rely on (a) other family members and (b) friends—for support, and how often they could open up to them. These items were scored the same way as the spousal support items described above (from *rarely or never* to *often*). As a rough measure of access to other sources of support, a dichotomous indicator of whether the respondent reported being able to rely on either family or friends was used. For the model predicting ability to open up to one's spouse, a similar measure indicating whether one could often open up to family members or friends was calculated. Respondents were also asked about their likelihood of discussing health with their other confidants. The proportion of confidants with whom one was "very likely" to discuss health was included in the model predicting likelihood of discussing health with one's spouse.

**Marital relationship quality**—Several measures of marital quality were included. First, the number of years the respondent and spouse had been married was recorded. NSHAP also asked, "Some couples like to spend their free time doing things together, while others like to do different things in their free time. What about you and [spouse's name]? Do you like to spend free time doing things together, or doing things separately?" Responses included together; some together, some different, and different or separate things. These responses were included as dummy variables. Respondents also indicated how close they felt to each confidant. Responses ranged from 1 (not very close) to 4 (extremely close). These ratings were averaged across all nonspouse confidants, and then this average was subtracted from the ordinal rating for closeness to the spouse. The resulting variable ranged from -3 to 3, with positive values indicating that the respondent felt closer to the spouse than to other confidants, on average. Finally, respondents reported how often their spouses "make too many demands" on them (range: 1 = rarely or never to 3 = often). This ordinal assessment was included as a rough proxy for asymmetry in spouses' expectations of each other, with the expectation that those whose spouses make excessive demands were probably regarded as less supportive overall.

**Health**—Health problems increase the demand for and provision of support. Among older adults, health problems can lead to smaller, kin-centered networks that increase spousal network overlap (Cornwell, 2009). Models included an ordinal measure of self-reported health (range: 1 = poor to 5 = excellent) as well as an index of functional health that gauged the respondent's ability to complete activities of daily living (a = .87). Psychological well-being could also affect the perception of social support. A modified version of the Center for Epidemiological Studies Depression Scale (Radloff, 1977), which did not include the item on loneliness (to reduce endogeneity), was used to control for psychological well-being (a = .78). A dichotomous indicator of self-reported disability also was included.

**Covariates**—One's spouse's health is also relevant. A spouse who experiences serious health problems is more likely to be a recipient of social support and may be less socially active. NSHAP asked respondents to rate their spouses' overall health as well as their "emotional or mental" health on 5-point ordinal scales, ranging from 1 (*poor*) to 5 (*excellent*). For both measures, the "poor" and "fair" categories were collapsed into a single category. Age was included in the model as years of age (divided by 10), because age was related to both spousal network overlap and support. Employment status was also controlled.

#### Analysis

The spousal support measures are dichotomous and were therefore analyzed using logistic regression analysis. An important analytic issue is that spousal support often operates

differently for men and women. Research has revealed gender differences in spousal support and marital quality (Antonucci & Akiyama, 1987a), as well as in network overlap (Kalmijn, 2003). Therefore, Chow tests were conducted to determine whether separately specified models for men and women yielded unequal coefficients. With the exception of the measure of how open respondents can be with friends and family (when predicting openness), the equations did not differ by gender. Therefore, pooled models that include both men and women were specified, but an interaction between gender and openness with friends and family was included when predicting openness.

Analyses pertained to respondents who were married (n = 1.801, 59.9%) and who had other confidants (n = 2,758, 91.8%). It is acceptable to restrict such an analysis to the subsample that is created by these joint conditions (N = 1,490, 49.6%). But several factors that may be related to spousal network overlap, and support could affect the composition of the sample. For example, the research discussed above suggests that both measures increase with age, and yet the oldest adults are the most likely to be widowed and thus excluded from the analysis. To adjust for potential selection, a complete-case weighting form of missing data adjustment was used (Morgan & Todd, 2008). First, each respondent's probability of inclusion in the analysis was predicted using a first-stage logit model that included age, gender, race and ethnicity, education, employment, health, and whether the respondent had answered questions about nonspousal support on a paper questionnaire that was left behind for respondents to complete and mail in after the interview. (One third of the sample was randomly selected to answer questions about non-spousal support on this leave-behind questionnaire instead of in person.) The inverse of the predicted probability that was derived from this first-stage model was then multiplied by the supplied NSHAP survey weight, and the product was used as the person-weight in the analysis. This procedure thus gave disproportionate weight to cases that were the least likely to be observed in the models, thus helping to reduce bias caused by selection.

# Results

Perceived spousal support was high among older adults. Approximately 85.6% indicated that they could often rely on their spouses for support if they needed help, 75.3% said that they could often open up to their spouses about their worries, and 92.6% reported that they would be *very likely* to discuss health problems and medical treatment decisions with their spouses. Respondents also reported substantial spousal network overlap. The average rating of spouses' frequency of contact with network members was 5.51, which falls between the *several times a month* and *weekly* contact categories. The median frequency of contact between spouses and confidants was *weekly*. Approximately one third of respondents (31.0%) reported that their spouses interacted with a confidant at least several times a week, and the vast majority reported that their spouses (81.8%) interacted with at least one confidant on at least a weekly basis.

#### Spousal Support Is Related to Spousal Network Overlap

Analyses revealed a substantial association between perceived spousal network overlap and spousal support. In a preliminary bivariate analysis, each spouse's typical frequency of contact with confidants was categorized as being monthly or less, weekly, or daily. The data showed that 79.1% of respondents whose spouses interacted with their other confidants about once a month or less could often rely on their spouses for support. Conversely, 91.4% of those whose spouses had daily contact with their confidants said that they could often rely on their spouses for support, F(1.95, 97.70) = 10.71, p < .001. Similarly, 69.5% of respondents whose spouses interacted with their other confidants once a month or less indicated that they could often open up to their spouses about their worries, compared with

79.1% of those whose spouses had daily contact with their confidants, R(1.78, 88.92) = 4.70, p < .05. A similar trend was evident in the relationship between spousal network overlap and likelihood of discussing health with the spouse, but it was not statistically significant, R(1.99, 99.62) = 2.33, p = .11.

#### **Multivariate Analysis**

The association between perceived spousal network overlap and support could be due to a number of confounding factors, such as health problems or relationship quality. In Table 2 are displayed odds ratios and standard errors from multivariate logistic regression analyses predicting the three forms of spousal support. Note that age was negatively associated with the frequency with which one opened up to one's spouse about concerns. Neither overall self-reported health nor functional health (not shown in the table) were significantly associated with perceived support, but depressive symptoms were negatively associated with the tendency to open up to one's spouse. Spouses' overall health was not associated with support, but spouses who had better mental health were seen as more supportive across all dimensions. As suspected, relationship quality mattered a great deal. Those who spent their free time apart from their spouses reported lower levels of spousal support than those who spent their free time with their spouses. Likewise, older adults who felt especially close to their spouses were more likely to report high levels of all three forms of spousal support, and spouses who were demanding were seen as less reliable sources of support. There was a positive association between respondents' access to other sources of support (from friends and family) and their access to support from their spouses. Model 2 shows an interaction between gender and the ability to open up to other family or friends about one's worries, suggesting that men's access to spousal support benefited more from their access to other forms of support than women's.

One of the most consistent findings across models was that perceived spousal network overlap was positively associated with spousal support. Those whose spouses and other confidants had more frequent contact were significantly more likely to report being able to rely on their spouses for support (OR = 1.23, 95% confidence interval [CI] [1.05, 1.44]), being able to open up to their spouses about concerns (OR = 1.17, 95% CI [1.04, 1.30]), and being able to talk to their spouses about health issues and medical decisions (OR = 1.35, 95% CI [1.12, 1.61]). These findings provide support for Hypothesis 1.

Figure 2 displays the predicted probability that respondents reported the highest level of spousal support of a given type—for example, being *very likely* to discuss health issues with their spouses, or that they could *often* rely on their spouses. These values are plotted against respondents' assessments of spouses' frequency of contact with other confidants. The figure demonstrates the positive associations between spousal network overlap and support. For example, respondents who reported an average frequency of contact of 2.0 (i.e., spouses had contact with confidants *once a year*, on average) had a predicted probability of approximately .80 of having been able to rely on their spouses for help, a probability of approximately .70 of having been able to open up to their spouses, and a probability of approximately .87 of having reported that they were *very likely* to talk to their spouses about health and medical matters. These compare with higher predicted probabilities of .90, .81, and .96, respectively, when spouses had an average frequency of contact with confidants of 8.0 (i.e., spouses had contact with confidants about *once a week*, on average).

## Discussion

Strong network ties and social support are often conflated in research, with many scholars assuming that stronger social ties (e.g., intimate partner relationships) automatically yield greater access to social support (Smith & Christakis, 2008). As a result, the role that broader

social network structure plays in generating (or inhibiting) social support flows in marriages has received little attention. This study sheds some light on this issue by showing that the perceived supportiveness of one's spouse depended, in part, on the belief that one's spouse was connected to shared network members. Older adults whose spouses and confidants were in frequent contact with each other were more likely to feel that they could rely on their spouses for help, open up to their spouse about their worries, and talk to their spouses about health-related issues. Likely explanations for these findings include that people who have frequent interaction with their spouses' confidants are better able to recruit external support resources on their spouses' behalf, that they can more effectively coordinate collective efforts to provide support, and/or that they have a better understanding of their spouses' support needs (Antonucci & Akiyama, 1987b; DiMatteo, 2004; Sprecher et al., 2002). This study could not, however, confirm which mechanisms underlie the main finding.

By demonstrating that spousal network overlap is positively associated with the flow of social support in marriages, this study expands on research that has shown that spousal network overlap has a variety of benefits for intimate partners, including an enhanced sense of couplehood (Bryant & Conger, 1999; Kearns & Leonard, 2004). But this study was motivated by the more general hypothesis that support processes that operate within strong relationships depend, in part, on connectedness to a broader network structure. With this in mind, future research might also examine the link between network overlap and support in other types of (nonmarital) relationships. This could provide valuable insight into more general family support processes. For example, researchers should consider the possibility that overlap between parents and their offspring (e.g., through neighbors and caregivers) helps explain variation in the scope and quality of intergenerational support.

This study has limitations. For one, NSHAP had limited support measures, so this study could not address how spousal network overlap related to other types of support like instrumental aid. More detailed data on social networks and partner characteristics would also help reduce endogeneity due to omitted variables. Information about the extent to which respondents are connected to their spouses' confidants would provide a more accurate measure of spousal network overlap. Likewise, data on network ties that are maintained by one's spouse could also yield additional insight into their access to external social resources that could enhance support capacity. Another issue is that the measure of spousal network overlap used here may capture unobserved qualities of the broader social network, such as network members' helpfulness or physical proximity. Also deserving of more attention are partner characteristics, such as the extent to which spouses are physically active, which could explain both their capacity to provide support and their social connectedness. Variation in partner characteristics, such as extent of extroversion, could also partially account for associations reported here.

The cross-sectional nature of the data hamper causal inference. The prospect of simultaneity is a concern, because spousal support could have affected network overlap. For example, some people may be inclined to keep unsupportive spouses away from their confidants. Regression analyses predicting spousal network overlap revealed that, on their own, each measure of support was a significant predictor of overlap. But when these measures were used together in a single model, neither spousal reliability nor openness were significant predictors (results available on request). Moreover, the reverse-causation argument implies that people are more likely to be reluctant to integrate unsupportive spouses into their networks. Feelings of distrust, resentment, or embarrassment surrounding the spouse may preclude people from cultivating ties between their spouses and confidants and may compel them to avoid their spouses' other confidants as well. If this were the case, one might expect the other measures of marital relationship quality (e.g., time spent together and closeness to the spouse) to account for the association between spousal network overlap and support.

That this was not the case is encouraging-especially given that time spent together was a major determinant of spousal network overlap. Finally, even if dual causation were present in the models, it is not entirely inconsistent with the argument that was made in this study. Spousal network overlap will augment spouses' support capacities regardless of whether it initially stems from spouses' efforts to provide support to each other.

All of these issues will need to be resolved through research that focuses on the interrelated dynamics of network structure, life course experiences, and aging. This research will provide much-needed insight into processes that are central to family sociology, health studies, and social gerontology.

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#### Figure 1.

Hypothetical Egocentric Social Networks Reflecting High and Low Spousal Network Overlap

*Note:* These diagrams characterize spousal network overlap in terms of the extent to which ego's spouse is connected to ego's confidants, irrespective of the extent to which ego is connected to the spouse's (other) confidants.

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#### Figure 2.

Predicted Probabilities of Reporting the Highest Levels of Three Different Types of Spousal Support, Given Different Average Frequencies of Contact Between One's Spouse and One's Confidants

*Note*: Predicted probabilities are derived from the models presented in Table 2. Covariates are held at their means. Gender was coded as "1" for women, and any relevant interactions were treated accordingly.

#### Table 1

#### Descriptive Statistics of Analysis Variables (N = 1,490)

Variable	М	SD	Min	Max
Spousal support	-			
Reliability	.86	.33	0	1
Openness	.75	.43	0	1
Health discussion	.93	.26	0	1
Spousal network overlap	5.51	1.57	0	8
Age (divided by 10)	6.80	0.74	5.7	8.5
Woman	.51	.50	0	1
Working	.35	.48	0	1
Disabled	.10	.27	0	1
Self-rated health	3.27	1.08	1	5
Functional health	.04	.65	-6.58	.35
Depression (CES-D)	-0.02	0.53	-0.60	2.83
Time spent together				
Spends free time together with spouse (ref.)	.49	.50	0	1
Spends some free time with spouse	.39	.49	0	1
Spends free time apart from spouse	.12	.31	0	1
Years of marriage (divided by 10)	3.82	1.53	0	6.8
Closeness to spouse	0.59	0.76	-3	3
Spousal demands	1.51	0.69	1	3
Spouse's overall health	2.27	1.01	1	4
Spouse's mental health	2.67	0.99	1	4
Other support sources				
Reliability	.68	.47	0	1
Openness	.46	.50	0	1
Health discussion	.61	.39	0	1
No. confidants	3.06	1.20	1	5
Proportion kin	.62	.36	0	1
Frequency of contact with other confidants	6.48	0.96	3	8

*Note:* Means were estimated using National Social Life, Health, and Aging Project person-level weights, with poststratification adjustments for nonresponse and adjustments for probability of inclusion in the main analysis. Estimates are calculated for all cases for which data are available on all key variables in the multivariate analysis.

CES-D = Center for Epidemiological Studies Depression Scale; ref. = reference.

# Table 2

Odds Ratios (ORs) From Logistic Regression Models Predicting Spousal Support (N = 1,490)

	Dimen	sion of	Spousal Sup	port Be	eing Predict	ed
	Reliabil	lity	Openn	ess	Discuss H	ealth
Predictor	OR	SE	OR	SE	OR	SE
Spousal network overlap	$1.23^{*}$	0.10	1.17**	0.07	$1.35^{*}$	0.12
Age (divided by 10)	0.82	0.15	0.66	0.08	0.79	0.16
Woman	0.72	0.15	1.33	0.29	0.78	0.18
Depression	0.77	0.11	$0.63^{**}$	0.10	0.71	0.13
Time with spouse (ref: R spends free tim	e w/spouse)					
R spends some free time w/spouse	0.83	0.21	0.68	0.13	0.69	0.22
R spends free time apart from spouse	0.37	0.11	0.35	0.07	$0.42^{*}$	0.18
Years of marriage (divided by 10)	1.02	0.09	1.02	0.06	1.10	0.13
Closeness to spouse	$1.77^{**}$	0.38	1.97	0.21	1.82 **	0.30
Spousal demands	$0.62^{**}$	0.08	0.87	0.10	0.99	0.17
Spouse's mental health	1.72 ***	0.23	1.54 ***	0.14	$1.49^{**}$	0.19
Other support sources						
Reliability	1.77 *	0.45				
Openness			4.20 ***	1.03		
Health discussion					2.11*	0.62
Woman $\times$ other sources of openness			0.47	0.14		
F	7.59 ***a		89.8 ***b		6.45 ***a	
Pseudo $R^2$	.23		.19		.14	

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health, functional health, number of confidants, proportion of kin, and frequency of contact with kin are included in these models but not shown because of space constraints. All but the last of these were Note: Estimates are weighted to adjust for probability of inclusion in the analysis and differential nonresponse. All models are survey adjusted. Labor force status, spouse's overall health, self-reported not significant. R = respondent; ref. = reference.

<sup>a</sup> df= 19, 32.

 $b_{df=20, 31.}$ 

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p < .05, two-tailed. p < .01, two-tailed. p < .001, two-tailed.

Cornwell