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A Short Scale for Measuring Loneliness in Large Surveys:

Results From Two Population-Based Studies

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Abstract

Most studies of social relationships in later life focus on the amount of social contact, not on individuals' perceptions of social isolation. However, loneliness is likely to be an important aspect of aging. A major limiting factor in studying loneliness has been the lack of a measure suitable for large-scale social surveys. This article describes a short loneliness scale developed specifically for use on a telephone survey. The scale has three items and a simplified set of response categories but appears to measure overall loneliness quite well. The authors also document the relationship between loneliness and several commonly used measures of objective social isolation. As expected, they find that objective and subjective isolation are related. However, the relationship is relatively modest, indicating that the quantitative and qualitative aspects of social relationships are distinct. This result suggests the importance of studying both dimensions of social relationships in the aging process.

Keywords

loneliness; social isolation; social network index; measurement

Humans are social animals

In fact, our desire for social connections seems so strong that some authors have suggested that humans have a basic need to belong (Baumeister and Leary 1995). Social relationships subtly embrace us in the warmth of self-affirmation, the whispers of encouragement, and the meaningfulness of belonging. They are fundamental to our emotional fulfillment, behavioral adjustment, and cognitive function. Disruption or absence of stable social relationships blasts our minds and biology like few other events.

Social integration is critical to development across the life span, but it is likely to be particularly important in later life. Recent research has shown that emotional closeness in relationships increases with age. At the same time, however, the number of social relationships decreases, and social events triggering significant disruptions in social ties (e.g., death of a parent, children leaving home, relocation, death of a spouse) may increase (e.g., Carstensen, Isaacowitz, and Charles 1999; Martire et al. 1999; Rowe and Kahn 1997; van Tilberg 1998). Finally, shifting

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demographic patterns are changing the contours and context of social relationships (Hughes and Waite forthcoming). Dramatic changes in the family during the past several decades have led to new, more fragmented family structures and increases in the proportion of people living alone. These shifts in the social environment of aging persons will be even more pronounced among future cohorts of elders.

Most studies of social relationships in later life focus on the amount (e.g., number of individuals, frequency of contact) or content (practical help, advice) of social contact, not on individuals' perceived social isolation (Berkman and Glass 2000; Seeman 2000; Uchino, Cacioppo, and Kiecolt-Glaser 1996). And although memory and cognitive functioning in older adults have attracted considerable research attention in recent years, feelings of isolation and related constructs reflecting social functioning have received less attention. Thus, we know little about the links between objective measures of social integration and individuals' subjective assessments of their social connections. We know even less about the ways in which perceived isolation affects well-being in later life.

However, subjective interpretations of social relationships are likely to be key to understanding the impact of social connections on well-being. When one's intimate and social needs are not adequately met, a complex set of feelings termed *loneliness* occurs that motivates one to seek the fulfillment of these needs (Baumeister and Leary 1995; Weiss 1973). The core experience is being isolated socially and absent both relational and collective connectedness (Russell, Peplau, and Cutrona 1980; Hawkley et al. 2004). There is now substantial evidence that loneliness is a core part of a constellation of socioemotional states including self-esteem, mood, anxiety, anger, optimism, fear of negative evaluation, shyness, social skills, social support, dysphoria, and sociability (see, e.g., Berscheid and Reis 1998; Shaver and Brennan 1991). Feelings of loneliness are not synonymous with being alone but instead involve feelings of isolation, feelings of disconnectedness, and feelings of not belonging. These feelings in turn are thought to reflect the discrepancy between one's desired and one's actual relationships (Peplau and Perlman 1982).

In a meta-analysis of risk factors for loneliness in adulthood and old age, Pinquart and Sorensen (2003) estimated that approximately 10% of older adults complain of frequent feelings of loneliness. Situational threats to a valued interpersonal relationship ranging from social exclusion, ostracism, rejection, separation, divorce, to bereavement are known to elevate feelings of loneliness. Weiss (1973), for instance, found that a spouse following his or her partner through a series of job transfers may be low in loneliness and well adjusted in one town but lonely and poorly adjusted in another. Nevertheless, loneliness is typically conceptualized as consisting of a stable trait, with individual differences in the set point for feelings of loneliness about which people vacillate depending on the specific circumstances in which they find themselves. Consistent with this reasoning, loneliness has a one-year test-retest reliability of .73 (unpublished conference presentation by Russell, Kao, and Cutrona 1987, cited in Shaver and Brennan 1991), and levels of loneliness increase little across the adult life span until above the age of 80 (Pinquart and Sorensen 2003).

A major limiting factor to studying loneliness in large-scale studies is the difficulty of measuring loneliness in a telephone survey, a typical mode of data collection in large studies. The standard measure of loneliness, the Revised UCLA Loneliness Scale (R-UCLA; Russell et al. 1980), is not well suited to a telephone survey. The R-UCLA was designed to be self-administered; it has 20 items with four response categories each. Such a scale is too long and too complex for a telephone interview.

As part of a large, multi-level study of social isolation and health in the aging process, we developed a three-item loneliness scale for use on a telephone survey. The scale has three items

and a simplified set of response categories but appears to measure overall loneliness quite well. In this article, we describe the scale and document its psychometric properties in two studies. We then assess the relationship between loneliness and several commonly used measures of objective social isolation. As expected, we find that objective and subjective isolation are related. However, the relationship is relatively modest, indicating that the quantitative and qualitative aspects of social relationships are distinct. This result suggests the importance of studying both aspects of social relationships in the aging process.

Method and Results

Study 1

Participants—Data for Study 1 were collected within the 2002 wave of the Health and Retirement Study (HRS), a nationally representative, longitudinal study of persons born 1947 or earlier. The HRS is a social survey designed for studying the later life course. At each interview, detailed information is collected about the respondent's health, family relationships, employment, income and wealth, and demographic background.

The HRS is composed of four cohorts who entered the study in different calendar years. Eligibility for each cohort was based on birth year, although spouses of age-eligible cohort respondents are interviewed regardless of their age. Once they have entered the study, respondents are interviewed every two years.

The sample for each cohort was derived from the same stratified, multistage area probability design in which Blacks, Hispanics, and Floridians were oversampled. The sample now includes approximately 22,000 respondents. The initial cohort response rates ranged from 70% to slightly more than 80%, quite high for a national survey. Reinterview rates for all cohorts at each wave have been between 92% and 95% (Health and Retirement Study 2003).

In addition to the lengthy core questionnaire, each wave of the HRS includes sets of questions, or modules, asked of only a portion of the sample. Modules contain questions being developed for future rounds, questions that apply to only a portion of the sample, or questions of interest for a specific research issue. The modules are given after the main body of the interview is complete and are limited to three minutes of interview time. Each member of the sample is assigned a module at random before interviewing for a wave begins. At the end of the (hour plus) telephone interview, respondents are asked if they would be willing to answer a few supplemental questions, and if they agree, they are administered their assigned module.

As part of our study of social environment, loneliness, and health in the aging process, we developed an HRS module that included a short loneliness scale. Our module was assigned to 3,008 potential respondents, double the number assigned to the other eleven 2002 modules.

Procedures—We began by selecting items from the R-UCLA Loneliness Scale (Russell et al. 1980), which is displayed in the first panel of Table 1. We conducted exploratory and confirmatory factor analyses of the scale, in which oblique rotations were carried out to allow for the possibility of correlated factors. Statistical evidence supported the superiority of a three-factor solution in the exploratory sample ($n = 1,255$) and confirmed substantial intercorrelations between the factors, rs > .5. Moreover, the three-factor structure showed a good fit to the data from the confirmatory sample ($n = 1,276$) (Hawkley et al. 2004). We subsequently selected three items from the dominant first factor to represent the loneliness construct. The three items with the highest loadings on the first factor were “I feel left out,” “I feel isolated,” and “I am unhappy being so withdrawn.” The relative complexity of the wording of the last item led us to replace it with the next highest loading item, “I lack companionship.”

We then adapted these items and their response categories for a telephone interview. This was an iterative process in which careful pretesting was invaluable; overall, it resulted in two sets of changes. First, we reworded the items as questions in the second person, because the items are not read by the respondent but are read to him or her over the telephone. Second, we reduced the number of response categories. In pretests, respondents had difficulty remembering the full set of response categories; the longer set of response categories also lengthened the module beyond our three-minute limit.

The three items we selected, as adapted, are shown in the bottom panel of Table 1. The response categories were coded 1 (*hardly ever*), 2 (*some of the time*), and 3 (*often*). As in the R-UCLA, each person's responses to the questions are summed, with higher scores indicating greater loneliness.

The Three-Item Loneliness Scale was then asked as a part of our module on the 2002 HRS. Of our 3,008 potential respondents, 471 (15.6%) refused to participate in the module (recall that respondents were asked whether they were willing to continue with the module questions at the end of a long telephone interview). Another 344 (11.4%) of the potential module respondents were actually proxy respondents, who answered on behalf of a respondent who was ill or incapacitated. Proxy respondents, by definition, did not complete the loneliness module. Eleven persons were missing information on one or more of the loneliness items. Thus, the final sample size for Module 6 of the 2002 HRS was 2,182. The characteristics of the sample are shown in the first column of Table 2.[1]

We used information from the main portion of the HRS interview to construct a set of indicators of objective social isolation. We first selected three indicators that prior research has used to measure social integration or isolation. These variables include marital status (currently married versus not currently married), a six-category measure of living arrangements, and whether the respondent volunteers at least 100 hours a year. In addition, we selected two variables as proxies for other aspects of social relations: whether the respondent provides any kind of help to family members and the respondent's rating of his or her neighborhood's safety. We use the first of these as a rough indicator of social contact, because the HRS does not provide direct information about frequency of social interaction (e.g., how often the respondent sees a close friend). We use the second as a crude proxy for neighborhood social integration.

Results: Loneliness Scale—The psychometric properties of the Three-Item Loneliness Scale in the Study 1 sample are shown in Table 3. The alpha coefficient of reliability is .72. Although this is somewhat lower than the alphas typically reported for the full scale (e.g., Akerlind and Hornquist 1989;Cuffel and Akamatsu 1989), the internal consistency for a three-item scale is quite good and indicates that the items reliably measure loneliness in a telephone sample. The mean and standard deviation of the Three-Item Loneliness Scale in the Study 1 sample are shown in the bottom panel of Table 3. As expected, most people report low levels of loneliness.

We assessed the convergent and discriminant validity of the Three-Item Loneliness Scale by examining its correlation with measures of mood and emotion that prior research indicates are associated with loneliness. The results are also summarized in Table 3. Replicating prior research, persons who score high on loneliness are more likely to experience depressive symptoms, as indexed by a short form of the Center for Epidemiologic Studies–Depression

[1]Comparison of our sample with the entire set of respondents to the 2002 Health and Retirement Study (HRS) revealed few differences. Our sample appears more likely to be married and is slightly younger than the entire sample. Overall, however, our sample appears to represent the U.S. population age 54 and above quite well. The module sample also included spouses of HRS sample members who were younger than age 54. The majority of these persons (75%) were age 48 or older. We include these respondents in the analyses presented in this article. Results excluding them were identical to those presented here.

Scale (CES-D; Turvey, Wallace, and Herzog 1999), and, on average, score higher on the Perceived Stress Scale (Cacioppo et al. 2000). In contrast, individuals' loneliness scores are only weakly associated with emotions not linked to loneliness, such as enjoyment, energy, and motivation. These findings demonstrate discriminant validity for the Three-Item Loneliness Scale. As for convergent validity, we see that the correlation between the self-labeling loneliness statement in the depression index and the Three-Item Loneliness Scale is much higher than the correlation between any of the other components of the short CES-D.

Results: Objective and Subjective Isolation—The results of bivariate ordinary least squares regressions of the standardized Three-Item Loneliness Scale on each indicator of objective social isolation are shown in Table 4.[2] Each indicator is significantly associated with loneliness in the expected direction. These results provide strong evidence of a link between objective and subjective social isolation. At the same time, however, the associations are relatively modest and the variance explained low (no greater than .05), suggesting that objective and subjective measures of social isolation tap different aspects of social experience.

Study 2

Participants—Data for Study 2 were collected in the first year of the Chicago Health, Aging, and Social Relations Study (CHASRS), a longitudinal, population-based study of persons born between 1935 and 1952. The study aims to examine the social, psychological, and biological aspects of social isolation and health.

The target population for Study 2 was White, Black, and Hispanic persons between the ages of 50 and 67 living in Cook County, Illinois, who were sufficiently ambulatory to come to the University of Chicago for a daylong visit to the laboratory. The sample was selected using a multistage probability design in which Blacks and Hispanics were oversampled and gender equality maintained. First, a sample of households was selected, then sampled households were screened by telephone for the presence of an age-eligible person. Age-eligible persons were then asked to participate in the study. If a household contained more than one age-eligible person, the person with the most recent birthday was selected. A quota sampling strategy was used to achieve an approximately equal distribution of respondents across the six gender-by-race/ethnic group combinations.

The response rate among eligible persons was 45%, comparable with those for other well-conducted telephone surveys.[3] Considering that participation in CHASRS involved spending an entire day at the university, this response rate is remarkable. The final sample size for year 1 of CHASRS is 229.

The characteristics of the sample are presented in the third column of Table 2. In the second column, we display the characteristics of persons in the same age range in the HRS national sample. Because the CHASRS sample contains a higher fraction of Black and Hispanic respondents than the HRS, we also display the sample characteristics for each study separately by race/ethnicity. We would not expect the distributions in the two studies to be identical; CHASRS is an urban sample from one city, whereas the HRS is a national sample of a wider age range. However, the differences between the samples are generally as expected (e.g., higher levels of education in CHASRS) and rather modest.

[2]We standardized ($M = 0$, $SD = 1$) responses to the Three-Item Loneliness Scale to better compare with the results from the Chicago Health, Aging, and Social Relations Study in Study 2.

[3]This response rate assumes that households for which the presence of an eligible individual was unknown (23% of all households) were just as likely to contain an eligible individual as households that were successfully screened.

Procedures—Participants arrived at the laboratory at around 8:30 a.m. for approximately 8 hours of testing, including informed consent, questionnaires, interviews, lunch, and a cardiovascular protocol. As part of the testing, participants completed the R-UCLA and a demographic questionnaire based on the demographic component of the HRS.

In Study 2, we indexed objective social isolation using the epidemiological measure that first documented an association between social isolation and health (Berkman and Syme 1979). Specifically, we constructed the Social Network Index (SNI) following as closely as possible the procedures described by Berkman (1977).[4] We first created a "sociability score" based on responses to questions asking respondents how many close friends and relatives they had and how many of these people they saw at least once every two weeks. Each participant scored low, medium, or high on sociability based on Berkman's (1977) cutoffs. We then combined the sociability score with participants' marital status (married or living with partner vs. separated, divorced, widowed, or never married) to create an "index of intimate contacts," which ranged from low, medium, or high. We weighted this index and combined it with dichotomous measures of religious group affiliation and group membership, yielding 12 possible social network scores. On the basis of the specifications used by Berkman (1977), we grouped the scores into four categories: low, medium, medium-high, and high.

Results: Loneliness Scale—The psychometric properties of the R-UCLA and the scale formed from the component items of the Three-Item scale are shown in the right-hand panel of Table 3. The alpha coefficient of reliability for the R-UCLA is quite similar to the alpha found in previous studies, at .91 (Akerlind and Hornquist 1989;Cuffel and Akamatsu 1989), although this is the first population-based study of older adults to examine these statistics for the R-UCLA. The alpha for the Three-Item Loneliness Scale is identical to the alpha we obtained for the same three items in Study 1 (.72). Moreover, the correlation between the R-UCLA and the Three-Item Loneliness Scale is quite high, at .82 ($p < .001$).

These results demonstrate that the Three-Item Loneliness Scale gauges general feelings of loneliness quite well and that it is robust across two different interview modalities (in person self-administered and telephone). These results also suggest that embedding the Three-Item Loneliness Scale within the R-UCLA is possible. This latter finding should increase the possibilities for cross-study comparisons.

To assess the validity of the Three-Item Loneliness Scale in a different sample, we examined the same set of correlations as we did in Study 1. The pattern of correlations is identical to the pattern we saw in Study 1, indicating convergent and discriminant validity. Moreover, the magnitude of the correlations is for the most part very similar to the corresponding correlations in Study 1 (see Table 3).

Results: Objective and Subjective Isolation—A bivariate OLS regression of loneliness, here measured by the standardized R-UCLA, and the SNI yielded a coefficient of −.42 ($p < .001$). Persons who score higher on the SNI show lower levels of loneliness, and the relationship is statistically significant. This result provides further confirmation of the connection between objective and subjective measures of social isolation. However, again, the association is relatively modest and the variance explained low. This is consistent with prior research showing that loneliness is determined by the qualitative rather than the quantitative aspects of social relationships (Hawkley et al. 2003; Wheeler, Reis, and Nezlek 1983). For example, marriage reduces the likelihood of loneliness, but married people can certainly feel isolated and lonely.

[4]We also constructed an unweighted Social Network Index to replicate the methodology used in some of the contemporary work in the field. The results and interpretations were comparable.

Discussion

The first finding in this article is that feelings of loneliness can be measured well in a telephone survey using the Three-Item Loneliness Scale. The Three-Item Loneliness Scale displayed satisfactory reliability and both concurrent and discriminant validity. Moreover, the three-item telephone version corresponds to the scale formed from the same three items when asked in the full in-person scale. Finally, our results are based on two population-based samples. Because most large-scale surveys rely on probability samples of the U.S. population, knowing that both the three-item and full scales work in the general population is important. The Three-Item Loneliness Scale greatly expands the possibilities for loneliness research in the older population. Loneliness can now easily be measured on large-scale surveys, and the results can be compared with results from studies using the full measure.

Our study also provides the first population-level confirmation of an association between social ties and loneliness. We predicted this association based on the extant research indicating that as objective social isolation increases, intimate and social needs are less likely to be met adequately. Loneliness is the experience elicited or exacerbated by these life circumstances. In a semistructured interview of single, married, divorced, and widowed individuals 25 to 75 years of age, de Jong-Gierveld (1987) reported that living with a partner predicted the lowest levels of loneliness. Similarly, elderly individuals who lived alone were lonelier than were age-matched individuals living with others, despite reporting comparable social interaction frequency and personal network adequacy (Henderson, Scott, and Kay 1986). Tornstam (1992), in a random sample in Sweden of 2,795 individuals 15 to 80 years of age, found that married individuals were, on average, less lonely than unmarried individuals. Among elderly independently living individuals (60 to 106 years), frequency of telephone contact with others predicted feelings of loneliness (Fees, Martin, and Poon 1999). Conversely, lonely, compared to nonlonely, individuals have fewer friends and fewer close friends, see their friends as less similar to themselves, and are less likely to have a romantic partner (Bell 1993).

However, significant individual differences in loneliness abound within these relationship categories (e.g., single, married; Barbour 1993; de Jong-Gierveld 1987; Tornstam 1992), as people also can live what feels to them to be an isolated existence even when around others (Cacioppo et al. 2000; Mullins, Elston, and Gutkowski 1996; van Baarsen et al. 2001). For this reason, loneliness is characterized as *feelings* of social isolation, absence of companionship, and rejection by peer groups (Adams et al. 1988; Austin 1983), with feelings of an isolated life in a social world forming the dominant experience (e.g., Russell et al. 1980). Accordingly, the association between social ties and loneliness in the current research was modest, indicating that objective and subjective social integration are related, but distinct concepts.

Good health is an important component of aging well. Recently, health researchers across a variety of fields have emphasized the need for multilevel research (e.g., Committee on Future Directions for Behavioral and Social Sciences Research at the National Institutes of Health 2001; Kessel, Rosenfeld, and Anderson 2004). This consensus reflects the now widespread recognition that individual health reflects processes occurring at social, psychological, and biological levels of organization. Such integrative research demands that researchers from fields with widely different approaches and techniques find common ground. In addition to the philosophical challenges involved in integrative research, reconciling different data collection modalities and analytic techniques presents a formidable barrier. We have shown how one of these practical challenges, developing measures that are robust to different data collection modalities, can be surmounted.

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References

Adams GR, Openshaw DK, Bennion L, Mills T, Noble S. Loneliness in Late Adolescence. Journal of Adolescent Research 1988;3:81–96.

Austin BA. Factorial Structure of the UCLA Loneliness Scale. Psychological Reports 1983;53:883–89. [PubMed: 6657840]

Akerlind I, Hornquist JO. Stability and Change in Feelings of Loneliness: A Two-Year Prospective Longitudinal Study of Advanced Alcohol Abusers. Scandinavian Journal of Psychology 1989;30:102–12. [PubMed: 2772568]

Barbour A. Research Report: Dyadic Loneliness in Marriage. Journal of Group Psychotherapy, Psychodrama & Sociometry 1993;46:70–72.

Baumeister RF, Leary MR. The Need to Belong: Desire for Interpersonal Attachment as a Fundamental Human Motivation. Psychological Bulletin 1995;117:497–529. [PubMed: 7777651]

Bell B. Emotional Loneliness and the Perceived Similarity of One's Ideas and Interests. Journal of Social Behavior & Personality 1993;8:273–80.

Berkman, Lisa F. Ph D dissertation. University of California; Berkeley: 1977. Social Networks, Host Resistance and Mortality: A Follow-Up Study of Alameda County Residents.

Berkman, Lisa F.; Thomas, Glass. Social Integration, Social Networks, Social Support, and Health. In: Berkman, LF.; Kawachi, I., editors. Social Epidemiology. Oxford, UK: Oxford University Press; 2000. p. 137-73.

Berkman, Lisa F.; Syme, S Leonard. Social Networks, Host Resistance and Mortality: A Nine Year Follow-Up Study of Alameda County Residents. American Journal of Epidemiology 1979;109(2): 186–204. [PubMed: 425958]

Berscheid, E.; Reis, HT. Attraction and Close Relationships. In: Gilbert, DT.; Fiske, ST.; Gardner, L., editors. The Handbook of Social Psychology. 2. New York: McGraw-Hill; 1998. p. 193-281.

Cacioppo, John T.; Berntson, Gary G.; Sheridan, John G.; McClintock, Martha K. Multi-Level Integrative Analyses of Human Behavior: Social Neuroscience and the Complementing Nature of Social and Biological Approaches. Psychological Bulletin 2000;126:829–43. [PubMed: 11107878]

Carstensen LL, Isaacowitz Derek M, Charles Susan T. Taking Time Seriously: A Theory of Socioemotional Selectivity. American Psychologist 1999;54:165–81. [PubMed: 10199217]

Committee on Future Directions for Behavioral and Social Sciences Research at the National Institutes of Health. New Horizons in Health: An Integrative Approach. Washington, DC: National Academy Press; 2001.

Cuffel BJ, Akamatsu TJ. The Structure of Loneliness: A Factor-Analytic Investigation. Cognitive Therapy and Research 1989;13:459–74.

de Jong-Gierveld, Jenny. Developing and Testing a Model of Loneliness. Journal of Personality & Social Psychology 1987;53:119–28. [PubMed: 3612484]

Fees BS, Martin P, Poon LW. A Model of Loneliness in Older Adults. Journal of Gerontology: Psychological Sciences 1999;54B:P231–39.

Hawkley LC, Browne Michael W, Cacioppo John T. The Dimensions of Loneliness: Perceived Isolation, Relational Connectedness, and Collective Connectedness. 2004Manuscript under review

Hawkley LC, Burleson MH, Berntson GG, Cacioppo JT. Loneliness in Everyday Life: Cardiovascular Activity, Psychosocial Context, and Health Behaviors. Journal of Personality and Social Psychology 2003;85:105–20. [PubMed: 12872887]

Health and Retirement Study. Sample Size and Response Rates. 2003. Retrieved October 13, 2003, from www.umich.edu/~hrswww/studydet/techdet/sample.html

Henderson AS, Scott R, Kay DW. The Elderly Who Live Alone: Their Mental Health and Social Relationships. Australian & New Zealand Journal of Psychiatry 1986;20:202–9. [PubMed: 3464264]

Hughes, Mary Elizabeth; Waite, Linda J. Forthcoming. The American Family as a Context for Healthy Aging. In: Sarah, Harper, editor. The Family in Ageing Societies. Oxford, UK: Oxford University Press;

Kessel, F.; Rosenfeld, PL.; Anderson, NB. Expanding the Boundaries of Health: Bio-Behavioral-Social Perspectives. New York: Oxford University Press; 2004.

Martire, Lynn M.; Schulz, Richard; Mittelmark, Maurice B.; Newsom, Jason T. Stability and Change in Older Adults' Social Contact and Social Support: The Cardiovascular Health Study. Journals of Gerontology Series B-Psychological Sciences & Social Sciences 1999;54B:S302–11.

Mullins LC, Elston CH, Gutkowski SM. Social Determinants of Loneliness Among Older Americans. Genetic, Social, & General Psychology Monographs 1996;122:453–73.

Peplau, LA.; Perlman, D., editors. Loneliness: A Sourcebook of Current Theory, Research and Therapy. New York: John Wiley; 1982.

Pinquart, M.; Sorensen, S. Risk Factors for Loneliness in Adulthood and Old Age— A Meta-Analysis. In: Shohov, S., editor. Advances in Psychology Research. 19. Hauppauge, NY: Nova Science; 2003. p. 111-43.

Rowe, John W.; Kahn, Robert L. Successful Aging. The Gerontologist 1997;37(4):443–40.

Russell, Dan; Peplau, Letitia A.; Cutrona, Carolyn E. The Revised UCLA Loneliness Scale: Concurrent and Discriminant Validity Evidence. Journal of Personality and Social Psychology 1980;39:472–80. [PubMed: 7431205]

Seeman, Teresa. Health Promoting Effects of Friends and Family on Health Outcomes in Older Adults. American Journal of Health Promotion 2000;14:362–370. [PubMed: 11067571]

Shaver, PR.; Brennan, KA. Measures of Depression and Loneliness. In: Shaver, P.; Wrightsman, L., editors. Measures of Personality and Social Psychology. 1. San Diego: Academic Press; 1991. p. 195-290.

Tornstam L. Loneliness in Marriage. Journal of Social & Personal Relationships 1992;9:197–217.

Turvey, Carolyn L.; Wallace, Robert B.; Herzog, Regula. A Revised CES-D Measure of Depressive Symptoms and a DSM-Based Measure of Major Depressive Episodes in the Elderly. International Journal of Psychogeriatrics 1999;11(2):139–48.

Uchino BN, Cacioppo JT, Kiecolt-Glaser JK. The Relationship Between Social Support and Physiological Processes: A Review With Emphasis on Underlying Mechanisms and Implications for Health. Psychological Bulletin 1996;119:488–531. [PubMed: 8668748]

van Baarsen B, Snijders TAB, Smit JH, van Duijn MAJ. Lonely But Not Alone: Emotional Isolation and Social Isolation as Two Distinct Dimensions of Loneliness in Older People. Educational and Psychological Measurement 2001;61:119–35.

van Tilburg, Theo. Losing and Gaining in Old Age: Changes in Personal Network Size and Social Support in a Four-Year Longitudinal Study. Journals of Gerontology Series B-Psychological Sciences & Social Sciences 1998;53B:S313–S323.

Weis, RS. Loneliness: The Experience of Emotional and Social Isolation. Cambridge, MA: MIT Press; 1973.

Wheeler L, Reis H, Nezlek J. Loneliness, Social Interaction, and Sex Roles. Journal of Personality and Social Psychology 1983;45:943–53. [PubMed: 6631669]

Biography

Mary Elizabeth Hughes, Ph.D., is an assistant professor of sociology at Duke University. Her research centers on how social contexts shape the individual life course. This article is based on a multidisciplinary project investigating the links between social environment, loneliness, and health in the aging process. Her other projects include an analysis of the connection between material aspirations and family formation and a study of the impact of social change on the lives of the baby boomers.

Linda J. Waite, Ph.D., is the Lucy Flower Professor of Sociology and director of the Center on Aging at the University of Chicago, where she also codirects the Alfred P. Sloan Center on Parents, Children and Work. Her research focuses on the family, from the youngest to the oldest ages. Her current projects include an investigation of the role of social contexts in the etiology of loneliness and stress, and their impact on health and well-being at older ages.

Louise C. Hawkley, Ph.D., is a senior research scientist in the Institute for Mind and Biology at the University of Chicago. Her current research investigates the psychological and physiological mechanisms that contribute to the association between loneliness and health in an aging population-based sample.

John T. Cacioppo, Ph.D., is the Tiffany and Margaret Blake Distinguished Service Professor of Psychology and the director of the Center for Cognitive and Social Neuroscience at the University of Chicago. His current research includes a longitudinal population-based investigation of the psychological and physiological mechanisms underlying the association between loneliness and health.

TABLE 1

Items in Revised UCLA Loneliness Scale (R-UCLA)[a] and Three-Item Loneliness Scale

R-UCLA Loneliness Scale

Directions: Indicate how often you feel the way described in each of the following statements. Circle one number for each.

Statement	*Never*	*Rarely*	*Sometimes*	*Often*
1. I feel in tune with the people around me.[b]	1	2	3	4
2. I lack companionship.	1	2	3	4
3. There is no one I can turn to.	1	2	3	4
4. I do not feel alone.[b]	1	2	3	4
5. I feel part of a group of friends.[b]	1	2	3	4
6. I have a lot in common with the people around me.[b]	1	2	3	4
7. I am no longer close to anyone.	1	2	3	4
8. My interests and ideas are not shared by those around me.	1	2	3	4
9. I am an outgoing person.[b]	1	2	3	4
10. There are people I feel close to.[b]	1	2	3	4
11. I feel left out.	1	2	3	4
12. My social relationships are superficial.	1	2	3	4
13. No one really knows me well.	1	2	3	4
14. I feel isolated from others.	1	2	3	4
15. I can find companionship when I want it.[b]	1	2	3	4
16. There are people who really understand me.[b]	1	2	3	4
17. I am unhappy being so withdrawn.	1	2	3	4
18. People are around me but not with me.	1	2	3	4
19. There are people I can talk to.[b]	1	2	3	4
20. There are people I can turn to.[b]	1	2	3	4

Three-Item Loneliness Scale

Lead-in and questions are read to respondent.

The next questions are about how you feel about different aspects of your life. For each one, tell me how often you feel that way.

Question	*Hardly Ever*	*Some of the Time*	*Often*
First, how often do you feel that you lack companionship: Hardly ever, some of the time, or often?	1	2	3
How often do you feel left out: Hardly ever, some of the time, or often?	1	2	3
How often do you feel isolated from others? (Is it hardly ever, some of the time, or often?)	1	2	3

NOTE: For both scales, the score is the sum of all items.

[a] Russell, Peplau, and Cutrona (1980).

[b] Item should be reversed before scoring.

TABLE 2

Characteristics of Respondents to 2002 Health and Retirement Study (HRS)[a] and Year 1 of the Chicago Health, Aging and Social Relations Study (CHASRS)

	HRS										CHASRS							
	All		Ages 50-67		White		Black		Hispanic		All		White		Black		Hispanic	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Age (years)	66.5	10.2	60.1	4.5	66.9	10.2	66.0	9.6	64.5	9.9	57.5	4.4	58.2	4.3	58.2	3.8	55.6	3.7
Female	63.9		68.7		63.6		63.6		67.6		52.4		52.4		54.3		50.0	
Ethnicity																		
White	80.7		76.8								35.8							
Black	11.3		13.1								35.4							
Hispanic	6.4		8.2								28.8							
Other	1.6		1.9								0							
Education (years)	12.4	3.4	12.7	2.9	12.9	2.9	10.7	4.0	8.8	4.6	13.3	3.0	14.6	2.4	12.8	3.2	12.2	3.1
Household income ($)	61,778	82,863	72,650	86,821	67,146	87,684	43,472	63,146	27,878	23,096	65,781	54,959	87,602	66,458	53,938	47,044	58,340	45,342
Marital status																		
Married/cohabiting	79.7		84.7		81.2		67.8		80.1		61.1		74.5		53.1		54.6	
Widowed	4.9		6.7		4.1		9.8		6.6		9.2		7.3		16.1		3.0	
Divorced/separated	13.2		5.7		13.2		17.5		12.5		24.5		14.6		25.9		34.9	
Never married	1.8		2.0		1.1		4.9		1.0		5.2		3.7		4.9		7.6	
Self-rated health																		
Poor	5.6		5.2		5.0		8.5		7.2		1.3		0		2.5		1.5	
Fair	16.9		13.5		14.1		25.1		38.1		14.9		3.7		22.8		20.0	
Good	32.5		31.9		31.6		37.3		33.1		43.7		34.6		48.1		47.7	
Very good	31.1		33.5		33.7		21.9		16.6		31.0		45.7		22.8		23.1	
Excellent	13.9		15.9		15.6		7.3		5.0		9.2		16.1		3.8		7.7	
N	2,182		1,124		1,761		247		139		229		82		81		66	

NOTE: Figures are percentages, except where noted

[a] Sample includes only respondents to Module 6. Figures are unweighted.

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TABLE 3

Psychometric Properties of the Three-Item Loneliness Scale in Two Studies[a]

	Study 1 HRS	Study 2 CHASRS
Revised UCLA Loneliness Scale (R-UCLA) α	—	.91
Three-Item Loneliness Scale α	.72	.72
Correlation between R-UCLA and Three-Item Loneliness Scale	—	.82***
Correlation between Three-Item Loneliness Scale and Depressive symptoms[b]	.48***	.49**
"Lonely" item in Depression Scale	.49***†	.54**
"Couldn't get going" item in Depression Scale	.20***	.24**
"Enjoyed life" item in Depression Scale	−.28***	−.42**
"Full of energy" item in Depression Scale	−.15***	—
Four-Item Perceived Stress Scale	.44***	.40**
Three-Item Loneliness Scale		
M	3.89[c]	6.1[d]
SD	1.34	2.10

NOTE: HRS = Health and Retirement Study; CHASRS = Chicago Health, Aging, and Social Relations Study; R-UCLA = Revised UCLA Loneliness Scale.

[a] Study 1, n = 2,182; Study 2, n = 229. See text for description of studies.

[b] Assessed by a short form of the Center for Epidemiologic Studies–Depression Scale (CES-D) in Study 1 and the full CES-D in Study 2.

[c] The response set consisted of three options.

[d] The response set consisted of four options.

** $p \leq .01$.

*** $p \leq .001$.

† Different from three items following, $p \leq .001$.

TABLE 4

Coefficients From Regressions of Loneliness[a] on Various Measures of Objective Social Isolation in Study 1 (Health and Retirement Study)[b]

Married	−.42***
Living arrangements	
Married, alone	—
Married, with children	−.11*
Married, with others	.14*
Single, alone	.47***
Single, with children	.50***
Single, with others	.32***
Volunteers 100 or more hours a year	−.15***
Provides help to others	−.19***
Rating of neighborhood safety	
Excellent	—
Very good	−.10**
Good	.21***
Fair	.40***
Poor	.61**

[a] Assessed by the Three-Item Loneliness Scale standardized to a mean of zero and a standard deviation of one.

[b] n = 2,182. See text for description of study.

* p .05.

** $p \leq .01$.

*** $p \leq .001$.