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Reexamining the Relationship Between Leisure and Stress Among Older Adults

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Abstract

This study examined whether leisure self-determination and leisure social support were related to acute stress and chronic stress among older adults. Participants were 141 older nursing home residents with high stress levels and 322 older community dwellers with low stress levels. Data were collected using face-to-face surveys, which included measures of leisure self-determination, leisure social support, and acute stress. Chronic stress was measured using an electrocardiogram. Data were analyzed using regression analysis. The results indicated that leisure self-determination and leisure social support were negatively correlated with acute stress among nursing home and community participants. However, leisure self-determination and leisure social support were not correlated with chronic stress in these two groups of older adults. Implications of the results are discussed.

Keywords: *leisure self-determination, leisure social support, acute stress, chronic stress*

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Introduction

People are particularly vulnerable to the effects of stress in older age (Cairney & Krause, 2008). Among older adults, the effects of stress involve the development of physical and psychological health conditions, such as a decreased autonomic nervous system function (Chang, 2014a), decreased immune function (McNaughton, Smith, Patterson, & Grant, 1990), and an increase in anxiety (Zhang, Shi, Wang, & Liu, 2012) and depression (Kwag, Martin, Russell, Franke, & Kohut, 2011). In addition to morbidity, stress increases the mortality risk of older adults (Fredman, Cauley, Hochberg, Ensrud, & Doros, 2010; Vasunilashorn, Glei, Weinstein, & Goldman, 2013). Therefore, managing stress levels of older adults is a key to maintaining optimal health and increasing life spans.

Empirical evidence has suggested that leisure is considerably and negatively related to stress; for example, participating in leisure activities can reduce occupational stress for female workers even when they must perform extra work at home (Filho, DaCosta, & Ribeiro, 1998), and leisure participation is correlated with stress management among adolescents (Lee, Wu, & Lin, 2012). This relationship between leisure and stress has been shown to be particularly strong among older adults (Chang, 2014b; Fitzpatrick, Spiro III, Kressin, Greene, & Boss, 2001; Patterson, 1996). Despite existing research that has established the relationship between leisure and stress, research has not yet determined which leisure-generated constructs may substantially contribute to stress reduction. Determining such constructs is crucial to develop effective intervention programs for older adults (Chang & Yu, 2013).

In a central study of leisure, Coleman and Iso-Ahola (1993) indicated that leisure self-determination and leisure social support were two crucial leisure-generated constructs that moderated the negative effects of stress on health. Leisure self-determination refers to the belief that participants are allowed to freely choose their leisure activities. Leisure social support pertains to the belief that participants are cared for by leisure companions and that adequate support is available when they need it. Craike and Coleman (2005) demonstrated that leisure self-determination might mitigate the negative effects of stress on psychological health among older adults. Recently, leisure self-determination and leisure social support were observed to exert mitigating effects on stress among older adults (Chang & Yu, 2013). Thus, enhancing levels of leisure self-determination and leisure social support should be an effective method to reduce stress among older adults.

Stress can be divided into acute stress and chronic stress (Hammen, Kim, Eberhart, & Brennan, 2009). Acute stress refers to short-term stress, whereas chronic stress is constant long-term stress, and people hardly recover from the changes of this type of stress. Acute stress is usually assessed by identifying conditions within 12 months before the interview. Stress is coded as chronic if the negative events have occurred for more than 12 months (McGonagle & Kessler, 1990). Chronic stress exerts a more substantial effect on health than acute stress (Cohen et al., 1998; McGonagle & Kessler, 1990). This effect is particularly substantial among older adults (Hugo et al., 2008; Mausbach et al., 2010). Previous studies have examined the relationship between leisure self-determination or leisure social support and acute stress among older adults (Chang & Yu, 2013; Craike & Coleman, 2005; Sasidharan, Payne, Orsega-Smith, & Godbey, 2006). However, how leisure self-determination and leisure social support affect chronic stress is unclear. Therefore, examining the relationships between the leisure self-determination and leisure social support of older adults and their chronic stress is necessary to explore any observed benefits of the constructs.

The psychological health benefits of leisure are not necessarily substantial for participants with low stress levels (Reich & Zautra, 1981). Only when stress is initially high does leisure exert a powerful impact (Craike & Coleman, 2005). According to these findings, leisure self-determination and leisure social support appear to be more related to chronic stress among older adults experiencing high levels of chronic stress compared with those experiencing low levels of chronic stress. However, studies clarifying the relationships between the constructs and chronic stress among older adults with various levels of chronic stress are lacking. Older nursing home residents frequently report higher chronic stress than older community dwellers (Lim, 2002); therefore, examining whether leisure self-determination and leisure social support are substantially and negatively related to chronic stress in these two groups of older adults is essential.

Literature Review

Stress Among Older Adults

Stress is primarily produced by appraising a stressor (Lazarus & Folkman, 1984). Two types of appraisal exist: primary and secondary appraisals. Primary appraisal involves determining whether a negative event is a stressor. Secondary appraisal involves identifying actions that are most likely to enable people to manage the negative events designated as stressors during the primary appraisal (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986). Coping refers to the behavioral or cognitive efforts used to manage the demands of a designated stressor. Two forms of coping have been identified: (a) problem-focused coping, which directly deals with a stressor, and (b) emotion-focused coping, which reduces the stress experienced as a result of a negative event (Folkman, Lazarus, Gruen, & DeLongis, 1986). According to this theory, older adults may feel stress when they ineffectively cope with a negative stressful event (Tak, Hong, & Kennedy, 2007).

Health-related concerns are the most frequently reported stressors among older adults (Hunter & Gillen, 2009; Tak, 2006). Mourning a friend, relative, or spouse is also a frequently reported stressor (Fitzpatrick et al., 2001; Norris & Murrell, 1990). Older adults face many severe stressors they cannot remove, such as chronic disease, disability, and the loss of loved ones; however, emotion-focused coping can still enable older adults to cope with these stressors (Ong & Bergeman, 2004). Thus, developing an emotion-focused stress-coping strategy is essential for older adults.

Role of Leisure-Generated Constructs in Reducing Stress

Numerous studies have suggested that self-determination and social support are two basic human needs (Niyonsenga et al., 2012; Parker, Jimmieson, & Amiot, 2013), particularly among older adults (Orsega-Smith, Payne, Mowen, Ho, & Godbey, 2007; Sikma, 2009). Self-determination refers to the free choice and initiative in the activities performed by older adults. Social support corresponds to receiving or perceiving adequate support from family and friends. When satisfied, these two needs contribute to psychological health (Deci & Ryan, 2008). Recent studies have indicated that self-determination can facilitate a full processing of emotions related to stressful events over time, thereby promoting enhanced emotional health and decreasing stress (Ntoumanis, Edmunds, & Duda, 2009; Weinstein & Ryan, 2011). Moreover, social support can reduce stress levels through emotion-focused comfort or aid from others to solve problems (Lou et al., 2010). Gerontological studies have also demonstrated that enhancing levels of self-determination and social support is an emotion-focused effective method to reduce the stress faced by older adults (Chang & Yu, 2013; Tak et al., 2007).

Participation in leisure activities can provide older adults with opportunities to exercise self-determination (Chang, 2012). Leisure activities are available to most retired adults and provide pleasurable experiences to supplement the routines of daily life (Chang, 2014a; Hutchinson & Nimrod, 2012; Iso-Ahola, 1980). Participation in leisure activities appears to be an ideal opportunity to promote the self-determination of older adults. Furthermore, the desire to affiliate with strangers decreases in older age when time is perceived as limited (Carstensen, 1995). However, limiting social interactions and meaningful relationships can still lead to affective well-being. Leisure for older adults is thought to be vital because it affords opportunities to interact with family and friends, and receive or perceive social support (Burnett-Wolle & Godbey, 2007). Promoting self-determination through leisure activities refers to leisure self-determination, whereas receiving or perceiving social support from family and friends in leisure contexts refers to leisure social support. In brief, participation in leisure activities for older adults is crucial to promote leisure self-determination and enhance leisure social support.

The stress-buffering hypothesis of Coleman and Iso-Ahola (1993) posits that leisure self-determination and leisure social support can effectively moderate the negative effects of stress on health. Iwasaki and Mannell (2000) also proposed similar concepts, namely hierarchical dimensions of leisure stress coping that include leisure coping beliefs and leisure coping strategies. Leisure coping beliefs refer to general beliefs that leisure enables people to cope with stress. For example, one of the beliefs (leisure self-determination) was reported to act as a buffer against stress to maintain health in the general population (Coleman, 1993; Iso-Ahola & Park, 1996). Leisure coping strategies are actual stress-coping situation-grounded behaviors or cognitions that are accessed through leisure activities. For example, people experiencing stress may become motivated to socialize with others (e.g., leisure companions) after intensely working alone for several consecutive days. Iwasaki (2003) and Iwasaki, Mannell, Smale, and Butcher (2005) have verified that social support from leisure companions can reduce stress. In addition, gerontological studies have indicated that leisure self-determination and leisure social support can enable older adults to reduce stress (Chang & Yu, 2013; Hutchinson, Yarnal, Staffordson, & Kerstetter, 2008).

Relationships Between Leisure-Generated Constructs and Chronic Stress

Since the work of Holmes and Rahe (1967) on life events and illness, acute life events have been a central focus of stress research. Acute life events, such as arguments and movements, refer to acute stress, which differs from chronic stress. However, many studies have indicated that chronic situations, such as chronic disease and disability, are mentioned more often than acute life events when people describe their major sources of stress (Mattlin, Wethington, & Kessler, 1990), and that chronic stress is a stronger predictor of health than acute stress (Cohen et al., 1998; McGonagle & Kessler, 1990). Gerontological studies have also demonstrated that chronic stress exerts a particularly substantial negative effect on health among older adults (Hugo et al., 2008; Mausbach et al., 2010). Therefore, chronic stress should be emphasized when investigating stress in older populations.

To date, research has only examined the acute stress of older adults and explored whether leisure self-determination and leisure social support were substantially related to acute stress (Chang & Yu, 2013; Craike & Coleman, 2005; Sasidharan et al., 2006). Therefore, to understand the role of leisure on stress among older adults, examining the relationships of the constructs with chronic stress is necessary.

Other research has measured chronic stress as the cumulative impact of minor incidents and hassles, such as humid climate and noise, and suggested that these events may have salient

effects on the health of people over time (DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982; Kanner, Coyne, Schaefer, & Lazarus, 1981). Schubert et al. (2009) adopted an objective approach to measure chronic stress; they indicated that continuous changes in sympathetic and parasympathetic neural impulses exhibit alterations in heart rate (HR) and cause oscillations of the R-R. R is a point corresponding to the peak of the QRS complex and R-R is the interval between two successive Rs. The QRS complex is a name for the combination of three of the graphical deflections seen on a typical electrocardiogram. Chronically stressed people exhibit a decreased heart rate (Lucini, Di Fede, Parati, & Pagani, 2005). Thus, this study used a parameter based on HR to measure chronic stress. The study examined the relationships between the leisure self-determination and leisure social support of older adults and their chronic stress.

Effects of Leisure-Generated Constructs on Stress in Different Groups

Leisure has been regarded as a stress buffer (Coleman & Iso-Ahola, 1993; Iso-Ahola & Park, 1996), which refers to a factor that is related to health only for people under stress (Cohen & Wills, 1985). According to these studies, leisure may reduce the negative effects of stress on health primarily for people under stress. When their stress levels are low, the effects of leisure will be negligible.

Reich and Zautra (1981) conducted an experiment to examine the relationships among life events, personal activities, and psychological well-being. After completing a series of questionnaires, three randomly selected groups of participants were instructed to (a) engage in 12 activities from a self-selected list of pleasurable leisure activities, or (b) engage in two activities from that list, or (c) return after one month for retesting with no specific instructions for leisure. After the experiment ended, data were collected and analyzed. A prior negative life change was treated as a factor in this experiment, and this life event interacted with the activities. Participants who reported many prior negative changes exhibited less psychiatric distress and more pleasantness than other participants when instructed to engage in 12 activities, rather than two or none. Reich and Zautra indicated that engaging in pleasurable leisure activities increased the positive aspects of the general well-being of the participants, but might only reduce distress for participants who experience high levels of acute stress. Craike and Coleman (2005) also stated that leisure might have a considerable mitigating effect on acute stress among older adults when their levels of acute stress are initially high. In other words, the psychological health benefits of leisure may not necessarily be substantial for older adults who experience low levels of acute stress. Instead, leisure may exert a powerful effect only when acute stress is initially high. Therefore, leisure self-determination and leisure social support may more substantially contribute to acute stress reduction among older adults who experience high levels of acute stress than among those with low levels of acute stress. However, a study of the effects of the constructs on chronic stress among older adults with various levels of chronic stress is lacking.

Many older adults in poor health experience life crises because they must move into nursing homes away from their families and depend on people other than relatives (Choi, Ransom, & Wyllie, 2008; Hunter & Gillen, 2009; Tsai & Tsai, 2008). Older adults residing in nursing homes generally view other residents as acquaintances and rarely form close relationships with them, turning instead to their families for emotional comfort (Carstensen, 1995). Older adults residing in nursing homes frequently experience life adaptation problems. Numerous studies have indicated that chronic health problems, living without families, and life maladaptation are severe stressors (Fitzpatrick et al., 2001; Hunter & Gillen, 2009; Norris & Murrell, 1990). In other words, older adults residing in nursing homes may experience higher levels of chronic stress

than older adults living at home. Therefore, this study compared the chronic stress levels of older nursing home residents and community dwellers and examined whether the relationship between leisure self-determination or leisure social support and chronic stress is stronger among older nursing home residents than among older community dwellers.

Hypotheses

Based on the relevant literature, this study proposed four specific hypotheses: (a) leisure self-determination and leisure social support are significantly and negatively correlated with acute stress among older nursing home residents and community dwellers, (b) leisure self-determination and leisure social support are significantly and negatively correlated with chronic stress among older nursing home residents and community dwellers, (c) path coefficients between the constructs and acute stress are stronger among older nursing home residents than among older community dwellers, and (d) path coefficients between the constructs and chronic stress are stronger among older nursing home residents than among older community dwellers. Study findings are expected to provide healthcare practitioners and leisure providers with information to develop strategies for reducing acute and chronic stress among older adults.

Methods

Participants

Two nursing homes in Taichung City, Taiwan, were randomly selected in 2012. A councilor in Taichung City, an alumnus of our university, visited the directors of the nursing homes to request assistance in recruiting participants from the residents. Sampling was conducted after the directors gave their permission. Participants were required to meet three eligibility criteria: (a) They were aged 65 years or older, (b) they could participate in leisure activities, and (c) they were free from mental health conditions (such as dementia or depression). Participants were excluded if the director of their nursing home reported that a doctor had diagnosed them with a mental health condition. This study recruited 141 older nursing home residents. Each resident received a small gift (a pair of stainless steel eco-chopsticks). This sample was purposively selected for their expected high stress and low activity profile.

Also in 2012, older community dwellers were selected as participants for comparison. This study recruited older community dwellers who were frequently involved in various programs for older adults, such as folk dancing and karaoke. These programs were operated by the Social Affairs Bureau of Taichung City. The councilor called relevant officials to request assistance in recruiting participants. The same eligibility criteria were applied to the community participants. This study recruited 322 older community dwellers who received the same small gift. This community-based sample was purposively selected for their expected low stress and high activity profile.

Measures

To ensure the quality of the data, face-to-face surveys were conducted. For illiterate participants, a full-time assistant with a master's degree read aloud the assessment items.

Leisure self-determination was measured using the scale of Chang and Yu (2013), which is a modified version of the Leisure Self-Determination Scale (LSD) of Weissinger and Bandalos (1995). The scale contains six items related to how older adults perceive themselves as being free to make choices regarding their leisure activities. The following are two examples of the items: (a) I freely choose my leisure activities, and (b) I perceive freedom when participating in leisure activities. The participants were asked to rate the degree to which they agreed with each of the

items on a 5-point ordinal scale, from 1 (*not at all*) to 5 (*completely*). Scores on the LSD ranged between six and 30, and high scores indicated great leisure self-determination.

Leisure social support was measured using the scale of Chang and Yu (2013), which is a modified version of the Leisure Social Support Scale (LSS) of Iwasaki and Mannell (2000). This 16-item scale measures the degree to which older adults feel adequately supported by their leisure companions, and it contains subscales related to emotional support, esteem support, informational support, and perceived aid. Examples of the items referring to each subscale are listed as follows: (a) I feel emotionally supported by my leisure companions, (b) I feel that I am respected by my leisure companions, (c) My leisure companions give me advice when I am in trouble, and (d) My leisure companions will lend me things if I need to borrow them. The participants were asked to rate the degree to which they agreed with each of the items on a 5-point ordinal scale, from 1 (*not at all*) to 5 (*completely*). Scores on the LSS ranged between 16 and 80, and high scores indicated a strong perception of leisure social support.

Acute stress was measured using the 14-item Perceived Stress Scale (PSS) of Cohen, Kamarck, and Mermelstein (1983). Two examples of the items are as follows: (a) In the last month, how often have you successfully coped with life hassles (reverse item)? and (b) In the last month, how often have you felt that you were unable to control the important things in your life? The participants were asked to rate the degree of stress they felt regarding each of the items on a 5-point Likert scale, from 1 (*never*) to 5 (*always*). Scores on the PSS ranged between 14 and 70, and high scores indicated high stress levels.

Chronic stress was measured using an electrocardiogram (SA-3000P, Medi-Core, South Korea), which is widely used to analyze heart rate variability (HRV) related to the autonomic nervous system function and chronic stress status (Chang, 2014a; Huang, Chien, & Chung, 2013). HRV parameters were calculated on normal-to-normal (NN) inter-beat intervals (or NN intervals) caused by normal heart contractions, paced by sinus node depolarization (according to the operation manual of the SA-3000P). The participants rested for 30 minutes before electrocardiographic recordings were conducted for approximately 5 minutes. Chronic stress was assessed according to the physical stress index, which reflects the long-term accumulated outcome of pressure on the heart. The participants with chronic stress scores exceeding 50 were deemed to be under the effects of chronic stress (Chang, 2014a).

Data Analysis

Descriptive statistics were used to describe the characteristics of the participants. Care was taken to ensure the data were normally distributed through inspection of the normal probability plots prior to all analyses. T-tests were conducted to examine whether the acute and chronic stress of nursing home participants were significantly higher than those of community participants. These were done to confirm that comparing nursing home and community participants was appropriate to determine whether leisure self-determination and leisure social support significantly contributed to reducing acute and chronic stress among older adults when their levels of acute and chronic stress were initially high. Regression analyses were performed to examine the relationships between the leisure self-determination and leisure social support of the participants and their acute and chronic stress. Demographic variables were selected as control variables to see if there was a relationship between the constructs and stress (acute and chronic). The demographic variables in this study comprised age, gender (0 = women; 1 = men), education levels, and marital status (0 = single including unmarried, divorced, and widowed statuses; 1 = married status).

Results

The ages of nursing home participants ranged from 65 to 90 years, with a mean age of 79.41 years (SD = 7.10). Most of these participants were female and widowed, and had completed primary school. The ages of community participants ranged from 65 to 89 years, with a mean age of 76.20 years (SD = 6.58). Most of these participants were female and married, and had completed primary school (Table 1).

Table 1

Characteristics of Participants

	Nursing Home Participants		Community Participants	
Characteristic	*n*	%	*n*	%
Gender				
Female	88	62.4	193	59.9
Male	53	37.6	129	40.1
Education				
Illiterate	44	31.2	62	19.2
Primary School Graduates	66	46.8	204	63.4
High School Graduates	16	11.4	36	11.2
University Degree and Above	15	10.6	20	6.2
Marital Status				
Unmarried	16	11.3	4	1.2
Divorced	12	8.5	9	2.8
Widowed	102	72.4	140	43.5
Married	11	7.8	169	52.5

The average leisure self-determination, leisure social support, acute stress, and chronic stress scores of nursing home participants were 14.30 (SD = 3.38), 40.87 (SD = 10.22), 45.10 (SD = 11.95), and 181.15 (SD = 404.59), respectively. Community participants scored 21.10 (SD = 4.19) for leisure self-determination, 55.96 (SD = 10.37) for leisure social support, 40.82 (SD = 12.13) for acute stress, and 110.07 (SD = 144.60) for chronic stress (Table 2). The acute and chronic stress of nursing home participants were both significantly higher than those of community participants (t_{AS} = 3.51, $p < 0.01$; t_{CS} = 2.03, $p < 0.05$); what this study needed was a "high stress" group and a "low stress" group and this was achieved by sampling in a high stress setting (nursing home) and low stress environment (community).

The results derived from the regression analyses were as follows: First, marital status was significantly and negatively correlated with acute stress (β = -0.11, $p < 0.05$) and chronic stress (β = -0.13, $p < 0.05$) among community participants; namely, the acute and chronic stress of married community participants were significantly lower than those of single community participants. Second, leisure self-determination and leisure social support were weakly related to acute stress among nursing home participants (β_{LSD} = -0.15, p = 0.09; β_{LSS} = -0.17, p = 0.06), whereas the constructs were significantly correlated with acute stress among community participants (β_{LSD} = -0.18, $p < 0.01$; β_{LSS} = -0.24, $p < 0.01$). The greater the leisure self-determination of community

Table 2

Differences in Constructs Between Nursing Homes and Community Participants

	Nursing Home Participants			Community Participants				
Construct	*n*	*M*	*SD*	*n*	*M*	*SD*	*t*	*p*
Leisure Self-Determination	141	14.30	3.38	322	21.10	4.19	18.46	<0.01
Leisure Social Support	141	40.87	10.22	322	55.96	10.37	14.48	<0.01
Acute Stress	141	45.10	11.95	322	40.82	12.13	3.51	<0.01
Chronic Stress	141	181.15	404.59	322	110.07	144.60	2.03	0.04

participants, the lower was their acute stress; similarly, the more their leisure social support, the lower was their acute stress. Third, leisure self-determination and leisure social support were not related to chronic stress among nursing home and community participants. An increase in leisure self-determination or leisure social support did not lead to changes in chronic stress in these two groups of older adults. Fourth, the path coefficients between the constructs and acute stress were weaker among nursing home participants than among community participants; namely, leisure self-determination and leisure social support more substantially contributed to acute stress reduction among community participants than among nursing home participants. Fifth, the path coefficients between the constructs and chronic stress were not significantly different among nursing home and community participants. Leisure self-determination and leisure social support did not contribute to chronic stress reduction in these two groups of older adults (Table 3).

Table 3

Regression Analysis for Factors Predicting Acute Stress and Chronic Stress

	Nursing Home Participants						Community Participants					
	Acute Stress Model			Chronic Stress Model			Acute Stress Model			Chronic Stress Model		
Factor	*B*	*β*	*p*	*B*	*β*	*p*	*B*	*β*	*p*	*B*	*β*	*p*
Age	0.17	0.10	0.23	3.68	0.07	0.45	0.13	0.07	0.19	1.97	0.09	0.11
Gender	-0.99	-0.04	0.63	-38.04	-0.05	0.60	-0.47	-0.02	0.71	-8.34	-0.03	0.61
Education	-1.06	-0.08	0.32	15.55	0.04	0.68	-0.60	-0.04	0.48	-9.09	-0.05	0.40
Marital Status	-3.19	-0.07	0.38	-69.16	-0.05	0.59	-2.72	-0.11	0.03	-38.44	-0.13	0.02
Leisure Self-Determination	-0.54	-0.15	0.09	-8.05	-0.07	0.48	-0.51	-0.18	<0.01	-2.12	-0.06	0.33
Leisure Social Support	-0.21	-0.17	0.06	-4.06	-0.10	0.28	-0.29	-0.24	<0.01	-1.29	-0.09	0.15
F		2.77			0.77			11.24			3.38	
R^2		0.11			0.03			0.18			0.06	

Discussion

This study examined whether leisure self-determination and leisure social support were related to acute and chronic stress among older nursing home residents and community dwellers after controlling for demographic variables. The results of the regression analyses in these two groups of older adults exhibited similar patterns. In each group, leisure self-determination and leisure social support were correlated with acute stress after controlling for marital status, whereas the constructs were not associated with chronic stress. Implications of the results are discussed in the next sections.

Marital Status is an Effective Control Variable

The results of the regression analyses indicated that marital status was significantly and negatively correlated with acute and chronic stress among community participants. The results were consistent with the findings of Chang and Yu (2013) which observed that the stress of married older adults was significantly lower than that of single older adults in their sample of 256 older community dwellers in Taiwan. Therefore, marital status is believed to be an effective control variable for stress. When the variable is entered into the regression models, it can precisely be seen whether leisure self-determination and leisure social support are actually correlated with acute and chronic stress in a given population.

Although marital status was not related to acute and chronic stress among nursing home participants, their marriage rate was low, at only 7.8% of participants reporting spouses. Thus, the results failed to provide sufficient statistical variance to generate precise results. Insufficient data pertaining to the marriage rate hindered precisely examining whether marital status was correlated with these two types of stress.

Leisure-Generated Constructs Are Correlated With Acute Stress

The first hypothesis reasoned that leisure self-determination and leisure social support are significantly and negatively correlated with acute stress among older nursing home residents and community dwellers. The results of the regression analyses supported the first hypothesis and were consistent with findings from previous studies conducted in different cultural settings (Chang & Yu, 2013; Hutchinson et al., 2008). Therefore, higher levels of leisure self-determination and leisure social support appear to be universally related to lower levels of acute stress among older adults.

The results indicate a crucial theoretic implication. Specifically, older adults are unable to remove most stressors they encounter; however, they possess an emotion management capability (Carstensen & Mikels, 2005) that can enable them to reduce acute stress effectively by employing an emotion-focused coping style (Ong & Bergeman, 2004). Because leisure self-determination and leisure social support can facilitate complete emotional processing (Deci & Ryan, 2008; Weinstein & Ryan, 2011) to cope with acute stress (Chang & Yu, 2013; Coleman & Iso-Ahola, 1993), enhancing levels of leisure self-determination and leisure social support may be an effective emotion-focused stress-coping method for older adults.

The results also provide healthcare practitioners with key information regarding efforts for mitigating acute stress to reduce the risk of morbidity and mortality among older adults. Because participation in leisure activities can provide older adults with opportunities to promote leisure self-determination and receive or perceive leisure social support (Chang & Yu, 2013; Craike & Coleman, 2005), practitioners should prioritize offering older adults increased opportunities to engage in feasible leisure activities.

Relationships Between Leisure-Generated Constructs and Chronic Stress Are Mixed

The second hypothesis reasoned that leisure self-determination and leisure social support are significantly and negatively correlated with chronic stress among older nursing home residents and community dwellers. The results of this study did not support the second hypothesis and were not consistent with the stress-buffering hypothesis of Coleman and Iso-Ahola (1993) and the hierarchical dimensions of leisure stress coping of Iwasaki and Mannell (2000). The results have two implications. First, leisure self-determination and leisure social support may not be effective predictors of chronic stress. As such, future studies must identify other crucial constructs to predict chronic stress. Second, the present leisure self-determination and leisure social support may be measurements of only a temporary state, a perception in the short term. A

short-term state predictor may not effectively predict a long-term accumulated state responder; therefore, future studies must develop new scales that can assess long-term accumulated outcomes of leisure self-determination and leisure social support. Only when such scales are developed can chronic stress be effectively predicted.

Relationships Between Leisure-Generated Constructs and Stress in the Different Groups

The third hypothesis posited that path coefficients between the constructs and acute stress are stronger among older nursing home residents than among older community dwellers. The results of this study indicated that leisure self-determination and leisure social support were weakly associated with acute stress among nursing home participants, whereas the constructs were significantly correlated with acute stress among community participants. In other words, the results did not support the third hypothesis. The results were also not consistent with findings from previous studies (Craike & Coleman, 2005; Reich & Zautra, 1981). This may be because nursing home participants engaged less in leisure activities and had fewer opportunities to promote leisure self-determination and receive leisure social support than community participants. For example, the leisure self-determination and leisure social support of nursing home participants were significantly lower than those of community participants (Table 2). It seems that low levels of leisure self-determination and leisure social support may not significantly contribute to acute stress reduction among nursing home participants. According to the results, increasing levels of leisure self-determination and leisure social support should be considered an essential element of acute stress reduction programs designed for older nursing home residents.

The results also indicated that leisure self-determination and leisure social support were not related to chronic stress among nursing home and community participants. Because path coefficients between the constructs and chronic stress in these two groups of older adults were not significant, comparing the path coefficients in these two groups of older adults (the fourth hypothesis) was not meaningful.

Strengths, Limitations, and Suggestions

This study has two strengths. First, this study examined the critical topics of leisure and coping with stress. Although many studies have examined the relationships between leisure-generated constructs and acute stress among older adults (Chang & Yu, 2013; Craike & Coleman, 2005; Sasidharan et al., 2006), little research has explored the relationships between leisure-generated constructs and chronic stress. Even though hypotheses related to chronic stress were not supported, investigation of this construct is warranted as it is the primary stress factor related to health and wellness among older adults. Second, nursing home participants were randomly recruited; therefore, the results more precisely reflected population parameters obtained from older nursing home residents.

Two limitations must be acknowledged as well. First, cause-effect conclusions cannot be directly drawn from the results because of the correlational analyses of this study. Second, the results of the survey from community participants must be carefully interpreted. Although nearly all of the older community dwellers who were involved in the programs operated by the Social Affairs Bureau of Taichung City were recruited, this group was purposively selected. Many factors, such as a predisposition for social engagement, depression, physical health, and socioeconomic status, are related to stress among older adults. The characteristics of purposive sample when involving these factors do not ensure the same characteristics in the population; therefore, the results may not be generalizable to all older community dwellers.

This study suggests that future studies should perform the following tasks to reach robust conclusions: First, this study did not examine the relationship between leisure self-determina-

tion or leisure social support and acute stress among solitary older adults or cerebral stroke survivors who may participate in fewer leisure activities and experience less leisure self-determination and leisure social support than older nursing home residents; therefore, future studies should explore the relationship in these two groups of older adults to clarify whether low levels of leisure self-determination and leisure social support can reduce acute stress. Second, future studies should develop new scales that can be used to assess long-term accumulated outcomes of leisure self-determination and leisure social support, and then examine whether long-term leisure self-determination and leisure social support are significantly correlated with chronic stress to clarify the relationships between the constructs and chronic stress. Third, future studies should determine the effects of leisure self-determination and leisure social support on acute and chronic stress, using an experimental design, to identify any causal relationships between the constructs and stress (acute and chronic).

Conclusion

The results suggested that leisure self-determination and leisure social support contributed to acute stress reduction among older nursing home residents and community dwellers. Although the contribution path patterns of the constructs were similar in these two groups of older adults, the contributions were particularly significant among older community dwellers with high levels of leisure self-determination and leisure social support. Therefore, enhancing levels of leisure self-determination and leisure social support is crucial for older adults, particularly older nursing home residents.

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