



Exercise as a Healthy Lifestyle Choice: A Review and Avenues for Future Research

Yap Sheau Fen

School of Arts & Social Sciences

KDU College Sdn Bhd

SS22/41, Damansara Jaya, 47400 Petaling Jaya

Selangor Darul Ehsan, Malaysia

Tel: 60-12-266-4262 E-mail: crystalyp@kdu.edu.my

Liew Kok Hong

Universiti Utara Malaysia

06010 UUM Sintok

Kedah Darul Aman, Malaysia

Tel: 60-12-289-6641 E-mail: kokhong_liew@yahoo.com

Abstract

The health benefits of exercising and the prevalent sedentary lifestyle give a strong reason for the research into the determinants of exercise behaviour. The present paper reviews several health-related behavioural theories and models that have been applied to understand the factors influencing physical activity or exercise participation and suggest avenues for future research. In particular, a review of literature provides strong empirical support for the theory of planned behaviour, yet several theoretical issues need to be resolved to aid in the development of a more comprehensive health-related model that can explain and predict exercise behaviour. The present paper highlights that there is a need to develop and empirically test a more integrative model of exercise behaviour from consumer behaviour perspective. Besides, the conceptualisation of TPB measures and sufficiency issues related to the model need to be addressed prior to the adoption of the TPB model.

Keywords: Theory of Planned Behaviour, Consumer Healthy Lifestyle, Exercise

1. Introduction

There is a growing focus on health related issues in the media and an increasing government spending on health campaigns in Malaysia. The initiative to improve public health on the part of government has undoubtedly contributed to the increased public awareness of the importance of healthy lifestyle. Lifestyles or simply ways of living are one of the most significant factors influencing individual health and wellness (Divine and Lepisto 2005). From the marketing perspective, consumer healthy lifestyle creates new opportunities and driving innovation and at the same time presents marketing challenge to marketers in the health-related industries such as fitness clubs, food, health care, insurance, and medical. The changing consumer attitude and behaviour toward healthy lifestyle will certainly heighten their interest in healthier products and services choices. This is evident by the extensive growth of health spas and fitness clubs business that spread across urban cities in Malaysia recent years (Ramli 2005).

Bloch (1984) views healthy lifestyle as an orientation toward health prevention for the maximisation of personal wellness. While healthy lifestyle encompasses a wide variety of behaviours, most healthy lifestyle research has focused on diet and exercise (Divine and Lepisto 2005). Kraft and Goodell (1993) notice that consumer shift in exercise and dietary behaviours have been the most visible lifestyle change. From a marketing perspective, exercise is associated with an orientation toward consumption as they are a set of activities, interests, and opinions that are related to the consumption of various health-related products and services (Kraft and Goodell 1993). Exercise is regarded as a recognised component of healthy lifestyles and desired public health behaviour (Bungum and Morrow 2000). The discussion of the present paper focuses on exercise as one of the components of healthy lifestyle behaviour.

Regular physical activity and fitness contribute to overall health and fitness (Ooyub and Omar 2002). It is widely known that regular exercise is associated with a significant decline in the risk of cardiovascular complications, high

blood pressure, obesity and weight management, and mortality rates. Regular exercise also helps in the reduction of symptom of depression and anxiety (Blair 1993). Despite the facts that these positive physical and psychological benefits of exercise are well documented and well publicised, levels of physical inactivity are increasing worldwide (Bond and Batey 2005). Due to the various health and social problems associated with sedentary lifestyle, research into investigating determinants affecting exercise behaviour is warrant. Analysing exercise behaviour can lead to a better understanding of how these related factors interact and influence each other, thus building a deeper understanding of complex consumer behaviour.

A thorough understanding of what drives Malaysian adopting healthy lifestyle is paramount. However, little research related to exercise and fitness has been found in the marketing literature. Very few studies have examined exercise behaviour in Malaysia. Most of these studies are commercial like survey or academic research that covers incomprehensive analysis of the predictors of exercise behaviour. Health-related marketing is not as simple as classifying consumers into “healthy” or “unhealthy” groups. A complex balance of appropriate factors should be taken into account in developing a solid theoretical model to examine the underlying factors determining health-related lifestyle behaviour.

The present paper reviews several health-related behavioural theories and models that have been applied to understand the factors influencing physical activity or exercise behaviour participation. Several key research issues will be identified to aid in the development of a more comprehensive health-related model that can explain and predict a specific desired health behaviour, exercise. Such model could be useful to health care marketers in segmenting markets, targeting promotions and positioning products and services. Armed with this knowledge, marketing practitioners can then find potential market opportunities and to determine the appropriate marketing mix in order to develop practical and effective marketing strategies.

2. Healthy Lifestyle and Marketing

The impact of healthy lifestyle behaviour on both consumer and society has been an issue and concern of both marketers in the health-related industries and public policy makers for long. Healthy lifestyle promotion is associated with consistent health conscious behaviour like quitting unhealthy behaviours such as smoking, alcohol consumption, or sedentary behaviours; and practicing healthy behaviours like regular exercise, healthy dietary practices, weight control, and managing stress (Nahas, Goldfine and Collins 2003). Overall, healthy lifestyle behaviours are activities undertaken to protect, promote or maintain health (Steptoe, Wardle, Vinck, Tuomisto, Holte and Wichstrøm 1994) as well as an orientation toward health prevention for the maximisation of personal wellness (Bloch 1984).

The spread of contagious diseases as well as the rising statistics of illnesses such as diabetes, heart attack, and cancers have heightened the importance of maintaining healthy lifestyle. Malaysians are increasingly conscious of the food and supplements they eat, the quality of drinking water and air as well as the general state of health, especially among population of middle to higher social-economic class group. Many health experts and nutritionists have generally reached consensus that that consumers can reduce the risk of illnesses such as heart disease, stroke, and cancer by monitoring their diets and by maintaining a healthy lifestyle including regular exercise (Rimal 2002). Therefore, promotion of health lifestyle or health seeking behaviour is an effective way to reduce or even to avoid the medical costs of treating such preventable illnesses associated with lifestyle behaviours (Murrow and Welch 1997).

Healthy lifestyle encompasses variety of behaviours such as healthy diet, tobacco-free lifestyle, regular exercise, substance use, cautious preventive practices, weight control and supportive environment (Omar 2002). Most researchers work on healthy lifestyle behaviours have focused their research on diet and exercise (Divine and Lepisto 2005). In addition, exercise and dietary behaviours have been recognised as the most visible lifestyle shift among consumers (Kraft and Goodell 1993). Generally, people rely on regular exercise as a means to maintain both their physical health and psychological well-being (Plante and Rodin 1990). There are increasing concerns about health and fitness among Malaysian especially among urbanite and higher social class groups. Health conscious consumers adopt varying strategies at different intervention levels in an attempt to adjust their lifestyle behaviours. These strategies include healthy diet, regular exercise as well as efforts in balancing work stress. Some consumers go beyond these basic steps to seek fast results such as consuming health supplements, slimming and low calorie diet, and the purchases of exercise equipment.

All these trends have strong implications to both marketers and policy makers. The increased public awareness of health lifestyles has resulted in great business opportunities for many marketers and lead to a wide range of new consumer products and services. For instance, in the food industry, numerous low-fat, low cholesterol, low-sugar, and low-preservative foods have come on the market and have been widely promoted. It is also evident that medical services such as homeopathic treatment based on herbs, acupuncture and traditional massage are becoming popular in Malaysia. The health club and various fitness programs have spread across urban areas in the country. Several fitness trends such as the embracement of home exercise equipment; diversified forms of exercise and fitness club popularity are evident among urbanite, more affluent and educated population (Ramli 2005).

Marketers in the health industry also face considerable marketing challenges partly due to consumers' unhealthy habits and preference to sedentary lifestyle which are evident in the media reports of obesity, smoking, lack of exercise (Mohd Shariff and Khor 2005), and poor eating habits among Malaysian (Mohamad 2000). The shifts in consumer buying patterns have greatly altered the way many marketers in the food, healthcare and medical services industry market their brands. Marketers start to embrace innovative marketing strategies and findings ways to differentiate themselves in the competitive market. Those in the advertising business are also aware of the changes and making much adjustment to make their advertisement more appealing to consumers. A comprehensive model in understanding and explaining health behaviour will definitely contribute to the design of effective marketing strategies and programs.

3. A Review of Health Behavioural Models

Several health-related behavioural theories and models have been applied to understand the factors influencing physical activity or exercise behaviour participation. Biddle and Nigg (2000) organise these theories and models into the following four categories: 1) belief-attitude theories (i.e., health belief model, protection motivation theory, theory of reasoned action TRA and planned behaviour); 2) competence-based theories (i.e., self-efficacy theory); 3) control-based theories (i.e., locus of control, self-determination theory); and 4) decision-making theories (i.e., transtheoretical model of stages of change). A brief review of these models will be provided in this section.

3.1 Health Belief Model (HBM)

The HBM model originated in the 1950's based on the work of Rosenstock was developed to explain why people did or did not engage in certain health behaviours, such as drinking, self-screening, smoking, and dietary behaviours. This model contends that the decision to adopt the health behaviour depend on their perceived benefits and barriers related to the implementation of the behaviour change (Rosenstock, Stretcher and Becker 1988). Within the theoretical context of the HBM model, perceived barriers are directly related to perceived severity and susceptibility, while perceived benefits are the perceptions that certain behaviour change will be effective in reducing a barrier (Wood 2008). The HBM assumes that a person will adopt certain health behaviours if they feel the consequences are severe and feel susceptible to that illness (Rosenstock, Stretcher and Becker 1988) (see Figure1).

The HBM model has been applied in the health promotion and lifestyle behaviour studies. For instance, Jayanti and Burns (1998) develop and test a model of preventive health care behaviour basing on the HBM model. Grubbs and Carter (2002) also modify the HBM framework in an attempt to examine current exercise habits and perceived benefits and barriers to exercise. However, the HBM model has proven to be more valuable in understanding why people cease certain unhealthy behaviour (e.g., smoking or drugs taking) rather than the adoption of healthy behaviour (e.g., exercise, healthy eating) (Nahas, Goldfine and Collins 2003). In an extensive review on exercise behaviour, Biddle and Nigg (2000) conclude that the application of HBM model to exercise or physical activity has yielded little success in predicting the adoption or maintenance of exercise participation. In agreement with this, Wood (2008) states that the HBM has limited application in examining motivation to exercise participation. However, Wood (2008) observes that the addition of self-efficacy construct into the model has improved its applicability in exercise domain.

3.2 Theory of Reasoned Action (TRA) and Planned Behaviour (TPB)

The TPB is an extension of the TRA (Fishbein and Ajzen 1975). The TPB extended the TRA by adding the perceived behavioural control (PBC) because the TRA has difficulty in explaining behaviours in which a person does not have volitional control over it. The TPB model (see Figure 2) posits that intention to perform a given behaviour is the immediate antecedent of that behaviour (Ajzen 1991). Behavioural intention refers to the amount of effort a person exerts to engage in behaviour. It captures the motivation factors necessary to perform a particular behaviour (Courneya, Bobick and Schinke 1999). That is, the more a person intends to carry out the intended behaviour, the more likely he or she would do so (Armitage and Conner 1999a). Intention is determined by three conceptually independent variables labelled attitude, subjective norms and PBC. Generally, the more favourable the attitude and subjective norm, and the greater the perceived behavioural control, the stronger should be the individual's intention to perform a particular behaviour (Ajzen 1991).

The efficacy of the TPB model has been demonstrated empirically in many different contexts. The TPB model has also been widely applied to health-related behaviour such as food purchase behaviour, dietary supplement consumption and healthy eating behaviour. Specifically, the TPB models have proven useful in explaining and predicting exercise behaviour (e.g., Courneya, Bobick and Schinke 1999; Norman, Conner and Bell 2000; Rhodes, Blanchard and Matheson 2006). In all these studies, the researchers have introduced a modified version of the TPB model in their study and the results were different from those of the original TPB model.

3.3 Protection Motivation Theory (PMT)

The PMT, proposed by Rogers in the 1980s, is a model that has several similarities with the HBM (Biddle and Nigg 2000) (see Figure 3). This model contends that intention to engage in a particular health-related behaviour is influenced by a person's perceived severity, perceived vulnerability / probability, response efficacy, and perceived self-efficacy,

which collectively terms as threat and coping appraisal (Wood 2008). PMT has often been implemented in experimental manipulation studies (Milne, Orbell and Sheeran 2002) and has been applied successfully to several health-related behaviours, including exercise, healthy lifestyle, cancer prevention, smoking and alcohol consumption, AIDs prevention, medical treatment compliance, road safety behaviours, and environmental protection (Floyd, Prentice-Dunn, and Rogers 2000).

However, the use of PMT in an exercise context is relatively few (Biddle and Nigg 2000). Based on PMT to investigate the use of written communications to increase exercise behaviour among 170 sedentary college women, Wurtele (1983) found perceived self-efficacy to have the strongest direct effect on exercise intentions, indicating the important role of self-efficacy in examining exercise participation. This is consistent with Biddle and Nigg's (2000) extensive review on exercise behaviour that highlight the role of self-efficacy as an important construct in physical activity motivation. The strength of self-efficacy as a predictor of behavioural changes is evident as the construct was added to the HBM and PMT and the Transtheoretical Model subsequently (Biddle and Nigg 2000). Another issue to be highlighted is that although PMT has been found to predict intention to change behaviour well but the PMT is limited in explaining actual behaviour (Floyd, Prentice-Dunn, and Rogers 2000). It is possible that a person with intention to perform a particular behaviour may not actually do so eventually (Milne, Orbell and Sheeran (2002).

3.4 Self-efficacy Theory (SET)

The SET is sometimes referred to as Social Cognitive Theory (SCT) which is an extension of social learning theory (see Figure 4). The concept of self-efficacy is a major construct in the SET model proposed by Bandura (1977). Specifically in the physical activity domain, Nahas, Goldfine and Collins (2003, p. 47) define self-efficacy as the "perceptions of personal efficacy or confidence regarding one's ability to be active on a regular basis." The SET explains behaviour through two major constructs: 1) self-efficacy (i.e., the belief that one has the capabilities to perform a behaviour that will result in an expected outcome); and 2) outcome expectancies (i.e., the expected consequences of successful behaviour performance). The antecedents of self-efficacy and outcome expectancies are modelling, verbal persuasion, emotional arousal, and mastery experiences (Biddle and Nigg 2000).

The concept of self-efficacy has received great attention and has subsequently been adopted and modified by other authors as additional construct in their original model. Within the TPB framework, Ajzen (1991) argues that the PBC construct is synonymous with self-efficacy. However, several researchers (e.g., Hagger and Chatzisarantis 2005; Rhodes and Blanchard 2006; Rhodes, Blanchard and Matheson 2006) modelled the PBC construct as two separate components (i.e., perceived control and self-efficacy) and have provided evidence for a distinction between self-efficacy and perceived control. According to Biddle and Nigg (2000, p. 297), the "SET has been one of the more successful theories in the exercise behaviour field even though there are several different conceptualisation of efficacy measurement." Consistent with this statement, in an attempt to identify an appropriate theoretical framework to study exercise participation, Wood (2008) highlights that perceived self-efficacy from the social cognitive theory has been consistently shown to be the most common factor in motivating exercise participation. Future research should consider the concept of self-efficacy in examining exercise behaviour.

3.5 Locus of Control (LOC)

The concept of LOC is defined as "the extent that people perceive that reinforcements are within their own control, are controlled by others or are due to chance" (Biddle and Nigg 2000, p. 298). In the TPB model, Ajzen (2002) advocates the difference between PBC and LOC in terms of their conceptualisation. Also, while LOC is a generalised belief that remains stable across circumstances, a person's PBC may vary across situations and actions (Ajzen 1991). The use of LOC in predicting fitness and exercise behaviours has been receiving weak support (Biddle and Nigg 2000). In contrast the concept of self-efficacy and perceived control have received greater support for the prediction of fitness and exercise behaviour.

3.6 Self-determination Theory (SDT)

Deci and Ryan's (1985) Self-determination theory (SDT) contends that individual have three primary psychological needs (i.e., autonomy, competence, and relatedness) that lead them to seek and meet challenges in life. According to SDT, there are three types of motivation: 1) Amotivation (i.e., lack of intention toward a behaviour); 2) extrinsic motivation (i.e., performance of an activity to attain an outcome); and intrinsic motivation (i.e., participation in an activity for the pure enjoyment of the activity) (Wood 2008). Among these three types of motivation, intrinsic motivation is a key determinant of subsequent behaviour (Deci and Ryan 1985). This suggests that when a person enjoys and feel interested in exercise activities they are more likely to engage in exercise behaviour. The SDT is quite well known in the field of sport psychology (Biddle and Nigg 2000) and has been used as a theoretical framework to examine exercise motivation (Wood 2008). For instance, in a cross-sectional survey utilising the Self-Determination Theory (SDT), Wilson and Rodgers (2004) examine the relationship between perceived autonomy support, exercise regulations and intention to continue exercising.

3.7 Transtheoretical Model of Stages of Change (TTM)

The TTM (also called the Stages of Change) was originally proposed by Prochaska and DiClemente (1983) (see Figure 5). This model posits that individual tends to change health-related behaviours, such as smoking, exercise, healthy diet eating, by moving through stages of behavioural change that reflect their readiness to change. The five behavioural stages are precontemplation, contemplation, preparation, action, and maintenance (Prochaska, DiClemente, and Norcross 1992). The Transtheoretical model has been applied to a wide variety of health-related behaviours such as smoking cessation, dietary fat reduction, and exercise behaviours (O'Hea, Wood and Brantley 2003). For instance, Cardinal, Tuominen and Rintala (2004) assess American and Finnish college students' exercise behaviours on the basis of TTM and the results generally support the use of TTM in understanding exercise behaviour among college student population. In the exercise domain, the use of TTM was initiated with measurement development followed by scale validation. Since then, several researchers have used the TTM to develop exercise interventions (Biddle and Nigg 2000).

Although the TTM model has been popularly used to examine exercise participation, the model has attracted criticism for the lack of standardised procedure to categorise respondents into different stages of change (Povey, Conner, Sparks, James and Shepherd 1999) and its inability to adequately predict behavioural change (Armitage and Arden 2002). For example, in a study testing the ability of the TTM in predicting exercise stage transition of a random sample of Canadian adults, Plotnikoff, Hotz, Birkett and Courneya's (2001) findings demonstrate only partial support for the internal validation of TTM in the exercise domain.

In comparing TPB with TTM, Courneya and Bobick (2000) argue that the TPB may be a more comprehensive and sophisticated model for explaining health-related behavioural change despite the facts that both models share many conceptual similarities. It is also worth highlighting that the concept of self-efficacy has been successfully incorporated into the TTM (Biddle and Nigg 2000). In an attempt to examine adolescent's exercise behaviour using the TTM, Nigg and Courneya (1998) found that self-efficacy tend to increase across the stages of exercise behaviour change. These findings again indicate the importance of self-efficacy construct in the exercise behaviour study.

4. Determinant of Exercise Behaviour

Determinants refer to those factors that potentially influence behaviour in question. Nahas, Goldfine and Collins (2003) classify determinants of exercise behaviour into two categories: 1) facilitators (refers to determinants that promote exercise participation); and 2) barriers (refers to determinants that discourage or restrain participation in exercise activities). In another study, Furlong (1994) divides the factors that influence exercise behaviour into two major categories, i.e., environmental and personal characteristics. In his study, Furlong (1994) views environmental characteristics as physical and social environmental factors that are associated with exercise and physical activity, which include spouse and family support, perceived available time, access to facilities, peer influence, cost, climate, etc. Whereas, personal characteristics are defined as past or present knowledge, attitudes, behaviours, personality characteristics, biomedical traits, and demographic factors that may influence exercise behaviour.

Over the years, much research has been conducted to examine which variables determine exercise behaviour. Whether an individual participates in exercise behaviour depends on a variety of factors. For instance, Kerner and Grossman (2001) state that these factors may include past program participation, high risk for coronary heart disease, perceived health, level of education, self-motivation, self-efficacy, behavioural skills support by a significant other, perceived available time, access to facilities, family influences, peer influences, cost and attitude toward physical activity. Nahas, Goldfine and Collins (2003) view the performance of exercise behaviour as a complex process, which may be affected by various intrapersonal, interpersonal, and environmental factors such as demographic and biological factors; psychological, cognitive, and emotional factors; behavioural attributes and skills; social and cultural factors; physical environment factors; and physical activity characteristics. It was observed that some of these determinants or factors have been captured in a number of health-related theories and models discussed aforementioned in the previous section.

It is now evident that behavioural change isn't a simple process. To summarise the above factors that influence exercise behaviour, one may group them into several major categories as: (1) attitude toward exercise; (2) social or normative influence; (3) perception of control; (4) self-efficacy; (5) motivation (6) demographic factors; (7) personality characteristics. It is known that the TPB model contains social cognitive constructs such as attitude, subjective norm and PBC as well as intention (which captures motivational factor). Whereas the demographic and personality factors are background data postulated in the TPB (Ajzen and Fishbein 1980; Ajzen 1991). Hence, it seems that the TPB would be a comprehensive and useful framework for examining exercise behaviour.

5. A Comparison between TRA and TPB

Other than the aforementioned theoretical models adopted in examining exercise behaviour, there are also non-theoretical based studies in the domain. These studies employed no theory and often used demographic variables and rely on more intuitive predictors in examining exercise behaviour. For example, Bungum and Morrow (2000)

examine the differences in self-reported rationale for increased physical activity by ethnicity and gender among randomly selected American household. Another example is Trujillo, Brougham and Walsh's (2004) study in examining age differences and the levels of concern for various types of exercise consequences. Nonetheless, the understanding and promotion of health-related exercise and physical activity needs to be based on appropriate theory (Biddle and Nigg 2000). Despite the number of social psychology theories available, there is no general consensus exists regarding which is the best theoretical framework for the studying exercise behaviour (Wood 2008). However, a review of literature revealed that the TPB has been successfully applied to exercise behaviour.

In terms of predictability, there are sufficient empirical evidence indicates that the addition of PBC to the original TRA model has yielded significant improvements in the prediction of intention and behaviour (Ajzen 1991). In comparing the predictability of TRA and TPB model, several meta-analyses have provided support that the TPB is a useful model for predicting behavioural intentions and behaviour in variety of context. For instance, a review of 16 studies using TPB by Ajzen (1991) revealed a considerable amount of explained variance in intentions can be accounted for by attitude, subjective norm, and PBC; with an average correlation of .71. For health behavioural studies, Godin and Kok's (1996) meta-analyses found that PBC contributed a mean additional variance of 13% to the prediction of intentions and 12% to the prediction of behaviour.

Specifically, Hausenblas, Carron and Mack (1997) report a meta-analysis on applications of the TRA and TPB to exercise behaviour and conclude that the TPB is more useful than the TRA in the exercise domain. Further, the efficacy of TPB also holds in experiment setting. Notably, the consistent findings across four different health behaviours in two experimental studies conducted by McCaul, Sandgren, O'Neill and Hinsz (1993) clearly support the predictive ability of the TPB for the performance of health behaviour. Yet in another study longitudinal study, Armitage and Conner's (1999b) study on food choice behaviour demonstrated that TPB constructs are stable predictors across time points.

Theoretically, the TPB model is more appropriate and comprehensive in predicting exercise behaviour compared to the TRA. This is because whether to exercise or not is not entirely under a person's volitional control. There are some control factors that may affect individual's exercise participation such as physical inability, time and money constraint, neighbourhood security, availability of exercise equipments and so on. Hence, it is deemed to be necessary to examine beyond the attitude and subjective norm construct in the TRA but to explore further the control factor that possibly influence individual's exercise participation.

6. Rationale for the Adoption of TPB Framework

As discussed, there exist many other social psychology models in health-related studies. The TPB model represents the most appropriate theoretical framework for the study of exercise behaviour due to a number a reasons. Firstly, many researchers agreed that TPB represents the most compelling and well-established model for the prediction of intentional behaviour (Biddle and Nigg, 2000; Courneya and Bobick 2000; Armitage and Christian 2003; Ravis and Sheeran 2003). For instance, in their meta-analysis, Ravis and Sheeran (2003) advocate that the TPB is the most influential theory for the prediction of social and health behaviour. More specifically, in the exercise domain, Rhodes, Jones and Courneya (2002) point out that the TPB is the most validated and prominent social cognitive theories for understanding and explaining exercise behaviour.

Second, one of the main indicators of the validity of a theory is that it needs to be demonstrated that the particular theory works under a variety of context (Bamberg, Ajzen and Schmidt 2003). Sheppard, Hartwick and Warshaw (1988, p.338) conclude in a meta-analyses that "the TPB model has strong predictive utility, even when utilised to investigate situations and activities that do not fall within the boundary conditions originally specified for the model". In line with Sheppard, Hartwick and Warshaw's (1988) argument, it is evident that this theory has received good empirical support in predicting a wide range of behaviours (For meta-analyses, see Sheppard, Hartwick and Warshaw 1988; Godin and Kok 1996; Armitage and Conner 2001). Its strength in terms of broad applicability also found spanning the areas of social psychology, sports science, nursing, health medicine, information technology, etc (Notani 1998; Armitage and Conner 1999b). For instance, Godin and Kok's (1996) review of the Ajzen's TPB in the health domain indicated that the theory performs very well for the explanation of both intention (with averaged R^2 of .41) and behaviour (with averaged R^2 of .34). Further, in their meta-analysis reviews of the TPB and exercise literature, Hausenblas, Carron, and Mack (1997) and Hagger and Chatzisarantis (2005) support the utility of the TPB for understanding and predicting exercise behaviour.

Third, the TPB is a parsimonious model (Abraham and Sheeran 2003) and hence relatively small number of variables is sufficient to ensure accurate prediction of behaviour. This theory is deemed appropriate as it covers major factors that are important in the present study such as attitude, normative influences, perception of control over exercising, and behavioural intention. Next, a theoretical model that can explain multidimensional determinants of exercise behaviour is needed. In this instance, the TPB allows the investigation of personal, social and psychological influence on individual exercise behaviour more comprehensively (Godin and Kok 1996; Hausenblas, Carron and Mack 1997). Many theories and models have been used to examine the multidimensional (e.g., cognitive, social, behavioural) factors that affect

individual exercise behaviour over the years (Symons Downs and Hausenblas 2003). While all of these models have shown some utility in understanding exercise behaviour, Biddle and Nigg (2000) claim that the TPB is still the most comprehensive and validated theories used in examining exercise behaviour.

Fourth, the TPB provides a systematic guidelines and clearly defined structure/framework that could guide researchers on how to measure social cognitive constructs specified by the model in achieving greater predictive accuracy (Ajzen and Fishbein 1980). For example, Ajzen (1991) highlights the importance of adhering to the boundary condition of correspondence within the TPB to ensure that measures of TPB construct are compatible (i.e., all refer to the same action, target, context, and time). The guidelines on TPB questionnaire construction as well as sample questionnaires are easily accessible online. Lastly, the model is useful for the explanation and prediction of consumer behaviour utilising behavioural intentions as a mediator (Ryan and Bonfield 1975).

Indeed, there is no general consensus among researchers exists regarding which is the best theoretical framework for the studying exercise behaviour (Wood 2008). Since the TPB contains social cognitive factors that are common to most of the other behavioural theories and models, it is deemed to be a promising framework basis from which a more integrative model of exercise behaviour may be developed. Abraham and Sheeran (2003, p. 265) state that “as a model of the cognitive antecedents of behaviour, the TPB is parsimonious, empirically supported and can be operationalised easily, according to available guidelines”. This quotation summarised the above rationales for using the TPB as a framework base for the examining behavioural studies.

7. Conclusion

The Health Ministry has been putting much effort in health promotion by educating the public about the importance of health. However, despite the fact that Malaysian general public is aware of the benefits of exercising and the potential risks of physical inactivity especially among those in middle and higher socio-economic status, there is still low participate rate in exercise activities. The government is concerned with the health issues that will affect the productivity and consequently, the nation economy in view of the importance of health as an asset in the development of human capital. However, the fact is that health awareness and knowledge have little influence on individual exercise participation despite various health promotion campaign organised by the government agencies. In fact, an empirical study conducted by Jayanti and Burns (1998) demonstrates that health knowledge has no significant effect on preventive health care behaviour. There might possibly be other social and/or psychology factors that influence individual exercise participation. With regards to the application of TPB model, several issues were observed from a review the past exercise research applying the TPB. These research issues need to be addressed in future research and it includes:

1. The sufficiency of the TPB model has been questioned despite numerous empirical supports for the use of the model. Most of the researchers approached the sufficiency issues by including additional constructs in the original TPB model and tend to demonstrate improvement of predictive ability of their model (Armitage and Conner 2001; Hagger, Anderson, Kyriakaki and Darkings 2007). However, Ajzen (2001) commented that most part of the improvement in predictive ability were relatively small and hence the results are not generalisable to other behavioural domains despite the fact that significant improvements were found in these studies.
2. Also, relating the issue of sufficiency, most of the TPB researchers often rely on more intuitively and arbitrarily derived predictors (Bakker, Van Der Zee, Lewig and Dollard 2006) as the additional variables in their framework. Very few researchers have looked into a more comprehensive and integrative model which enable the examination of predictors that influence exercise behaviour simultaneously. There is a need to develop an integrative model in order to provide more comprehensive and coherent view points in the study of exercise behaviour.
3. Exercise research has received great attention in the literature from various disciplines such as health science, medicine, health and social psychology. Most of these exercise behaviour related studies were conducted in the West; there have been very few studies examining the psychosocial predictors of exercise behaviour from consumer behaviour and/or marketing perspective.
4. It is generally agreed that self-efficacy has been an important construct in studying exercise and / or physical activity (Wood 2008). Evidently, the concept of self-efficacy has been included into several social psychology models such as TTM, HBM, and TPB (Biddle and Nigg 2000) as additional variable in predicting health behaviour. However, Ajzen (1991) argues that the self-efficacy construct is synonymous with PBC within the TPB framework. Future research should consider the concept of self-efficacy in examining exercise behaviour. Also, the distinctions between PBC and self-efficacy should be made clear before conclusion can be drawn.
5. The TPB predictors (i.e., attitude, subjective norm, and PBC) are traditionally measured as single concepts (Ajzen 1991). It has been a common practice to aggregate TPB components to form higher order TPB constructs (Armitage and Conner 2001; Ajzen 2002) in recent years. However, some researchers argue that this higher order structure may overlook the variation in the predictive ability of the differentiated TPB components, and hence defeat the purpose of

differentiating them in the first place (Hagger and Chatzisarantis 2005). There are also attempts to modify the original TPB model as correlated multidimensional measures and has yielded conflicting findings regarding the optimal conceptualisation of TPB constructs.

6. Biddle (1992) suggests that the study of exercise behaviour should be conducted in different settings and should also take into consideration the different types of exercise programs and physical activity. Nevertheless, it was observed that some researchers in the exercise domain have focused on narrow and specific aspects of the exercise such as aerobic, strength training, cardiovascular training, walking, running, jogging, and gymnasium. Also, while majority of the TPB studies in exercise domain have used undergraduate students as their subjects with the focus on adolescent exercise and / or physical activity behaviour, others have used specific population like clinic patient, school children and youth, obese women, and pregnant women.

7. Early studies in the exercise domain rely heavily on exploratory data analysis techniques such as regression analysis. The use of structural equation modelling (SEM) techniques in examining exercise behaviour is gaining popularity. To overcome the limitations associated with the traditional multivariate analysis (Byrne 2001), SEM technique should be used to specify, estimate and test a hypothesised model effectively (Bentler 1990).

In view of these conflicting findings and shortcomings in the literature, there is a need to address these issues with an attempt to advance knowledge on health-related behavioural studies and provide practical marketing implications for health-related products or services providers. An integrative model of exercise behaviour should be proposed and empirically tested based on the research issues identified in the present paper.

References

- Abraham, C. & Sheeran, P. (2003). Implications of Goal Theories for the Theories of Reasoned Action and Planned Behaviour. *Current Psychology: Developmental, Learning, Personality, Social*, 22 (3), 264-280.
- Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50 (2), 179-212.
- Ajzen, I. (2001). Nature and Operation of Attitudes. *Annual Review Psychology*, 52, 27-58.
- Ajzen, I. (2002). Perceived Behavioral Control, Self-Efficacy, Locus of Control, and the Theory of Planned Behavior. *Journal of Applied Social Psychology*, 32 (4), 665-683.
- Ajzen, I. & Fishbein, M. (1980). *Understanding Attitudes and Predicting Social Behavior*. Prentice Hall: Englewood Cliffs, NJ.
- Armitage, C. J. & Arden, M. A. (2002). Exploring Discontinuity Patterns in the Transtheoretical Model: An Application of the Theory of Planned Behaviour. *The British Journal of Health Psychology*, 7 (Feb), 89 – 103.
- Armitage, C. J. & Christian, J. (2003). From Attitudes to Behavior: Basic and Applied Research on the Theory of Planned Behavior. *Current Psychology: Developmental, Learning, Personality, Social*, 22 (3), 187-195.
- Armitage, C. J. & Conner, M. (1999a). The Theory of Planned Behavior: Assessment of Predictive Validity and Perceived Control. *The British Journal of Social Psychology*, 38, 35-54.
- Armitage, C. J. & Conner, M. (1999b). The Theory of Planned Behavior: Assessment of Predictive Validity and Perceived Control. *The British Journal of Social Psychology*, 38, 35-54.
- Armitage, C. J. & Conner, M. (2001). Efficacy of the Theory of Planned Behavior: A Meta-Analytic Review. *The British Journal of Social Psychology*, 40, 471-499.
- Bakker, A. B., Van Der Zee, K. I., Lewig, K. A. & Dollard, M. F. (2006). The Relationship Between the Big Five Personality Factors and Burnout: A Study Among Volunteer Counselors. *Journal of Social Psychology*, 146 (1) (February), 31-50.
- Bamberg, S., Ajzen, I. & Schmidt, P. (2003). Choice of Travel Mode in the Theory of Planned Behavior: The Roles of Past Behavior, Habit, and Reasoned Action. *Basic and Applied Social Psychology*, 25 (3), 175-187.
- Bandura, A. (1977). Self-efficacy: Toward A Unifying Theory of Behavioral Change. *Psychology Review*, 84, pp. 191-215.
- Baranowski, T., Cullen, K. W. & Baranowski, J. (1999). Psychosocial Correlates of Dietary Intake: Advancing Dietary Intervention. *Annual Review of Nutrition*, 19, 17-40.
- Bentler, P. M. (1990). Comparative Fit Indices in Structural Models. *Psychological Bulletin*, 107 (2) (March), 238-246.
- Biddle, S. J. H. (1992). Exercise Psychology. *Sports Science Review*, 1, 79-92.
- Biddle, S. J. H. & Nigg, C. R. (2000). Theories of Exercise Behavior. *International Journal of Sport Psychology*, 31, 290-304.

- Blair, S. (1993). Physical Activity, Physical Fitness and Health. *Research Quarterly for Exercise and Sport*, 64: 365-376.
- Bloch, P. (1984). The Wellness Movement: Imperatives for Health Care Marketers. *Journal of Health Care Marketing*, 4 (Winter), 9-16.
- Bond, K. A. & Batey, J. (2005). Running for Their Lives: A Qualitative Analysis of the Exercise Experience of Female Recreational Runners. *Women in Sport & Physical Activity Journal*, 14 (2) (Fall), 69-782.
- Bungum, T. J. & Morrow, J. R., Jr. (2000). Differences in Self-Reported Rationale for Perceived Increases in Physical Activity by Ethnicity and Gender. *Research Quarterly for Exercise and Sport*, 71 (1), 55-60 .
- Byrne, B. M. (2001), *Structural Equation Modeling with AMOS: Basic Concepts, Applications, and Programming*, London: Lawrence Erlbaum Associates.
- Cardinal, B. J., Tuominen, K. J. & Rintala, P. (2004). Cross-Cultural Comparison of American and Finnish College Students' Exercise Behavior Using Transtheoretical Model Constructs. *Research Quarterly for Exercise and Sport*, 75 (1) (March), 92 – 101.
- Courneya, K. S. & Bobick, T. M. (2000). Integrating the Theory of Planned Behavior with the Processes and Stages of Change in the Exercise Domain. *Psychology of Sport and Exercise*, 1, 41-56.
- Courneya, K. S., Bobick, T. M. & Schinke, R. J. (1999). Does the Theory of Planned Behavior Mediate the Relation between Personality and Exercise Behavior. *Basic and Applied Social Psychology*, 21 (4), 317-324.
- Divine, R. L. & Lepisto, L. (2005). Analysis of the Healthy Lifestyle Consumer. *Journal of Consumer Marketing*, 22 (5), 275-283.
- Fishbein, M. & Ajzen, I. (1975). *Belief, Attitude, Intentions and Behavior: An Introduction to Theory and Research*. Addison-Wesley, Reading, MA.
- Floyd, D.L., Prentice-Dunn, S. & Rogers, R.W. (2000). A Meta-analysis of Research on Protection Motivation Theory. *Journal of Applied Social Psychology*, 30 (2), 407-429.
- Furlong, C. L. (1994). Factors Related to Exercise Behavior: Personality Factors and Demographic Characteristics. *Ph.D. diss.* Oklahoma State University. Retrieved June 27, 2007, from the ProQuest database .
- Godin, G. & Kok, G. (1996). The Theory of Planned Behavior: A Review of Its Applications to Health-related Behaviors. *American Journal of Health Promotion*, 11 (2) (November/December), 87-98.
- Grubbs, L. & Carter, J. (2002). The Relationship of Perceived Benefits and Barriers to Reported Exercise Behaviors in College Undergraduates. *Family and Community Health*, 25 (2), 76-84.
- Hagger, M. S. & Chatzisarantis, N. L. D. (2005). First-and Higher-order Models of Attitude, Normative Influence, and Perceived Behavioural Control in the Theory of Planned Behaviour. *British Journal of Social Psychology*, 44, 513-535.
- Hagger, M. S., Anderson, M., Kyriakaki, M. & Darkings, S. (2007). Aspects of Identity and Their Influence on Intentional Behavior: Comparing Effects for Three Health Behaviors. *Personality and Individual Differences*, 42, 355-367.
- Hausenblas, H. A., Carron, A. V. & Mack, D. E. (1997). Application of the Theories of Reasoned Action and Planned Behavior to Exercise Behavior: A Meta-analysis. *Journal of Sport and Exercise Psychology*, 19, 36–51.
- Jayanti, R. K. & Burns, A. C. (1998). The Antecedents of Preventive Health Care Behavior: An Empirical Study. *Journal of the Academy of Marketing Science*, 26 (1), 6-15. Retrieved June 25, 2007, from the ProQuest database .
- Kerner, M. S. & Grossman, A. H. (2001). Scale Construction for Measuring Attitude, Beliefs, Perception of Control, and Intention to Exercise. *Journal of Sports Medicine and Physical Fitness*, 40 (1), 124-131
- Kraft, F. B. & Goodell, P. W. (1993). Identifying the Health Conscious Consumer. *Journal of Health Care Marketing*, 13 (3), 18-25.
- McCaul, K. D., Sandgren, A. K., O'Neill, H. K. & Hinsz, V. B. (1993). The Value of the Theory of Planned Behavior, Perceived Control, and Self-Efficacy Expectations for Predicting Health-Productive Behaviors. *Basic And Applied Social Psychology*, 14 (2), 231-252.
- Milne, S., Orbell, S. & Sheeran, P. (2002). Combining Motivational and Volitional Interventions to Promote Exercise Participation: Protection Motivation Theory and Implementation Intentions. *British Journal of Health Psychology*, 7 (2) (May), 163 – 185.
- Mohamad, S. G. (2000). We Trust Government More Than Food Makers. *New Straits Times*, November 21, p. 8.

- Mohd Shariff, Z. & Khor, G. L. (2005). Obesity and Household Food Insecurity: Evidence from a Sample of Rural Households in Malaysia. *European Journal of Clinical Nutrition*, 59 (June), 1049-1058.
- Murrow, J. L. & Welch, J. (1997). Improving Marketing Strategies for Wellness: What Factors Influence An Individual's Behavior toward Maintaining A Healthy Lifestyle?. *Marketing Health Services*, 17 (2), 30-38.
- Nahas, M. V., Goldfine, B. & Collins, M. A. (2003). Determinants of Physical Activity in Adolescents and Young Adults: The Basis for High School and College Physical Education to Promote Active Lifestyles. *Physical Educator*, 60 (1) (Winter), 42-56.
- Nigg, C. R. & Courneya, K. S. (1998). Transtheoretical Model: Examining Adolescent Exercise Behavior. *Journal of Adolescent Health*, 22, 214-224.
- Norman, P., Conner, M. & Bell, R. (2000). The Theory of Planned Behavior and Exercise: Evidence for the Moderating Role of Past Behavior. *British Journal of Health Psychology*, 5, 249-261.
- Notani, A. S. (1998). Moderators of Perceived Behavioral Control' Predictiveness in the Theory of Planned Behavior: A Meta-Analysis. *Journal of Consumer Psychology*, 7 (3), 247-271.
- O'Hea, E. L., Wood, K. B. & Brantley, P. J. (2003). The Transtheoretical Model: Gender Differences Across 3 Health Behaviors. *American Journal of Health Behavior*, 27 (6) (Nov/Dec), 645-656.
- Omar, Z. A. (2002). Diet, Physical Exercise and Health: Are We Doing Enough?. *NCD Malaysia*, 1 (3), 2-3
- Ooyub, S. & Omar, Z. A. (2002). Physical Activity: Exercise or Be Active. *NCD Malaysia*, 1 (4), 2-3.
- Plante, T. G. & Rodin, J. (1990). Physical Fitness and Enhanced Psychological Health. *Current Psychology*, 9 (1).
- Plotnikoff, R. C., Hotz, S. B., Birkett, N. J. & Courneya, K. S. (2001). Exercise and the Transtheoretical Model: A Longitudinal Test of a Population Sample. *Preventive Medicine*, 33 (5), 441-452.
- Povey, R., Conner, M., Sparks, P., James, R. & Shepherd, R. (1999). A Critical Examination of the Application of the Transtheoretical Model's Stages of Change to Dietary Behaviour. *Health Education Research*, 14 (5) (Oct), 641-651.
- Prochaska, J.O., Diclemente, C.C. & Norcross, J.C. (1992). In Search of How People Change: Applications to Addictive Behaviors. *American Psychologist*, 47 (9), 1102-1114.
- Ramli, A. (2005). The Future of Fitness. *Malaysian Business*, May 16, p. 78.
- Rhodes, R. E. & Blanchard, C. M. (2006). Conceptual Categories or Operational Constructs? Evaluating Higher Order Theory of Planned Behavior Structures in the Exercise Domain. *Behavioral Medicine*, 31 (4) (Winter), 141-150.
- Rhodes, R. E., Blanchard, C. M. & Matheson, D. H. (2006). A Multicomponent Model of the Theory of Planned Behavior. *British Journal of Health Psychology*, 11, 119-137.
- Rhodes, R. E., Jones, L. W. & Courneya, K. S. (2002). Extending the Theory of Planned Behavior in the Exercise Domain: A Comparison of Social Support and Subjective Norm. *Research Quarterly for Exercise and Sport*, 73 (2), 193-199.
- Rimal, A. (2002). Association of Nutrition Concerns and Socioeconomic Status with Exercise Habit. *International Journal of Consumer Studies*, 26 (4), 322-327.
- Rivis, A. & Sheeran, P. (2003). Descriptive Norms As An Additional Predictor in the Theory of Planned Behaviour: A Meta-Analysis. *Current Psychology: Developmental, Learning, Personality, Social*, 22 (3), 218-233.
- Rosenstock, I. M., Stretcher, V. J. & Becker, M. H. (1988). Social Learning Theory and the Health Belief Theory. *Health Education Quarterly*, 15, 175-183.
- Ryan, M. J. & Bonfield, E. H. (1975). The Fishbein Extended Model and Consumer Behavior. *Journal of Consumer Research*, 2 (2), 118-136.
- Sheppard, B. H., Hartwick, J. & Warshaw, P. R. (1988). The Theory of Reasoned Action: A Meta-Analysis of Past Research with Recommendations for Modifications and Future Research. *Journal of Consumer Research*, 15, 325-343.
- Steptoe, A., Wardle, J., Vinck, J., Tuomisto, M., Holte, A. & Wichstrøm, L. (1994). Personality and Attitudinal Correlates of Healthy and Unhealthy Lifestyles in Young Adults. *Psychology and Health*, 9, 331-343.
- Symons Downs, D. & Hausenblas, H. A. (2003). Exercising for Two: Examining Pregnant Women's Second Trimester Exercise Intention and Behavior Using the Framework of the Theory of Planned Behavior. *Women's Health Issues*, 13, 222-228.
- Trujillo, K. M., Brougham, R. R. & Walsh, D. A. (2004). Age Differences in Reasons for Exercising. *Current Psychology: Development, Learning, Personality, Social*, 22 (4), 348-367.

Wilson, P. M. & Rodgers, W. M. (2004). The Relationship Between Perceived Autonomy Support, Exercise Regulations and Behavioral Intentions in Women. *Psychology of Sport and Exercise*, 5, 229-242.

Wood, M. E. (2008). Theoretical Framework to Study Exercise Motivation for Breast Cancer Risk Reduction. *Oncology Nursing Forum*, 35 (1), 89 – 96.

Wurtele, S. K. (1983). The Relative Contributions of Protection Motivation Theory Components in Predicting Exercise Intentions and Behavior. *Ph.D. diss.* The University of Alabama.

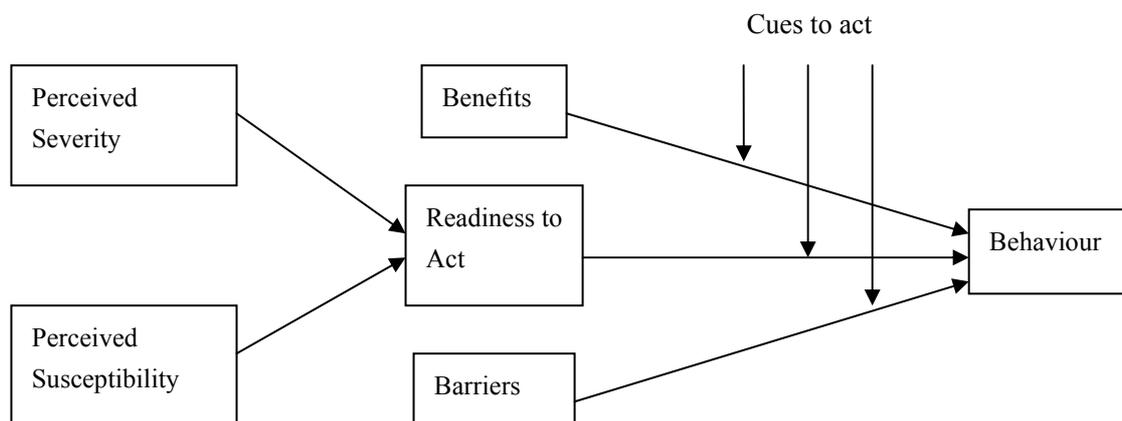


Figure 1. Health Belief Model (HBM)

Source: Adopted from Baranowski, T., Cullen, K. W., and Baranowski, J. (1999). Psychosocial Correlates of Dietary Intake: Advancing Dietary Intervention. *Annual Review of Nutrition*, 19, 17-40

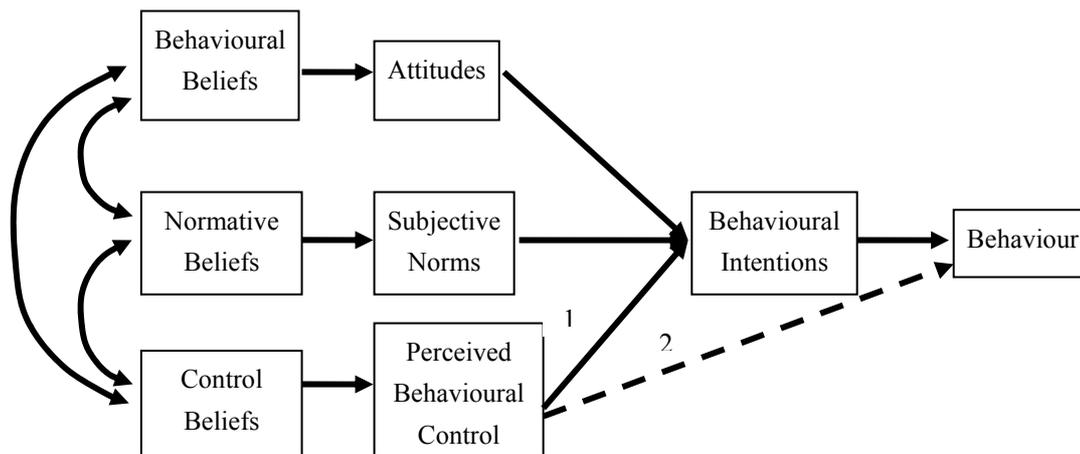


Figure 2. The Theory of Planned Behaviour. Version 1 assumes PBC has an indirect effect on behaviour. Version 2 assumes PBC has a direct effect on behaviour.

Source: Adopted from Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50 (2), 179-212.

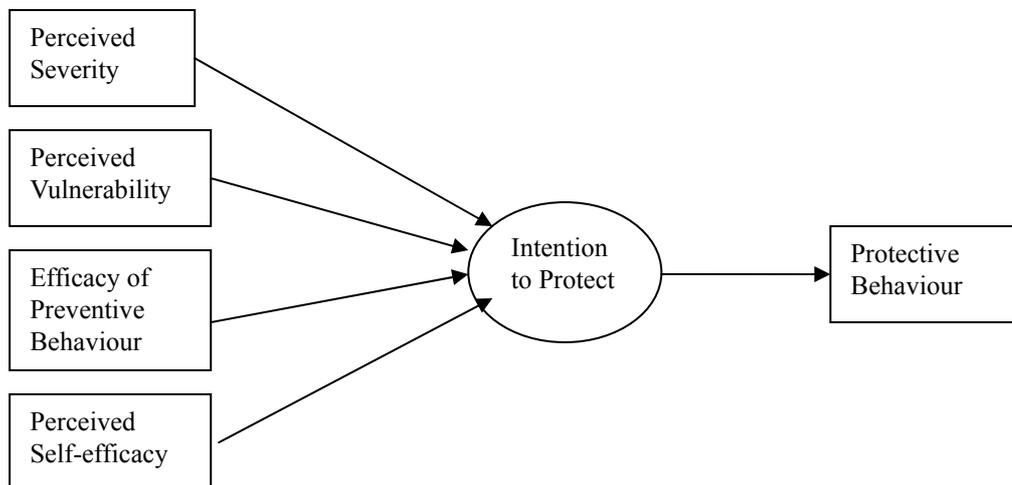


Figure 3. Protection Motivation Theory

Source: Adopted from Biddle, S. J. H., and Nigg, C. R. (2000). Theories of Exercise Behavior. International Journal of Sport Psychology, 31, 290-304

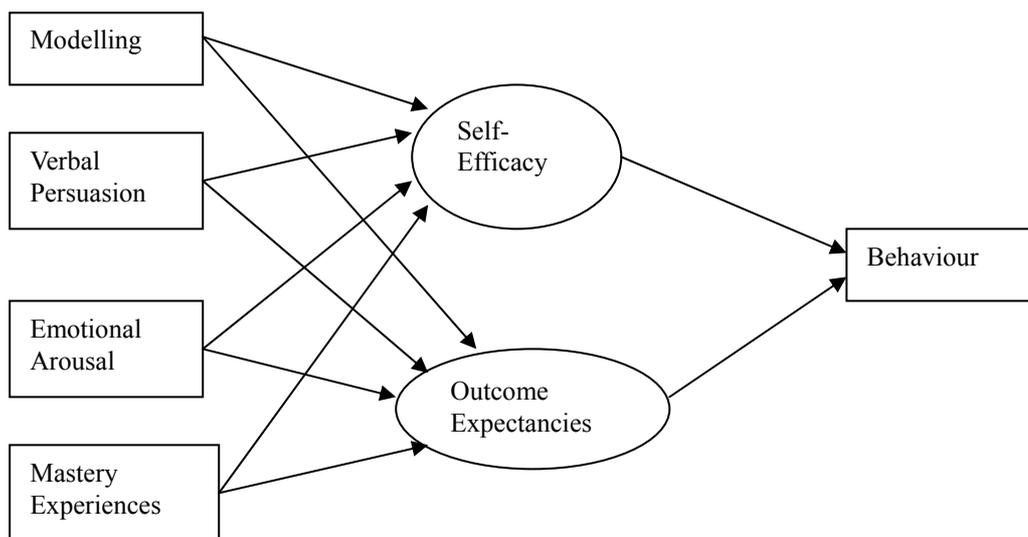


Figure 4. Self-Efficacy Theory

Source: Adopted from Biddle, S. J. H., and Nigg, C. R. (2000). Theories of Exercise Behavior. International Journal of Sport Psychology, 31, 290-304

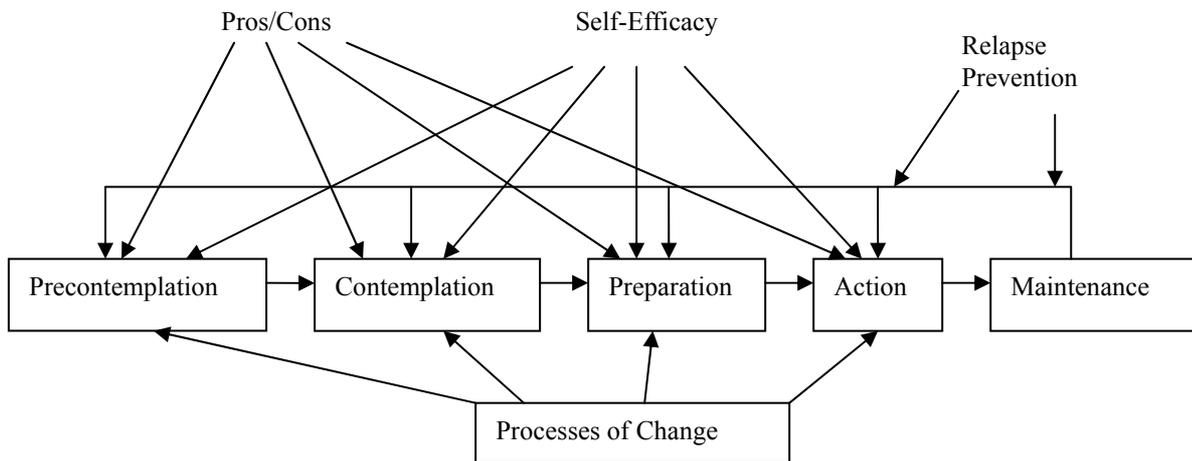


Figure 5. Transtheoretical Model of Stages of Change (TTM)

Source: Adopted from Baranowski, T., Cullen, K. W., and Baranowski, J. (1999). Psychosocial Correlates of Dietary Intake: Advancing Dietary Intervention. *Annual Review of Nutrition*, 19, 17-40