

INTERRELATIONSHIP OF MOTIVATION FOR AND PERCEIVED CONSTRAINTS TO PHYSICAL ACTIVITY PARTICIPATION AND THE WELL-BEING OF SENIOR CENTER PARTICIPANTS

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Abstract.—This study investigated the relationship of motivation for and perceived constraints to physical activity (PA) participation and the well-being of senior center participants. A survey instrument made up of modified versions of the Sport Motivation and Perceived Constraints Scales, the Life Satisfaction Index-Z, and the Geriatric Depression Scale was administered at the Cascades, VA, Senior Center. Findings indicate that all perceived constraints (intrapersonal, interpersonal, and structural) were inversely correlated to frequency of physical activity participation. Further, interpersonal and intrapersonal constraints were positively correlated to lack of motivation. Structural constraints were indirectly and inversely related to life satisfaction moderated by frequency of physical activity participation. These results indicate that perceived constraints play a key role in defining PA and well-being.

1.0 INTRODUCTION

The number of older adults in the United States will reach 71.5 million or 20 percent of the population by 2030, due in large part to increasing longevity and the cohort of baby boomers turning 65 in 2011 (U.S. Dept. Health and Human Services, Administration on Aging 2003). This total is more than twice the number in 2000, when people over 65 years represented

only 12.4 percent of the population. This growing population segment will experience an increased incidence of age-related disease and disability. Research has indicated that participation in regular, moderate physical activity in later life can enhance health, including: reduced incidence of physical and mental health problems; delay of functional decline; reduction of chronic disease onset; and stabilization of psychological and physical abilities (American College of Sports Medicine 1998). Further, engaging in active leisure activities in later life has been shown to be a significant predictor of well-being, increased morale, and successful aging (Stathi et al. 2002, Lee and Russell, 2003, Nets et al. 2005).

Despite the number of studies documenting the contribution of physical activity to well-being in later life, many individuals remain inactive. It is therefore necessary to more fully understand those factors which may influence participation in physical activity. Perceived constraints are defined as “factors perceived by individuals to inhibit or prohibit participation and enjoyment in leisure” (Jackson 1991, p. 279) and such constraints to physical activity have been shown to be positively related to motivation and participation in physical activity (Carroll and Alexandris 1997, Alexandris et al. 2002, Alexandris et al. 2003, Cohen-Mansfield et al. 2003, Lees et al. 2005). According to Cohen-Mansfield et al. (2003), health problems, motivation, lack of time, and fatigue are the most common perceived constraints to physical activity among older adults. Lees et al. (2005) determined that fear of falling and lack of interest were significant constraints for elderly nonexercisers. Alexandris et al. (2003) reported that psychological state and accessibility were the major factors constraining recreational sport participation and community-based physical activity of older adults.

Findings from several studies have also supported the theory that motivation operates as a significant mediator of constraints to participation in physical activity (Carroll and Alexandris 1997, Hubbard and Mannell 2001, Alexandris et al. 2002). For instance, health problems can reduce one's ability to engage in physical activity, while also motivating such participation (Cohen-Mansfield et al. 2003). In a study of the process of negotiating leisure constraints, Hubbard and Mannell (2001) identified the strong relationship of motivation, constraints, negotiation, and participation. The authors suggested that motivation was key to negotiation of constraints, as individuals who were more highly motivated to participate expended greater effort on negotiation and increased participation in physical activity. Similarly, Alexandris et al. (2002) determined that perceived constraints (i.e., psychological factors and lack of knowledge) were positively related to lack of motivation and inversely related to intrinsic motivation among an adult population in Greece.

The relationship between intrinsic motivation and physical activity adherence has also been well documented (Clough et al. 1989, Ryan et al. 1997). Intrinsic motivation has been found to enhance well-being (Frederick and Ryan 1993, Guinn 1999, Maltby and Day 2001). In an examination of college students who had been exercising for less than 6 months, extrinsic motivation, depression, and anxiety were found to be high, while level of self-esteem was low. Those who had been exercising for 6 months or more, however, reported higher intrinsic motivation and self-esteem, and lower levels of depression and anxiety. These findings suggest that intrinsic motivation mediated by frequency of participation in physical activity may enhance well-being (Maltby and Day 2001).

The intent of this study was, therefore, to investigate the interrelationship of motivation for and perceived constraints to physical activity participation and the well-being of senior center participants. Figure 1 represents a path model of well-being, graphically depicting the interrelationship of key study variables.

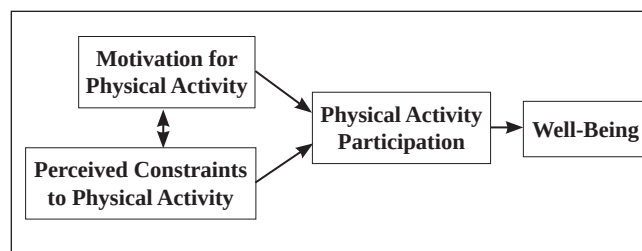


Figure 1.—Path model of motivation, perceived constraints, physical activity participation, and well-being.

2.0 METHODS

2.1 Participants

Eighty-five members of the Senior Center at Cascades, VA (SCC), participated in this study. The SCC is run by the Loudoun County Department of Parks, Recreation and Community Services, Area Agency on Aging.

2.2 Procedure

Data were collected from participants at the SCC using a self-administered survey instrument during one week in summer 2006. All participants were approached upon entrance to the center, and those agreeing to complete the survey chose a comfortable place (e.g., cafeteria, lobby, or classroom) to do so. The researcher addressed any questions or concerns immediately on-site and collected the questionnaire upon completion. Descriptive statistics were calculated for all study variables. A series of bivariate Pearson Correlations was performed to evaluate the direct interrelationships among motivation, perceived constraints, frequency of participation in physical activity at the SCC, and well-being (i.e., satisfaction, depression). The indirect relationships of motivation for and perceived constraints to well-being, as moderated by frequency of participation in physical activity at the SCC, were tested using partial correlation analyses.

2.3 The Survey Instrument

Participants were initially asked about their participation in various structured activities at the SCC and other locations (frequency, satisfaction). The frequency of participation in specific organized physical activity programs at the SCC (i.e., aerobic

class, basic line dancing, beginning line dancing, intermediate line dancing, pickle ball, Tai Chi, yoga, other) were scaled from 0 to 3, where 0 = never participated, 1 = seldom participated, 2 = frequently participated, and 3 = participated during every visit. A total frequency of participation in physical activities at the SCC score was then calculated for each participant as the sum of frequency scores for specified physical activities at the SCC. Total participation frequency scores ranged from 0 to 24 where 0 = never participated in physical activity at the SCC and 24 = participated in all physical activities during every visit to the SCC. Fixed-choice questions were used to assess subject characteristics including age, gender, race or ethnicity, current living arrangements, marital status, and general health condition.

Motivation for participation in physical activity was measured using a modified version of the Sport Motivation Scale (Pelletier et al. 1995), which is composed of three subscales assessing three motivation traits. Twelve items each were used to measure intrinsic motivation (IM) (i.e., IM to know, IM toward accomplishment, and IM to stimulation) and extrinsic motivation (EM) (i.e., identified regulation, introjected regulation, and external regulation). Lack of motivation (amotivation) was assessed with four items. All items were slightly modified to replace the contextual term “sport” with “physical activity.” Respondents were asked to indicate their level of agreement with each statement on a 1 to 7 Likert scale, from 7 = very strongly agree to 1 = very strongly disagree. The overall modified Sport Motivation Scale was found to have high reliability ($\alpha = .91$), while the individual subscales varied (from $\alpha = .64$ [IM Stimulation] to $.88$ [IM to Know]).

Perceived constraints to physical activity were measured using a modified version of the Leisure Constraints Scale (Raymore et al. 1993). Twenty-one statements focused on general perceptions of constraints to participate in a new leisure activity using three subscales: intrapersonal, interpersonal, and structural constraints. For this study, statements

were modified to inquire about constraints to a specific physical activity rather than general leisure activity. Level of agreement with each statement was indicated on a 4-point Likert scale ranging from strongly agree to strongly disagree. The reliability of the scale was later evaluated and the results indicate an acceptable model of leisure constraints (Raymore et al. 1993). Internal consistency of the overall modified scale ($\alpha = .87$) and individual subscales (from $\alpha = .74$ [Structural] to $.86$ [Interpersonal]) was found to be reliable.

In this study, well-being was operationalized as life satisfaction (assessed using the Life Satisfaction Index Z [LSI-Z]) (Wood, et al. 1969) and depression (using the Geriatric Depression Scale [GDS]) (Sheikh and Yesavage 1986). The Life Satisfaction Index Z (LSI-Z) is a shorter version of the original Life Satisfaction Rating Scale (LSR) (Neugarten et al. 1961) and consists of 13 statements with Likert-scale response categories of “agree,” “disagree,” and “not sure.” The range of potential scores is 13 to 26, with a high score indicating high life satisfaction (Wood et al. 1969). The reliability of the life satisfaction scale in this study was $\alpha = .81$. The short-version GDS consists of a 15-item scale; subjects are asked to indicate whether each item describes how they have felt recently. The scale is scored by assigning one point for each “Yes” answer for a negative mood item. Scores of five or more may indicate depression. In this study, the reliability of the GDS was high ($\alpha = .80$).

3.0 RESULTS

Of SCC visitors who agreed to participate in the survey, approximately 78 percent were female. The mean age was 78 years (with a range of 59 to 94 years). Two-thirds of respondents lived independently in houses or townhouses and 47 percent lived alone. The majority were white or Caucasian (73.1 percent), and married (43.8 percent) or widowed (32.5 percent). More than 80 percent of those surveyed reported being in good health with 45 percent having no impairments. Sixty-six percent indicated that they attended the center 2 or 3 days a week and 18.1 percent attended every day. More than 56 percent spent only half a day at the SCC, while 10.8 percent reported staying all day.

Forty-two percent of the subjects reported that they had engaged in at least one organized physical activity program at the SCC. Participants most frequently participated in aerobics class (57.2 percent), followed by intermediate line dancing (25.7 percent), basic line dancing (22.9 percent), beginning line dancing (22.9 percent), Tai Chi (20 percent), pickle ball (8.6 percent) and yoga (8.6 percent).

Respondents indicated very high levels of intrinsic and extrinsic motivation, especially IM accomplishment ($M = 18.5$), EM introjected regulation ($M = 18.5$), IM stimulation ($M = 17.1$), IM to know ($M = 17.4$), EM identified regulation ($M = 16.6$), and EM external regulation ($M = 15.9$). Amotivation was significantly lower ($M = 13.7$). With regard to perceived constraints, subjects indicated that they were most influenced by or experienced the highest level of structural constraints ($M = 18.2$), compared to either intrapersonal ($M = 16.1$) or interpersonal ($M = 15.6$) constraints. The total mean score for life satisfaction was 20.5, indicating high life satisfaction and the total mean depression score for this study was 1.4 ($N = 53$), indicating very low depression. These findings indicate an overall sense of well-being among subjects.

The intercorrelation of frequency of PA participation, motivation, perceived constraints, and well-being is presented in Table 1. The frequency of physical activity at the SCC was not significantly correlated with life satisfaction ($r = -.01, p = .934$) or depression ($r = .14, p = .315$). Intrinsic motivation was found to

be significantly positively correlated to frequency of participation in physical activity at the SCC ($r = .38, p = .014$), and amotivation was found to be significantly inversely correlated to participation in physical activity at the SCC ($r = -.42, p = .008$). Extrinsic motivation, however, was not correlated to participation in physical activity at the SCC ($r = .18, p = .299$). All perceived constraints subscales were found to be significantly and inversely correlated to frequency of physical activity participation at the SCC [intrapersonal ($r = -.41, p = .004$), interpersonal ($r = -.49, p = .000$), and structural ($r = -.53, p = .000$)]. In the interrelationship between motivation and perceived constraints, amotivation was found to be significantly and positively correlated to interpersonal ($r = .46, p = .005$), and intrapersonal constraints ($r = .34, p = .044$).

The indirect relationships among motivation and well-being, moderated by frequency of physical activity participation, are noted in Table 2. Amotivation was found to be significantly related to well-being; specifically, amotivation was inversely related to life satisfaction ($r = -.40, p = .023$), and positively related to depression ($r = .50, p = .004$), moderated by frequency of physical activity participation at the SCC. Table 3 presents the indirect relationships between perceived constraints and well-being as moderated by frequency of physical activity participation. Structural constraints, in particular, were found to be indirectly and inversely related to life satisfaction ($r = -.34, p = .044$), moderated by frequency of

Table 1.—Intercorrelation of frequency of physical activity participation, motivation, perceived constraints, and well-being

Variables	1	2	3	4	5	6	7	8	9
1. PA frequency	--								
2. Intrinsic Motivation	.379*	--							
3. Extrinsic Motivation	.181	.857**	--						
4. Amotivation	-.420**	-.164	.226	--					
5. Intrapersonal Constraints	-.406**	-.254	-.025	.338*	--				
6. Interpersonal Constraints	-.491**	-.056	.107	.461**	.264	--			
7. Structural Constraints	-.527**	-.255	-.111	.181	.408**	.446**	--		
8. Life Satisfaction	-.012	-.041	-.230	-.352*	-.118	-.269	-.328*	--	
9. Depression	.142	.018	.181	.397*	.242	.131	.113	-.586**	--

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 2.—Partial correlation between motivation and well-being moderated by frequency of physical activity participation at the SCC

Variables	Life Satisfaction	Depression
Intrinsic Motivation	-.035	-.044
Extrinsic Motivation	-.217	.142
Amotivation	-.400*	.499**

* Correlation is significant at the .05 level (2-tailed)

** Correlation is significant at the .01 level (2-tailed)

Table 3.—Partial correlation between perceived constraints and well-being moderated by frequency of physical activity participation at the SCC

Variables	Life Satisfaction	Depression
Intrapersonal	-.134	.320
Interpersonal	-.234	.114
Structural	-.337*	.075

* Correlation is significant at the .05 level (2-tailed)

** Correlation is significant at the .01 level (2-tailed)

physical activity participation at the SCC. Further, there were no significant interrelationships among intrapersonal and interpersonal constraints, life satisfaction, and depression.

4.0 DISCUSSION AND CONCLUSIONS

Perceived constraints were a key factor in the interrelationships among motivation, frequency of participation in physical activity at the SCC, and well-being. All perceived constraints subscales were significantly and inversely correlated to frequency of physical activity participation. Figure 2 illustrates the significant direct and indirect relationships among key study variables.

This study's findings support previous research suggesting that intrapersonal and structural constraints, such as a lack of interest, fear of injury (Cohen-Mansfield et al. 2003, Lees et al. 2005), psychological state, and accessibility (Alexandris et al. 2003), have the most influence on the physical activity participation of older adults. In this investigation, interpersonal constraints were significantly related to amotivation and frequency of participation in physical activity. The importance of social relationships to the physical activity participation of older adults cannot be overestimated. Cohen-Mansfield et al. (2003) noted that unmarried individuals who are more in need of social contact and social reinforcement are constricted

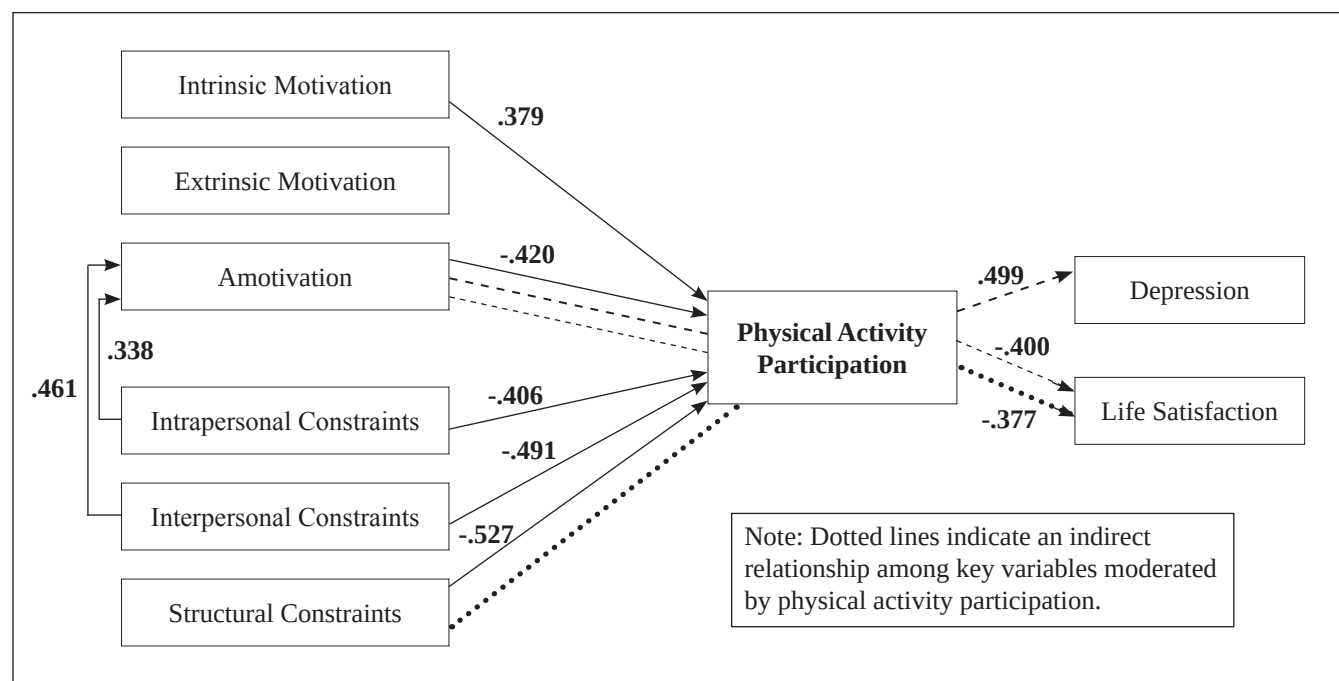


Figure 2.—The interrelationship of motivation, perceived constraints, physical activity participation, and well-being.

from participation in physical activity. Moreover, Pettee et al. (2006) found that married individuals were more likely to participate in physical activity than their single counterparts. Finding a partner or friend with whom to participate in physical activity may be difficult, as illustrated by the large number of participants in this study who lived alone (44 percent), or were widowed (18 percent) or divorced (31 percent).

Constraints alone, however, may not limit or exclude participation. Motivation appears to be an essential element of participation and, ultimately, well-being. Previous research has supported the theory that intrapersonal dimensions and structural constraints are significant predictors of amotivation (Alexandris et al. 2002), and that older adults' health problems may influence their motivation to participate in physical activity (Cohen-Mansfield et al. 2003). For example, Hubbard and Mannell (2001) suggested that strength of motivation was key to negotiating constraints and thereby increasing participation in physical activity.

Another important finding of this study was that amotivation was directly and inversely correlated with participation in physical activity, indicating that individuals who have higher amotivation participate less frequently in physical activity than those with lower amotivation. Amotivation was also indirectly and inversely related to life satisfaction and indirectly and positively related to depression, moderated by frequency of participation in physical activity. This relationship indicates that individuals who have higher amotivation to participate in physical activity have overall lower well-being when mediated by a lower frequency of participation. This result supports previous research showing that individuals who have lower self-determined motivation generally report a less positive feeling of well-being and those who have higher self-determined motivation to participate in

physical activity have higher psychological well-being (Maltby and Day 2001). Overall, these results indicate that perceived constraints play a key role in physical activity behavior. Overcoming such constraints may reinforce motivation to participate and increase activity engagement.

The findings of this study can therefore be utilized to encourage participation in physical activity to enhance the well-being of older adults. Two findings, in particular, are worth considering for the development of physical activity programs for older adults at senior centers or other recreation agencies: overcoming perceived constraints and reinforcing self-determined motivation. First, older adults who perceive that their participation in activities is constrained by others, such as a spouse or partner, may be less motivated to participate in physical activity. Changes in social relationships in later life (e.g., living alone, the death of a spouse, relatives, or close friends, or lack of communication due to sensory disabilities) may influence seniors' perceptions of constraints to participation in physical activity. Thus, recognizing the influence of a spouse, partner, friends, and neighbors will enable programmers to develop better methods for enhancing social relationships among older adults. Second, the absence of motivation must also be addressed as it negatively affects the well-being of older adults. Senior and recreation center staff may need to encourage participation in physical activity for those who appear unmotivated. Programs or workshops should be designed to facilitate discussion of the benefits of physical activity. The older adults in this study reported that the most frequent reason for visiting the senior center was to join in social activities – meeting people, eating lunch, and participating in other social or cultural programs. As previously noted, social relationships are crucial to negotiating constraints to activity participation among older adults.

5.0 CITATIONS

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