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Social support mediates loneliness and depression in elderly people

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Abstract

This study investigated the effect of loneliness on depression and further tested the mediating effect of social support. A total of 320 elderly persons completed the Emotional and Social Loneliness Scale, Multidimensional Scale of Perceived Social Support, and Self-Rating Depression Scale. Results revealed that loneliness and social support significantly correlated with depression. Structural Equation Modeling indicated that social support partially mediates loneliness and depression. The final model illustrated a significant path from loneliness to depression through social support. This study sheds light on the concurrent effects of loneliness and social support on depression, providing evidence on how to reduce depression among the elderly.

Keywords

depression, health promotion, moderator, older person, social support

Depression is a common mental disorder prevalent among elderly people in various countries, with 3.8 percent to 15 percent of them having depressive symptoms (Barcelos-Ferreira et al., 2013). The recognition of depression as a pathogenetic factor in late-life suicide renders its effective prevention and treatment to be of paramount importance (Conwell et al., 2011). With the rapid increase in the elderly population in China, studies of the Western culture reported that baby boom cohorts, as they age, have the higher propensity to commit suicide than earlier or later birth cohorts. The government and researchers should therefore provide urgent attention and allocation of resources to the development and study of suicide prevention approaches suitable for the elderly. Studies on subjects with depressive symptoms or depression suggested that both are associated with intense loneliness, less perceived social support, poor physical function, and high perception of poor health status (Heiman and Margalit, 1998; Leary, 1990; Pronk et al., 2013; Sonnenberg et al., 2013). This association has a critical role in studying the mechanism of depression and in exploring ways to cope with depression among elderly people who experience loneliness.

Many studies have indicated that loneliness is positively related to depression; individuals with high levels of loneliness exhibit high dissatisfaction in life and more negative emotions (Hansen et al., 2013; Hawkley and Cacioppo, 2010). Loneliness, as an important predictor of depression, is commonly experienced by elderly people. Studies showing that 40 percent of

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adults over 65 years of age are reported to be lonely, at least sometimes, with levels of loneliness gradually increasing with age (i.e. over 70 years) (Hawkley and Cacioppo, 2010; Wolf et al., 1998). Loneliness is defined as a distressing feeling that accompanies the perception that one's social needs are not being met by the quantity or especially the quality of one's social relationships (West et al., 1986). Peplau and Perlman (1982) outlined three main themes underlying all proposed definitions of loneliness. According to this, loneliness is caused by either qualitative or quantitative deficiencies in a person's social relationships. Loneliness is therefore a subjective and internal experience and is not identical to physical isolation. Researchers generally agree that more than one qualitatively distinct type of loneliness exists. One typology of loneliness was described by Weiss (1973) who inferred that loneliness can be classified into emotional and social loneliness. Emotional loneliness is caused by the lack of a close and intimate attachment to another person. People who had lost their loved ones or underwent a divorce may experience this kind of loneliness. Social loneliness is caused by the lack of a social network with which common interests and activities can be shared. Elderly people who have retired from their professional lives may experience this kind of loneliness.

The physical and mental health consequences of loneliness, the mechanisms of its effects, and the effectiveness of extant interventions were reviewed in a comprehensive theoretical framework in a recent study, which identified interventions by which loneliness can be reduced. Hawkley and John stated that loneliness not only affects physical health and mortality but also mental health and cognitive functioning (Cacioppo et al., 2002). The current study examines the association between loneliness and increases in depressive symptoms. Some scholars indicated that the causal nature of the association between loneliness and depressive symptoms is reciprocal. However, more recent analyses of five consecutive annual assessments of loneliness and depressive symptoms have shown that loneliness predicts increases in depressive symptoms at 1-year intervals, but depressive symptoms do not predict increases in loneliness at those same intervals (Cacioppo et al., 2010; Park et al., 2013). The mechanism behind this phenomenon is that perceived social isolation is tantamount to setting in motion a self-fulfilling prophecy in which lonely people actively distance themselves from would-be social partners despite their belief that the cause of social distance is attributable to others and is beyond their own control (Hawkley and Cacioppo, 2010; Peplau and Perlman, 1982). This self-reinforcing loneliness loop is accompanied by feelings of hostility, stress, pessimism, anxiety, and low self-esteem and represents a dispositional tendency that activates neurobiological and behavioral mechanisms contributing to a state of low mood and aversion to activity (Kool et al., 2013; West et al., 1986).

Social support is an important concept that is closely related to loneliness and depression and may be particularly important in countering depression among elderly persons. Social support is generally defined as the existence or availability of people on whom one can rely and from whom one can experience care, value, and love. Researchers have classified social support into four subtypes: emotional, instrumental, appraisal, and informational support (Sarason et al., 1990). Social support can be measured as the perception that one has assistance available, receives actual assistance, or is integrated in a social network. Emotional social support, such as intimate ties with a spouse and/or with children, is considered as having a particularly protective effect against the risk of depression. Studies had also provided evidence that support from both family and friends prevents the risk of depression, while the preservation of naturally occurring support resources among some groups (such as the aged) may be a way to maintain mental health (Kessler and McLeod, 1985; Maeda et al., 2013; Sonnenberg et al., 2013). Social support is assumed to vary among people in their later lives. Hence, the varying levels of social support for elderly people partially explain some of the differences in the depression rate across populations (Melchiorre et al., 2013).

Based on theoretical perspectives and empirical findings on the relationships among depression, social support, and loneliness, loneliness is hypothesized to be related to more severe depressive symptoms, and social support can mediate the relationship between them. In light of the mediating and moderating effects reported in past investigations, the lack of social support for lonely elderly persons is assumed to exacerbate their depression. Prior studies had also individually investigated the contributions of depression, social support, and loneliness to suicidal behaviors. However, to our knowledge, none had examined the relationships among all three constructs simultaneously among elderly people. Thus, the aim of this study is to clarify the mechanisms behind the strong links between psychosocial variables and depression-confronting behaviors to assist in developing and enhancing interventions targeted at improving the quality of life of elderly people.

Despite the increasing interest in loneliness-related issues among elderly people, most studies about the relationship between loneliness and depression had been focused on the experiences of Western people. As China stepped into an aging society, with a rapidly increasing number of elderly people, the issue of quality of life for elderly people has become increasingly important. Although practitioners and academics alike have shown a growing interest in the problems of the elderly in the Chinese context, this field of research currently remains under-investigated. To examine the universality of the relationship between loneliness and depression, the same relationship in other eastern cultures, such as China, must be examined as well.

In summary, the current study tested the mediation effect of social support between loneliness and depression in a collectivist culture and aimed to provide meaningful evidence of the external validity of previous findings.

Methods

Participants and procedure

Participants were 320 elderly people (age ≥ 60 years) from six cadre's sanitariums in China, which consisted of 189 men and 131 women. Their age ranged from 61 to 85 years, with a mean of 68.44 years (standard deviation (SD) = 8.72). Participants completed the questionnaire packet in a classroom environment. All subjects knew the research background, research purposes, and the research significance, and informed consent was obtained before completing the measures. We distributed 320 questionnaires, all of which were collected. Data of 10 participants were excluded since they failed to finish all the questions. Participants received ¥50 in compensation.

Instruments

Emotional and Social Loneliness Scale. The Emotional and Social Loneliness Scale (ESLS), developed by Wittenberg and Reis (1986), is a 10-item self-report measure of emotional loneliness and social loneliness. Items are rated from 1 (never happened) to 5 (very often). Examples of items include "I don't get much satisfaction from the groups I participated in" and "There are good people around me who understand my views and beliefs." Scale scores are the sum of items with reverse coding of relevant items. In this study, the Cronbach alpha coefficient for the ESLS was 0.841.

Multidimensional Scale of Perceived Social Support. The Perceived Social Support Scale (PSSS), developed by Zimet et al. (1988), is a 12-item self-report measure of how one perceives their social support system, including an individual's sources of social support (i.e. family, friends, and significant other). Items are rated from 1 (very strongly disagree) to 7 (very strongly agree). Three subscale scores for PSSS can be computed, that is, family support, friends support, and significant other support. Examples of items from this form include "I get the emotional help and support I need from my family" and "My friends really try to help me." In this study, the Cronbach alpha coefficient for the PSSS was 0.914.

Self-Rating Depression Scale. The Self-Rating Depression Scale (SDS) developed by Zung

et al. (1965) consists of 20 items. Depressive symptoms "over the past several days" are rated from 1 (little or none of the time) to 4 (most or all of the time). Scores on the test range from 20 through 80, with higher scores indicating increased depressive symptoms. Examples of items include "Morning is when I feel the best" and "I have trouble with constipation." The scale is a well-established screening measure of adult depression severity. In this study, the Cronbach alpha coefficient for the SDS was 0.796.

Data analysis procedure

First, in order to test the significant of correlation coefficient, the intercorrelations among the three latent variables were calculated (Zhang et al., 2014a). Then, for the reason of confirming the structural relational of the latent structured model, a two-step procedure introduced by Anderson and Gerbing (1988) was adapted to analyze the mediation effect. In Step 1, the measurement model of all the latent variables was tested to assess the extent of goodness of fit represented by its indicators. Step 2, if index of confirmatory measurement model up to the standards, then the maximum likelihood estimation would be adopted to test the Structural Equation Modeling (SEM). All the above analyses were conducted in AMOS 17.0 program.

During the test of goodness fit for SEM, in order to control the inflated measurement errors due to multiple items for the latent variable and to improve the reliability and normality of the resulting measures (Nasser-Abu Alhija and Wisenbaker, 2006; Peng et al., 2013), three item parcels were created for SDS with the factorial algorithm proposed by Rogers and Schmitt (2004). The following four indices were utilized to evaluate the goodness of fit of the model (Hu and Bentler, 1999; Peng et al., 2014; Zhang et al., 2014b): (a) Chi-square statistic (χ^2), χ^2/degrees of freedom (df); (b) the standardized root mean square residual (SRMR); (c) the root mean square error of approximation (RMSEA); and (d) the comparative fit index (CFI). In this study, a model was considered to have a good fit if all the path coefficients were significant at the level of 0.05, SRMR was below 0.08, RMSEA was below 0.08, and CFI was 0.95 or more.

Results

Measurement model

The full measurement model included three latent constructs (loneliness, social support, and depression) and eight observed variables were tested to examine whether the measurement model fit the sample data adequately or not. The initial test of the measurement model comes into being a satisfactory fit to the data: $\chi(22, N = 310) = 26.996$, $p < 0.001$; RMSEA = 0.046, [0.027, 0.068]; SRMR = 0.065; and CFI = 0.987. All the factor loadings for the indicators on the latent variables were significant ($p < 0.001$), indicating that all the latent constructs were well represented by their indicators. Furthermore, as shown in Table 1, all the latent variables—loneliness, social support, and depression—were significantly intercorrelated with each other.

Structural model

Since the confirmatory factor analysis (CFA) confirmed the structure of latent factor, the SEM was tested to analyze the mediation effect. First, the direct effect of loneliness (predictor variable) on depression (dependent variable) without mediators was tested. The directly standardized path coefficients from loneliness to depression ($\beta = 0.415$, [0.347, 0.656], $p = 0.001$) were significant. Then, a partially mediated model which contained mediators (social support) and a direct path from loneliness to depression was tested (Figure 1). The results showed that the model goodness of fit can be accepted, $\chi(22, N = 310) = 23.750$, $p < 0.001$; RMSEA = 0.047, [0.023, 0.098]; SRMR = 0.069; and CFI = 0.991. These results showed the mediational role of social support in the relationship between loneliness and depression. Loneliness can exacerbate depressive symptoms directly, and social support

Table 1. Intercorrelations between four latent variables.

	M	SD	Loneliness	Social support	Depression
Loneliness	3.05	0.47	1		
Social support	4.64	0.38	−0.41**	1	
Depression	3.41	0.56	0.57**	−0.40**	1

M: mean; SD: standard deviation; *N* = 310.
**: p <0.01.

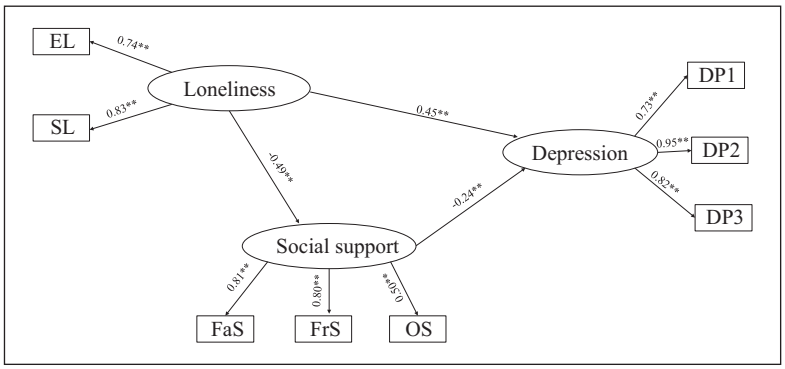

Figure 1. The final structural model (*N* = 310).
EL: emotional loneliness; SL social loneliness; FaS: family support; FrS: friends' support, OS: significant other support; DP1-DP3: three parcels of depression.
Factor loadings are standardized.
**p < 0.01.

can weaken this relationship. The effect of loneliness on depression through support was 40.2 percent.

Mediating effect testing

The mediating effect of social support between loneliness and depression was tested for significance by adopting the bootstrap estimation procedure in AMOS (a bootstrap sample of 1500 was specified). The reason for the bootstrapping approach is that the indirect effect estimates which are the products of direct effects may not follow the normal distribution (Zhang et al., 2014a). Thus, the standard error estimates and confidence intervals calculated based on the assumption of normal distribution will usually be inaccurate, and it will be powerless for the statistical tests of indirect effect to be assumed on the normal distribution assumption (MacKinnon et al., 2004). Researchers suggested that the bootstrap method yields the most accurate confidence intervals for indirect effects (MacKinnon et al., 2004; Zhang et al., 2014b). The indirect effects and their associated 95 percent confidence intervals are shown in Table 2. Loneliness had a significant direct effect on depression; the direct effects of loneliness on social support and social support on depression were also significant. The indirect effect of loneliness on depression through social support was also significant.

Discussion

This study investigated the concurrent effect of loneliness and social support on depression and further examined the mediating effect of social support on the relationship between loneliness and depression among the Chinese elderly. This

Table 2. Direct and indirect effects and 95% confidence intervals for the final model.

Model pathways	Estimated effect	95% CI	
		Lower bounds	Upper bounds
Direct effect			
Loneliness→social support	−0.485[a]	−0.641	−0.258
Loneliness→depression	0.450[a]	0.247	0.659
Social support→depression	−0.240[a]	−0.457	−0.139
Indirect effect			
Loneliness→social support→depression	0.116[a]	0.046	0.271

CI: confidence interval; SD: standard deviation.
[a]Empirical 95% CI does not overlap with zero.

study found that a positive relationship exists between loneliness and depression among elderly people, suggesting that elderly persons with a high level of loneliness are more likely to suffer from depressive symptoms. This result is consistent with the findings of previous studies conducted in Western cultures. The effect of loneliness on depression can also be found in a recent literature review by Jaremka et al. (2013). Perhaps the most significant finding from the review is that people, from children to the elderly who experience loneliness, are susceptible to depressive symptoms. Studies performed among patients had also associated loneliness with depression (Asti et al., 2006; Keele-Card et al., 1993). Loneliness clearly has a positive correlation with depression among elderly people. Hawkley and Cacioppo (2010) detailed the reasons behind this correlation in their review. As previously mentioned, loneliness is a sense of insecurity that sets off a high alert for threat information. Unconscious surveillance for social threat creates depressive cognitive biases. Lonely individuals are thus more likely to see the social world as a darker place, expect more negative social interactions, and remember more negative social information. The current study provides meaningful evidence for the same mechanism among the elderly. The obtained finding presented meaningful evidence for the external validity of the relationship between loneliness and depression among the elderly in a collectivist cultural setting.

Another finding of this study was that the structural model supports the mediation effect of social support on loneliness and depression. That is, the path from loneliness to depression through social support was significant. The mediating role of social support provides new insight into the relationships among loneliness, social support, and depression. Prior studies had individually investigated the relationship between loneliness and depression or that between social support and depression. No study so far had examined the concurrent effects of loneliness and social support on depression among the elderly. Prior research had found that elderly people with low emotional support are more often depressed, with men showing higher rates of depression than women. Dalgard et al. (2006) observed that elderly women who receive minimum support are more vulnerable to depression than men. Michael et al. (2001) provided evidence that social support protects elderly people against psychological distress. Sonnenberg et al. (2013) also found out that low social support and a high need for affiliation are related to depression in later life. Thus, among the elderly, these factors are related to each other. In testing the mediating effect of social support on the relationship between loneliness and depression among the Chinese elderly, we expanded previous research and confirmed that social support mediates the effect of loneliness on depression. Simultaneously investigating trilateral relations among the factors may allow a

more distinct picture of the interconnections among these relationships.

The findings in this study have highly important applications in terms of protecting elderly people from depression. The reality of depression as a highly prevalent occurrence validates the paramount importance of its detection and effective treatment (Bennett and Shepherd, 2013; Cacioppo et al., 2002; Tan and Yadav, 2013). The elderly inevitably encounter life events such as loss of partners or close friends and retirement from their jobs, which may cause loneliness in later life (Hawkley and Cacioppo, 2010). Loneliness is a common experience for the elderly. Studies had confirmed that elderly people are more vulnerable to loneliness than younger individuals (Donaldson and Watson, 1996). The significant path from loneliness →social support→depression shows that social support is a potential protective factor for lonely elderly persons. Elderly people who retired from their jobs and who presently have smaller networks are more likely to be depressed, as illustrated by studies that found the association between vulnerability to depression and small network size. Effective emotional or social support, such as that from a partner, can weaken the association between loneliness and depression (Park et al., 2013). This effect has very important applications in adjustment counseling and interventions in modern life, especially with the developed special interest on the positive aspects of mental health. Elderly people may benefit from the active search for social support (Kool et al., 2013), such as network expansion (Bennett and Shepherd, 2013; Berkman, 1983; Liew, 2012), by modifying their typical patterns to accommodate more healthy behaviors after significant life events and by being able to protect themselves from depression and promote their quality of life. Thus, interventions to reduce depression and its health consequences among the elderly may require the consideration of emotional and social support and their effects on health behaviors.

Although the current findings provide substantial insight into the association among loneliness, social support, and depression, limitations must be noted. This study is limited by its characteristics as a cross-sectional study. The interpretation of the results of the mediation analyses should be performed with caution. In subsequent research, longitudinal data should first be collected to prove the predictive power of loneliness to depression through social support. Second, the results can be made more reliable if experimental studies are conducted.

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