What Predicts the Intention to Engage in Home-Based Exercise: The Theory of Planned Behavior

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ABSTRACT. Drawing on the theory of planned behavior, the current study aims to explore the mechanisms by which social media attention influences the constructs of the theory of planned behavior and then affects individual intentions. A total of 430 participants in China participated in an online survey. The results revealed that attention to information on social media about home-based exercise and health care significantly influenced attitude, subjective norms, descriptive norms, and perceived behavioral control. These, in turn, positively influenced the individual's behavior intention to engage in home-based exercise. Theoretical and practical contributions are discussed in this study as well.

1 INTRODUCTION

During the pandemic, an increasing number of people have paid more attention to health information and exercising to keep fit. Doing exercises can improve an individual's immune function and reduce the risk and severity of respiratory viral infection [1,2]. In addition, home-based exercise, which requires a minimum amount of space, can bolster one's immunity and so has received widespread attention among several kinds of exercise.

Exercise is one of the important measures for people to keep healthy and can be done outdoors or indoors. During the pandemic, indoor exercises, especially home-based exercise, has gradually become people's favorite type of exercise. Home-based exercise clearly represented a convenient and safe way to promote people's health during the pandemic [3]. Participating in home-based exercise can protect individuals from being influenced by disease and improve the condition of one's personal health. Doing home-based exercises is not restricted by the weather or space limitations and keeps individuals healthy. Given these advantages, we need to explore the factors that influence individuals' home-based exercise intention.

The majority of studies have mainly concentrated on the role of knowledge in home-based exercise and have neglected to adopt a strong theory to predict home-based exercise. The theory of planned behavior (TPB) is a well-known theory that applies to many fields, such as psychology and communication. The theory proposes that people's attitudes, subjective norms and perceived behavioral control (PBC) can predict individuals' behavior. Previous research found that attitudes, subjective norms, and PBC could predict people's intentions toward sports participation [4]. Besides, an individual's descriptive norms could influence their behavioral intention unconsciously. Hence, this study has adopted the theory of planned behavior as the main theoretical framework to explore how these theoretical constructs influence individuals' behavioral intention.

In addition, social media attention has influenced individuals' perception of home-based exercise during the pandemic. Nowadays, social media platforms serve as the main source of most updated information for people. To some degree, an individual's social media attention may influence their attitude, subjective norms, and PBC to perform behaviors. Hence, this study also seeks to explore how social media attention influences individuals' behaviors via attitude, subjective norms, and PBC.

In a nutshell, the purpose of this paper is twofold. First, the study examines how individuals' attitudes, subjective norms, PBC, and descriptive norms influence their intentions to perform home-based exercise. Second, the study explores how social media attention indirectly influences people's behavioral intention to do home-based exercises via attitude, subjective norms, descriptive norms and PBC.

2 LITERATURE REVIEW

2.1 Theory of Planned Behavior

The theory of planned behavior (TPB) is a well-established theory for predicting exercise behavior, since it integrates diverse social cognitive variables that serve as robust predictors of exercise behavior [5,6]. TPB is extended and based on the theory of reasoned action, which is able to explain almost all human behaviors and has been proven effective in predicting and explaining human behavior in diverse contexts [7]. TPB includes three constructs, namely attitude toward the specific behavior, subjective norms regarding specific behavior, and PBC over engaging in the behavior. These three

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constructs, in turn, influence intention [8]. For example, when individuals hold a positive attitude toward home-based exercise, perceive a high social expectation of exercise participation, and have a high level of behavioral control, they will be more likely to engage in home-based exercise.

2.1.1. Attitude.

Attitude can be broadly defined as "the degree of a person's favorable or unfavorable evaluation or appraisal of the behavior in question"[9]. It is also explained as a predictor of behavior [10]. Individuals with a positive attitude often perform related behaviors. Findings have demonstrated that a positive attitude can motivate individuals to engage in exercises during a pandemic [11]. Similarly, Liao found attitude was positively associated with home-based exercise. Thus, individuals with a positive attitude have a stronger intention to engage in home-based exercise[12]. Based on the literature, this study proposes a hypothesis as follows:

H1: Attitude is positively associated with home-based exercise intention.

2.1.2. Perceived behavioral control.

Perceived behavioral control (PBC) refers to 'perceived behavioral control refers to people's perception of the ease or difficulty of performing the behavior of interest [13]. In other words, the degree of a person's belief in his or her ability to perform behaviors may promote or hinder their behavioral performance [12]. It may encompass two components [13,14]. The first component reflects the availability of resources required to participate in the behavior [15]. Similar to self-efficacy in social cognitive theory [16], PBC is an assessment of an individual's ability to perform current behavior [13]. The second component reflects a person's self-confidence in their ability to accomplish the task [15]. When individuals possess a high degree of behavioral control, they tend to have a higher behavioral intention to engage in home-based exercise. Therefore, we propose a second hypothesis, as follows:

H2: Perceived behavioral control is positively associated with home-based exercise intention.

2.1.3. Subjective norms.

Subjective norms refer to "the perceived social pressure to perform or not to perform the behavior" [13]. In other words, the significant others, such as family, friends, and colleagues, exert their expectation to influence peoples' decisions. Two subsequent experiments focusing on healthy behaviors showed that subjective norms had a positive influence on intention [17.18].

H3: Subjective norms are positively associated with home-based exercise intention.

2.1.4. Descriptive norms.

Descriptive norms refer to "rules and standards that are understood by members of a group, and that guide and/or constrain social behavior without the force of laws"[19]. Smith found that descriptive norms were positively associated with home-based exercise [20]. Descriptive norms also serve as social functions that can help individuals coordinate their social action to achieve desired outcomes [21]. Therefore, we propose two further hypotheses:

H4: Descriptive norms are positively associated with home-based exercise intention.

2.2 Social media attention

Social media play an important role in shaping public awareness and opinions of participation in public activities [22]. During the COVID-19 pandemic, social media became the main source for individuals to obtain health information [23]. With the number of professionals and organizations involved in social media platforms constantly increasing in recent years, individuals now tend to rely on social media to get information about health matters. Seeking health information via social media can aid members of the public to take stock of their health status and take preventive measures to make sure their health is stable [24]. In addition, studies have shown that social media information functions as a significant factor influencing changes of intentions and modifying public lifestyles and habits [25]. Most of the existing research has focused on the direct impact of social concerns on individual intentions, ignoring the influence of TPB's own variables.

Social media attention also influences attitude, subjective norms, descriptive norms and PBC, and consequently influences individual intention. Media attention is a precondition for a media effect to occur, which can be illustrated by McGuire's information-processing model [26] and Bandura's social cognitive theory [27].

Individuals formulate an attitude based on their evaluation of the expected outcome of a behavior, which may be acquired from individual social media attention [28]. People are prone to get information from social media or participate in group discussions, and they thus realize the benefit of the behavior[29,30]. In addition, on social networks, the more information individuals gain, the more positive the attitude is that they have. Thus, people with stronger social media attention to exercise and health care are likely to hold positive attitudes toward them.

Individuals' PBC during the COVID-19 pandemic has largely depended on the information and knowledge they obtained from social media. People evaluate their individual ability through information they obtain online [29]. In this case, when individuals pay more attention to social media information, they tend to acquire more relevant and up-to-date knowledge, which could enhance their self-confidence and ability toward performing related behavior. Hence, a higher social media attention leads to a higher PBC.

When people pay more attention to information about a specific behavior, their parents, relatives, and friends

may think they are fond of the behavior and are likely to expect people to do it [31]. In other words, individuals' social media attention to home-based exercise and health could influence subjective norms.

People's social media attention usually determines people's social circle, and friends around them have the same or similar interests and hobbies and partake of the same behaviors. In other words, social media attention is associated with descriptive norms. However, few studies have explored social media attention as a predecessor variable in TPB. Thus, it is necessary to examine social media attention as a predecessor variable in attitude, subjective norms, descriptive norms, and PBC. We thus propose the following research questions:

RQ1: How does the degree of social media attention relate to individuals' attitude to engage in home-based exercise?

RQ2: How does social media attention relate to individuals' PBC to engage in home-based exercise?

RQ3: How does social media attention relate to subjective norms to engage in home-based exercise?

RQ4: How does social media attention relate to descriptive norms to engage in home-based exercise?

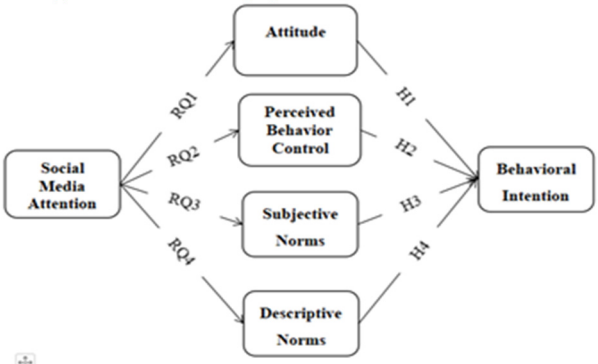

Fig. 1. Conceptual Model (The model is done by draw my own)

3 Method

3.1 Data collection

An online survey was conducted in July 2022. The participants were residents of southern, northern, eastern, and western China. A total of 477 responses were returned, of which 430 were valid responses, excluding incomplete or invalid responses. Of the respondents, 46.1% were male and 53.9% were female. More than half of the participants were undergraduates (53.4%), and 14.4% were graduates.

3.2 Measure

Our research team developed the questionnaire by adapting existing reliable and valid questionnaire scales to the study's context (see Table 1). First, we adapted three items from Skoric and Poor's (2013)attention to social media to fit the context of health and sport information [32]. Four items were adapted from the attitude scale of Kaplanidou and Gibson (2011), as well as a subjective norms scale (consisting of three items) to fit into our current context. In addition, we included Ho et al.'s (2017) descriptive norms scale (consisting of three items)[33,34]. Additionally, we used Young-Jae Kim and E-Sack Kim's (2021) perceived behavioral control scale (consisting of four items) [35] . Finally, we adapted Lim's (2017) corrective actions scale (consisting of five items) to the current research context. All of the adopted scales achieved a good level of reliability and validity [36].

Social media attention to health and sport information. For social media attention to health and sports, we concentrated on information concerning health, sports, exercise, and home-based exercise, including home-based exercise webcast. We used the items from Skoric and Poor (2013) with a seven-point Likert scale (1=no attention at all and 7=very close attention) to measure attention to health and sport information (M = 4.37, SD = 1.49, Cronbach's α=0.94) [32].

Attitude to home-based exercise. Based on previous research, the study adapted the attitude scale from Kaplanidou and Gibson (2011) to measure individual attitude to home-based exercise. We used a seven-point Likert scale (1=strongly disagree and 7=strongly agree). A higher score indicated greater attitude influence on home-based exercise (M=4.58, SD=1.49, Cronbach's α=0.94) [33].

Perceived behavioral control to home-based exercise. For measuring PBC, we modified three items using a seven-point Likert scale (1=strongly disagree and 7=strongly agree) [35]. A higher score indicated strong PBC (M=4.61, SD=1.49, Cronbach's α=0.93).

Subjective norms. Three items from a previous study were adapted to measure subjective norms using a seven-point scale (1=strongly disagree and 7=strongly agree)[33]. Respondents were asked whether their parents, relatives, or friends expected them to perform home-based exercise. A higher score indicated strong subjective norms (M=4.26, SD=1.51, Cronbach's α=0.95).

Descriptive norms. Three items were modified to measure descriptive norms using a seven-point scale (1=strongly disagree and 7=strongly agree) from Ho et al. (2017) [34]. Respondents were asked to indicate whether their parents, relatives, or friends engaged in home-based exercise. A higher score indicated strong descriptive norms (M=4.30, SD=1.43, Cronbach's α=0.91).

Behavioral intention to participate in home-based exercise. Behavioral intention to participate in home-based exercise was measured by three items using a seven-point Likert scale (1=strongly disagree and 7=strongly agree). The respondents were asked to indicate how likely they were to participate in home-based exercise. A higher score indicated a strong intention to participate in home-based exercise (M=4.55, SD =1.60, Cronbach's α=0.96).

3.3. Preliminary data analysis.

First, we used a question that served to screen those who did not carefully fill out the questionnaire and then we collected the data. Then, we excluded 47 participants who did not correctly answer the screening question. Next, we tested the collected data for the absence of outliers and

whether all measured items were normally distributed. The results demonstrated that there were no outliers and all variables were normally distributed, as kurtosis and skewness were within the range of ±1 [37].

4 Results.

First, we ran a path analysis using the maximum likelihood tests for the hypotheses and answers to the research questions. The goodness-of-fit statistics of the model indicated a good fit to the data (CMIN/DF=2.27; CFI=0.99; TLI=0.98, and RMSEA=0.05). The results showed that social media's attention to health and sport was positively associated with attitude to participate in home-based exercise (β=0.81 p < .00), subjective norms (β=0.78, p < .00), descriptive norms (β=0.68, p < .00), perceived behavior control (β=0.78 p < .00), answering RQ1 – RQ4. In addition, attitude (β =0.29, p<0,001), behavioral control (β= 0.24, p < 0.001), subjective norms (β=0.20, p < .00), and descriptive norms (β = 0.26, p < .00) were positively associated with the behavioral intention to participate in home-based exercise, thus supporting H1, H2 , H3, and H4, respectively (see Figure 2).

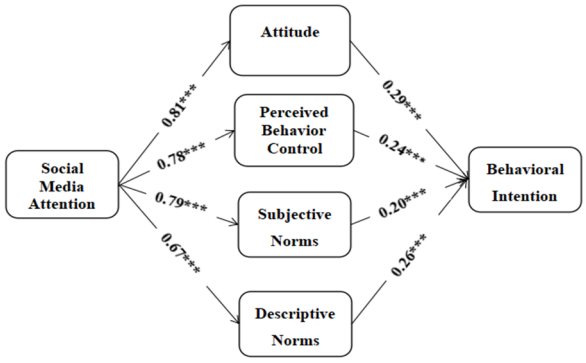

Fig. 2. TPB model to Predict home-based exercises intention (The model is done by draw my own)

Table 1. Item Scale (The model is done by draw my own)

Study measure	Survey items	Cronbach's α	M	SD
Social Media attention (Skoric & Poor, 2013)	(1) Attention paid to information about health topics.	0.94	4.40	1.63
	(2) Attention paid to information about sports and exercise.		4.35	1.57
	(3) Attention paid to information about home-based exercise .		4.32	1.56
Attitude (Kaplanidou & Gibson,2011)	(1) I think participating in home-based exercise is pleasant.	0.94	4.58	1.61
	(2) I think participating in home-based exercise is exciting.		4.41	1.58
	(3) I think participating in home-based exercise is entertaining.		4.49	1.61
	(4) I think participating in home-based exercise is worthwhile.		4.79	1.65
Perceived behavioral control (Young-Jae Kim & E-Sack Kim, 2021)	(1) I can participate in home-based exercise at any time I want.	0.93	4.37	1.55
	(2) Whether I participate in home-based exercise or not depends on myself.		4.82	1.71
	(3) I have time to participate in home-based exercise.		4.60	1.64
	I have the ability to do home-based exercise.		4.68	1.67
Subjective norms (Kaplanidou & Gibson, 2011)	(1) My friends or family members think that it is good for me to participate in home-based exercise.	0.95	4.23	1.57
	(2) My friends or family members support me in participating in home-based exercise.		4.30	1.56
	My friends or family members are likely to participate in indoor sports.		4.20	1.64
Descriptive norms (Ho et al., 2017)	(1) My family members do some home-based exercise.	0.91	4.30	1.59
	(2) My relatives do some home-based exercise.		4.14	1.54
	(3)My friends do some home-based exercise.		4.40	1.55
Behavioral intention (Young-Jae Kim & E-Sack Kim, 2021)	(1) I intend to participate home-based exercise in the next week.	0.96	4.55	1.65
	(2) I plan to participate home-based exercise in the next week.		4.54	1.64
	(3) I will to participate home-based exercise in the next week.		4.48	1.70

5 DISCUSSION

In line with previous TPB research, individual attitude is positively associated with home-based exercise intention. People with a positive attitude are more likely to have the intention to participate in home-based exercise. Perceived behavioral control is positively correlated to home-based exercise intention. It is possible that more active participation is a result of high perceived behavior control. The high perceived behavior control makes people realize the benefits and the shortcomings of engaging in home-based exercise and evaluate the self-condition. Subjective norms are positively correlated to home-based exercise intention. Individuals are prone to participate in home-based exercise after acquiring the support of important

people. Descriptive norms are positively correlated to home-based exercise intention. Exercising with friends and family around creates a good atmosphere and stimulates them to devote themselves to engaging in it.

The current study adds social media attention not only as an antecedent variable to extend the TPB mechanism but also in the individual dimension and social dimension to observe the individual participating in home-based exercise. Social media attention through positively influencing the individual attitude, perceived behavioral control, subjective norms, and descriptive norms indirectly affect the individual behavior intention [28]. To some degree, the outcomes reflect the situation that people living in the social media era seek information and communicate with other people without social media.

Descriptive norms as a predictor of behavior intention make the social factors more reasonable [21]. This also indicates that the factor in the social dimension is truly vital for individual behavioral intention. Moreover, due to their great attention to health and sport information to keep healthy during the COVID-19 pandemic, they tend to communicate with people and encourage each other to engage in home-based exercise.

6 IMPLICATION AND LIMITATION

This research has both theoretical and practical implications. In regard to the theoretical implications, the current study focused on the background of COVID-19 and concentrated on promoting individuals to do some home-based exercises to stay healthy. Some scholars have researched home-based exercise for older adults [38]. However, few studies have focused on all ages of people and how to influence their intention to engage in home-based exercise.

Second, with social media development, social media attention gradually becomes an important variable to measure and predict individual behavior [34, 39]. Most studies have viewed social media attention as an independent variable directly influencing individual behavior or as a part of the independent variables of TPB. They neglected social media attention as an antecedent variable focusing on its influence on other factors and the relationship of TPB. This study is based on the theory of TPB adding social media attention as an independent variable, exploring the mediating effect of attitude, perceived behavioral control, subjective norms, and descriptive norms, and revealing the inner mechanism of TPB.

Finally, this study uses the descriptive norms as a societal factor to predict behavioral intention and to enhance social factors in the theory of planned behavior. Descriptive norms mostly focus on the social relationship formed by social media. Individuals can establish new positive relationships by making friends according to their hobbies.

In terms of practical implications, the findings indicate that improving individual social media attention to health and sport would change individual attitudes and prompt individual engagement. The more attention to health and sport that people pay in social media, the more chance for others to engage in home-based exercise. Additionally, professionals in health care should use intervention strategies to expose people to more social media health information and call for people to concentrate on social media attention.

However, the positive and negative nature of information is not considered in the attention of social media in this study. In addition, the current study collected cross-sectional data that just estimated that social media attention positively influenced the mediators, but the study does not explain specific causality. Lastly, age is an important demographic variable, as previous studies concentrated more on older people. But this study does not break down the effects of different age groups on dependent variables. Future research should pay attention to individual health concerns and be divided into different age groups to research, which would make the research more persuasive.

7 CONCLUSION

The study seeks to investigate how media attention influence attitude, subjective norms, descriptive norms, perceived behavioral control which in turn influence individuals' behavioral intention. The results showed that social media attention is positively associated with attitude, subjective norms, descriptive norms, perceived behavioral control. If participants pay more attention to the information about home-based exercises on social media, they are more likely to have a positive attitude, strong subjective norms and descriptive norms and positive perceived behavioral control, which motivate individuals to engage in home-based exercise.

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