

The Relationship between Psychosocial Effects and Life Satisfaction of the Korean Elderly: Moderating and Mediating Effects of Leisure Activity

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ABSTRACT

The purpose of this present study first suggest a conceptual framework for life satisfaction of the elderly and examined the relationship among leisure activities, self-efficacy, social support and life satisfaction in terms of moderating and mediating effects with a sample of the elderly in the Korean context by characterizing the causal structure. Specially, this study not only describes the relationship between life satisfaction and leisure activities, self-efficacy and social support, but also provides direct and indirect relationships between life satisfaction and each subscale in the measured variables. Results show that leisure activities positively influence self-efficacy, social support, and life satisfaction. In addition, results show that perceived self-efficacy and social support positively mediate the relationships between leisure activities and life satisfaction in the elderly. Therefore, the current study suggests that helping the elderly to maintain participation in formal and/or informal leisure pursuits has important implications for promoting well-being in later life. Furthermore, designing the appropriate leisure activities for elders could be very helpful in enhancing life satisfaction.

1. Introduction

The elderly population will consist of 38 percent of the entire population by 2050 compared to 15 percent in average of the developed countries (Howe, Jackson, & Nakashima, 2007). In parallel, South Korea is one of the rapidly growing aging countries (Eggleston&Tuljapurkar, 2012; Howe et al., 2007). However, the prospect of the quality of life in the elderly appears to be not promising, entangled with the changes in familial and social structure. There are significant rises in the form of a nuclear family and fall in the number of children as well as the lack of readiness of public systems to support these vulnerable individuals (De Vos& Lee 1993; Kye, Arenas, Teruel, &Rubalcava, 2012).

While such demographic changes increase the attention toward successful aging across developed countries (Bourdeaudhuij&Sallis, 2002), previous studies are only interested in examining indicators of life satisfaction to help the elderly perceive positively of their lives. Despite the inconclusive definition of life satisfaction, Life satisfaction could refer to subjective wellbeing for the elderly and it sometimes shares commonality with quality of life (Grann 2000; Horowitz&Vanner 2010; Mannel& Dupuis, 1996). In essence, life satisfaction is frequently investigated in domains related to self-assessed satisfaction with one's life, social and environmental well-beings, physical and emotional functioning, and general health promotion settings (Blace 2012; Lloyd& Auld, 2002; Neal &Sirgy, 2004; Spiers& Walker, 2009).

In relation to the determinants of life satisfaction, participation in leisure activities is considered a prominent factor (Brown& Frankel, 1993; Janke, Nimrod, &Kleiber, 2008; Resnick, Galik, Gruber-Baldini, & Zimmerman, 2010). Older adults tend to experience gradually of significant drop in physical functioning. Such lower capacity in physical functioning can undermine satisfaction with life among the elderly especially because it may reduce frequency or regularity of their leisure participation. Leisure activities that help maintain and/or improve such physical functioning are positively associated with life satisfaction (Edgintone, DeGraaf, Dieser, &Edginton, 2005; McAuley et al. 2008; McAuley, Jerome, Konopack, &Marquez, 2005). With regard to leisure time participation, two main foci have been adopted to study determinants of

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health behaviors such as leisure activities: environmental and individual characteristics (Giles-Corti & Donovan, 2002; McAuley & Blissmer, 2000). Literature highlights social support and self-efficacy as predictors of leisure participation, which are linked to life satisfaction (Figueira, et al., 2012; Kaufman, Kosberg, Leeper, & Tang, 2010; McAuley & Blissmer, 2000; Sato, Demura, Kobayashi, & Nagasawa, 2002).

Despite findings about the significant indicators affecting life satisfaction such as leisure, self-efficacy, and social support in previous studies, such studies have presented a couple of limitations to understand the predictors of life satisfaction of the Korean elderly. First, the findings of the identified variables associated with life satisfaction are difficult to generalize across culture or country (Fagerström et al., 2007). In addition, previous studies lack of comprehensive models illustrating causal relationships among leisure activities, self-efficacy, social support, and life satisfaction at the same place. Through review of literature, this study proposes a conceptual model explaining both moderating and mediating effect of leisure activities on the relationships among social support, self-efficacy, and life satisfaction generally for the elderly. Therefore, the purpose of the study is to examine how and the extent to which self-efficacy and social support are associated with life satisfaction through the path of leisure activities.

2. Overview of the Literature

2.1 The effects of leisure on life satisfaction

Life satisfaction of the elderly is greatly related to leisure activities. Types of leisure are also closely linked to lifestyle. Daily living activities are often considered instrumental leisure activities (Cummings, 2002; Fagerstrom et al., 2007; Inal, subasi, Ay, & Hayran, 2007; Sato et al. 2002). Regardless of one's living conditions such as assisted living facilities or independent living arrangements, the elderly do basic daily living activities such as dressing, bathing, or personal care (Cummings, 2002; Fagerstrom et al. 2007; Inal et al. 2007; Sato et al. 2002). In addition, with a certain level of physical capability, they are more likely to involve the other instrumental activities. They may go grocery shopping, do laundry or visit doctor's appointment (Cummings, 2002).

Leisure is not equal to exercise, but it can be physical that requires higher level of intensity compared to daily living activities. Such physical activities include walking, gardening, dancing, or playing sports (Becchetti, Ricca, & Pelloni, 2012; Orsega-Smith, Payne, Mowen, Ho, & Godbey, 2007; Wilcox, Castro, King, Housemann, & Brownson, 2000). Leisure may involve people. Enjoyable leisure activities describe time spent with reading, communing with nature, or quiet time alone, while they also embrace visiting others, eating with others, fellowship or religious group participation. The latter type of leisure is described as social leisure activities (Horowitz & Vanner 2010; Becchetti et al., 2012). Both physical and social leisure can be formal or informal as well (Janke et al., 2008). Indeed, leisure activity is seemingly associated with lifestyle with regard to time spent or frequency engaged in a certain activity and the relevant intensity of the activity (Inal et al., 2007; McAuley et al., 2000).

Leisure activities are advantageous of protecting chronic and degenerative diseases while inactive leisure clinging to sedentary lifestyle increases a risk for such health outcomes (Chodzko-Zajko et al., 2009; U.S. Department of Health and Human Services, 1996; World Health Organization, 2008). Another line of the study, on the other hand, underscores life satisfaction as an outcome of leisure (Bourque, Pushkar, Bonneville, & Beland, 2005; Fagerström et al. 2007; Sato et al. 2002; Rodriguez, Latkova, & Sun, 2008; Resnick et al., 2010; Sterbova, Harvanova, Hrochova-Hruba, & Elfmark, 2009). It is difficult to define the satisfaction with life of the elderly in a unified way due to the challenges to indicate the subjective perception of the concept. However, life satisfaction is the perception that individuals have about their past, present, and future in relation to their psychological well-being (Cohen, 2000; Lawton 1982, 1983).

Quality of life (QOL) is a separate concept, but it often prevails in the literature of life satisfaction to clearly define the latter. In such studies, life satisfaction indicates subjective indicators of QOL in relation to well-being and happiness (Fagerström et al. 2007; Horowitz & Vanner, 2010; Inal et al., 2007), and it was defined as "psychological health, well-being, and perceived satisfaction with life for older adults" (Horowitz & Vanner, 2010). Instead, QOL is decomposed of both objective and subjective indicators of well-being (Horowitz & Vanner, 2010). Life satisfaction is not domain specific and evaluates life as a whole (Fagerström et al., 2007; Pavot, Diener, Colvin, & Dandvik, 1991).

The relationships between leisure and life satisfaction at older ages are straightforward in a positive direction (Elavsky et al., 2005; Hagger, Chatzisarantis, & Biddle, 2002). Either physical or nonphysical

activities enhance the perception of life satisfaction positively in the elderly, showing engagement in any form of leisure related positively to life satisfaction (Becchetti et al., 2012; Lloyd & Auld 2002; Spiers & Walker, 2009). Such relationship is reflected in the other interesting finding that older adults with at least mild impairment in daily living capacity presented low satisfaction.

Specific to the measurement of the leisure activities, various indicators such as exercise frequency, time spent in leisure activities, regularity of physical activities, or leisure satisfaction affect life satisfaction (Inal et al., 2007; McAuley et al., 2000; Schnohr, Kristensen, Prescott, & Scharling, 2005). In addition, the degree of intensity also predicts scores of physical and psychological well-being, while only low-demand leisure had a statistically significant effect. Low demand leisure activities are associated with lower physical and psychological well-being (Everard, Lach, Fisher, & Baum, 2000). Atheoretical evidence of such relationship is found in a single study with a clinical sample in assisted living facilities (Resnick et al., 2010). Such finding, however, implies that within the sample, physical activity is not valued enough to influence life satisfaction, meaning that the degree of physical activity the population may not be variant within the sample (Resnick et al., 2010).

2.2 Leisure, social support, and self-efficacy associated with life satisfaction

It is well known that life satisfaction is related to various factors, although not often investigated at the same time (Fagerström et al., 2007). In addition to leisure activities, psychosocial variables, particularly social support and self-efficacy, are important indicators of attaining and maintaining satisfactory independent living for older adults (Borque et al., 2005; Street, Burge, Quadagno, & Barrett, 2007). Self-efficacy is a major psychological factor associated with life satisfaction (Elavsky et al., 2005; McAuley & Blissmer, 2000). It is a mechanism that enhances one's belief about his or her ability and capacity to initiate, to carry out, and to accomplish a task or to deal with the challenges of life successfully (Baundra, 1997). It also includes the behavioral predispositions that lead one to engage in productive strategies for mastering role changes such as physical activities and health outcomes inherent in life satisfaction. On the other hand, social support contributes to perseverance and enhancement of life satisfaction (Bisconti & Bergeman, 1999; Hsu 2012; Shaw & Janevic, 2004). Older adults need emotional, financial, and socio-cultural support in varying degrees within the society, and such level of social engagement within the context of the elders predicts satisfaction with life (Kaufman et al., 2010).

Prior to understanding of the associations among leisure, social support, self-efficacy, and life satisfaction, what researchers have found about the relationships between leisure, social support, and self-efficacy can clarify our vision to establish a conceptual model pertaining to the determinants of life satisfaction at the same place. Such relationships among the determinants of life satisfaction tend to be hypothesized as correlational or linear relationships, and mostly self-efficacy and social support are regarded as independent variables of leisure activities (Bourdeaudhuij & Sallis 2002; Lee, 2005; Sterbova et al., 2009; Spanier & Allison, 2001; Wilcox et al., 2000).

Nevertheless, a clear direction of causal relationships is controversial to conclude. On the one hand, literature shows that level of self-efficacy is significantly improved by involvement in physical activities (McAuley & Blissmer, 2000; McAuley et al., 2005, 2008). In addition, leisure activities adopted by the elderly help elders to obtain new achievements and/or build pleasurable social interactions (Chen, Snyder, & Krichbaum, 2001). In relation to the results, self-efficacy and social support are also considered outcomes by the involvement of any type of leisure activities. On the other hand, greater volume of studies was interested in examining what explains leisure activities. Both family social support and self-efficacy have a direct impact on leisure physical activity participation among adults with disability (Peterson, Lowe, Peterson, Nothwehr, Janz, & Lobas, 2008), and the model explained 21% of the total variance of the leisure participation. Despite different age groups rather than older adults above 65 years, social variables including social support and self-efficacy also predict physical activity regardless of sub-age groups and gender (Bourdeaudhuij & Sallis 2002). Other studies without putting social support and self-efficacy together also presents consistent findings in terms of their relationship with leisure activities (Spanier & Allison, 2001; Wilcox et al., 2000). Less social support is a barrier to physical activity for both rural and urban women, and familial structure, social quantity, and social frequency were determinants of physical activity.

Despite the evidence that supports the impact of leisure on social support and self-efficacy or vice versa, either direction of such relationship is not compelling to be normative due to two major reasons. First, previous literature is conservative to utilize a theoretical/conceptual framework. Several theoretical

frameworks in relation to health promotion theories such as planned behavior or reasoned action are not applied. Instead, multiple variables such as self-efficacy and social support are put together to underscore simply that the determinants of physical activity are multifaceted (Spanier & Allison, 2001). Second, a methodological drawback of using simple or multiple regression analyses makes such direction continue to be unclear. Leisure activities are correlated with social support, and self-efficacy, it is an incomplete agenda to determine an endogenous variable(s) on a specific path. Of course, there is a study that clearly tests causality. A program evaluation with regard to a leisure education program generates improvement in social support and self-efficacy as well as general well-being scores for both caregivers and older adults with disability (Carbonneau, Caron, & Desrosiers, 2011).

Despite the theoretical and methodological limitations, it is reasonable that this study would focus on leisure activity as an endogenous variable(s) of self-efficacy and social support rather than it would leave it as a correlational variable with the others. As stated, a prominent reason is that literature conceptualized social support and self-efficacy as determinants of leisure activities (Bourdeaudhuij & Sallis, 2002; Sterbova et al. 2009; Peterson et al. 2008). Although assumptions of directional relationships appeared to be ambiguous, such approach will be helpful to interpret research findings, and build a best-fit conceptual framework based on the literature review.

With the assumption of the relationships among leisure activities, self-efficacy, and social support, previous studies also shed light on paths between the variables and life satisfaction (Bisconti & Bergeman, 1999; Bourque et al., 2005; Hsu 2012; McAuley et al., 2000; Resnick et al., 2010; Rodriguez et al., 2008; Shaw & Janevic, 2004; Street et al., 2007). Not only social support directly influences life satisfaction (Antonucci & Akyama, 1995), but also it has an indirect effect toward life satisfaction (Sasidharan, Payne, Orsega-Smith, & Godbey, 2006). For example, Taiwanese older adults who receive supports from various sources such as participating in social groups as volunteer groups, union, political groups, community action, or elderly clubs have reported higher life satisfaction trajectories (Hsu, 2012). In addition, residents in a residential care system with high scores on internal social relationship measures report more positive well-being across all measures including life satisfaction (Street et al., 2007). Furthermore, McAuley et al. (2000) suggest that perceived social relations and support in exercise groups increase subjective well-being measured by happiness, UCLA loneliness, and satisfaction with life.

Self-efficacy is an interesting variable due to lack of studies investigating its direct relationships with the life satisfaction within the structural equation modeling. Although the relationships between self-efficacy and life satisfaction are not straightforward in the research questions, several studies implicitly mention association between the self-efficacy and the life satisfaction (Poulsen, Ziviani, & Cuskelly, 2007; Sterbova et al., 2009). For instance, Sterbova et al. (2009) assume that middle aged female adults' perception of body image contains the self-efficacy construct, and such personal dimension is adherent to a higher level of life satisfaction. After the female adults who participate in a physical activity program, those who perceive positive body image showed higher participation in physical activity, and such physical activity participation was also related to life satisfaction. Furthermore, Poulsen et al. (2007) show that lower self-appraisal of perceived freedom in leisure among boys with developmental co-ordination disorder was also indirectly related to life satisfaction. In addition, in older adult sample, an internal locus of control, which is a major property of self-efficacy, mediated the relationships between perceived support and psychological well-being (Bisconti & Bergeman, 1999).

There are additional relationships to be considered to explain the relationship between leisure and the life satisfaction. Previous studies have not tested simultaneously the relationship between social support and self-efficacy in relation to life satisfaction in spite of occurring frequently in literature of leisure activities (Bourdeaudhuij & Sallis, 2002; Peterson et al., 2008; Sterbova et al., 2009). In accordance with the role of exogenous variables (e.g., self-efficacy and social support) as a mediator, the conceptualization of leisure activities in the line of life satisfaction becomes very important. Bisconti and Bergeman (1999) summarize the difference between a mediator and a moderator variable based on the initial work from Baron and Kenny (1986). A mediator explains why and how the relationship between self-efficacy and the outcome variable exist. In other words, such relationship is possible through the indirect path of leisure activity. On the other hand, a moderating variable influence the strength of the initial relationship between self-efficacy and life satisfaction. That is, the elderly who are engaged in high level of physical activities and self-efficacy would report greater life satisfaction compared to those who are engaged in less physical activities without changes in the level of self-efficacy. Thus, physical activities moderate the self-efficacy and life satisfaction relationship.

The purpose of this study is to examine both moderating and mediating effect of physical activity toward the relationships between self-efficacy, social support, and life satisfaction in the Korean elderly within the structural equation modeling (SEM). Such relationships based on four different hypotheses are unfolded in Figure 1.

Figure 1 illustrates relationships among leisure activities, self-efficacy, social support, and life satisfaction based on the purpose of the study and the related literature. The current study takes into account leisure activities, social support including the circumstances of social structure (e.g., emotional, informative, evaluative and physical support), and self-efficacy including stable or dispositional characteristics of the individual (general, social, and physical self-efficacy) so as to accommodate life satisfaction. Also, this study takes into consideration other variables (e.g., gender, socio-economic status, and religion) accompanied by the demographic characteristics of participants.

Research Questions

The following questions are to be investigated

- 1) Is the suggested model adequate for the Korean elderly,
- 2) Is there direct or indirect relationship between the leisure and the life satisfaction for the Korean elderly?
- 3) Is there any mediating and/or moderating effect associated with the life satisfaction?

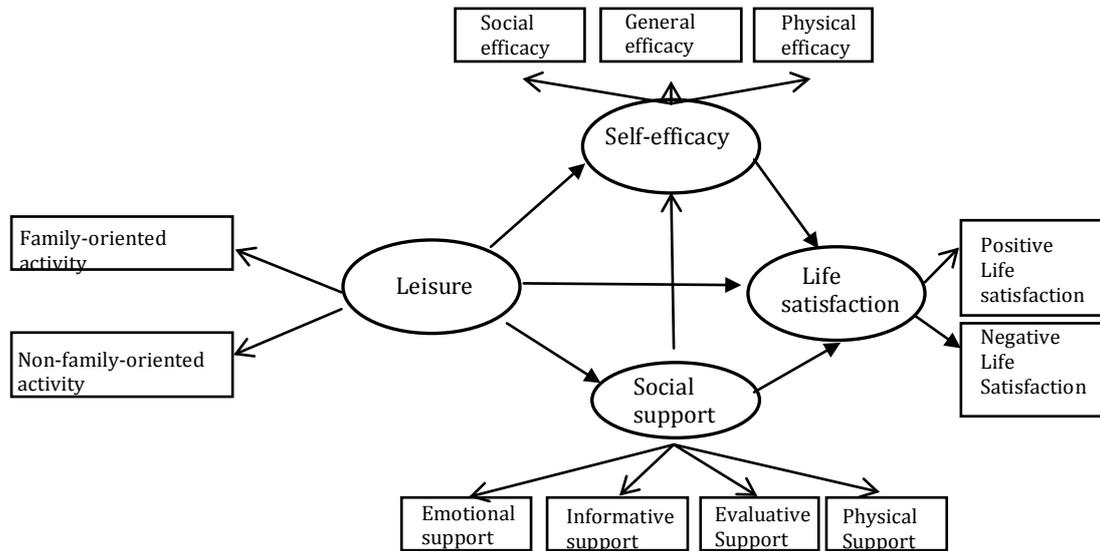


Figure 1: The Causal relationship among life satisfaction and leisure activities, self-efficacy, and social support

3 Methods

3.1 Study participants

The present research is conducted in South Korea. The sample consists of 281 participants from the older adult population randomly selected. Data analysis includes two hundred and eighty one participants within the age group of 60-75 years, with a mean age of 73.38 (*SD* = 5.95) years belonging to the middle-income group. Regarding gender, of the two-hundred eighty one individuals who provide gender information, 151 (53.7%) are female, whereas 130 (46.3%) are male.

Demographic information collected includes information regarding the participant’s age, gender, marital status, living arrangements, educational level and monthly income. Amongst the two hundred and eighty one participants, 75(26.69%) participants live in joint families and 206 (73.31%) live in a nuclear family setup. In addition, responses asking marital status indicate that 117 (41.64%) participants are widowed. Of

those who answer the income question, only 4.1 % reports income less than \$500, whereas 18.4 % reports incomes in excess of \$ 2,000 per month. Most of the reported incomes fall between \$1000 - \$ 2000, with 20.1 % of the respondents reporting incomes \$1000 – \$1500 and 26.5 % indicating they earn between \$1500 – \$ 2000.

3.2 Instruments

Four different instruments are used in this study, focusing on leisure activities, self-efficacy, social support, and life satisfaction. All of the measurements are translated into the Korean version of the instruments. The deeper meanings of certain questions could not be parallel when comparing the Korean version with the English version. Therefore, translation procedure such as 'back to back-translation', discussion, and review are used (Brislin, 1970) to increase validity.

3.2.1 Leisure activity scale for the elderly

This scale is designed to measure the leisure activities amongst older adults in a South Korean cultural setting and utilized a 17-item Likert scale (from strongly disagree to strongly agree), which in general classify leisure activities into family-oriented (FO) and non-family-oriented (NFO) activities (Choi, 2002). The NF activities involved watching TV, walking, doing household chores and gardening, visiting friends and relatives, and voluntary involvement in the community. Meanwhile, the NFO activities involve visiting places of worship and attending community events, exercising or sporting outdoors with friends.

3.2.2 Self-efficacy

Social and general self-efficacy are measured with the Self-efficacy scale (Sherer et al.,1982) tailored for the context of South Korea and only having 17 items with two subscales: Social self-efficacy (six items) and general self-efficacy (11 items). Each item uses a 5-point Likert scale in which 5 = strongly agree and 1 = strongly disagree. The reliability and validity of this instrument are proven in several studies (Sherer et al., 1982). In addition, physical self-efficacy is measured using the physical self-efficacy scale (Ryckman et al., 1982), also tailored for the context of South Korea. Only 9 items are used in this study.

3.2.3 Social support

The scale developed for Korean elderly (Kim & Choi, 2010) primarily taps the emotional, informative, evaluative and physical components of social support in the elderly. The emotional social support refers to receiving respect, affection, and trust from the society. Informative social support refers to the amount of information the elderly could obtain to deal with their daily lives. Evaluative social support refers to degrees of positive or negative appreciation of the elderly's behaviors. Physical social support refers to physical assets the elderly received from the society. The validity and reliability of the scale are supported through both theoretical and empirical research (Kim & Choi, 2010).

3.2.4 Life satisfaction

This scale is designed to measure two components (positive and negative life satisfaction) of life satisfaction amongst the elderly with 20 items with a maximum score of 125 and minimum score of 25 (Paik, 2010). Both positive and negative life satisfaction have 10 items each in which 5 = strongly agree and 1 = strongly disagree.

3.3 Analysis

In answering the research questions, SEM is utilized to examine possible relationships between the research variables and to examine the direct and indirect effects of independent variables on dependent variables with basic descriptive and correlation analyses. All analyses of data are performed using SAS 9.3. Model fitting and estimation is implemented through SAS/PROC CALIS.

3.2.1. Model fit

The SEM analysis is conducted to test the directional effects and relationships linking observed variable to latent variables and latent variables with one another. The SEM analysis permits researchers to test the direct and indirect effects of a system of variables, which in turn make it possible to develop a model explaining the complex inter-relationships within a system of variables (MacCallum, 1995).

The model fit is first examined to determine the similarity of the hypothesized model to the observed data: the smaller the differences between the suggested model and the true one, the better the fit of the model to the data (Bollen, 1989). The overall fit is assessed by a chi-square goodness of fit test of the residuals. Although a goodness of fit statistic that assesses the size of residuals is valuable, a chi-square statistic is

extremely sensitive to sample size and is a direct function of sample size (Kline, 1998). Also, the Comparative Fit Index (CFI) ranges zero to one and representative of the percent of the co-variation from the data which are explained by the suggested model (Bentler, 1990). For instance, the CFI which equaled .90 implies that 90 % of the co-variation from the data is explained in the model. However, CFI take into account the sample size of the data as chi-square statistic does. Thus, some research (Bollen 1989; Fan, Thompson, & Wang, 1999) suggest a number of alternative fit indices, such as Normed Fit Index (NFI), Root Mean Square Residual (RMSR), Standardized RMSR, which are not influenced by size.

Since different fit indexes behaved differently under different data conditions (e.g., sample size, estimation methods, and model misspecification)(Fan et al. 1999; Fang & Wang, 1998; Gerbing&Anderson,1993; Marsh, Hau, & Wen, 2004), cut-off values for fit indexes should be flexibly considered (Marsh et al., 2004). Thus, it is common to report more than one fit index (Hu & Bentler, 1999; Jackson, Gillaspay, & Purc-Stephenson, 2009) and reporting two-index strategy is becoming prevalent (Moulder&Algina, 2002).

4 Results

4.1 Descriptive and correlational empirical findings

Before proceeding with the SEM analysis, a number of preliminary analyses are conducted (e.g., Normality, Multicollinearity, and Reliability) because maximum likelihood used for the SEM needs to meet assumptions such as multivariate normality (Ferron&Hess, 2007). An absolute skewness value greater than 3.0 and absolute Kurtosis values above 10.0 were considered problematic in normality (Kline, 1998). Table 1 shows the results of testing the univariate normality of four factors used in this study. The results identifies that there is no normality problem. In addition, Mardia's (1970) multivariate skewness and kurtosis test is performed but not reported in this study (detailed information for this analysis, contact corresponding author). Also, Cronbach's α is used to check the internal consistency. Table 1 demonstrates that all measures have adequate level of reliability ($\alpha = .81$ to $.91$).

Table 1 Descriptive statistics for measured variables

Variables	Mean	Standard Deviation	Skewness	Kurtosis	Cronbach's α
Leisure	42.42	9.78	.50	.34	.80
Family-oriented activities	20.99	4.82	.31	.22	.62
Non-family-oriented activities	21.43	6.22	.37	-.00	.72
Self-efficacy	78.26	12.99	.13	.93	.83
Social-efficacy	31.72	6.14	-.23	.42	.70
General-efficacy	17.22	3.27	.30	.01	.52
Physical-efficacy	25.72	5.03	-.09	-.02	.63
Social Support	87.56	16.24	.08	.11	.92
Emotional support	27.89	5.57	.17	-.29	.81
Informative support	17.23	3.16	.00	.15	.79
Evaluative support	28.45	5.67	-.14	.18	.88
Physical support	10.38	2.33	-.08	.40	.81
Life Satisfaction	69.16	13.57	.20	-.37	.91
Positive life satisfaction	32.00	8.25	.20	-.43	.91
Negative life satisfaction	37.16	7.71	-.26	-.71	.87

There are significant correlations ($r = .60, p < .001$) between the 2 subscales of leisure activities; (range .047 - .59, $p < .001$) among 3 subscales of self-efficacy; (range .65 - .82, $p < .001$) among 4 subscales of social support; and (range .44, $p < .001$) between 2 subscales of life satisfaction. Furthermore, significant correlations exist between life satisfaction and each of 3 measurements (.34, .64, and .57, $p < .001$). There are weak but significant correlations between the negative perception of life satisfaction and the family-

oriented activities in leisure activities on the one hand, and negative perception of life satisfaction and each subscale in self-efficacy and social support. The only exception is no significant correlation between the non-family-oriented activities and the negative perception in life satisfaction.

4.2 Testing Hypothesized Model

The value of the chi-square test result ($\chi^2 = 127.024$, $df = 38$, $p = .0001$) shown in Table 2 indicates that the model fitness is statistically significant. Therefore, the result reveals that the model fit is “weak” for the sampled data. However, both the Goodness-of-Fit index (GFI) = .921 (which exceeds the recommended level of .90) and the SRMR = .054 (recommended level below or equal to .08 indicates that the data provide adequate evidence that the model is a reasonable fit (Hu & Bentler, 1999) further supporting the acceptance of the proposed model. Although not all fit indices are significant, the suggested model appears to have a decent fit as all of the t -values are significant for the observed variables and the R^2 correlation coefficients indicates a moderate to high amount of variance is accounted for by the measures. Therefore, the results are an acceptable representation of the hypothesized relationships of the variables. The suggested model explains 49% of the variance in life satisfaction.

Table 2 Summary of overall model test

	Model measure	Ideal value	Model value	Model test
	χ^2	$P > .05$	127.024 *	Acceptable
	df		38	
Absolute fit measure	GFI	$\geq .9$.921	Acceptable
	RMSEA	$\leq .08$.091	Not acceptable
	SRMR	$\leq .08$.054	Acceptable
	Relative fit measure	NNFI	$\geq .9$	
	CFI	$\geq .9$.946	Acceptable
Simple fit measure	χ^2 / df	1 ~ 5	3.34	Acceptable

* $p < .05$

Table 3 shows that latent factor of leisure has a statistically significant direct relationship to life satisfaction ($\beta = .24$, $t = 1.92$, $p < .001$) as well as self-efficacy ($\beta = .33$, $t = 3.75$, $p < .001$) and social support ($\beta = .47$, $t = 8.86$, $p < .001$). In addition, results show that self-efficacy ($\beta = .88$, $t = 5.36$, $p < .001$) and social support ($\beta = .44$, $t = 4.07$, $p < .001$) are positive predictors for the life satisfaction. However, self-efficacy seems to be a much stronger predictor of life satisfaction ($\beta = .88$) than any other constructs.

This study hypothesizes the belief that there is a moderate effect between leisure and life satisfaction through self-efficacy and social support. Moderation occurs when self-efficacy and/or social support alters the degrees of relationship between the leisure and life satisfaction by enhancing the relationship (Baron & Kenny, 1986). Table 3 shows that the statistically significant relationship between the effects of leisure and life satisfaction becomes stronger when the other two variables (e.g., social support and self-efficacy factors) are added into the conceptual model used in this study. In addition, self-efficacy has a stronger total effect on life satisfaction than social support.

Besides the moderating effect, it is also helpful to determine whether mediating effect appears in the suggested framework. Table 3 shows that there is the mediating effect within this conceptual model. The relationship between the latent factor of leisure and life satisfaction with either one of the latent factors of social support and self-efficacy or without these factors is statistically significant.

Table 3 Unstandardized and standardized factor loadings among Construct

	B			β		
	Leisure	Social support	Self-efficacy	Leisure	Social support	Self-efficacy
Direct						
Leisure						
Social support	.47 (.05)**			.40 (.04)**		
Self-efficacy	.33 (.08)**	.47 (.05)**		.32 (.06)**	.53 (.05)**	
Life satisfaction	.24 (.12)**	.44 (.11)**	.88 (.16)**	.15 (.07)**	.32 (.08)**	.57 (.09)**
Indirect						
Leisure						
Social support						
Self-efficacy	.22 (.05)**			.21 (.21)**		
Life satisfaction	.69 (.10)**	.41 (.08)**		.43 (.05)**	.30 (.06)**	
Total						
Leisure						
Social support	.47 (.05)**			.40 (.04)**		
Self-efficacy	.55 (.09)**	.47 (.05)**		.53 (.05)**	.53 (.05)**	
Life satisfaction	.93 (.12)**	.85 (.09)**	.88 (.16)**	.58 (.06)**	.62 (.06)**	.57 (.09)**
B:	Unstandardized	coefficient	β	:	Standardized	coefficient
** $p < .001$						

Adding additional factors (social support and self-efficacy) do not change the statistically significant relationship between the latent factor of leisure and satisfaction with life (Baron & Kenny 1986) but increase the impacts of leisure factor on the satisfaction with life. For instance, the indirect impact of the leisure factor on life satisfaction with social support and self-efficacy factors is statistically significant ($r = .69, t = 6.64, p < .001$). These results imply that higher leisure participation is associated with higher levels of life satisfaction.

The next level of analysis has performed to examine significance of individual paths to determine the strength and relationships between measured variables and latent factors. Table 4 shows the all paths are significant at $p < .001$ level. All paths indicate a moderate to high magnitude of relationships for participation in leisure activity, self-efficacy, social support, and life satisfaction (Table 4).

Table 4 Unstandardized and standardized direct coefficients

Observed variable	Latent construct	B		β		
		R	SE	r	SE	r^2
Family-oriented activity	Leisure	1.00		.85 **	0.05	.72
Non-family-oriented activity		1.07 **	.013	.71 **	0.05	.50
Social-efficacy	Self-efficacy	1.00		.69 **	0.04	.48
General-efficacy		0.60 **	0.05	.78 **	0.03	.61
Physical-efficacy	Social support	0.83 **	0.08	.70 **	0.04	.49
Emotional support		1.00		.87 **	0.02	.76
Informative support		0.63 **	0.03	.84 **	0.02	.71
Evaluative support		1.09	0.05	.93 **	0.01	.86
Physical support	Life satisfaction	0.38 **	0.02	.79 **	0.02	.62
Positive life satisfaction		1.00		.79 **	0.04	.62
Negative life satisfaction		0.66 **	0.08	.58 **	0.05	.34

** $p < .001$

The significance of t -values and the strength of the r coefficients are examined for the each measured variable. The leisure construct is posited to be measured in two dimensions: family-oriented activities and non-family-oriented activities. The leisure construct affected the family-oriented activities ($r = .85, t = 17.78, p < .001$) stronger than the non-family-oriented activities ($r = .71, t = 14.78, p < .001$). The social support construct is posited to be measured in four dimensions: informative, evaluative, emotional, physical

support. Among four dimensions, social support construct had the most positively significant effect on the evaluative social support ($r = .93, t = 70.28, p < .001$). In addition, the self-efficacy construct has the most positively significant effect on the general self-efficacy ($r = .78, t = 23.14, p < .001$) compared to others. Furthermore, satisfaction with life has a positively significant effect on positive attitude of life ($r = .79, t = 18.96, p < .001$) compared to negative attitude of life ($r = .58, t = 11.58, p < .001$). Therefore, these findings provide evidence in support of the hypothesis generated for this study.

The magnitude of indirect impacts of each observed variable is also estimated. Table 5 shows that all the indirect effects from latent factors to the observed variables are statistically significant.

Table 5 Unstandardized and standardized indirect coefficients

	B			β		
	Leisure	Social support	Self-efficacy	Leisure	Social support	Self-efficacy
Family-oriented activity						
Non-family-oriented activity						
Emotional support	0.47(.05)**			.35(.04)**		
Informative support	0.30(.04)**			.34(.04)**		
Evaluative support	0.51(.06)**			.37(.04)**		
Physical support	0.18(.02)**			.32(.04)**		
Social-efficacy	0.55(.09)**	0.47(.05)**		.37(.05)**	.36(.04)**	
General-efficacy	0.33(.04)**	0.28(.03)**		.41(.04)**	.41(.04)**	
Physical-efficacy	0.46(.07)**	0.39(.05)**		.37(.04)**	.37(.04)**	
Positive life satisfaction	0.93(.12)**	0.86(.09)**	0.88(.16)**	.46(.05)**	.50(.05)**	.45(.07)**
Negative life satisfaction	0.61(.10)**	0.56(.08)**	0.58(.12)**	.33(.04)**	.35(.04)**	.32(.06)**

** $p < .001$

The latent factor of leisure activities has a stronger indirect impact on the evaluative social support within the social support factor. In addition, the latent factor of leisure activities positively influences the social self-efficacy within the self-efficacy factor. Furthermore, the latent factor of leisure activities has a positive relationship with the positive life satisfaction within the life satisfaction factor. Regarding the other factors (social support and self-efficacy factors), the same results occur with the different path coefficients. More detailed information is available in Table 5.

5 Discussion

The aged population in South Korea is increasing at a faster rate than ever. The issues related to the elderly need immediate attention of researchers, planners, and welfare agencies. In parallel, it becomes important to describe the direction of causation between life satisfaction and its potential determinants. This study not only describes the relationship between life satisfaction and leisure activities, self-efficacy and social support, but also provides direct and indirect relationships between life satisfaction and each subscale in the measured variables.

Results from this study shows that in general higher self-efficacy, higher social support, as well as higher involvement in leisure time activity appear to be related to life satisfaction. Participation in leisure activities could be critical to maintain positive feelings regarding self-efficacy, social-support and satisfaction with life of the elderly. Also, participation in leisure activities predicts increased physical and psychological well-being. Therefore, helping the elderly to maintain participation in formal or informal leisure pursuits has important implications for promoting well-being in later life. Furthermore, designing the appropriate leisure activities for elders could be very helpful in enhancing life satisfaction. Both self-efficacy and social

support could serve as a bridge between participation of leisure activities and satisfaction with life. The extent to which the elderly is enmeshed within this social network of family, friends and neighbors greatly affects their experience of aging. As expected, this study finds that social-support positively influenced on satisfaction with life. In conclusion, the present results suggest that life satisfaction, social support, self-efficacy, and leisure have significant positive correlations with each other. In this study, leisure, self-efficacy, as well as social support are good measures for life satisfaction within the context of South Korea. Results obtained from the current study suggest clear national policies and the paucity of evidence-based data for creating adequate leisure activities for the elderly.

Even though this study suggests a conceptual framework for life satisfaction in the elderly, more research still need to be performed to examine more age related variations as well as to increase generalizability of results to a larger population because the leisure – life satisfaction model is in the developmental stage. The current study would also add a hypothesis of the mediating role of leisure activities between self-efficacy, social support, and life satisfaction. We are not sure at this point about the relevance of culture neutral approach of the determinants of life satisfaction. However, this study would examine if the same factors explain life satisfaction for the Korean elderly. Researchers should treat the suggested model as the approximately correct one because misspecification could potentially bias estimates of the parameters (Bollen 1989). In addition, such a specification indicates the linear relationships between traits (e.g, life satisfaction, social support, self-efficacy, and leisure) despite the possibilities of existing nonlinearity, which could prove the performance of the suggested model. Although the proposed model could not always be appropriate for explaining life satisfaction, it does provide an attractive method to understand complicated pathways.

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