

Towards Understanding Senior Citizens' Gateball Participations Behavior and Well-Being: An Application of the Theory of Planned Behavior

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Abstract. Successful aging is expected goal for every older adult. Well-being has been considered an important indicator of successful aging. Thus the aim of this study is applying the Theory of Planned Behavior to investigate senior citizens' leisure participation behavior and their perceived psychological well-being of participating in gateball-playing activities. We analyze a survey of 614 Taiwanese senior citizens gateball players to test the hypothesized. The results indicated that perceived behavioral control, attitude, and subjective norm have significant positive effects on gateball participation behavior, and ultimately significant positive impact on senior citizens' perceived psychological well-being. Perceived usefulness and perceived ease of use have positive and significant effects on attitude. Friend/co-worker influences have significant positive effects on subjective norm. Both resource facilitating conditions and self-efficacy have significant positive effects on perceived behavioral control. Managerial implications and suggestions are also discussed in this study.

Keywords: Theory of Planned Behavior (TPB) · Gateball · Exercise behavior · Psychological well-being

1 Introduction

Population aging is a common trend in the world. Successful aging is expected goal for every older adult in Taiwan and other countries. It is also one of the main objectives of the government policy. Well-being has been considered an important indicator of successful aging. Thus, how to help senior citizens aging actively for the purpose of increasing their quality of life has profoundly become a social phenomenon [27] and identifying factors that promote well-being perceived by senior citizens is of growing importance. In the past there have been some researchers focused in elderly leisure activities on well-being. Silverstein and Parker [33] note that engaging in friendship-type leisure activities lead to the highest quality of life perceived by Swedish elders. In a literature review addressing social and leisure activity and well-being in older people,

Adams et al. [1] indicate that joining informal social activity (e.g., club going) is most likely to benefit their well-being. In an analysis of the health and retirement study, Chen and Feeley [13] conclude that individual well-being improves with higher levels of social relationship.

Although many studies have focused on identifying various factors influencing older adults acceptance behavior of leisure participation factor and their well-being, researchers are still developing leisure participation evaluation techniques, using subjective approaches based on individual preferences, or simply to find the factors that influence participation leisure behavior, lack of well-constructed theoretical models for the connection between cause and accepted understanding of behavioral and psychological mechanisms, in addition to its findings can only be answered "What" questions, but cannot understand the behavior of the elderly to accept the reasoning of perception and feeling process, while there will be an unstable situation. As a result, although subjective researchers have made some contributions to overview concept of the development of leisure activity, they may not have adequately required direct evaluations through perceptive reasoning processes. So a deep understanding of the problem and treatment is not sufficient. Theory of Planned Behavior (TPB) is the use of a personal attitude, subjective norm and perceived behavioral control to predict the behavior of individuals to participate in a particular activities, TPB is widely accepted and has been successful used in various fields of study includes leisure activity. Furthermore, gateball-playing is a good elderly leisure activities and it has increasingly become popular leisure activity for the older adults in Taiwan.

Thus based on TPB, an integrated model was developed to explore the behavior of the elderly to participate in gateball and well-being. Also, through reviewing of gateball activities literature, authors identified several antecedents contributing to playing gateball behavior and those affecting attitude, subjective norm, and perceived behavioral control. For example: the two exogenous factors "perceived ease of use" and "perceived usefulness" to replace the original exogenous factors, behavior belief and outcome evaluation; "Family/friend/co-worker influences" to replace the original exogenous factors, normative belief and motivation to comply. And "self-efficacy" and "resource facilitating conditions" to replace the original exogenous factors, control beliefs and perceived facilitate.

2 Literature Review and Hypothesis Development

2.1 Theory of Planned Behavior

Human behavior tends to be goal-oriented. Based upon this tenet, Ajzen and Fishbein [4] propose the Theory of Reasoned Action (TRA) which addresses that most human behaviors follow a certain pattern and therefore are predictable. According to TRA, individuals consist of a high degree of volitional control and are capable of making logical choices among alternatives. As one of intention-based models, TRA uses behavioral intention to predict subjects' actual behaviors. Behavioral intention correspondingly leads to actual behavior and is a function of attitude toward a behavior and subjective norm. Attitude is correspondingly correlated with behavioral belief and subjective norm is associated with normative belief [4].

Based on theoretical framework of TRA and incorporates a new dimension, perceived behavioral control, as one of the determinants of behavioral intention, TPB is established for predicting human behavior [2, 21]. The applicability of TRA, however, has drawn concerns from researchers. This is because the performance of a particular behavior may require the presences of opportunities and resources which are non-volitional in nature [2]. That is, TRA is unable to fully explain certain situations if the availability of resources and opportunities are limited. For example, although a senior citizen has positive attitude and is aware of general supports toward participating in playing gateball, he/she cannot join the leisure activity if the playing ground is not conveniently located or the opportunity cost for this particular person is high. The application of TPB, in this case, would be appropriate in predicting the senior citizen's behavior. It is clear that senior citizens' decision making can include a variety of non-volitional factors that can diminish their opportunities or capabilities to play gateball. Thus, TPB fits the conceptual framework of the study because it offers a well-developed structure which enable researchers to conduct a thorough examination of the formation of senior citizens' gateball playing behavior and their psychological well-being by considering both volitional and non-volitional factors.

2.2 Relationship of Leisure Participation Behavior and Psychological Well-Being

The psychological benefit of leisure participation is one of the most frequently pursued topics in the field of leisure study [27]. This is because researchers generally believe that psychological benefit is considered a useful evaluation criterion pertaining to leisure activity participation [29] and is correlated with perceived quality of life [32]. The common interpretation of leisure participation and psychological well-being is that both are positively correlated. That is, leisure participation can be an important behavior in increasing one's health and psychological well-being. Prior research has shown that positive emotional state or subject well-being can be a promoting agent for individual health [37]. Lawton indicates that there is a positive relationship between leisure activity participation psychological well-being. Hassmen et al. [22] emphasize that regular exercise has been characterized as a positive leisure participation behavior which may yield psychological benefits. In their study, a consistent positive association between psychological well-being and regular exercise is found. The results of a meta-analysis show that participation in physical activity is linked to individual strength, functional capacity, and psychological well-being [30].

By referencing the results of prior studies, we believe that participation in gateball is beneficial for players, particularly for senior citizen players. This is because gateball is a game of strategic deployment which offers exercise for the mind as well as for the body [24]. Through such leisure activity, players may view the activity as a means for maintaining a clear mind and body fitness. In addition, players may consider playing field as a place for social interaction [24]. As stated above, research has shown that the relationship between leisure participation behavior and psychological well-being is positive and leads the following hypothesis:

Hypothesis 1: Senior citizens' gateball-playing behavior has a positive influence on their psychological well-being.

2.3 Relationship of Attitude, Subjective Norm, Perceived Behavioral Control and Leisure Participation Behavior

The Theory of Planned Behavior (TPB) proposition has been indicated that the behavioral intention is a determinant of actual behavior, and this behavioral intention is determined by three antecedent beliefs, attitude, subjective norm and perceived behavioral control [6, 7]. Similar results were also found in the field of sports, leisure, and recreation studies [5, 28]. Continuing the TPB proposition, this study revalidates constituent relationships in the context of senior citizens' gateball-playing with the following hypotheses:

- H2: Attitude has a positive influence on senior citizens' gateball-playing behavior.
- H3: Subjective norm has a positive influence on senior citizens' gateball-playing behavior.
- H4: Perceived behavioral control has a positive influence on senior citizens' gateball-playing behavior.

2.4 Relationship of Perceived Ease of Use, Perceived Usefulness and Attitude

The Technology Acceptance Model (TAM) has been indicated that behavioral attitude is determined by two antecedent beliefs, perceived usefulness and perceived ease-of-use [15]. Similar results were also found in the field of sports, leisure, and recreation studies [12, 26]. In our context, if senior citizens perceive that gateball is not difficult to learn and play, they are likely to have a positive attitude toward gateball-playing behavior. If senior citizens perceive that playing gateball is useful for keeping their mind sharp, maintaining their physical fitness, or providing opportunities for social interaction, they are likely to have a positive attitude toward gateball-playing behavior. Continuing the TAM proposition, this study revalidates constituent relationships in the context of gateball-playing with the following hypotheses:

- H5: Perceived ease of use is positively associated with senior citizens' attitude toward gateball-playing behavior.
- H6: Perceived usefulness is positively associated with senior citizens' attitude toward gateball-playing behavior.

2.5 Relationship of Family/Friend/Co-worker Influences and Subjective Norms

Subjective norm is a function of salient normative belief [6]. In TPB, normative norm is defined as a person's perception concerning social pressures or other individuals'

beliefs that he/she should or should not conduct a particular behavior [17]. Motivation to comply, accordingly, refers to a person's choice of whether he/she follows instructions and reaches outcomes desired by important referents [17]. In fact, normative belief is basically a concept of social influence which refers to accepted standards or unwritten rules of behavior existing in a particular group, community, or culture. It is assumed that important referents in combination with the individual's motivation to comply constitute the prevailing subjective norm. In real life situation, all individuals have important referents or groups around them. Those important referents generally consist of spouse, family members, friends, supervisors, or coworkers. If persons are aware that those important referents endorse a particular behavior, they are more likely to perform such behavior [6]. In our context, if important referents encourage or provide advice to senior citizens by indicating that playing gateball is good for them, they are likely to follow their advice to participate in gateball playing and games. In this study, the important referents include family members, friends, and peers. Family members and friends are two significant groups of people who may have impact on individual decision making. Researchers [19] have pointed out that family members and friends are usually the most influential persons in shaping a particular person's views. We also consider that viewpoints provided by peers are important for senior gateball players in this study. As stated above, gateball is a group activity. Interacting with teammates and other players is a part of the game. In this study, teammates and other gateball players are considered as peers. In fact, peers' encouragement is can play a key role for the participation in the leisure activity. Therefore, the following hypotheses are developed.

- H7: Family members' influence is positively associated with subjective norms as perceived by senior citizens.
- H8: Friends' influence is positively associated with subjective norms as perceived by senior citizens.
- H9: Peers' influence is positively associated with subjective norms as perceived by senior citizens.

2.6 Relationship of Self-efficacy, Resource Facilitating Conditions and Perceived Behavioral Control

In TPB, perceived behavior control is a function of control belief. Control belief refers to the presence of factors which may either facilitate or hinder the performance of a particular behavior [3]. If the participation of a leisure activity, for instance, is convenient (e.g., location, low cost) for an individual, he/she is more likely to join that activity, and vice versa. Facilitation conditions, thus, may play a pivotal role of whether a person is willing to participate in a leisure activity. In addition, Ajzen [2] notes that perceived behavioral control is conceptually compatible to the concept of self-efficacy. Self-efficacy is defined as the belief in one's capabilities of "how well one can execute courses of action required to deal with prospective situations" [9]. Researchers have addressed that individual confidence in his/her ability is the key to have such person performing a particular behavior [34]. Self-efficacy can not only influence individual

selection of activities, but also reflect determinations and efforts expanded during the execution process [2]. We believe that control belief is constituted by the internal force of self-efficacy and external factor of facilitation conditions. In this context, if senior citizens perceive that they have confidence in playing gateball well, they are more likely to engage in more efforts and time for this activity. If playing gateball can be cost efficient and based on individual time availability, as well as convenient locations for participation, senior citizens are more likely to involve in the gateball-playing behavior. Previous studies have indicated that both self-efficacy and facilitation conditions have positive relationships with perceived behavioral control [31]. Therefore, the following hypotheses are developed.

- H10: Self-efficacy is positively associated with perceived behavioral control as perceived by senior citizens.
- H11: Facilitation conditions are positively associated with perceived behavioral control as perceived by senior citizens.

3 Method

3.1 Measures

The questionnaire development was based on theory, recreation management-related literature review and psychology literature review. Perceive ease of use was measured using four items adopted from [11]. Perceived usefulness was measured by six items adopted from [36]. The construct of normative belief was categorized into three dimensions including family members' influence, friends' influence, and peers' influence. Each dimension was measured by four statements [14]. Control belief consists of self-efficacy and Facilitation conditions. Self-efficacy was measured by four statements. The development of these statements was based on [10]. Facilitation conditions were measured using three statements adopted from [2, 34]. Drawing upon previous studies [7], five statements were used to measure attitude. The subject norm statements were adopted from [16], and Curtis et al. (2010). Three statements were used to measure the construct of subjective norm. Based on the prior studies [2, 34], three statements were used to measure perceived behavior control. Leisure participation behavior was measured by four statements. The development of these statements was based upon the works of. Psychological well-being statements were adopted from [2, 23]. A total of eight statements were used to measure this construct. The wordings of the measurement were modified for the purpose of being appropriate for this study. The refinement of the instrument was also reviewed by a panel of experts.

3.2 Data Collection

Purposeful sampling was employed in this study because a complete population list concerning senior gateball players was unable to be obtained. Subjects were senior gateball players who were 60 years old or above. Empirical data were collected via the

assistance of Chinese Taipei Gateball Association (CTGA). The period of data collection lasted about four and a half months from July 16 to November 30, 2014.

3.3 Data Analysis

SPSS and AMOS were used to analyze the data. Drawing on approach, an estimate of a measurement model was first developed using confirmatory factor analysis (CFA). After assessing the adequacy of the model, structural equation modeling (SEM) was employed for the purpose of testing hypothesized relationships and theoretical model. For model testing, SEM is a multivariate technique which combines factor analysis and multiple regressions and, accordingly, enables researchers to assess a series of independent/dependent relationships simultaneously [20].

4 Results

4.1 Descriptive Statistics

A total of 614 usable responses were received and used in data analysis. Of the 614 respondents, 60.4 % were male ($n = 371$). Female respondents accounted for 39.6 % ($n = 243$). Respondents' age ranged from 60 to 83 years and their average age was 68.3 years. Respondents who had graduated from middle school (29.7 %, $n = 184$), high school or vocational school (25.6 %, $n = 157$), and elementary school (25 %, $n = 151$) were the major groups categorized by their educational levels. The majority of the respondents indicated that they currently lived with their family members (92.2 %, $n = 566$). Approximately 93 % of the respondent ($n = 569$) revealed that they have played gateball for at least a year. Among them, about 60 % of respondents ($n = 371$) had at least five-year experiences in playing gateball.

4.2 Testing of the Measurement Model

Table 1 presents an overview concerning the means, standard deviations, and correlation among the constructs. The CFA results revealed that the model fits the data ($\chi^2/df = 1.528$, GFI = .881, AGFI = .868, RMSEA = .029, CFI = .953, NFI = .859). The loadings of all statements were above .70 on their assigned constructs. These results indicated that all statements were significantly related to their specified constructs and the unidimensionality of each scale was satisfactory. Composite reliability of the underlying constructs ranged from .782 to .982. The values exceeded the recommended value of .70 suggested by [8]. Average Variance Extracted (AVE) was also performed to examine the convergent validity of the measures. The AVE values, ranging from .525 to .903, exceeded the recommended value .50 suggested by [18]. Additionally, the square root value of AVE from each construct was larger than the correlation between each construct, As listed in Table 1. Such value indicated that discriminant validity was satisfactory.

Table 1. Measure correlations, reliability coefficients, and AVE

| | PEOU | PU | FMI | FI | PI | SE | FC | ATT | SN | PBC | LPB | PWB |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| PEOU | .86 | | | | | | | | | | | |
| PU | .80 | .95 | | | | | | | | | | |
| FMI | .69 | .65 | .79 | | | | | | | | | |
| FI | .61 | .52 | .71 | .83 | | | | | | | | |
| PI | .60 | .51 | .78 | .71 | .82 | | | | | | | |
| SE | .59 | .42 | .77 | .81 | .79 | .85 | | | | | | |
| FC | .63 | .53 | .72 | .74 | .73 | .76 | .81 | | | | | |
| ATT | .82 | .75 | .64 | .53 | .51 | .44 | .54 | .85 | | | | |
| SN | .64 | .58 | .73 | .70 | .71 | .72 | .71 | .58 | .74 | | | |
| PBC | .59 | .48 | .77 | .73 | .72 | .82 | .80 | .49 | .73 | .83 | | |
| LPB | .69 | .65 | .76 | .69 | .68 | .72 | .79 | .68 | .72 | .82 | .88 | |
| PWB | .61 | .57 | .67 | .61 | .60 | .63 | .70 | .59 | .63 | .71 | .69 | .72 |
| Mean | 5.76 | 5.51 | 5.84 | 5.79 | 5.79 | 5.95 | 5.96 | 5.77 | 5.71 | 6.00 | 6.14 | 6.11 |
| SD | .76 | .76 | .71 | .73 | .75 | .60 | .62 | .86 | .72 | .61 | .59 | .68 |
| CR | .916 | .982 | .868 | .901 | .893 | .911 | .855 | .926 | .782 | .866 | .934 | .898 |

Note. PEOU = perceived ease of use; PU = perceived usefulness; FMI = family members' influence;

FI = friends' influence; PI = peers' influence; SE = self-efficacy; FC = facilitation conditions;

ATT = attitude; SN = subjective norm; PBC = perceived behavioral control; LPB = leisure participation behavior; PWB = psychological well-being; CR = composite reliability; The diagonals represent the square root of average variance extracted (AVE).

4.3 Structural Model

The results of hypotheses testing are presented in Table 2. As indicated in this table, except hypothesis 7, the results supported the other relationships hypothesized at a significance level of 0.05. The findings for these hypotheses showed that senior citizens' psychological well-being is positively correlated with their participation in gateball-playing behavior, and their attitude toward playing gateball, subjective norms, and perceived behavioral control all have impact on such participation behavior. In addition, as shown in Table 2, the estimates of the standardized coefficients revealed that the effect of perceived behavioral control on leisure participation behavior was greater than attitude and subjective norm. The effect of perceived usefulness on attitude was greater than perceived ease of use. The effect of friends' influence on subjective norm was greater than peers' influence. Finally, the effect of self-efficacy on perceived behavioral control was greater than facilitation conditions.

5 Discussion

In combination of TAM as a part of TPB model, this study was an effort to test the appropriateness of TPB in explaining senior citizens' decision making process concerning gateball playing behavior and the effect of such behavior on individual psychological well-being. In this model, the predictive constructs were validated as determinants of leisure participation behavior and psychological well-being. Overall, the results of the study verified that proposed constructs can be the primary reasons for

Table 2. Structural equation modeling results (N = 614)

| Paths | Coefficient | Hypothesis |
|----------------|-------------|--------------|
| H1: LPB → PWB | .807*** | Supported |
| H2: ATT → LPB | .148* | Supported |
| H3: SN → LPB | .105* | Supported |
| H4: PBC → LPB | .730*** | Supported |
| H5: PEOU → ATT | .296*** | Supported |
| H6: PU → ATT | .671*** | Supported |
| H7: FMI → SN | .178 | No supported |
| H8: FI → SN | .598*** | Supported |
| H9: PI → SN | .194* | Supported |
| H10: SE → PBC | .532*** | Supported |
| H11: FC → PBC | .439*** | Supported |

senior citizens' participation in gateball-playing behavior and the possibility of such behavior contributing to their psychological well-being. In addition, the findings of the study also verified the roles of belief constructs (e.g., friends' influence, peers' influence, facilitation conditions, self-efficacy) and TAM applied constructs (i.e., perceived usefulness, perceived ease of use) which served as antecedent variables to specifically explain the path of the proposed model.

The study provides theoretical implications for a better understanding of the determinants of senior citizens' leisure participation behavior (i.e., gateball-playing behavior). First, TPB is a theoretical model that attempts to explain the decision making process for a particular behavior. An extension of TPB was developed in this study. Psychological well-being was applied in order to comprehend the effect of leisure participation on senior citizens' psychological well-being. Although prior research has reported that leisure participation behavior has positive effect on individual psychological well-being, the application of the link for senior gateball players enables investigators to extend previous research on TPB. Not surprisingly, the finding revealed that gateball-playing behavior has a significant effect on psychological well-being. This finding also implies that, through the participation in leisure activities, individuals may perceive a higher degree of psychological well-being. Accordingly, they may be happier, more confident, and more satisfy with their current life.

Second, embedding TAM in TPB, to our knowledge, is the first attempt in the field of leisure and recreation studies. Senior citizens possess life experiences in making logical choices among alternatives. When engaging in a particular leisure activity (i.e., gateball), they would assess how the activity is useful for them and whether the activity is easy to comprehend and get involved. In this case, based on the examination of the estimated standardized coefficients, perceived usefulness had a greater level of impact on attitude. This implies that, to enhance senior citizens' attitude to engage in gateball activities, having them understand the usefulness of such activity can be an effective promotional strategy which emphasizes social interactions, communication, or medium level of physical exercises/fitness.

Third, the findings of this study indicated that perceived behavioral control had a greater level of impact on leisure participation behavior (i.e., gateball-playing behavior) than attitude and subjective norm. This implies that senior citizens are more likely to join gateball activities if they have a higher level of the belief in their abilities. In addition, having more spare time, economic sufficiency, and convenient locations for playing gateball all plays an important role of helping senior citizens to engage in such leisure activity.

Fourth, the findings of this study also revealed that friends' influence is the primary factor to have impact on individual decision making for engaging in gateball activity. Though family members and peers are all significant referents, friends are the most influential persons in shaping senior gateball players' view. A plausible reason is that a majority of respondents' friends may consider gateball is a good leisure activity for senior citizens. Encouraging them to participate in such activities can be good for them. This is because gateball is a group activity and having opportunities to interact with others is a part of the game. Through these interactions senior citizens are able to enhance their social connectedness which, in turn, helps reduce social isolation [35]. Prior research also show that better self-reported individual health is positively correlated with higher frequency and number of participating in leisure activities promote health [12].

Several limitations exist in this study. First, due to being unable to obtain a complete population list, purposeful sampling was employed in this study. Therefore, the results of this study cannot be generalized to the entire senior gateball players. Second, the respondents of this study were exclusively senior gateball players. The results of the study are not applicable for other leisure activities. Finally, the levels of gateball activity involvement can be different in skill sets and years of experiences in playing or practices. Therefore, the perception of playing gateball is easy or difficult can be varied. Using perceived ease of use as an example, a player with several years of experiences may consider this leisure activity is easy, but it may not be an easy task for a new player. In fact, such topic has not been fully investigated. Researchers can focus on this direction to develop further investigations.

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