

The Prediction of Physical Activity Intention and Behavior in Elderly Male Residents of a Nursing Home: A Comparison of Two Behavioral Theories

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Abstract

Background: Regular physical activity is ranked as a leading health indicator. Despite the extensive benefits of physical activity, elder people are much less active than desired. Using Theory of Planned Behavior (TPB) and the self-efficacy construct, this study examined the prediction of physical activity intention and behavior in a sample of elderly male resident of a nursing home.

Methods: In a cross-sectional study of the residents of Kahrizak Nursing Home in Tehran, Iran, elderly men who were 60 years or older, capable of independent living, mobility, and verbal communication were asked to complete measures of the TPB, self-efficacy and physical activity behavior.

Results: A hierarchical step-wise multiple regression analysis indicated that affective/instrumental attitude, subjective norm, and perceived behavioral control (PBC) explained 32.8% of the variance in physical activity intention, and self-efficacy provided an additional 2.7%. In a reverse step regression, the TPB variables explained an additional 12.2% of physical activity intention. In a multiple regression analysis on physical activity behavior, affective/instrumental attitude, subjective norm, perceived behavioral control (PBC) and intention explained 15.7% of the variance in physical activity behavior while self-efficacy contributed an additional 5.6%. In the reverse step regression, TPB predictors contributed an additional 3.0% in explaining the variance in physical activity behavior.

Conclusion: The results indicate that in addition to the TPB, self-efficacy may also play an important role in the prediction of behavior, and should be included in the design of physical activity programs for elderly men of nursing home residents.

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Keywords • Attitude • intention • elderly • self-efficacy

Introduction

In 2000, the population aged 60 years or over numbered 600 million, triples the number presented in 1950. In 2009, the number of older people surpassed 700 million. By 2050, two billion old people are projected to be alive, implying that their number will once again triple over a span of 50 years.¹

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In developed countries, the percentage of the elderly population is even higher (15%), and still growing.²

In the Islamic Republic of Iran, the proportion of elderly people is increasing due to a decreasing birth rate and access to a better health care. The proportion of the population aged 60 years and older in 2005 was approximately 7.3%, and is projected to rise to 11.6% in 2025 and 30.8% by 2050.³

People over 65 years use health services more than others,⁴ and up to one-thirds of this age group has a health problem that limits activities of daily living.⁵ Congruently in Iran, the rate of transferring the elderly to nursing homes is also increasing.⁶ Aging is not a disease, but a natural process that cannot be stopped or reversed. However, it is possible to reach it in a healthy way.

Many chronic diseases are preventable, and their prevention and early management mean reduction of enormous human, social, and economic cost to the country. This is especially important for developing countries.⁷

In Healthy People 2010, regular physical activity is ranked as a leading health indicator, and has been shown to have many health benefits for all age groups.⁸ According to the World Health Organization,⁹ physical activity is the single most useful thing that individuals can do to maintain their health, daily function and quality of life.

The challenge of the public health is to promote the awareness of physical activity and its implementation as an important aspect of a healthy lifestyle among older adults. Physical activity may also offer a useful alternative to drug management by reducing the need for medication in some conditions, such as hypertension and type 2 diabetes in elder people.² The benefits for elder people include improved fitness and quality of life.¹⁰

Unfortunately, despite the extensive benefits of physical activity, the population of older people is much less active than desired.⁸ Therefore, the need to understand physical activity behavior and implement effective intervention strategies is paramount. This study was designed to examine to predictors of physical activity intention and behavior in a sample of elderly men of nursing home residents using theory of planned behavior (TPB) and the self-efficacy construct.

Theory of Planned Behavior

Theories can be used to plan these programs by providing a method of understanding why people are or are not following public

health and medical advice. Existing theories can help pinpoint what you need to know before developing an intervention program and provide insight into how to shape program strategies to effectively reach people and organizations. They can also help identify what should be monitored, measured and or compared to during program evaluations.¹¹

The TPB explains and predicts physical activity behavior effectively.¹² The TPB suggests that the proximal determinant of a volitional behavior is one's intention to engage in that behavior. Intentions are the motivational factors that influence a behavior.¹³ Subjective norm and attitude are suggested to exert their effects upon a behavior through its influence on one's intentions. Subjective norm assesses the social pressures on an individual to perform or not to perform a particular behavior. Attitude is an individual's positive or negative evaluation of self-performance of a particular behavior. Attitude is further divided into affective and instrumental attitudes. Previous research has consistently identified the construct distinction of these two attitudinal components.¹⁴ Thus in this study, affective and instrumental attitudes were modeled as distinct constructs.

Currently, there are few studies on the behavioral theories in elder men.^{15,16} In 2002, semi-structured pilot interviews were carried out with a small sample of elder men to elicit the behavioral, normative and control beliefs associated with the target behavior.¹⁷

Self-efficacy is an individual's confidence or belief in his own capability of performing an action, and is a salient predictor of health behavior change and maintenance.¹⁸ Self-efficacy is a key factor because it operates based on motivation and action both directly and through its impact on the other determinants.¹⁹ Studies adopting the TPB for physical activity behavior have catalogued the independent influence of self-efficacy on intention and behavior.²⁰ Moreover, a number of studies successfully paired self-efficacy with the TPB in various behavioral settings.^{21,22} Self-efficacy is more concerned with cognitive perceptions of the control based on internal control factors. Further, in a comparison of the theories of reasoned action, planned behavior and social cognitive theory, self-efficacy rather than Perceived behavioral control (PBC), had a direct impact on behavior.²³ Previous studies have highlighted the distinction between the TPB and self efficacy.

Consequently, this current study used an expanded TBP model which incorporates the two constructs of attitude, subjective norm and PBC

as well as self-efficacy, to investigate physical activity intention and behavior in elderly men.

Aims of the Study

This study aims to identify the relationship of the TPB and self-efficacy constructs associated with self-reported physical activity behavior and physical activity intention in elder men. Lastly, we attempt to identify and compare the effectiveness of the TPB with self-efficacy as predictors of physical activity and intention.

Materials and Methods

Participants and Procedure

The study was a cross-sectional study using a census sample of 120 elder men aged 60 to 85 years in a population of elderly men, who constituted whole resident of Kahrizak nursing home in Tehran, Iran. The Institutional Review Board of the Tarbiat Modares University approved and supported the study. After institutional ethical approval, the investigators were introduced to Kahrizak nursing home by research administration of Tarbiat Modares University. The objectives and methodology of the study was explained to the management of Kahrizak Nursing Home, and its approval was obtained.

The sample size, calculated using an α of 0.05 and a power of 0.95, was found to be 120 individuals. Therefore, 120 old men possessing the inclusion criteria were selected.

The inclusion criteria for the study were an age of 60 years or older, independent living (no assistance from paid or unpaid persons for personal care), no suffering from several diseases including osteoarthritis, heart diseases, osteoporosis, pulmonary diseases, and ability for independent mobility (moving without canes, etc.), and ability of verbal communication.

Each participant was given a packet of questionnaires on physical activity that contained questions in regards to the assessment of physical activity intention, behavior, attitude, subjective norm, PBC, and self-efficacy. The study was developed according to procedures defined by Ajzen and Fishbein.²⁴

Data Collection

Participants were individually interviewed for 45 minutes using questions in regards to their demography, physical activity beliefs, and physical activity behavior, respectively. The interviewer explained questionnaires used for data collection to the participants to prevent illiteracy or vision difficulties from affecting the study participation or findings.

Instruments

In order to assure the validity of the Persian version of the questionnaire, it was translated into Persian and then back into English. The translation and back translation were performed by two different linguistic students. The translations were then compared and the questionnaire was corrected accordingly.

The questionnaire was then given to 10 professionals in Health Education, sociology and Gerontology at Tehran University to examine the item clarity, face validity, and content validity. The questionnaire was then modified based on their suggestions and comments.

Reliability of the questionnaire was evaluated using a sample of 20 subjects over 10 days using test-retest for physical activity behavior, and Cronbach's alpha for other items.

Participants were instructed to answer all questions based on the definition of regular physical activity. Regular physical activity was defined as a moderately intense physical activity (such as brisk walking) that is performed ideally every day for a minimum of 30 minutes. The duration of regular physical activity may be fulfilled either in a single session or accumulated in multiple bouts of at least 8–10 minutes throughout the day. Questions of TPB were based on previously used measures of TPB constructs, and were all measured on 7-point scales.¹³

Physical Activity Intention

Physical activity intention was measured with a single item modeled after Ajzen's work in 1999. Subjects were asked about the extent of their agreement with the statement that they intend to perform regular physical activity.

Physical Activity Behavior

Physical activity was measured using the Physical Activity Scale for the Elderly (PASE).²⁵ The PASE is a brief instrument designed specifically to assess the frequency and duration of recreational, leisure, and occupational physical activity in older adults over a 7-day period. Frequency was categorized by as never, seldom (1-2 days/week), sometimes (3-4 days/week), and often (5-7 days/week). Duration was categorized as less than 1 hour, between 1-2 hours, 2-4 hours, and more than 4 hours. The total PASE score was computed by multiplying the duration of time spent in each activity or participation (yes/no) by the empirically-derived item weights, and summing up all activities. A higher PASE score represents a greater physical activity behavior. Reliability,

evaluated in 20 subjects over 10 days, was (correlation coefficient=0.76).

Physical Activity Attitude

The participants' attitude was assessed using the statement "For me, participating in regular physical activity would be". The answers assessed components of both instrumental attitude (useful/useless, healthy/unhealthy, bad/good) and affective attitude (enjoyable/unenjoyable, boring/interesting, pleasant/unpleasant, stressful/relaxing). Answers were adjectives that are commonly employed in the physical activity domain.²⁴ Cronbach's alpha for affective attitude ($\alpha=0.74$) and instrumental attitude ($\alpha=0.81$) were good.

Subjective Norm

Subjective norm was operationalized by three statements: "people close to me think that I should participate in regular physical activity", "people who are important to me think that I should participate in regular physical activity", and "my doctor thinks that I should participate in physical activity." These items were scored using seven-point scales from 1 (strongly disagree) to 7 (strongly agree). Cronbach's alpha for this part was 0.71.

Perceived Behavioral Control

Perceived behavioral control (PBC) was measured by four questions. The first question was how much control the subjects had over participating in regular physical activity scored from 1 (very little control) to 7 (complete control). The second question was whether or not the subjects could easily participate in regular physical activity if they wanted. The answer to this question was scored from 1 (strongly disagree) to 7 (strongly agree). The next question was how confident were the subjects that they were capable of participating in regular physical activity. The level of confidence was ranked from 1 (not at all confident) to 7 (extremely confident). The fourth question was about extent of control that the subjects had over the amount of time they had for physical activity. The extent of the control was ranked from 1 (very little control) to 7 (complete control).

Cronbach's alpha for PBC was 0.73.

Self-Efficacy

We adapted the physical activity self-efficacy scale.²⁶ This 5-item instrument was designed to assess confidence in the ability to overcome the barriers for increasing physical activity in various situations. A 4-point likert scale from 1 (very uncertain) to 4 (very certain) was used for scoring. Cronbach's alpha for this part was 0.85.

Statistical Analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS, v. 13). Descriptive statistics were used to determine means and standard deviations of all constructs.

Kolmogorov-smirnov test was used to examine the normality of distribution of quantitative data. Quantitative data were analyzed using Pearson correlation coefficients or multiple Regression.

Results

Data Analyses

Actual subject age ranged from 60 to 85 years (71.56 ± 6.59). Most men were married ($n=62$, 51.6%), had a mean of 2.33 illnesses ($SD=1.95$, range 0–10), moderate level of socioeconomic status (71.9%), body mass index (BMI) of 24.74 ± 3.46 and instrumental activities of daily living (IADL) of 77.13 ± 8.46 .

Pearson correlation coefficients were calculated to determine the bivariate correlation between the TPB constructs. The Pearson correlation coefficients of the theoretical constructs appear in table 1. All variables correlated significantly with intention and behavior. There were weak to moderate correlations between each of the predictor variables and intention. Intention was most strongly correlated with affective attitude and perceived behavior control ($r=0.573$, $P<0.01$; $r=0.507$, $P<0.01$), and was most weakly correlated with subjective norm ($r=0.339$, $P<0.01$). Behavior was most strongly correlated to self-efficacy ($r=0.428$, $P<0.01$) and was most weakly associated with perceived behavior control and subjective norm

Table 1: The results of Pearson correlation test among theory of planned behavior variables.

Variables	1	2	3	4	5	6	Mean \pm SD
1. Self-efficacy							7.50 \pm 2.87
2. Instrument Attitude	0.603**						6.98 \pm 3.07
3. Affective Attitude	0.616**	0.845**					8.47 \pm 3.83
4. Subjective Norm	0.470**	0.509**	0.454**				7.09 \pm 2.53
5. Perceived Behavior Control	0.533**	0.803**	0.750**	0.539**			8.30 \pm 3.54
6. Intention	0.483**	0.472**	0.573**	0.339**	0.507**		2.30 \pm 0.977
7. Behavior	0.428**	0.396**	0.379**	0.319**	0.311**	0.331**	32.11 \pm 37.22

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

($r=0.311$, $P<0.01$; $r=0.319$, $P<0.01$). Self-efficacy was most correlated to instrumental and affective attitude of the TPB variables ($r=0.603$, $P<0.01$; $r=0.616$, $P<0.01$).

Prediction of Intention

The stepwise regression results for intention in relation to the TPB variables and self-efficacy are shown in tables 2 and 3. Significant predictors had a P value less than 0.05. Instrumental and affective attitude, subjective norm and PBC were entered in the first step of the regression (Step 1, table 2) and the total variance in physical activity intention explained was 32.8%. The affective attitude has significant beta weight in the regression equation ($B=0.146$, $P<0.0001$), and was the only significant predictor of intention. The instrumental attitude, subjective norm and PBC were non-significant. In step two, self-efficacy was entered in the regression (table 2). Self-efficacy accounted for an additional 2.7% of the variance in intention ($B=0.071$, $P<0.02$). Affective attitude ($B=0.113$, $P<0.0001$) remained significant in step two of the regression equation.

In a reverse regression (table 3), self-efficacy was entered in the first step of the regression, and the explained total variance in physical activity intention was 23.4%. Self-efficacy had a significant beta weight in the regression equation ($B=0.164$, $P<0.0001$). Instrumental and affective attitude, subjective norm and PBC were entered in the second step of the regression and accounted for an

additional 12.2% of the variance in intention. Affective attitude has a significant beta weight in the regression equation ($B=0.113$, $P<0.0001$), and was the most important predictor of intention. Instrumental attitude, subjective norm and PBC were non-significant. Self-efficacy ($B=0.071$, $P<0.027$) remained significant in the second step of the regression equation. A total of 35.6% of the variance in physical activity intention was explained by all variables.

Prediction of Behavior

In a hierarchical regression for predicting behavior, intention, instrumental and affective attitude, subjective norm and PBC were entered on step one (table 4). A part (15.7%) of the variance in physical activity behavior was explained by these TPB variables. Instrumental attitude ($B=4.79$, $P<0.0001$) had a significant beta weight in the regression. Intention, PBC, affected attitude and subjective norms were non-significant. Self-efficacy entered in step two of the regression (table 4) accounted for an additional 5.6% of the variance in behavior, and had a significant beta weight ($B=3.853$, $P<0.005$). Instrumental attitude ($B=2.623$, $P<0.037$) remained significant in the regression equation in step 2.

In the reverse regression, self-efficacy was entered in step one of the regression (table 5). Self-efficacy explained 18.3% of the variance in physical activity behavior and had a significant beta weight ($B=0.428$, $P<0.0001$). Subjective norm, instrumental and affective attitude,

Table 2: Hierarchical multiple regression analysis to predict intention from the theory of planned behavior variables first and then self-efficacy (n=120)

Predictor	R square	R square change	Adjusted R square	B	Beta	t	Sig
Step 1							
Affective attitude	0.328	0.328	0.323	0.146	0.573	7.594	0.001
Instrumental attitude					-0.041	-0.290	0.772
Subjective norm					0.099	1.169	0.245
PBC					0.176	1.552	0.123
Step 2							
Affective attitude	0.328	0.328	0.323	0.113	0.443	4.710	0.001
Self-efficacy	0.356	0.027	0.345	0.071	0.210	2.234	0.027

Note. Insignificant predictors in step 1 are not shown in step 2.
PBC=Perceived behavioral control; B: unstandardized coefficients; t: test statistic

Table 3: Hierarchical multiple regression analysis to predict intention from self-efficacy first and then the theory of planned behavior variables (n=120)

Predictor	R square	R square change	Adjusted R square	B	Beta	t	Sig
Step 1							
Self-efficacy	0.234	0.234	0.227	0.164	0.483	5.997	0.0001
Step 2							
Self-efficacy	0.234	0.234	0.227	0.071	0.210	2.234	0.027
Affective attitude	0.356	0.122	0.345	0.113	0.443	4.710	0.0001
Instrumental attitude					-0.106	-0.747	0.456
Subjective norm					0.052	0.600	0.549
PBC					0.145	1.281	0.203

PBC=Perceived behavioral control; B: unstandardized coefficients; t: test statistic

Table 4: Hierarchical multiple regression analysis to predict behavior first from the theory of planned behavior variables and then from Self-efficacy (n=120)

Predictor	R square	R square change	Adjusted R square	B	Beta	t	Sig
Step 1							
Instrumental attitude	0.157	0.157	0.150	4.792	0.396	4.687	0.0001
Affective attitude					0.155	0.983	0.327
Subjective norm					0.158	1.625	0.107
PBC					-0.019	-0.132	0.895
Intention					0.185	1.949	0.054
Step 2							
Instrumental attitude	0.157	0.157	0.150	2.623	0.217	2.110	0.037
Self-efficacy	0.213	0.056	0.200	3.853	0.298	2.896	0.005

Note. Non significant predictors in step 1 are not shown in step 2.

PBC=Perceived behavioral control; B: unstandardized coefficients; t: test statistic

Table 5: Hierarchical multiple regression analysis to predict behavior first from self-efficacy and then from the theory of planned behavior variables (n=120)

Predictor	R square	R square change	Adjusted R square	B	Beta	t	Sig
Step 1							
Self-efficacy	0.183	0.183	0.176	5.544	0.428	5.148	0.0001
Step 2							
Self-efficacy	0.183	0.183	0.176	3.853	0.298	2.896	0.005
Instrumental attitude	0.213	0.030	0.200	2.623	0.217	2.110	0.037
Affective attitude					0.048	0.300	0.765
Subjective norm					0.098	1.002	0.318
PBC					-0.060	-0.435	0.664
Intention					0.118	1.219	0.225

PBC=Perceived behavioral control; B: unstandardized coefficients; t: test statistic

intention and PBC were entered on step two (table 5). Instrumental attitude had a significant beta weight in the regression equation (B=2.623, P<0.037), and explained an additional of 3.0%. Affective attitude, subjective norm, PBC and intention were non-significant. Self-efficacy (B=3.853, P<0.005) remained significant in the second step of the regression equation. A total of 21.3% of the variance in physical activity behavior was explained by all variables.

Discussion

There have been a few studies that have used the TPB to explain physical activity in a general population of older adults (>60 years of age), but results are varied.¹²

The present study of the physical activity in an older adult population nursing home resident showed that the TPB model that included self-efficacy explained more variance in physical activity intention and behavior than did the TPB alone. According to our step wise regression data (table 2-5), variables of the TPB predicted 32.8% of variance in the physical activity intention in older adult. This was marginally lower than the value of 44.5% reported by Hagger et al.²⁷ A combination of TPB variables and self-efficacy explained a higher percentage (35.6%) of the variance in physical activity

intention. While TPB alone explained 15.7% of variance in behavior physical activity, a combination with self-efficacy explained 21.3% of it. Affective attitude and self-efficacy were the significant predictors of intention to physical activity. Instrumental attitude and self-efficacy were the significant predictors of physical activity behavior. Interestingly, self-efficacy was a more effective predictor of behavior by contributing an additional 5.6% in the second step of the regression compared to the TPB variable contribution of 3.0%. This finding is consistent with a previous research on physical activity. However, the TPB variable, affective attitude, remains the stronger predictor of intention as shown by its second step contribution of 12.2% compared to the 2.7% of self-efficacy. In general, our data showed that self-efficacy does add to the effectiveness of TPB and provides additional support for the proposition that TPB is a multidimensional theory that can be expanded upon.

The results of this study have several important consequences for both theory and practice. From a theoretical perspective, they highlight the importance of self-efficacy in relation to the TPB. The combination of TPB with self-efficacy not only explained more of the variance in intention and behavior than TPB alone, but made a greater contribution to the prediction of behavior than any other independent TPB variable. Such

results suggest that future model construction and studies on physical activity among older adults nursing home residents should incorporate self-efficacy as a distinct construct that was confirmed with by another study.²⁸

In common with previous research, affective attitudes explain unique variance in intention above and beyond that explained by standard TPB variables.²⁹ According to narrative reviews, the majority of studies using the TPB in physical activity behavior research have reported that attitudes have the most pervasive influence on intentions.^{27,30,31} For example, When Estabrooks and Carron used the TPB to predict attendance in a physical activity program for older adults, they found that although intention predicted attendance, neither attitude or subjective norm predicted intention or attendance in the physical activity program.¹⁵ Courneya and colleagues reported that older adults intended to do physical activity when they held a positive attitude toward physical activity, had perceptions of control over their physical activity, or perceived pressure from important others.¹⁶

Our results show that affective attitude explained a considerable amount of unique variance in intention (table 2), whereas this was not the case for instrumental attitude. Our study and a previous study,²⁹ have shown that affective attitude was the stronger predictor of physical activity intention than is instrumental attitude. This suggests that interventions aimed at improving affective attitudes toward physical activity among older adults nursing home residents may lead to successful increases in physical activity intention.

Perhaps people who had a more negative attitude were less likely to intend to perform physical activity. This study further shows that instrumental attitude was the stronger TPB predictor of physical activity behavior. This suggests that interventions designed to emphasize aspects of pleasure in physical activity may be more effective to build intention whereas instrumental attitude should be addressed when translating intention to behavior.

This study shows that intention was not significant in predicting behavior. An explanation for the modest amount of variance is the restriction in the range of intentions and behavior. Ajzen indicates that the magnitude of attitudes, subjective norm and PBC, on intention could vary with situational conditions (1991).¹³ Most of our elderly people in the Nursing Home spent most of their time in their residences, and did not engage in social or recreational activities. When using such participants, intentions are not likely to be a significant mediator in this

model. Direct paths from attitudes, subjective norms and perceived behavioral control to behavior should instead be tested when there are apparent restrictors preventing intention-behavior relationships. A previous study also shows that intention was not itself significantly predictive of reported activity levels.³⁰

Perceived behavioral control did not add significantly to the prediction of intention and behavior that is confirmed with other study.²⁸ This may be due to the possibility that older adults with several years of experience already take into account the actual control they have over the target behavior. Or perhaps certain behavior control were also limited by situational conditions that conflict with what subjects perceive as their own control versus what the institutions in Tehran may encourage.

This study also reveals that subjective norm did not add significantly to the prediction of intention and behavior. This finding supports previous research involving the TPB.^{27,28} Although the elder adults of Nursing Home in this study believe physical activity is beneficial, they appear to be less influenced by others to change their physical activity behavior as evidenced by the small impact of subjective norm on intention and physical activity behavior. A previous study also shows that subjective norm did not add significantly to the prediction of intention and behavior predictor of physical activity intention compared to attitude and perceived behavioral control.^{27,28} This may be consistent with the notion that participation in physical activity relies more on personal motivational judgments than on outside influence in the case of older adults. Perhaps these consistent results point to some potential culture-specific protective factors against these physical activity changes. Or perhaps similar to the case of intention and PBC, the effects of subjective norm may be hindered by circumstance. For example, in Tehran, there are few fitness centers, which few can afford, thus discouraging the elderly from going to these fitness centers and increasing the priority to stay in their nursing home. This financial hurdle would definitely affect the relationships between intention-behavior, PBC-actual behavior, and subjective norm-behavior.

Another explanation may be that one's subjective norms and PBC are less susceptible to change by means of communication alone than is the case for one's attitude because subjective norms and PBC comprise external as well as internal dimensions.

Considerable evidence has consistently linked physical activity self-efficacy with actual

performance of activity among samples of healthy adults of all ages.²¹ In this study, self-efficacy was the strongest correlate of physical activity behavior. Self-efficacy has been successful in explaining additional variance in physical activity intention and behavior in this study. Future physical activity interventions may prove to be more effective by focusing on a social-cognitive design that emphasizes internal aspects of confidence towards physical activity.

The present findings provide further support for the TPB in predicting physical activity intention and behavior. Attitude and self-efficacy were significant predictors of intentions and behavior. Perceived behavioral control and subjective norm were not significant. The present study suggests that people's attitudes and self-efficacy seem to be the key influences in forming interventions to improve participation in physical activity. In practical terms this suggests that interventions based on the enhancement of attitudes and self efficacy toward physical activity may lead to a concomitant increase in physical activity behavior. Clearly, as the research community reaches a consensus on defining and measuring the TPB construct, the understanding of its contribution to the explanation of behavior and the need for further expansion on the construct will become more transparent.

Limitations of the present study were that it used a convenient sample of older adults' Nursing Home residents therefore, we don't generalize the results to all of elderly.

And we used self-reported physical activity behavior. We also employed a very brief questionnaire with fewer item measures of TPB constructs because it is difficult for older people to complete a full TPB questionnaire. Another limitation of this study was its use of a single item to measure physical activity intention. Although single items for measuring this construct predominate in research based on the TPB, a multiple-item assessment would allow researchers to estimate internal consistency.

Conclusion

The findings of this study indicate that physical activity behavior in elderly men of Nursing Home residents was largely predicted by self-efficacy and instrumental attitude, and physical activity intention was predicted by self-efficacy and affective attitude. They also showed that compared to TPB variables, self-efficacy was the stronger predictor of physical activity behavior in these subjects, while affective attitude was the stronger predictor of intention.

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