



PSYCHOSOCIAL CORRELATES OF PHYSICAL ACTIVITY IN KOREAN MIDDLE-AGED ADULTS

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Abstract

The current study investigated the relationship of psychological and social variables with physical activity in Korean middle aged adults. A total of 352 adults (male: 183, female: 169, $M_{age} = 39.85$ years, $SD = 9.42$) who are residing in Seoul were voluntarily participated in this study. Four Korean-version questionnaires were used to explore possible associations between psychosocial variables and physical activity among middle aged adults. Data were analyzed using correlation analysis and structural equation modeling. Results indicated that self-efficacy, perceived benefits, family support and friend support were significant in explaining physical activity. This study offers significant evidence of a relationship of psychosocial variables with physical activity in middle aged adults.

Introduction

It is well documented that regular physical activity contributes to the prevention and treatment of diseases such as cancer, cardiovascular disease, diabetes, and obesity (Vogel et al., 2009). However, many studies indicate that a large number of adults around the world do not meet the physical activity recommendation to obtain health benefits (Ministry of Culture, Sports and Tourism, 2011; U.S. Centers for Disease Control and Prevention, 2010). Given that physical activity is important for people's health and however, few of them are participating in enough physical activity to maintain health benefits, promoting participation in physical activity and understanding its related motivational factors are needed.

Traditionally, efforts aimed at combating physical inactivity have focused on providing information, education, and counseling programs without fully considering the psychological and social factors associated with physical inactivity (Kim, 2004). To resolve this, variables that affect adults' physical activity behavior must be understood within the psychological, social, and behavioral domains (Rovniak et al., 2002). In this regard, self-efficacy, perceived benefits, perceived barriers, and social support (i.e. friend and family influences) have been commonly studied in Western countries as key psychosocial variables influencing adults' physical activity (Titze et al., 2005; Sallis et al., 2000).

Self-efficacy is a component of Bandura's social learning theory, which relates to one's perceived confidence in her/his ability to carry out a specific behavior (1977). For example, in the physical activity domain, someone with high exercise self-efficacy will participate in physical activity in spite of inclement weather, whereas a person possessing low self-efficacy may only do so when the weather is pleasant. In the Health Belief Model, perceived benefits refer to an individual's assessment of positive consequences of engaging in physical activity, and perceived barriers refer to an individual's assessment of the influences that facilitate or discourage participating in physical activity. For exercise, examples of perceived benefits include stress relief, improved sleep patterns, and increased energy and stamina. Time constraints, competing commitments and/or tasks (e.g. less time to spend with family and friends), and inclement weather are all examples of perceived barriers.

Social support is typically related to tasks or steps that significant others take to facilitate behavior (Dishman and Sallis, 1994). More specifically, social support from family and friends has been found to be positively related to physical activity (Saunders et al., 2004). Furthermore, social support may potentially have a stronger influence on physical activity behavior than do other psychosocial variables, particularly if the behavior is not under complete volitional control and requires assistance to enact (Courneya and McAuley, 1995).

For over a decade, studies across a wide range of populations and settings have demonstrated the existence of a significant relationship between physical activity and psychosocial constructs (Duncan and Mummary, 2005; Deforche et al., 2004). However, these studies have mainly come from Western countries. Physical activity, especially in Korea, is only now being considered a crucial factor in the health status of Koreans, and this has fast become an important public health and social issue in Korean society (Oh et al., 2010). Therefore, the purpose of this study was to test the direct, indirect, and total effects of friend support, family support, self-efficacy, perceived benefits and perceived barriers on physical activity among Korean middle-aged adults.

Methods

Participants

A total of 352 adults (male: 183, female: 169, $M_{age} = 39.85$ years, $SD = 9.42$) who are residing in Seoul were voluntarily participated in this study. In the initial stage, it was emphasized that those who currently exercise, those who currently do not



exercise, and those who are not interested in exercising were all encouraged to participate in the study. The study was approved by the Research Committee of the Seoul National University of Science and Technology.

Table 1. Study participant's demographic characteristics (N = 352)

	Variable	N	%
Gender	Male	183	52.0
	Female	169	48.0
Age(years)	20-29	30	8.7
	30-39	154	43.7
	40-49	95	26.8
	50-59	73	20.8
Education level	Primary School	1	0.3
	Junior high and high School	105	29.9
	University or higher	246	69.9
Living arrangements	Alone	63	17.9
	With spouse	8	2.3
	With children	189	53.7
	With parents	92	26.1
Monthly salary (US dollar)	Less than 1,000	4	1.2
	1,000-1,999	15	5.1
	2,000-2,999	84	24.0
	3,000-4,999	104	29.7
	Over 5,000	145	49.6

Measures

In order to measure self-confidence of the participants with regard to undertaking physical activity, the Korean version of the Exercise Self-efficacy Scale was used (Kim, 2004). The scale consists of 18 items with a 5-point scale ranging from 1 (cannot do) to 5 (certain can do). A two-week test-retest reliability was performed as a measure of instrument stability, resulting in a reliability coefficient of .86.

To assess perceived benefits and barriers of physical activity the decisional balance scale for exercise developed by Plotnikoff, Blanchard, Hotz, and Rhodes (2001) was revised into Korean, and applied in the study. This 5-point scale consisted of 10 items (i.e., five perceived benefits and five perceived barriers), and participants were asked to indicate how important each statement was to them with regard to their decision of whether or not to exercise. Response rates ranged between 1 ("strongly disagree") and 5 ("strongly agree"). A two-week, test-retest reliability was performed, resulting in a reliability coefficient of .81 for perceived benefits and .78 for perceived barriers (Kim, 2007).

For social environmental variables relating to physical activity the social support scale for physical activity developed by Sallis, Grossman, Pinski, Patterson, and Nader (1987) was translated into Korean (Yang, Lee, Kim & Hyun, 2005), and used in the study. The revised scale consists of 24 items (i.e., 12 items relating to family support and 12 items around friend support), with 5-point response rates ranging between 1 ("never") and 5 ("very often"). A two-week, test-retest reliability resulted in a reliability coefficient of .83 for family support and .89 for friends support (Yang et al. 2005).

A leisure time physical activity scale developed by Godin and Shephard (1985) was revised into Korean and used in the study to assess habitual weekly physical activity behaviors. Participants reported how many times during a typical week they took part in strenuous (e.g., running, vigorous cycling), moderate (e.g., fast walking, easy swim), and mild (e.g., yoga, golf) physical activity for more than 15 minutes. Scores were calculated by multiplying each reported activity session by its metabolic equivalent (MET) value and adding the result [MET score = (strenuous \times 9) + (moderate \times 5) + (mild \times 3)]. The two-week, test-retest Cronbach's α reliability coefficient for the Korean version of the LTEQ was .86 (Kim & Cardinal 2010).

Data analysis

Descriptive statistics (i.e., means, standard deviations, and frequencies) were used to summarize participant characteristics. Correlation analysis was conducted to identify the correlations among the study variables. Then, structural equation modeling (SEM)



was conducted to test the associations of psychosocial variables with physical activity. This proposed model was tested not only to identify the direct effect of psychosocial variables on physical activity, but also to explore the indirect effect of self-efficacy, perceived benefits, and perceived barriers in explaining the relationship of friend support and family support physical activity. All statistical analyses were performed using SPSS Win 20.0 and AMOS 20.0.

Results

Correlation among the study variables

Table 2 illustrates the results of the correlation analysis to identify the relationships among all of the study variables. Overall, all the psychosocial variables were significantly intercorrelated, as well as related with physical activity (MET score). Self-efficacy had the strongest correlation with physical activity ($r = 0.41$). On the basis of each variable's correlation coefficient, the effect of the psychosocial variables on physical activity was considered.

Table 2. Correlations among the study variables

Variable	1	2	3	4	5	6
Perceived benefits(1)		-.223**	.284**	.189*	.242**	.197**
Perceived barriers(2)			-.334**	-.234**	-.238**	-.230**
Self-efficacy(3)				.389**	.217**	.410**
Social environment(4)					.245**	.306**
Physical environment(5)						.164*
Physical activity(6)						
Mean	3.96	2.59	3.00	2.67	3.32	10.89
SD	.59	.66	.59	.62	.61	.14.30

* $P < .05$; ** $p < .01$

Relationships among psychological variables, social variables, and physical activity

Figure 1 shows the results of the SEM analysis. The standardized coefficients embedded in the structural model indicate that both friend and family support had a significant direct effect, as well as indirect effect, on physical activity through self-efficacy and perceived benefits. Of the social support variables, family support had a stronger relationship to physical activity than did friend support. With regard to the psychological variables, self-efficacy and perceived benefits were significantly associated with physical activity.

An important part of any statistical procedure that builds models from data is to establish model fit. According to indices of global model fit, the proposed model had an excellent fit for exploring the relationship of psychosocial variables with physical activity ($\chi^2 = 212.098$, $df = 352$, $p = .001$, $GFI = .923$, $CFI = .942$, and $RMSEA = .067$).

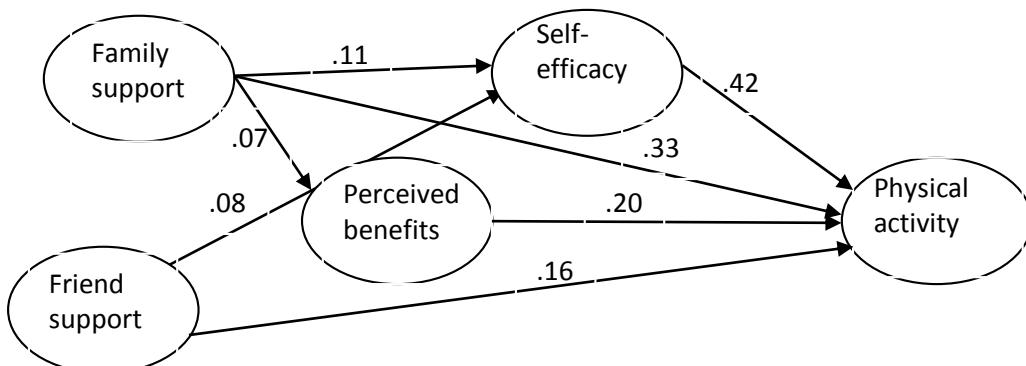




Figure 1. Effect of psychosocial variables on physical activity

Only statistically significant paths are included in the figure. All paths are statistically significant at $p < .05$.

Discussion

This study examined the hypothesized model that social variables in the form of family and friend support would be related to psychological variables (e.g. self-efficacy, perceived benefits and barriers), and that these associations would consequently exert a substantial influence on predicting physical activity behavior. The model provided a good fit to the data in explaining physical activity. This finding is consistent with previous research (Kim and Cardinal, 2010). In this study, self-efficacy exerted the largest effect on middle aged adults' physical activity. Middle aged women with high self-efficacy were more likely to participate in physical activity compared to those with lower levels of self-efficacy. Consistent with this, numerous other descriptive studies have found self-efficacy to be one of the strongest predictors of adopting and maintaining regular physical activity (Kim, Cardinal, and Lee, 2006). Furthermore, friend support and family support alone exerted a positive effect on physical activity, suggesting that supportive social networks can facilitate regular involvement in physical activity among Korean middle aged adults. For example, regularly scheduled exercise sessions with supportive friends or family members can help sustain an active lifestyle.

Those with high self-efficacy to engage in physical activity, despite obstacles, tend to be more active. This finding has been observed in several studies (Kim 2004; Rovniak et al., 2002) and is consistent with Bandura's (1977) theory, which hypothesizes that an individual's level of confidence to engage in a specific behavior is related to their actual behavior. Self-efficacy is developed through previous performance accomplishments, vicarious experiences (modeling), verbal persuasion, emotional arousal, physiological states, and imagined experiences. For example, setting physical activity goals and sticking with them would result in a sense of accomplishment, thereby raising one's efficacy expectations. Similarly, seeing others (e.g., friends, siblings) receive recognition or rewards from significant others would increase one's efficacy expectations. The pattern of relationships between physical activity and perceived benefits and barriers found in the present study is supported by previous studies, which have found that individuals do not maintain or promote their physical activity levels unless they perceive the benefits of physical activity to outweigh the barriers. For example, perceiving that one's friends are energetic, healthy and popular as a result of their exercise involvement would constitute benefits. Conversely, believing that one would feel sore and tired after exercise would be a barrier that would likely decrease involvement.

This study offers significant evidence of a relationship of psychosocial variables with physical activity in middle aged adults. In particular, the findings of this study provide the potential to influence the development of better physical activity programs that include psychosocial attributes as a key component.

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