The Role of Social Relationships in Predicting Loneliness: The National Social Life, Health, and Aging Project

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The authors explore associations between objective and subjective social network characteristics and loneliness in later life, using data from the National Social Life, Health, and Aging Project, a nationally representative sample of individuals ages 57 to 85 in the United States. Hierarchical linear regression was used to examine the associations between measures of objective and subjective social network characteristics and their importance in predicting loneliness across marital status. For the entire sample, as well as the married–cohabitating subsample, objective indicators such as frequency of contact with social network members were negatively associated with feelings of loneliness, net of background characteristics. However, the authors' analysis highlights the contribution of subjective perceptions of social ties, the quality of marriage in later life for those engaged in marital or cohabitating relationships, and the quality of familial ties for the nonmarried older adults. In a married–cohabitating subsample, the subjective perceptions of one's relationship with the partner explained, by itself, 7% of the variance in loneliness, whereas the quality of family ties explained an additional 6% of the variance in loneliness in the nonmarried sample. Based on the present findings, practical implications for social workers are discussed.

KEY WORDS: *later life; loneliness; social networks; subjective perceptions*

In research, multiple definitions of loneliness have been proposed. Yet almost uniformly, a distinction has been made between loneliness and aloneness (Andersson, 1998). Loneliness is approached as a discrete, subjective construct associated with the objective social situation but not synonymous with the actual circumstances. Thus, people can feel lonely in the company of many others or be alone without feeling lonely. It also has been agreed that loneliness is a painful or unpleasant experience (Peplau & Perlman, 1982).

Cognitive theory, which is a major theoretical approach guiding loneliness research, focuses on one's perception and evaluation of social ties. Loneliness, according to this theoretical point of view, results from the perceived discrepancy between desired and actual social relationships or the subjective gap between one's optimal levels of social relationships and achieved levels of same. A perceived deficit in one's social interactions is crucial in creating a sense of loneliness. Past experience and experience of other people in the social environment shape this evaluation process. Contrary to other important theoretical views of loneliness, such as the social needs approach (represented by Weiss, 1973, 1987), cognitive theory suggests an indirect relation between objective deficits in one's social network and feelings of loneliness. Cognitive processes of perception and evaluation serve as mediators (de Jong Gierveld, 1998; Peplau & Perlman, 1982).

In recent years, interest in aging and loneliness has grown for two primary reasons. First, loneliness is a socially prevalent phenomenon among elderly people. For example, in a representative sample of British community-dwelling older people, almost 40% experienced loneliness to some degree (Victor, Scambler, Bowling, & Bond, 2005). Similar prevalence rates were recently found in Finland among a random sample of people age 75 and over (Savikko, Routasalo, Tilvis, Strandberg, & Pitkälä, 2005). In the United States, Theeke (2007) reported that approximately 17% of people age 50 and above reported loneliness.

Second, loneliness can have deleterious effects in multiple domains of elders' lives, including both physical and mental health. In the Chicago Health, Aging, and Social Relations Study, loneliness was associated with elevated systolic blood pressure, even

after controlling for demographics, health behaviors, and various psychosocial factors. Moreover, loneliness was a unique predictor of age-related increases in systolic blood pressure (Hawkley, Masi, Berry, & Cacioppo, 2006). Loneliness was also found to affect cardiovascular activity in everyday life by predicting higher basal total peripheral resistance and lower cardiac output (Hawkley, Burleson, Berntson, & Cacioppo, 2003). Moreover, loneliness has predicted mortality in elderly people in a longitudinal study (Penninx et al., 1997).

Along with effects on physical health, loneliness is associated with poor mental health. In both cross-sectional and longitudinal studies, greater loneliness was associated with higher levels of depression. Moreover, loneliness remained a risk factor for depression after central demographic and psychosocial factors were taken into account (Cacioppo, Hughes, Waite, Hawkley, & Thisted, 2006). Loneliness was also found to be negatively associated with emotional well-being (Lee & Ishii-Kuntz, 1987) and positively associated with serious thoughts of suicide and parasuicide (Stravynski & Boyer, 2001).

According to the cognitive model for conceptualizing loneliness, suggested by de Jong Gierveld (1987), two domains of the social network form the most likely determinants of loneliness among older adults. The first, termed "the descriptive characteristics of the social network," represents the objective aspect of social contacts, as measured by network size and frequency of contact. However, study of objective determinants yields inconsistent results as to their contribution to the prediction of loneliness in later life. In a recent study, levels of contact with family or friends and also proximity and number of family or friends did not demonstrate statistically significant association with self-reported loneliness (Victor et al., 2005). However, among 20-year survivors of the Bangor Longitudinal Study on Ageing, married status and children living nearby were protective factors against loneliness (Wenger & Burholt, 2004). Also, a study of 1,071 participants in the Senior Citizens Nutrition and Activities Program in Florida found that subjects with no children and no friends were lonelier than their counterparts with children and friends (Mullins & Elston, 1996). The latter is consistent with a Swedish study of elderly people age 75 and over, which demonstrated that 50% of those who reported no friends experienced loneliness (Holmen, Ericsson, Andersson, & Winblad, 1992). However, marital status had no impact on loneliness (Mullins & Elston, 1996).

The second domain emphasizes the quality of social ties, as measured by perceived availability of support and satisfaction with interpersonal relationships, and is termed the "subjective evaluations of the social network." Although both the objective and subjective network aspects were included in de Jong Gierveld's framework, she underscored the importance of the latter one, which is argued to be more closely linked to loneliness than the objective domain. Many other scholars have emphasized the importance of subjective assessments of social interactions over objective social circumstances in predicting well-being outcomes (for example, Antonucci & Akiyama, 1991; Bowling, 1994), particularly for loneliness (Cutrona, 1982; Peplau & Perlman, 1982).

Nevertheless, studies most frequently use objective measures of social networks as determinates of loneliness; the subjective domain is less often tested (Pinquart & Sörensen, 2001). Several recent studies that incorporated subjective assessments of the network—measured by perceived social support—found statistically significant inverse associations with loneliness (Kahn, Hessling, & Russell, 2003; Kim, 1999; Tiikkainen & Heikkinen, 2005). However, these studies' findings are not generalizable because of their select samples. For example, Kahn et al. (2003) used a sample of 100 older adults attending a senior community center, whereas Tiikkainen and Heikkinen's (2005) sample comprised 207 residents of central Finland at age 80.

Moreover, the literature suggests that social ties are not always beneficent and supportive, but can also be hurtful (Rook & Pietromonaco, 1987). Beneficent and negativity characteristics can co-occur in the same relationships (Ruehlman & Wolchik, 1988). Thus, there is a serious need to explore the positive and negative aspects of social interactions. This arena was explored previously in relation to depressed mood (Schuster, Kessler, & Aseltine, 1990), life satisfaction, and positive and negative mood (Walen & Lachman, 2000), but not in regard to loneliness in later life.

In sum, there seems to be no prevailing consensus about the contribution of the objective domain of social relationships in relation to loneliness. There is also insufficient knowledge concerning the contribution of subjective quality of the same ties. The current study, using contemporary data from the

recently implemented National Social Life, Health, and Aging Project (NSHAP), contributes to loneliness research in two ways. It explored both the objective and the subjective characteristics of older adults' social networks. The latter aspect was tested in a comprehensive manner (perceived support and strain) while using a large, generalizable sample. This latter aspect is particularly important, because much of loneliness research has been criticized as stemming from locally based samples, thus limiting the generalization of the various findings (Victor et al., 2005).

METHOD

The current study used data from the first wave of NSHAP that is focused on older adult interpersonal connections, including marriage, family, social relationships, and sexuality as well as the health of older adults. The general aims of NSHAP wave 1 were to describe the health of older adults; evaluate the relationship between older adult interpersonal connections and health; examine the importance of gender, culture, and economic context for older adult health and social connectedness; identify the biological pathways through which social connectedness affects various aspects of health; and describe health behaviors and health care use among older adults, including their perceptions of patient–physician communication.

NSHAP is a nationally representative probability sample of noninstitutionalized people ages 57 to 85 years, selected from households across the United States. NSHAP is a multistage, stratified area probability sample. The sample for NSHAP was generated using the same field operation that was used for the 2004 wave of the Health and Retirement Study (HRS). The HRS is a nationally representative sample of individuals 50 years and older living in the United States that is sponsored by the National Institute on Aging and is conducted by the University of Michigan. Participants take part in a biennial interview that covers a range of topics, including income, wealth, work, retirement, family support systems, health, and health care use (http://hrsonline.isr.umich.edu/).

Through an innovative collaboration between NSHAP and HRS, the screening for both surveys was carried out as a single operation. The sample designs for NSHAP and HRS were thus identical at the area stages, in which geographic areas were selected into the sample with probabilities proportional to their sizes. Two additional sampling stages were (1) a household selection stage in which households were selected for screening and (2) an individual selection stage in which one eligible person in each household was selected for the NSHAP interview. The 2004 HRS new cohort required adults ages 50 to 56. To avoid overlap with the HRS sample, the age range of 57 to 85 years was selected for the NSHAP investigation. African Americans, Latinos, men, and the older age group were oversampled to provide adequate representation of these subgroups (for a detailed description of the sample design, see O'Muircheartaigh, Eckman, & Smith, 2009).

Two-hour in-home interviews were conducted in English and Spanish by professional interviewers using a computer-assisted personal interview. The interviewer training included the completion of a home study packet, a four-day in-person training, and booster trainings, which were held by phone during data collection to provide help with field efficiency and gain cooperation (Smith et al., 2009). Data collection was executed between July 2005 and March 2006, yielding 3,005 respondents (1,455 men and 1,550 women). The weighted sample response rate was 75.5%. Data collection also included a brief "leave behind" self-administrated questionnaire. This questionnaire was given to the respondents at the end of the in-person interview to fill out and mail back. The response rate for the postinterview questionnaire was approximately 84%. (For detailed information on NSHAP methodology, see O'Muircheartaigh et al., 2009, and Smith et al., 2009.)

Study Variables

Loneliness. NSHAP used a shortened version of one of the most widespread scales of loneliness: the Revised UCLA Loneliness Scale (R-UCLA) (Russell, Peplau, & Cutrona, 1980). For use in large surveys, Hughes, Waite, Hawkley, and Cacioppo (2004) shortened the original 20-item scale to three questions with a simplified set of response categories. Respondents were asked to rate, on a three-point scale (ranging from hardly ever to often), how often they felt a lack of companionship, left out, or isolated from others. Responses to each question are summed, with higher scores indicating greater loneliness. In the NSHAP sample, this scale achieved good internal reliability, with a Cronbach's alpha of .81.

Social Network Characteristics. Objective network characteristics: For the purposes of this analysis, current marital status was measured using two categories: married or cohabiting and other. Respondents also reported the number of living children and grandchildren they have. In addition, respondents reported the number of relatives and friends they have on a six-point ordinal scale ranging from none to more than 20. Frequency of social contact with neighbors was measured on a five-point ordinal scale ranging from hardly ever to daily or almost every day, whereas frequency of contact with friends and relatives was measured on a seven-point scale ranging from never to several times a week.

Subjective characteristics of the social network*:* The subjective characteristics (positive and negative) were operationalized through four indicators taken from the 2002 HRS that were originally developed for the MacArthur Midlife in the United States survey (MIDUS) to evaluate perceived social support and perceived strain (Honda & Jacobson, 2005;Walen & Lachman, 2000). Items were asked in three loops in reference to the respondent's partner, friends, and family. Included were two indicators of perceived support: (1) "How often can you open up to your (husband/wife/partner) if you need to talk about your worries: Would you say hardly ever, some of the time, or often?" (2) "How often can you rely on (him/her) for help if you have a problem?" (with the same response scale). The two indicators of perceived strain were as follows: (1) "How often does your (husband/wife/partner) make too many demands on you? Would you say hardly ever, some of the time, or often?" (2) "How often does (he/she) criticize you?" (with the same response scale). In accordance with other studies using these indicators, we summed the two perceived support indicators and the two strain measures separately for spouse, relatives, and friends. In NSHAP, as in MIDUS, factor analysis supported this solution (Walen & Lachman, 2000). For the three types of relationships, two factors (perceived support and perceived strain) were extracted on the basis of two eigenvalues greater than 1 while using principal component analysis with Varimax rotation.

Covariates

Health status was measured using a self-reported question: "Would you say your health is excellent, very good, good, fair or poor?" Responses to this item ranged from 1 to 5, with higher scores indicating better subjective health. We included two additional measures of health: eyesight and hearing loss. Respondents were asked to rate their eyesight in the same manner that they rated their health and to indicate on a yes/no question whether they had experienced a hearing loss.

Sociodemographic data—age (57 to 64, 65 to 74, 75 to 85), gender (men, women), education (less than high school, high school, some college, bachelor's degree or more), ethnicity (white, not white), and subjective income—were gathered through self-report. In the case of subjective income, the respondents were asked the following: "Compared with most of the people you know personally, like your friends, and work associates, would you say that your household income is far below average, below average, average, above average or far above average?"

Statistical Analysis

Bivariate correlations were used to examine the relationships between individual predictors and loneliness. We used hierarchical linear regressions to examine the associations between various measures of objective and subjective social network characteristics and the relative importance of each domain in predicting loneliness (using the difference in the R^2s as an estimator). Using the entire sample, three sets of variables were added sequentially: (1) background characteristics, (2) objective network characteristics, and (3) subjective network characteristics. In this sample, a substantial number of respondents did not have a spouse or a cohabitating partner. Therefore, we ran two additional sets of regressions, among the unmarried and married subsamples separately. In the unmarried sample, we used the same three models as in the entire sample; to examine how perceptions of a partner relationship were related to loneliness for the married group, we executed a third hierarchical regression. For this analysis, the first three models were run as indicated earlier, and a fourth model estimated the contribution of subjective perceptions of the respondent's relationship to his or her partner. In all three stages of analysis, we used weights to account for differential probabilities of selection and differential nonresponse. The complex sampling design used in NSHAP requires the use of weights in the analyses to provide unbiased estimates of the population. The weight variable used in these analyses accounts for the probability

of the household's selection for the HRS screening operation, including the probability of selection of the areas that contain the case and the probability of the household selection and the household's probability of selection for the NSHAP survey, which accounts for any adjustments due to subsampling of nonminority cases, the probability of selection of the household for NSHAP, and the probability of selection of the given individual within the household. The weight variable also accounts for differential nonresponse (see O'Muircheartaigh et al., 2009, for a detailed description of weighting procedures and available weights for use in the public data). STATA 9.0 was used for the analyses.

RESULTS

Background characteristics of the NSHAP sample and differences in mean loneliness scores across gender, marital status, ethnicity, income, education, and health groups are presented in Table 1. The loneliness scale ranges from 3 to 9, with higher scores reflecting greater loneliness. The mean of loneliness for the entire sample was 3.99 (SE = 0.04; 95% CI 3.9, 4.07), suggesting a relatively low level of experienced loneliness. However, on the bivariate level, women, nonmarried individuals, black and Hispanic people, and people with lower income levels and lower education reported greater loneliness. The better one's perceived health, the less loneliness one felt. Among these relationships, being married or cohabiting appeared as an important protective factor against loneliness. Age and hearing loss were not significantly correlated to feelings of loneliness (not shown).

The bivariate relationships between objective and subjective network characteristics and loneliness can be found in Table 2. Each subjective subscale ranges from 2 to 6, with higher scores indicating greater perceived support or strain. In general, older adults perceived their network as more supportive than strained. The direction of the relationships between the subjective network characteristics and loneliness were as expected. Supportiveness received from a spouse or partner, relatives, and friends was associated with less loneliness. Strained relationships were associated with higher levels of loneliness. With partners, perceived support was more closely linked to loneliness than perceived strain. The opposite, however, was found concerning relatives and friends, with the negative characteristics more dominantly associated with loneliness.

We also tested the bivariate associations between objective network characteristics and loneliness (see Table 2). The number of relatives, number of friends, frequency of contact with neighbors and with relatives, and frequency of contact with friends had significant negative relationships with experienced loneliness (–.17, –.24, –.10, –.15, respectively). However, we did not find a significant association with number of children and grandchildren (not shown).

Hierarchical regressions were used to examine the importance of objective and subjective social network features in predicting loneliness, net of the effect of demographic characteristics (see Table 3). Regressions included only variables that showed significant correlations with loneliness at the bivariate level. In model 1, when only the background explanatory variables were entered, better income and subjective health (general and eyesight) were inversely associated with feelings of loneliness. Men were also less lonely than women. In model 2, with objective network measures added, the most powerful protective factor was being married. The other background factors from model 1 remained significant, excluding gender. As expected, in model 3, strained family relationships were positively associated with loneliness, and positive family relationships were negatively associated with loneliness. Surprisingly, perceived supportiveness (positive and negative) from friends was not related to loneliness.

To determine the relative contributions of the objective and subjective network domains in predicting loneliness, we tested the difference in R^2. In model 1, 9% of the variance in loneliness was explained. Adding the objective network indicators increased the ratio of the explained variance to 15%, and the difference in R^2 between the two models was significant. Significant additional improvement was shown when the subjective network characteristics were introduced; model 3 explained 19% of the variance in loneliness. The most influential predictor of loneliness in the entire sample was marital status. Being married was found to be a significant protective predictor of loneliness.

Next, among married and cohabitating adults, we examined the relative importance of respondents' perceptions of support and strain from their spouse or partner. Thus, in addition to the three models included in the former analysis, this analysis tested the subjective quality of the marital relationship as well (see Table 3). The influence of background char-

Table 1: Descriptive Characteristics of the Sample and Bivariate Analysis

Variable	%	Mean of Loneliness[a]	Loneliness β *SE*
Gender			
(Women)	51.5	4.09 (0.05) [4.0, 4.2]	
Men	48.5	3.88 (0.06) [3.8, 4.0]	–0.20 (0.08)*
Marital status			
(Not having a partner)	31.5	4.53 (0.07) [4.4, 4.7]	
Having a partner	68.5	3.75 (0.04) [3.7, 3.8]	–0.79 (0.09)**
Ethnicity			
White	81.0	3.93 (0.05) [3.8, 4.0]	–0.33 (0.08)**
(Not white)	19.0	4.26 (0.08) [4.1, 4.4]	
Income[a]			
Below the average	27.8	4.43 (0.08) [4.3, 4.6]	–0.33 (0.05)**
Average	49.9	3.88 (0.04) [3.8, 4.0]	
Above average	22.3	3.70 (0.07) [3.6, 3.9]	
Education[b]			
High school or less	45.5	4.14 (0.05) [4.0, 4.2]	–0.17 (0.03)**
High school diploma	30.0	3.98 (0.07) [3.8, 4.1]	
Bachelor or more	24.5	3.76 (0.06) [3.6, 3.9]	
Health[a]			
Less than good	24.8	4.51 (0.08) [4.3, 4.7]	–0.27 (0.03)**
Good	29.6	3.95 (0.05) [3.8, 4.1]	
Very good or excellent	45.6	3.76 (0.05) [3.7, 3.9]	
Eyesight[a]			
Less than good	15.1	4.56 (0.11) [4.4, 4.8]	–0.28 (0.03)**
Good	30.7	4.09 (0.05) [4.0, 4.2]	
Very good & excellent	54.2	3.79 (0.05) [3.7, 3.9]	

Notes: Reference categories are in parentheses. Estimates are weighted to account for differential probabilities of selection and differential nonresponse and to account for survey sampling design through incorporation of sampling strata and clusters.
[a]Robust standard errors are given in parentheses, and 95% confidence interval are given in brackets.
[b]These variables were treated as ordinal in the bivariate analysis, using their original response categories.
*$p < .05$. **$p < .01$.

acteristics remained similar in the married group to that of the entire sample. In model 2, all the objective social network measures were significant predictors of loneliness. However, when subjective appraisals of family and friends were introduced, the number of relatives was not significant, but the rest of the objective measures were still influential. As for the quality of the relationship with family and friends, perceived family strain showed a strong positive association with loneliness as in the entire sample. However, in the married/cohabitating subsample, subjective family support did not show protective effects, whereas perceived strain from friends was statistically associated with greater loneliness in this group.

The quality of the marital tie proved to have a remarkable influence on experienced loneliness (model 4). The feeling that you can open up and rely on your spouse achieved the strongest negative association with loneliness. Perceived strain from a spouse was strongly associated with greater feelings of loneliness. The importance of the quality of the marital tie was also substantiated when testing the differences in *R*-squares. Adding the subjective perceptions of the marital/cohabitating relationship explained an additional 7% of the variance in loneliness.

The importance of the subjective characteristics of the network was shown again when the three-level model was tested among the nonmarried group (see Table 3). The strongest association was found between perceived family strain and loneliness (β = 0.30), followed by a strong negative relationship between perceived support received from the family

Table 2: Objective and Subjective Network Characteristics and Loneliness		
Variable	**Total Sample** β ***SE***	**Loneliness** β ***SE***
Objective indicators		
No. of friends	3.3 (0.04)	–0.24 (0.03)***
No. of relatives	2.3 (0.04)	–0.17 (0.04)***
Freq. contact neighbors	2.4 (0.04)	–0.10 (0.02)***
Freq. contact with friends and relatives	5.4 (0.03)	–0.15 (0.03)***
Subjective indicators		
Perceived spouse support	5.6 (0.03)	–0.47 (0.05)***
Perceived spouse strain	3.0 (0.03)	0.25 (0.04)***
Perceived family support	4.9 (0.03)	–0.16 (0.04)***
Perceived family strain	2.6 (0.02)	0.38 (0.05)***
Perceived friends support	4.3 (0.03)	–0.09 (0.03)**
Perceived friends strain	2.3 (0.02)	0.27 (0.07)***

Notes: Estimates are weighted to account for differential probabilities of selection, differential nonresponse and to account for survey sampling design through incorporation of sampling strata and clusters. No. = number; Freq. = frequency.
**$p < .01$. ***$p < .001$.

and feelings of loneliness. As in the married subsample, here again the subjective block significantly explained more variance in the outcome than the others, it explained an additional 6% of the variance in loneliness compared with only 2% explained by the objective network characteristics in this group.

DISCUSSION

The current study aimed to examine the role of social ties in predicting loneliness among a nationally representative sample of older people in the United States. Our findings underscore the importance of the objective characteristics of the social network. For the entire sample as well as in the married subsample, number of friends and relatives and frequency of contact with social network members were all inversely associated with loneliness. A strong negative relationship was also found between the number of relatives and feelings of loneliness among the nonmarried group. Thus, the potentially palliative influence of objective network characteristics on loneliness is consistent with other studies (Holmen et al., 1992; Lee & Ishii-Kuntz, 1987; Mullins & Elston, 1996).

Theoretical models, however, argue that the subjective quality of social contact is more closely linked to perceived loneliness than are objective features (Cutrona, 1982; de Jong Gierveld, 1987). This argument received substantial verification in our study in both the married/cohabiting and the nonmarried subsamples. In both groups, greater explanatory power for the perceived characteristics was found. Moreover, the strongest predictors of loneliness in these groups came from the subjective appraisals of the social network. This is in accord with another study that found that the level of satisfaction with the network is a leading determinate of loneliness, whereas the size of the network has only a moderate effect, albeit significant (Kim, 1999).

The importance of the quality of social relationships is emphasized too by the fact that social ties are not always beneficent and supportive (Carstensen, 1991). The NSHAP data allowed us to explore these two facets of the subjective contacts—perceived support and perceived strain—providing an opportunity to test which domain has a stronger relationship with loneliness. Our analysis suggests that the negative aspect is more predictive than supportive interactions of loneliness. A strained familial relationship was among the most influential predictors of loneliness, especially for the nonmarried respondents. However, consistent with other studies, the objective measures of kinship (that is, number of children and grandchildren) did not demonstrate a relationship with loneliness (Lee & Ishii-Kuntz, 1987; Zhang & Liu, 2007). This emphasizes the importance of the perceived quality of family ties rather than the size of the family network in predicting loneliness.

In addition, a notable effect of the quality of the marital/cohabitating relationship was found. Having a supportive spouse or partner to whom one can open up and upon whom one can rely had the strongest inverse relationship with self-reported loneliness, after controlling for the effects of varying

Table 3: Network's Objective and Subjective Characteristics and Loneliness: Entire Sample, Married and Nonmarried Subsamples

	Entire Sample (N = 3,005)			Married Subsample (n = 1,861)				Nonmarried Subsample (n = 1,144)		
Variable	**M1**	**M2**	**M3**	**M1**	**M2**	**M3**	**M4**	**M1**	**M2**	**M3**
Income	–0.23***	–0.13**	–0.16***	–0.12**	–0.11*	–0.13**	–0.10*	–0.21	–0.17*	–0.18*
	(0.04)	(0.04)	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)	(0.08)	(0.08)	(0.09)
Education	0.01	0.01	0.02	0.01	–0.02	0.01	0.00	0.01	0.01	–0.01
	(0.04)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.03)	(0.07)	(0.07)	(0.07)
Health	–0.16***	–0.13***	–0.10**	–0.12**	–0.09*	–0.06†	–0.07†	–0.24***	–0.22**	–0.17
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.06)	(0.07)	(0.07)
Eyesight	–0.18***	–0.10**	–0.08*	–0.16***	–0.11**	–0.08*	–0.06	–0.15***	–0.07	–0.07
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.07)	(0.07)	(0.08)
Men	–0.14*	–0.09	–0.06	–0.14*	–0.15*	–0.16*	–0.15*	0.30*	0.11	0.24†
	(0.07)	(0.06)	(0.07)	(0.07)	(0.07)	(0.08)	(0.07)	(0.15)	(0.14)	(0.14)
White	–0.13	–0.07	0.04	–0.19†	–0.09	0.01	0.00	0.04	–0.04	0.12
	(0.09)	(0.09)	(0.09)	(0.10)	(0.10)	(0.09)	(0.09)	(0.16)	(0.16)	(0.18)
Married		–0.60***	–0.61***							
		(0.08)	(0.08)							
No. of relatives		–0.12***	–0.09**		–0.08*	–0.06	–0.03		–0.20**	–0.13†
		(0.03)	(0.03)		(0.03)	(0.04)	(0.03)		(0.06)	(0.07)
No. of friends		–0.09**	–0.08*		–0.13***	–0.12***	–0.10**		–0.10	–0.00
		(0.03)	(0.03)		(0.03)	(0.03)	(0.03)		(0.06)	(0.08)
Freq. contact neighbors		–0.09***	–0.09***		–0.09**	–0.10**	–0.08**		–0.06	–0.08
		(0.03)	(0.03)		(0.03)	(0.03)	(0.03)		(0.04)	(0.07)
Freq. contact with friends		–0.07*	–0.07*		–0.06†	–0.07*	–0.08*		–0.09	–0.09
		(0.03)	(0.03)		(0.03)	(0.03)	(0.03)		(0.06)	(0.07)
Perceived family support			–0.09**			–0.04	–0.01			–0.20***
			(0.03)			(0.04)	(0.04)			(0.06)
Perceived family strain			0.25***			0.23***	0.21***			0.30***
			(0.04)			(0.05)	(0.05)			(0.07)
Perceived friends support			–0.01			–0.04	–0.01			–0.04
			(0.03)			(0.03)	(0.03)			(0.06)
Perceived friends strain			0.08			0.16*	0.13†			0.05
			(0.06)			(0.07)	(0.07)			(0.10)
Perceived spouse support							–0.32***			
							(0.06)			
Perceived spouse strain							0.15***			
							(0.03)			
R^2	.09	.15	.19	.06	.09	.13	.20	.09	.11	.17
ΔR^2		.06***	.04***		.03***	.03***	.07***		.02	.06***

Notes: Estimates are weighted to account for differential probabilities of selection and differential nonresponse. Beta coefficients (β) are given outside of parentheses. Robust standard errors are given in parentheses. M = model; No. = number; Freq. = frequency.
†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

background and objective measures. Also, strained marital bond demonstrated a strong association with greater loneliness. The subjective perceptions of one's relationship with a married/cohabitating partner explained, by itself, 7% of the variance in loneliness among the married/cohabitating subsample.

Among the entire sample, the absence of a partner was also found to be highly correlated with feelings of loneliness. This is in accord with other studies (Green, Richardson, Lago, & Schatten-Jones, 2001; Jylhä, 2004) and the conceptualization suggested by Weiss (1973, 1987) that differentiated between loneliness of emotional isolation and that of social isolation, the former deriving from the absence of a partner. Based on our last findings, we can conclude that having a partner is a potent protective factor against loneliness. However, when an individual is married or cohabitating, loneliness is most closely linked to the quality of the relationship.

Surprisingly, we did not empirically verify the association between quality of friendship ties and reported loneliness. This is in contrast with other studies that have underscored the importance of satisfaction with friend contacts (Holmen et al., 1992; Holmen & Furukawa, 2002). It might be that friends are different than family in the sense that friends are selected and chosen. This might imply that friends who are not supportive and those who are harmful do not remain as friends and, consequently, are not considered when replying to the question. The importance of friends in predicting loneliness is evident, nevertheless, when the objective measures of number of friends and frequency of contact with them are explored.

A limitation of the present study is that NSHAP used a shortened version of the R-UCLA Loneliness Scale. This scale does not make a distinction between the two common forms of loneliness—emotional loneliness and social loneliness—that were originally offered by Weiss (de Jong Gierveld & van Tilburg, 2006). Consequently, we could not explore these domains according to their strict definitional criteria. Another limitation was that we could not make a distinction between situational loneliness and long-term, chronic loneliness (Marangoni & Ickes, 1989). However, in 2011, when wave 2 data from NSHAP become available, we will be able to explore the distinctions between these two types of loneliness. Using panel data will also allow us to examine a model with causal relationships that is limited now by the cross-sectional nature of the data.

Nonetheless, our findings demonstrate an important relationship between objective social network characteristics and feelings of loneliness in later life. In particular, our investigation underscores the contribution of subjective perceptions of social ties, the quality of marriage in later life for those engaged in marital or cohabitating relationship, and the quality of familial ties for the nonmarried older adults.

The current investigation has some practical implications for professionals such as social workers. In the literature, three levels of interventions have been suggested to combat this painful experience of loneliness (Rook, 1984). At the individual level, several one-to-one interventions have been described, and most of them are based on home visits or telephone calls conducted by professionals or by peers (Cattan, White, Bond, & Learmouth, 2005). The second level intervention—group interventions—was found to be much more prevalent and effective (Cattan et al., 2005). One example of a successful intervention at the group level is the friendship enrichment program, developed and carried out in the Netherlands among older women. This program aimed at coping with loneliness by developing new beneficent friendships (Stevens, 2001; Stevens & van Tilburg, 2000). At the environmental level, removing obstacles to social contacts was suggested. Examples include offering free transportation for older people (Rook, 1984) and providing access to and computer skills for using the Internet to facilitate virtual networking and encourage interpersonal dialogue, particularly among older adults with disabilities (Findlay, 2003). The current investigation highlights the importance of the quality of existent relationships, the quality of the closest ties, the marital bond for married older adults, and familial relationships for the nonmarried older adults. Therefore, instead of focusing solely on the extension of the social network in terms of objective characteristics, a serious professional effort should be focused at improving the quality of the closest relationships. The current findings also suggest that there is no one prescription for combating loneliness in later life. For nonmarried older adults, interventions should take place at the familial arena as both support and strain from family members are associated with feelings of loneliness. Efforts should be made at increasing support and reducing familial strain to cope with loneliness. However, for their counterparts, the married or cohabiting

older adults, efforts at reducing loneliness should be focused more on the couple level. SWR

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