

ORIGINAL ARTICLE: BEHAVIORAL
AND SOCIAL SCIENCES**Family relations, sense of coherence, happiness and perceived health in retired Taiwanese: Analysis of a conceptual model**Hui-Hsun Chiang¹ and Tony Szu-Hsien Lee² ¹School of Nursing, National Defense Medical Center, and ²Department of Health Promotion and Health Education, National Taiwan Normal University, Taipei, Taiwan

Aim: A growing awareness of the rapidly increasing aged population in the world has led to growing attention to mental health in late life. Happiness has been emphasized as an important indicator of physical health and is predicted by a sense of coherence. However, the mechanism of influence of family relations on sense of coherence, happiness and perceived health is unknown. The present study aimed to analyze a conceptual model of the relationships among family relations, sense of coherence, happiness and perceived health in retired persons.

Methods: A total of 142 retired participants were recruited from social service centers in Taipei, Taiwan. A structured questionnaire measuring the relationships among family relations, sense of coherence, happiness and perceived health was filled in by each respondent. Data were analyzed using structural equation modeling.

Results: The results showed that family relations is positively correlated with happiness, sense of coherence and perceived health. The results also showed that good family relations and a sense of coherence predict greater happiness. The results from structure equation modeling showed that the relationship between family relations and perceived health is completely mediated by happiness and a sense of coherence, but only the indirect effect of happiness is significant. The results also showed that family relations is partially mediated by the sense of coherence to happiness.

Conclusions: In caring for retired older people, medical professionals need to increase their family relations and sense of coherence simultaneously, and then promote happiness in their interventions. **Geriatr Gerontol Int 2018; 18: 154–160.**

Keywords: family relations, happiness, health, retired elderly, sense of coherence.

Introduction

Well-being in the major domains of life has become the subject of research, reflecting the growing attention to mental health, especially in one's later years. Well-being is conceptualized to include a broad-spectrum of positive feelings, including life satisfaction and the enjoyment of mental engagement, congenial social relationships, and good physical and mental health.¹ The impact of physical and psychosocial factors, such as perceived health, sense of coherence, happiness and family support, are relevant to promoting positive outcomes of aging in later life.²

Family relations, happiness and perceived health

Aging well, including good family and interpersonal relationships, indicates increased well-being. Family relationships are instrumental in providing the financial and emotional support older adults need to become more socially and psychologically adjusted. Perceived family support has been shown to boost well-being and functional health in older women.³ Achieving family harmony is deemed an important purpose of life that is also essential for maintaining an individual's well-being in Chinese society.⁴ Traditionally, the Chinese family functions as a close-knit social unit that regulates family relations to meet psychological, social and physical needs.⁵ In Confucianism, the purpose of family ethics is to promote family harmony, thereby contributing to a peaceful world.⁴ Perceived filial behavior and respect from one's children are also predictors of well-being.⁵ Family harmony and interaction patterns have been shown to be positively associated with positive affect and well-being, consistent with Confucian ethics.⁴ In short, harmonious family relations are important for

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happiness and well-being, especially for older adults in Chinese society.

A study of 3795 randomly selected older adults from cities in China using a structural model found that family relations had a direct protective effect on happiness that was stronger than the effects of health and economic status.⁶ In a recent survey of 7367 retired older adults in the USA, strong support from one's spouse and children significantly improved well-being, both directly and indirectly.⁷ In Japan, persons living alone were found to be significantly less happy than those living with others, providing further evidence of an association between positive family relations and happiness.⁸

Family relations are also correlated with health. A review of evidence from 31 longitudinal studies showed that widowhood leads to a worsening of self-rated health in older adults in the short term, but relationships between self-rated health, and support from family and friends were mediated by self-esteem and a sense of control.⁹ Thus, poor family support and family relations resulted in poorer perceived health.

However, data from a 2000–2010 Japanese social survey show that people with poor and good family relations did not differ in perceived health.⁸ The relationships between family relations and health are inconsistent and mediated by psychological variables. In particular, family relations are positively related to a sense of coherence. For example, a parent–child pair survey in Japan revealed that parents' sense of coherence was positively related to family relations in females.¹⁰

Sense of coherence, happiness and health

There is a triangular relationship between family relations, sense of coherence and happiness. Sense of coherence has been found to play a pivotal role in achieving happiness. One study found that a sense of coherence predicted happiness in a community-dwelling elderly population.¹¹ A systematic integration of research studies published from 1992 to 2003 showed that a sense of coherence has a positive impact on quality of life.¹²

Sense of coherence can directly or indirectly affect health. For example, a sense of coherence was found to be related to health-related quality of life in cardiovascular patients undergoing invasive treatment¹³ and in chronic heart disease patients at long-term follow up.¹⁴ A study examining the relationships of school context, health and sense of coherence in a random sample of 7580 adolescents aged 15–18 years showed that a supportive school climate and sense of coherence had a direct positive effect on their health.¹⁵ Another study found that sense of coherence impacted health both directly and indirectly through stress-coping.¹⁶ A systematic review of research published from 1992 to 2003 showed that sense of coherence has a primary

moderating or mediating role in the explanation and prediction of health.¹⁷

Happiness is an important predictor of health and a healthy lifestyle. A study of a representative sample of 817 residents of Italy found that happiness was strongly correlated with perceived health after controlling a number of relevant socioeconomic factors.¹⁸ Furthermore, happier people had a healthier lifestyle. Another study found that happiness in Iranian adolescent girls was positively associated with health and a healthy lifestyle characterized by regular physical activity, family time and a smoke-free environment.¹⁹ A large longitudinal study of USA young adults found that positive well-being during adolescence predicted better perceived health and fewer risky health behaviors during young adulthood.²⁰ Thus, it can be concluded that happiness plays a vital role in the promotion of good health.

Because there are few data showing the path of the influence of family relations and sense of coherence on health and well-being, the present study aimed to examine the direct/indirect relationships among family relations, sense of coherence, happiness and perceived health in retired older adults.

Methods

Participants and procedure

The potential participants were recruited from social service centers and public parks in Taipei City and New Taipei City, Taiwan. Before signing the consent form, each potential participant was given an explanation of the study's purpose and the time required (40–50 min) to complete the structured interview, which was then carried out by a well-trained research assistant. The original sample consisted of 146 retired older adults who met the following criteria: (i) retired from full-time work; (ii) age 50–75 years; and (iii) able to communicate verbally with the interviewer. Retirement age was defined as the age at which one stops working and earning money. The exclusion criteria were: (i) any psychological illness; (ii) any serious cognitive impairment; and (iii) not willing to participate in the study.

The study protocol was reviewed and approved by the institutional review board at the Taipei Medical University (approval no. 201003002). Every participant signed a written consent. To respect their rights, participants were allowed to withdraw at any time if they felt any discomfort while completing the questionnaire. Collected data were coded to ensure anonymity.

Instruments

Questionnaires included items on demographics and family relations, the Chinese Happiness Inventory (CHI) and sense of coherence scale (SOCS).

Demographics

The demographic variables were sex, age, marital status, education level, perceived health and disposable income. Perceived health was assessed by asking, "How does your health adversely affect your daily life?" Responses were coded from 1 ("often") to 4 ("not at all"). Disposable income in the past 6 months was assessed by asking, "Do you have enough money for daily expenses?" Answers were "enough" or "not enough."

CHI

We used the short version of the CHI, which has 20 items. Adequate concurrent validity with the Life Satisfaction Scale has been shown.²¹ In the present study, exploratory factor analysis yielded only one factor. Cronbach's alpha was 0.96, composite reliability was 0.94, and average variance extracted (AVE) was 56 %. Item scores range from 0 ("not at all") to 3 ("often"). Higher scores mean greater happiness. The item-total correlations are very high, so no items were dropped.

SOCS

We used the 13-item version of the SOCS. Initially, the term "sense of coherence" referred to a way of seeing the world that facilitates successful coping with adversity. There are three dimensions: Comprehensibility, Manageability and Meaningfulness. The reliability of the SOCS-13 version was found to be satisfactory and stable. Construct validity was shown by a moderate-to-high correlation with a measure of self-actualization subscale of the Measure of Self-Actualization of Potential ($r = 0.54, P < 0.05$).²² Item scores range from 1 ("never") to 7 ("always"). Higher scores show a greater sense of coherence. In the present study, Cronbach's alpha for the SOCS-13 was 0.85, composite reliability was 0.92 and average variance extracted was 79%.

Family relations

The family relations measure was a three-item scale: (i) "How much are your significant family members involved in your daily life?" (involvement); (ii) "How are your emotional relationships with your close family members?" (emotional ties); and (iii) "What is the atmosphere of your family interactions?" (sociability). Responses were made on a 5 points Likert scale: (i) "none" or "bad"; (ii) "sometimes" or "fair"; (iii) "often" or "good"; (iv) "usually" or "great"; and (v) "always" or "perfect". Possible scores ranged from 5-15, with a higher score indicating more positive family relations. In the present study, Cronbach's alpha was 0.73, composite reliability was 0.74 and average variance extracted was 50%.

Statistical analyses

Before data analysis, the dataset was examined for accuracy, number and pattern of missing responses, and outliers, using SPSS for Windows version 18.0 (SPSS, Chicago, IL, USA). The original sample consisted of 146 participants; however, four were omitted in the final data analysis because they had more than two missing responses per measure on more than one instrument. Scores for the CHI, SOCS, and family relations are presented as means and standard deviations.

Data were further analyzed using Pearson's product-moment correlation, linear regression, bootstrapping and structural equation modeling to detect the pathway for family relations, SOCS, CHI and perceived health. To determine the relationships among family relations, SOCS, perceived health and CHI, bootstrapping, and structural equation modeling were carried out using Mplus version 5.0 (Muthén & Muthén, Los Angeles, CA, USA).

The analysis for mediation was carried out using the bootstrap method in Mplus version 5.0. A total of 100 bootstrap replications were carried out to create a bootstrap sample for estimating the indirect effect of mediation. The indirect effect was assessed with a 95% confidence interval (CI) in the empirical sampling distribution. The indicators of model fit for refinement of the model and stopping criteria were: (i) $\chi^2/d.f. < 2$; (ii) comparative fit index ≥ 0.90 ; (iii) root mean square error of approximation ≤ 0.06 ; and (iv) standardized root mean squared residual ≤ 0.08 .

Results

Sample characteristics

As shown in Table 1, most participants were women ($n = 115, 81.0\%$), had an education level of at least senior high school ($n = 60, 42.3\%$) and were married ($n = 123, 86.6\%$). Approximately one-quarter ($n = 37, 26.0\%$) reported that their health was adversely affected by their daily life, and the rest ($n = 105, 73.9\%$) reported no effect. Most participants felt they had enough money to spend ($n = 118, 83.1\%$).

Correlations of family relations, sense of coherence, happiness and perceived health

Table 2 presents the means, standard deviations and bivariate correlations. The mean score on the CHI (possible range 0-60) was 30.55 (SD 11.61); the mean score on the SOCS (possible range 13-91) was 68.50 (SD 13.45); the mean score on the family relations scale (possible range 5-15) was 10.55 (SD-1.89); and the mean score on the perceived health item was 3.06 (SD 0.82).

There were moderate correlations of family relations with the CHI ($r = 0.44, P < 0.001$) and the SOCS ($r = 0.41, P < 0.001$). There were modest correlations of

Table 1 Demographic characteristics of retired Taiwanese older adults

Variable	Mean	SD	n/%
Age (years)	60.5	6.3	
Education level			
Elementary or below			19/13.4
Junior high school			24/16.9
Senior high school			60/42.3
College or university			39/27.5
Sex (% female)			115/81.0
Perceived Health			
Often			3/2.1
Sometimes			34/23.9
Seldom			57/40.1
Not at all			48/33.8
Marital status			
Married			123/86.6
Single/divorced/separated			19/13.4
Disposable income			
Often enough			61/43.0
Usually enough			57/40.1
Seldom enough			10/7.0
Always not enough			14/9.9

Total $n = 142$.

Table 2 Descriptive statistics and correlation coefficients for perceived health, happiness, sense of coherence and family relations

	Perceived health (X1)	CHI (X2)	SOCS (X3)	Family relations (X4)
X1	1.00			
X2	0.29**	1.00		
X3	0.13	0.37**	1.00	
X4	0.21*	0.44**	0.41**	1.00
Mean	3.06	30.55	68.50	10.55
SD	0.82	11.61	13.45	1.89
No. items	1	20	13	3
Cronbach's α	N/A	0.96	0.85	0.73

* $P < 0.05$. ** $P < 0.01$. *** $P < 0.001$.

perceived health with the CHI ($r = 0.30$, $P < 0.05$), SOCS ($r = 0.13$, $P < 0.05$) and family relations ($r = 0.21$, $P < 0.05$). There was also a modest correlation between the CHI and SOCS ($r = 0.37$, $P < 0.01$).

Model of family relations–SOCS–CHI–health

The initial conceptual model for the study is shown in Figure 1. Structural equation modeling showed that the original model-fit statistics for the proposed path are as follows: $\chi^2/d.f. = 1.53$, comparative fit index = 0.89, root

mean square error of approximation = 0.06 and standardized root mean squared residual = 0.07. Because comparative fit index is < 0.90 , the model was revised to eliminate some of the paths from SOCS to health and family relations to health. However, the modification index (MI = 26.68) suggested the addition of a relationship between SOC3 and SOC2. The revised model added the error covariance between SOC3 and SOC2. This degree of covariance, which is consistent with results from a previous study, shows that these two items are similarly worded, negatively formulated and located contiguously in the questionnaire.²² The path diagram of the revised model, shown in Figure 2, has adequate fit.

Mediation effect in the family–SOCS–happiness–health model

A single-mediator model was assessed for which SOCS was hypothesized to mediate the relationship between family relations and the CHI. As shown in Table 3, family relations had a positive effect on both CHI ($\beta = 0.44$, $P < 0.001$) and SOCS ($\beta = 0.09$, $P < 0.05$). Results from the bootstrap analysis of the indirect effect showed a bias-corrected 95% CI excluding 0 ($CI_{0.95} = 0.04$, 0.44), showing that SOCS is a mediator between family relations and CHI. The direct effect of family relations on CHI, controlling for SOCS, remained significant ($\beta = 0.34$, $P < 0.001$), showing that SOCS only partially mediated the relationship between family relations and CHI.

The direct effects of the CHI and SOCS on family relations were examined in a multiple mediator model representing a pathway from family relations to perceived health. As shown in Table 3, family relations had a positive effect on both health ($\beta = 0.21$, $P < 0.05$), and CHI ($\beta = 0.09$, $P < 0.05$). Only CHI had a significant indirect effect on health ($\beta = 0.09$, $P < 0.05$). The indirect effect of SOCS on the relationship between family relations and health was not significant ($\beta = 0.02$). Results from the bootstrap analysis of the specific indirect effect of CHI on the relationship between family relations and health showed a bias-corrected 95% CI excluding 0 ($CI_{0.95} = 0.002$, 0.03). CI for the direct effects of family relations on health included 0 ($CI_{0.95} = -0.018$, 0.052), indicating that the relationship between family relations and perceived health is completely mediated by CHI and SOCS, but only the indirect effect of CHI is significant.

The conceptual model of the present study, based on prior literature, proposes that CHI completely mediates the predicted effect of perceived health on family relations and SOCS. SOCS partially mediates the predicted effect of family relations on CHI. SOCS was the most significant predictor of CHI, although meaningfulness and manageability also explain dimensions of SOCS. Family relations was the significant factor that predicted CHI, and CHI was the most significant factor predicting perceived health (Fig. 2).

Figure 1 Proposed conceptual model of associations between family relations, sense of coherence (sense of coherence scale [SOCS]), happiness (Chinese Happiness Inventory [CHI]) and perceived health. Structure equation modeling using the Mplus software was carried out to test the mediation effects of SOCS and CHI between family relations and perceived health. The dotted arrow indicates that the direction of the relationship between the two variables is unclear from the previous literature.

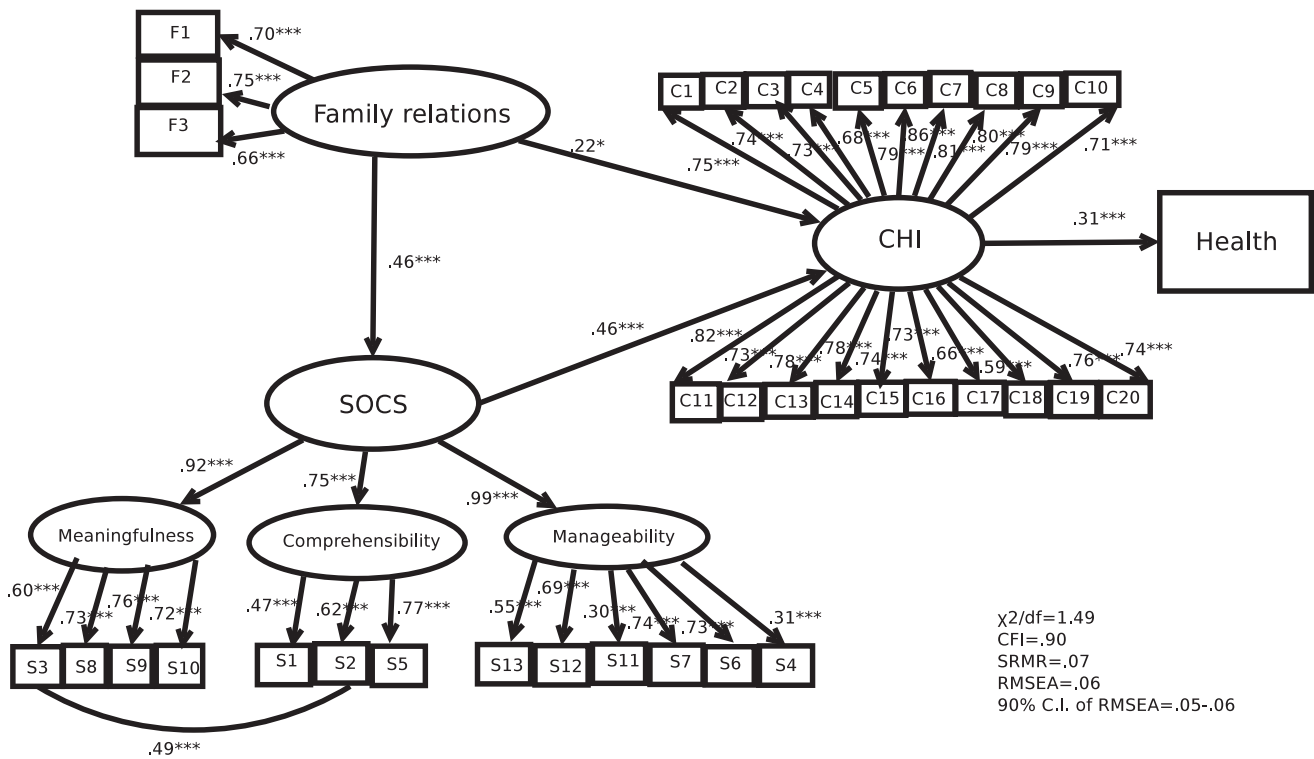
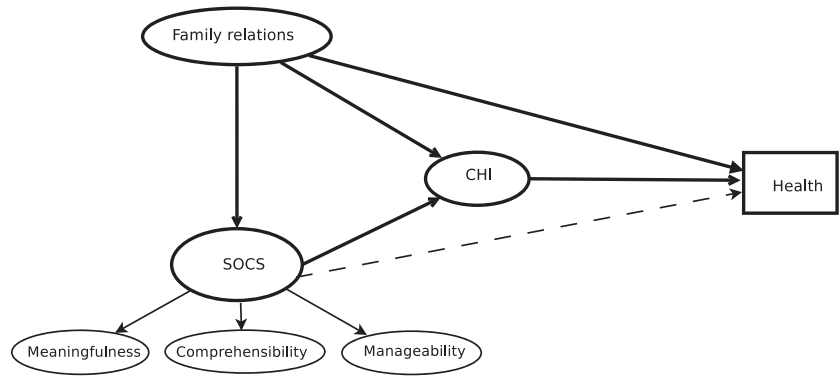


Figure 2 Revised conceptual model of associations between family relations, sense of coherence (sense of coherence scale [SOCS]), happiness (Chinese Happiness Inventory [CHI]) and perceived health. Results from structure equation modeling indicated that happiness (CHI) is a mediator between family relations and sense of coherence (SOCS). Results also showed that family relations is partially mediated by the SOCS to CHI. * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

Discussion

In the literature, family relations and sense of coherence have been shown to be important predictors of happiness and/or perceived health.^{16,23,24} The present study's findings are consistent with those of previous studies, suggesting that good family relations provide a context for the prediction of happiness by psychological needs;²³ family support shows a substantial positive association with concurrent happiness, and change in family support is

positively correlated with change in happiness.²⁴ Family relations were shown to have a strong role in explicating the effect of family functionality and social relations on perceived health.²⁵

The literature documents that sense of coherence is an independent predictor of happiness, quality of life and mental health.¹⁴ Systematic reviews suggest that a sense of coherence has a positive impact on quality of life and life satisfaction.¹² However, an effect of a sense of coherence on physical health has not been consistently shown. A previous study showed that sense of coherence is an

Table 3 Standardized direct, indirect and total effect values for the family–sense of coherence scale–Chinese Happiness Inventory–health model

Effect	Standardized coefficient (β)	SE	P-value	Estimate	Bootstrapping 95% CI	
					lower	upper
Family–CHI						
Total effect	0.44	0.07	0.000	1.13	0.64	1.63
Total indirect	0.09	0.04	0.011	0.24	0.04	0.44
Specific indirect family–SOCS–CHI	0.09	0.04	0.011	0.24	0.04	0.44
Direct family–CHI	0.34	0.08	0.000	0.89	0.40	1.39
Family–health						
Total effect	0.21	0.08	0.01	0.038	0.003	0.072
Total indirect	0.11	0.04	0.01	0.020	0.003	0.037
Specific indirect family–CHI–health	0.09	0.04	0.02	0.016	0.002	0.030
Specific indirect family–SOCS–health	0.02	0.01	0.06	0.004	–0.001	0.010
Direct family–health	0.10	0.09	0.28	0.017	–0.018	0.052

CHI, Chinese Happiness Inventory; SOCS, sense of coherence scale.

important contributor to the maintenance of perceived health, but does not alone explain actual overall health.¹⁷ Conversely, a 4-year follow-up study showed that sense of cohesion is a predictor of perceived health in adults.²⁶ A sense of coherence has been shown to have a direct positive impact on health in adolescents.¹⁵

The results in the present study differ from those of Garcia-Moya *et al.*¹⁵ and Suominen *et al.*²⁶ In contrast to the use of adolescents or young adults in these studies, the relationships among family relations, sense of coherence and health in retired older adults were examined in the present study. Another study found a significant correlation of sense of coherence with resilience, but not with physical health. Sense of coherence and resilience liaison, along with inner strength, should be taken into consideration in determining how best to provide healthcare, especially for older adults, who are particularly prone to illnesses and functional impairment.²⁷ The impact of inner strength on resilience might be an important consideration in designing ways to promote mental health, but not directly physical health, in older adults. The findings in the present study are consistent with those of Eriksson and Lindström in suggesting that sense of coherence has a mediating role in explaining happiness, which in turn strengthens perceived health.¹⁷

Less attention has been paid in the literature to the possible mediating effect of sense of coherence on the relationship between family relations and happiness in retired older adults. The finding in the present study that sense of coherence mediated the relationship between family relations and CHI is consistent with previous reports.²⁸ The hypothesis in the present study was that supportive family and friends play a significant role in rendering the world comprehensible, meaningful and manageable, and that sense of coherence might be viewed as mediating the relationship between family relations and well-being.

Identification of the influence of happiness on perceived health in retired older adults is consistent with a previous study that found happiness to be an important predictor of perceived health.²⁹ It was found that happiness was promoted by increasing the quality of family relations and sense of coherence, as predicted by a broaden-and-build theory of positive emotion.

The findings of the current study might provide insight into how to develop effective interventions by increasing our understanding of the effects of social factors (in this case, family relations), cognitive factors and personality factors (in this case, sense of cohesion) on physical and mental health outcomes. The need to incorporate in interventions features that provide social support, and strengthen family and community ties for the purpose of promoting good health is supported by the present study. Efforts to promote good health by cultivating positive social networks and social support must provide both a sense of belonging and intimacy, and they also must help people become more competent and self-efficacious.³⁰ The present study's findings provide a possible rationale for the use of social support mechanisms and psychosocial interventions.

Despite the important findings from the present study, there were limitations that have implications for future research. This study examined only the relationships of measures of family relations, the SOCS and the CHI with a measure of perceived health in retired older adults; other variables that might influence mediation of happiness or perceived health need to be examined. Because the present study used a cross-sectional design, nothing can be firmly concluded about the direction of causation in the relationships uncovered or the possible role of variables that were not measured. Another limitation was the homogeneity of our non-random, small samples, which limits the generalization of the findings. Finally, because the selection criteria limited participants to age

50–75 years, most of the participants ($n = 115$, 81%) were women, the reason being that most men in Taiwan stop working at age 65 years. Future studies need to test the proposed model with people of different ages.

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Disclosure statement

The authors declare no conflict of interest.

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