Kasetsart Journal of Social Sciences 39 (2018) 312–319

Contents lists available at ScienceDirect

Kasetsart Journal of Social Sciences

journal homepage: http://www.elsevier.com/locate/kjss

Weight control specific compensatory health beliefs: Hypothetical testing and model extension

Sittichai Thongworn*, Veena Sirisuk

Department of Society and Health, Faculty of Social Sciences and Humanities, Mahidol University, Nakhon Pathom 73170, Thailand

ARTICLE INFO

Article history:
Received 6 February 2017
Received in revised form 17 April 2017
Accepted 12 June 2017
Available online 29 June 2017

Keywords:
compensatory beliefs,
compensatory health beliefs,
compensatory health beliefs model,
weight control

ABSTRACT

Compensatory health beliefs (CHBs) refers to the beliefs that unhealthy behavior can be compensated for by activating healthy behavior. The purposes of this study were to investigate various theoretical hypotheses in the CHB model and to present a model whose concept expands from the original CHB model. A cross-sectional survey was designed for the present study. The sample consisted of 788 undergraduate students (mean age 19 years). All participants were asked to complete a questionnaire regarding weight control specific CHBs, self-efficacy, self-concordance, motivational conflict responses, compensatory behavior intentions, and actual behavioral control. Path modeling showed that the degree of desirability influenced resolving motivational conflict by resisting desire and adapting risk perception/outcome expectancy when implementing tempting behavior. Identified self-concordance had an influence on resolving conflict by resisting desire. Weight control self-efficacy had an influence on resolving motivational conflict by resisting desire and adapting risk perception/outcome expectancy when implementing tempting behavior. Weight control self-efficacy had an influence on identified self-concordance. Compensatory behavior self-efficacy had an influence on compensatory behavior intention. Actual behavioral control had an influence on compensatory behavior intention and compensatory behavioral self-efficacy. Further work is required to explore all of the processes of the model.

Introduction

A study on the prevalence of weight control and weight loss among Caribbean adolescents revealed that the weight control prevalence between male and female adolescents was different; that is, female adolescents were more likely to control their weight than their male counterparts. In addition, 40.5 percent of female adolescents and 25.2 of male adolescents wanted to lose their weight through dietary control and exercise (McGuire et al., 2002). In Thailand, the reviewed literature shows that there have been studies on weight control prevalence among Thai adolescents, but all of them were conducted on small sample groups. Based on the studies, 38.2 percent of the samples controlled and lost their weight (Tinkajee & Pumwiset, 2016), and 43.1 percent used to lose weight (Choundchumnum et al., 2005, pp. 1–9). The data on weight control among Thai adolescents manifests that the level of Thai adolescents' weight control is quite high and similar to adolescents in foreign countries.

Some studies showed that within five years, individuals who tried to lose or control their weight usually gained back the weight they had lost, and in another five years, the weight they gained back was greater than that they had lost. Similarly, those who had just started exercising always

* Corresponding author.
E-mail address: sittichai_psycho@hotmail.com (S. Thongworn).
Peer review under responsibility of Kasetsart University.

http://dx.doi.org/10.1016/j.kjss.2017.06.006

gave up exercising within the first six months (National Task Force on the Prevention and Treatment of Obesity, 1993). In addition, although individuals had knowledge about behavior that had negative health impacts, for example, consumption of excessive food or a lack of exercise, and tried to have a lifestyle was healthy, their efforts were not successful (Pinel, Assanand, & Lehman, 2000).

Academics have attempted to understand the factors which contribute to low levels of commitment to self-set health goals. Part of the psychological explanation for this phenomenon focuses on reasoned cognitive processes (Ajzen, 1991; Rogers, 1985). One cognitive process that impacts an individual's decision to indulge is the activation of compensatory beliefs (Rabiau, Knäuper, & Miquelon, 2006). Compensatory health beliefs refer to the idea that the negative, but often desirable, consequences of unhealthy behavior can be compensated for by engaging in other behaviors that have good health impacts (Rabiau et al., 2006).

Rabiau et al. (2006) proposed that a reasoned cognitive process is undertaken when there is a motivational conflict or an incompatibility between the temptation to engage in unhealthy behavior and self-set health goals. This incompatibility creates three motivational strategies to resolve the conflict: 1) resist the desire, 2) adapt one's risk perception/outcome expectancy, and 3) activate compensatory health beliefs (Rabiau et al., 2006). They also proposed that the degree to which the behavior one is tempted to engage in is desirable influences the activation of compensatory health beliefs. Moreover, Rabiau et al. (2006) suggested that when the temptation is to engage in a behavior that is undesirable, individuals should be able to resist the desire and not need to rely on or activate compensatory health beliefs. In addition, when faced with the temptation to engage in a behavior that is exceedingly desirable and essentially irresistible, they would not be able to activate Compensatory Health Beliefs (CHBs) because they believe that the intensity of the temptation and the desirability of the behavior justifies self-indulgence. CHBs tend to be used when the desirability degree is at a moderate level (Rabiau et al., 2006). Furthermore, self-efficacy was considered as another factor that influences CHB usage. Rabiau et al. (2006) suggested that high self-efficacy is associated with the levels of implementing CHBs. That is, individuals with high self-efficacy should experience a low tendency to activate CHBs. The value of individuals' self-set goals is another factor that may affect the levels of motivational conflict (Rabiau et al., 2006). Goals such as exercising regularly, eating a healthy diet, and quitting smoking can be achieved through self-set motivation. Highly self-motivated people are very interested in attaining their goals or set goals with which they have concordance and great determination to succeed. In addition to utilizing self-motivation to attain goals, individuals may be externally motivated to succeed. The potential for external reward or punishment may cause guilt or anxiety, or conflict between themselves and their goals. Therefore, health goal self-concordance should be another variable that influences behavior in people responding to their internal conflict (Rabiau et al., 2006) as shown in Figure 1.

Despite the fact that there is significant amount of empirical evidence confirming that compensatory health beliefs affect self-regulation, especially in terms of individuals' health behavior (Kronick & Knäuper, 2010; Miquelon, Knäuper, & Vallerand, 2012; Monson, Knäuper, & Kronick, 2008; Nguyen, Knäuper, & Rabiau, 2006; Rabiau, Knäuper, Nguyen, Sufrategui, & Polychronakos, 2009; Radtke, Scholz, Keller, Knäuper, & Hornung, 2011), there are some questions that have not yet been studied. There is little empirical evidence to support the hypotheses about determinants of conflict resolution strategies when encountering conflict between health goals and desires, as presented in the CHB model (Rabiau et al., 2006). These reasons have led to this study.

Research Objectives

The present study aimed to investigate various theoretical hypotheses presented in the compensatory health beliefs model by Rabiau et al. (2006) and to present a model whose concept expands from the original compensatory health beliefs model.

Method

Participants

The study was conducted using a community sample of undergraduate students from a single university in northern Thailand (N = 788). A multi-stage sampling strategy

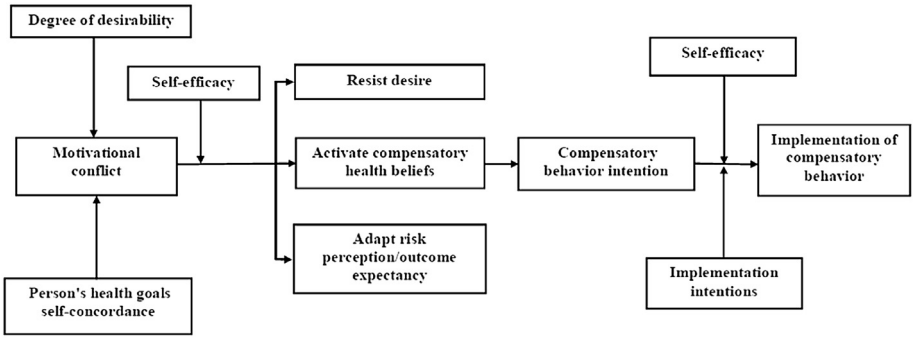

Figure 1 Compensatory health beliefs model
Source: Rabiau et al. (2006)

was employed, starting with purposive selection from undergraduate students at Mae Fah Luang University, Chiang Rai province, Thailand, an autonomous university consisting of a diversity of students, in terms of birthplaces, religions, languages, and cultures. After Mae Fah Luang University had been purposively sampled, cluster sampling was conducted to select students enrolled for general education courses, which were attended by students from different schools and class years. Purposive sampling was conducted for three courses, each of which consisted of 300 students or more. As these three courses allowed students from all schools and years within the university to enroll on an equal basis, the opportunity and possibility for all students in the university to enroll for the courses should be considered to be equal. Simple random sampling was conducted to randomly select general education courses to serve as samples. Two courses were randomly selected—General Psychology, and Creative Thinking and Inquiry Skills for Everyday Use. The total number of students enrolling in the courses was 809. This study involved only Thai undergraduate students (excluding students from other countries enrolled for the courses). The samples were Thai students who attended the classes on the days when data collection was conducted, had never completed the questionnaire, and consented to complete the questionnaire. Questionnaires from 795 students were received. As some of them were not complete, the total number of samples in this study was 788, representing 97.40 percent of the student sample (809).

Two-thirds of the samples were female (77.7%) and more than half were 17–19 years old (58.6%) with an average age of 19.51 years (SD = 1.07). The ages were consistent with the year of study at the university—59.4% were freshmen, 17.9% sophomores, 16.8% juniors, and 6% seniors. The body mass index (BMI) was calculated by multiplying individual height in meters (m) by itself and dividing by the individual weight in kilograms (kg). The BMI of over half of all the samples (58.5 male and 68.3% female) was within the normal BMI range of between 18.51 and 22.99 (World Health Organization, 2000). The percentage of male samples whose BMI was over a normal BMI (over 22.99) was higher than that of their female counterparts (31.3 and 21.7%, respectively). Nearly 29% of the male samples perceived that their weight was lower than the standard weight range. The percentage was higher than those whose BMI was lower than the standard BMI range (10.2%). This indicated that the male samples were more likely to recognize their weight as being lower than their actual weight. More than half of the female samples (57.8%) perceived that their weight was slightly or much higher than the standard weight range. The percentage was over twice as much as that of those whose BMI was higher than the standard BMI range (21.7%). The data indicated that the female samples were more likely to believe (or perceive) their weight as being higher than their actual weight.

Measures

Desirability Scale

This scale was used to assess the degree of desirability of unhealthy behavior such as eating too much, eating certain food, or physical inactivity that may have an adverse effect on weight control. A 10-level rating scale was used ranging from 0 to 10 points (0 = No desire and 10 = Most desirable). In the questionnaire, there were 28 desirability related items. The internal consistency of this scale was high ($\alpha = 0.86$).

Self-efficacy Scale

This scale was utilized to evaluate the participants' confidence to identify if they had the ability to manage themselves to attain their health goals. The 10-level rating scale ranged from 0 to 10 points (0 = Not confident at all and 10 = Most confident). In this study, the self-efficacy scale was divided into two sub-scales; 1) the scale of weight control self-efficacy (8 items) and, 2) the scale of compensatory behavior self-efficacy (12 items). The internal consistency of these scales was high ($\alpha = 0.80$ and 0.91, respectively).

Health Goal Self-concordance Scale

This scale was utilized for evaluating health goal self-concordance that individuals had defined, the freedom to define their own goal, and the intrinsic motivation to behave to achieve the goal. The health goal self-concordance scale was formed based on the self-concordance concept developed by Sheldon and Elliot (1999) by expanding the concept of the self-determination theory of Ryan and Deci (2000a). This scale consisted of 15 items and was divided into three dimensions: 1) external health goal self-concordance 2) introjected health goal self-concordance, and 3) identified health goal self-concordance. Cronbach's alpha coefficient of health goal self-concordance scale was 0.91, which was a very high value. The reliability values of health goal self-concordance scale under respective dimensions identified that health goal self-concordance had the highest reliability value ($\alpha = 0.85$), followed by introjected health goal self-concordance ($\alpha = 0.84$) and external health goal self-concordance, which had the lowest reliability value ($\alpha = 0.83$).

Response to Motivational Conflict

This part of the questionnaire was used to assess strategies that the participants used to reduce frustration arising from the conflict between desirability and their defined health goal. The questions measured their responses to motivational conflict which were developed pursuant to the concept in the compensatory beliefs model by Rabiau et al. (2006). The model presents that when individuals encounter conflict between desirability and a defined health goal, they will feel frustrated and will adopt a strategy to respond to the motivational conflict. There are three identified strategies: 1) resisting desire, 2) adapting risk perception/outcome expectancy when they are influenced by the desirability, and 3) activating compensatory health beliefs. Under circumstances of motivational conflict, individuals adopt only one conflict resolution strategy. When they implement the first strategy, they do not utilize the second or the third. Accordingly, in this study, the questionnaire was developed to measure the response to motivational conflict through a scenario that stimulated conflict between desirability and a weight control goal. When the research

participants read the scenario, they had to select one of the three motivational conflict resolution strategies.

Weight Control Compensatory Health Beliefs Scale

The weight control compensatory health beliefs (WC-CBHs) scale was used to assess the subjects' beliefs when they justified their implementation or non-implementation of weight control behavior. The WC-CHBs scale is a 10-level rating scale ranging from 0 to 10 points (0 = Completely disagree and 10 = Strongly agree). There were 10 items which were divided into two categories: 1) compensatory beliefs about eating, and 2) compensatory beliefs about doing physical activities. The internal consistency of this scale was high ($\alpha = 0.88$).

Compensatory Behavior Intention Scale

The scale was used to assess the attention, intention, and attempt to implement compensatory behavior for weight control. This scale was a 10-level rating scale, ranging from 0 to 10 points (0 = No intention at all and 10 = Strongest intention). There were 10 items. Testing the reliability value of the scale with 788 students revealed that the Cronbach's alpha coefficient of this scale was high ($\alpha = 0.82$).

Actual Behavioral Control Scale

This actual behavioral control (ABC) scale was used to assess historical use of compensatory behavior. The scale was a 10-level rating scale ranging from 0 to 10 points (0 = Never implemented compensatory behavior and 10 = Used to implement the compensatory behavior the most frequently) and consisted of 10 items. The ABC scale was divided into two categories: 1) actual compensatory behavioral control about eating, and 2) actual compensatory behavioral control about doing physical activities. The analysis of the scale reliability revealed that the Cronbach's alpha coefficient of the scale was 0.92, which was a very high reliability value.

Analyses

After the questionnaires were returned, the author checked the validity and completeness of the data in all questionnaires again and then encoded, processed, and analyzed it. The researcher conducted primary data analysis to learn about the demographic characteristics and other data about the samples by employing fundamental statistical formulas in the SPSS for Window version 22 program. The analysis of the causal relationships of different variables in the compensatory health beliefs model was based on path analysis using the AMOS 21 statistical software program. AMOS (analysis of a moment structures) is a visual program for structural equation modeling (SEM). In AMOS, we can draw models graphically using simple drawing tools. AMOS quickly performs the computations for SEM and displays the results.

Results

Hypothetical Testing

Data analysis revealed that the degree of desirability (DD) had a negative influence on resolving motivational conflict by resisting desire (RD; $\beta = -0.144$) and had a positive influence on resolving motivational conflict by adapting risk perception/outcome expectancy when implementing tempting behavior (AD; $\beta = 0.142$) at a statistical significance level of $p < .001$. However, the findings indicated that the degree of desirability had no influence on activating compensatory health beliefs (see Table 1).

In addition, it was found that identified self-concordance (ID) had a positive influence on resolving conflict by resisting desire (RD; $\beta = 0.146$) at a statistical significance level of $p < .05$. However, the findings indicated that external self-concordance (ET) had no influence on adapting risk perception/outcome expectancy when implementing tempting behavior (AD) and introjected self-concordance (IT) had no influence on activating compensatory health beliefs (CHB) as shown in Table 1.

Moreover, it was found that weight control self-efficacy (SE I) had a positive influence on resolving motivational conflict by resisting desire (RD; $\beta = 0.096$) and had a negative influence on adapting risk perception/outcome expectancy when implementing tempting behavior (AD; $\beta = -0.137$) at a statistical significance level of $p < .05$ and $p < .001$, respectively. That is, the samples who perceived that they could control their weight well were more likely to respond to a desire that might have an adverse impact on their weight control by resisting that desire and less likely to adapt risk perception/outcome expectancy after implementing the tempting behavior. However, this study revealed that weight control self-efficacy (SE I) had no influence on activating CHBs.

The results of the data analysis also revealed that weight control self-efficacy (SE I) had a positive influence on identified self-concordance (ID; $\beta = 0.196$) with a statistical significance level of $p < .001$. In addition, weight control self-efficacy (SE I) also had a positive influence on external self-concordance (ET) and introjected self-concordance (IT) at a statistical significance level of $p < .001$ ($\beta = 0.176$ and $\beta = 0.321$, respectively) as shown in Table 1. Analysis of compensatory behavior self-efficacy revealed that compensatory behavior self-efficacy (SE II) had a positive

Table 1
Causal relationships of the compensatory health beliefs model based on the conceptual framework of Rabiau et al. (2006)

(n = 788)

Variable			Estimate	S.E.	C.R.
Independent variable		Dependent variable			
DD	>>	RD	−0.144	0.000	−4.096***
DD	>>	AD	0.142	0.000	4.030***
DD	>>	CHB	0.037	0.000	1.051
ET	>>	AD	−0.093	0.002	−1.680
IT	>>	CHB	0.049	0.005	0.493
ID	>>	RD	0.146	0.003	2.799**
SE I	>>	RD	0.096	0.001	2.698**
SE I	>>	AD	−0.137	0.001	−3.880**
SE I	>>	CHB	0.010	0.001	0.267
SE I	>>	ET	0.176	0.035	5.015***
SE I	>>	IT	0.321	0.026	9.515***
SE I	>>	ID	0.196	0.021	5.612***
SE II	>>	CI	0.141	0.040	3.176***

***$p < .001$, **$p < .05$

influence on compensatory behavior intention (CI; $\beta = 0.141$) at a statistical significance level of $p < .001$ (see Table 1). The hypothetical testing of the causal relationships of the CHBs model of Rabiau et al. (2006) is illustrated in Figure 2.

Expansion of Compensatory Health Beliefs Model

The conceptual basis of the implementation of compensatory behavior in the CHB model of Rabiau et al. (2006) was partly based on the theory of planned behavior presented by Ajzen (1991). The review of the theory of planned behavior revealed that the factors influencing behavior intention consist of: 1) attitudes toward behavior, 2) subjective norms, and 3) perceived behavioral control. In particular, perceived behavioral control, some structures of which overlap with those of self-efficacy, influences behavior intention and implementation of target behavior which has led to the expansion of the CHB model in the present study in order to achieve better understanding and explanation of individuals' behavior. Actual behavioral control was added because its' structure partially overlaps with the perceived behavioral control (Armitage & Conner, 2001). In addition, many studies found that actual behavioral control had direct influence on the implementation of target behavior (Knussen, Yule, MacKenzie, & Wells, 2004; Kidwell & Jewell, 2008; Rhodes & Courneya, 2003; Sheeran, 2002; Smith, Manstead, Terry, & Louis, 2007).

The results of the analysis of the causal relationship between actual behavioral control (ABC) and compensatory behavior intention (CI) complied with the hypothesis. It was found that actual behavioral control had influence on compensatory behavior intention at a statistical significance level of $p < .001$ (see Table 2). Furthermore, actual behavioral control (ABC) also had influence on compensatory behavior self-efficacy (SE II) at a statistical significance level of $p < .001$. The data indicated that the samples' compensatory behavioral self-efficacy partly resulted from actual compensatory behavior in the past. That is, if the samples had implemented compensatory behavior to control their weight, they would be more likely to perceive that they could implement compensatory behavior to control their weight also (see Table 2).

This study focused on variables related to compensatory health beliefs. Among the 788 samples, 278 chose to resolve motivational conflict by activating compensatory health beliefs. Because of this, the causal relationships between the variables in the compensatory belief model among those 278 participants were analyzed. This model was then adjusted to be in-line with recommendations of the model adjustment index ($p = .67$, relative chi square (X^2/df) = 1.59, GFI = 0.98, AGFI = 0.95, NFI = 0.98, CFI = 0.99, and RMSEA = 0.04) as shown in Figure 3.

Table 2
Causal relationships of the expanded compensatory health belief model

(n = 788)

Variable			Estimate	S.E.	C.R.
Independent		Dependent			
ABC	>>	CI	0.646	0.038	14.508***
ABC	>>	SE II	0.414	0.052	7.573***

***$p < .001$

Based on the results of the data analysis, the degree of desirability (DD) had a positive influence on resolving motivational conflict by activating compensatory health beliefs (CHB) at a statistical significance level of $p < .05$ ($\beta = 0.18$). In addition, desirability had a positive influence on external self-concordance (ET; $\beta = 0.20$), and it also had a negative relationship with weight control self-efficacy (SE I; $r = -0.12$) and actual behavioral control (ABC; $r = -0.07$) as shown in Figure 3.

Weight control self-efficacy (SE I) had a positive influence on identified self-concordance (ID; $\beta = 0.22$). In addition, weight control self-efficacy and actual behavioral control had a positive relationship on each other ($r = 0.22$). It was also identified that weight control self-efficacy had a positive influence on compensatory behavior self-efficacy (SE II) at a statistical significance level of $p < .05$ ($\beta = 0.60$) as shown in Figure 3.

Regarding the health goals self-concordance in weight control, external self-concordance (ET) had a positive influence on compensatory health beliefs (CHB) at a statistical significance level of $p < .05$ ($\beta = 0.08$), and it also had a positive influence on compensatory behavior intention (CI; $\beta = 0.14$) as shown in Figure 3.

Regarding the causal relationships between compensatory health beliefs (CHB), compensatory behavior intention (CI), compensatory behavior self-efficacy (SE II), and actual behavioral control (ABC), it was indicated that compensatory health beliefs, compensatory behavior self-efficacy, and actual behavioral control had a positive influence on compensatory behavior intention at a statistical

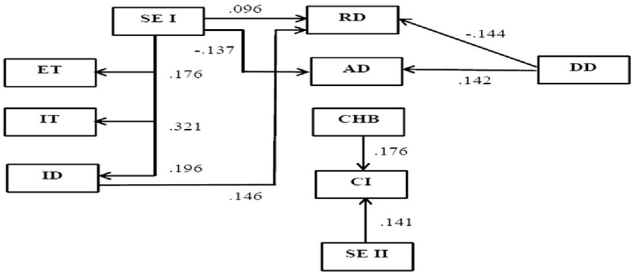

Figure 2 Hypothetical testing of causal relationships of the compensatory health beliefs model

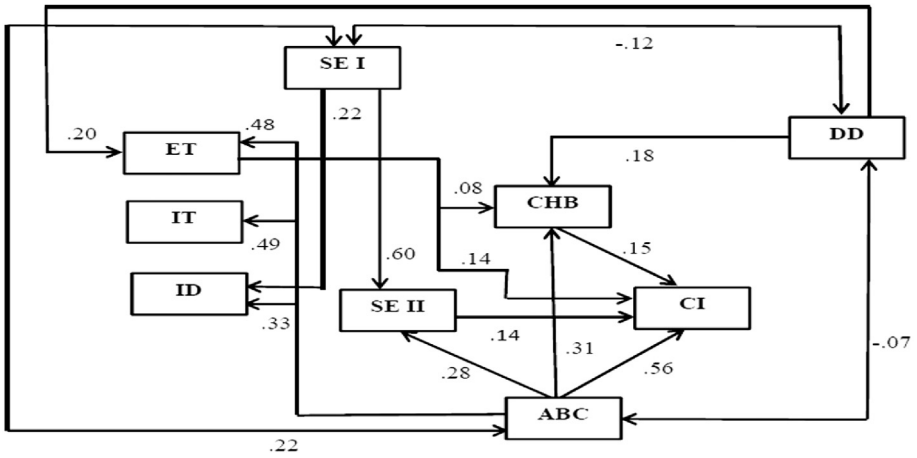

Figure 3 Causal relationship of the expanded model in samples activating compensatory health beliefs

significance level of $p < .05$ ($\beta = 0.15$, $\beta = 0.14$ and $\beta = 0.56$, respectively). In addition, actual behavioral control had a positive influence on compensatory health beliefs and compensatory behavior self-efficacy ($\beta = 0.31$ and $\beta = 0.28$, respectively). Actual behavioral control also had a positive influence on external self-concordance (ET), introjected self-concordance (IT), and identified self-concordance (ID) at a statistical significance level of $p < .05$ ($\beta = 0.48$, $\beta = 0.49$, and $\beta = 0.33$, respectively) as shown in Figure 3.

Discussion

The main objectives of this study were to test hypotheses presented in the compensatory health beliefs model and to present a model whose concept was an expansion of the original model. It was found that many variables were consistent with the hypotheses proposed by Rabiau et al. (2006). However, there were some variables which were incongruent with the original model. There are some explanations for these incompatibilities. First, the degree of desirability and weight control self-efficacy had no influence on activating compensatory health beliefs. Based on the findings, there are many factors that influence an individual's response to motivational conflict, such as goal self-concordance, degrees of desirability, self-efficacy, and intensity of motivational conflict—they are key variables influencing the relationships among other variables (Rabiau et al., 2006). This might result from the fact that the samples were not just subjects who wanted to control their weight. The BMI of almost all the samples was within the normal BMI range and they perceived that they had a normal weight. Thus, when they experienced tempting desire, conflict in their mind was not very high, so they did not activate compensatory health beliefs to resolve the conflict.

Moreover, it was found that weight control self-efficacy had a positive influence on identified self-concordance, external self-concordance, and introjected self-concordance because the concept of health goal self-concordance has been developed based on the self-determination theory (Ryan & Deci, 2000b). This concept suggests that the need for competence, the need for relatedness, and the need for autonomy have great influence on self-motivation. It has been seen that the need for competence may have a relationship with individuals' perceived self-efficiency, so this variable has influence on motivation for setting goals. However, the self-determination theory (SDT) postulates that individuals' motivation is different in terms of autonomy. For example, some students pay attention to their homework because they believe that this will have a positive effect on their study in the future. Others may do homework just to avoid punishment by their teachers or because their parents force them to do so. It is evident that the behavior in doing homework for both groups is the same and their motivation for doing homework is extrinsic motivation, but with a different level of autonomy (Ryan & Deci, 2000b). When the concept is applied to explain health goal self-concordance, it is evident that self-efficacy has influence on the three types of health goal self-concordance (they involve extrinsic motivation as well) but it is different in terms of the level of autonomy. That is, external self-concordance has autonomy for establishing self-goals the least, but identified self-concordance has autonomy for establishing self-goals the most.

In addition, the study also found that external self-concordance had no influence on adapting risk perception/outcome expectancy when implementing tempting behavior. Likewise, introjected self-concordance had no influence on activating compensatory health beliefs. This might be because the response to motivational conflict by adapting risk perception/outcome expectancy when implementing tempting behavior and activating compensatory health beliefs is a process that involves cognitive reasoning. In that process, individuals use data and process other factors to respond to their motivational conflict (Rabiau et al., 2006). As stated, there are many factors that influence resolving motivational conflict. One variable that has great influence on choosing motivational conflict resolution strategies is the intensity of the conflict between individuals' goal and the desire that may negatively affect that goal. However, as this study did not only focus on

subjects who were in the weight control period, this might affect their goal self-concordance and the intensity of their motivational conflict; they might not be strong enough to result in the samples' responding to motivational conflict by using a particular strategy.

Finally, the model by Rabiau et al. (2006) was expanded and the causal relationships among the variables were adjusted. Based on the data analysis, external self-concordance had a positive effect on compensatory health beliefs. Based on the findings, this might result from the fact that individuals with external self-concordance tend not to be able to resist desire. Thus, determination to define a goal tends to be weakened when individuals are confronted with obstacles, which, in the end, makes it difficult to achieve that goal (Sheldon & Elliot, 1999). When individuals cannot resist desire, they have two choices to resolve their conflict—adapting risk perception/outcome expectancy for tempting behavior and using compensatory beliefs (Rabiau et al., 2006). However, implementing tempting behavior that has a potential negative impact on the goal will result in frustration and guilt. Rabiau et al. (2006) argued that activating compensatory beliefs allows individuals to implement tempting behavior with less guilt than adapting risk perception/outcome expectancy when implementing tempting behavior because using compensatory beliefs also links to the process of implementing compensatory behavior. Thus, individuals will feel that they are still adhering to the goal they have defined.

Recommendations for Research Results Application

The concept of compensatory health beliefs should be applied to counseling or assistance processes for those who want to control their weight so that they will realize and understand the process of utilizing compensatory health beliefs and how it can affect their compensatory behavior intention. Actual compensatory behavior should be promoted to enhance self-efficacy, which can be conducted by encouraging a change from compensatory behavior intention to actual behavior. This can be accomplished by helping them to make specific plans, creating practical guidelines, monitoring, and providing feedback on a regular basis. In addition, there should be training programs aimed at creating motivation, developing self-efficacy, and setting goals for students to develop their self-efficacy, to reinforce how to establish goals, and to appropriately build intrinsic motivation for future benefit.

Limitations

This study aimed to test the hypotheses and expand the original model explained by Rabiau et al. (2006), but it did so without monitoring the samples' behavioral process; their compensatory behavior was not witnessed. The activation by subjects of compensatory health beliefs should be monitored to identify if they implement compensatory behavior and which factors influence them to do so. Moreover, there should be a comparative study between adapting risk perception/outcome expectancy and activating compensatory health beliefs in terms of weight control. This would aim to identify which strategy is more effective in weight control, to encourage people to learn how to appropriately respond to motivational conflict.

Conflict of Interest

There is no conflict of interest.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211.

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behavior: A meta- analytic review. *British Journal of Social Psychology, 40*, 471–499.

Choundchumnum, N., Prapasrisuk, K., Thamcharoensathit, K., Pieanmee, K., Atchariyawongmetee, T., & Suangtho, N. (2005). *Prevalence, behavior and knowledge about weight lost among undergraduate students in Khon Kean University*. Khon Kaen, Thailand: Faculty of Medicine, Khon Kaen University.

Kidwell, B., & Jewell, R. (2008). The influence of past behavior on behavioral intent—an information-processing explanation. *Psychology & Marketing, 25*(12), 1151–1166.

Knussen, C., Yule, F., MacKenzie, J., & Wells, M. (2004). An analysis of intentions to recycle household waste: The roles of past behavior, perceived habit, and perceived lack of facilities. *Journal of Environmental Psychology, 24*, 237–246.

Kronick, I., & Knäuper, B. (2010). Temptations elicit compensatory intentions. *Appetite, 54*, 398–401.

McGuire, M. T., Story, M., Neumark-Sztainer, D., Halcon, L., Campbell-Forrester, S., & Blum, R. W. M. (2002). Prevalence and correlates of weight-control behaviors among Caribbean adolescent students. *Journal of Adolescent Health, 31*, 208–211.

Miquelon, P., Knäuper, B., & Vallerand, R. J. (2012). Motivation and goal attainment. The role of compensatory beliefs. *Appetite, 58*, 608–615.

Monson, E., Knäuper, B., & Kronick, I. (2008). Food temptations spontaneously elicit compensatory beliefs in dieters. *McGill Scientific Undergraduate Research Journal, 3*(1), 42–45.

National Task Force on the Prevention and Treatment of Obesity. (1993). Very low-caloric diets. *Journal of the American Medical Association, 270*, 967–974.

Nguyen, D. M., Knäuper, B., & Rabiau, M. (2006). The role of compensatory beliefs and self-efficacy on treatment adherence in adolescents with type 1 diabetes. *McGill Scientific Undergraduate Research Journal*, 7–10.

Pinel, J. P. J., Assanand, S., & Lehman, D. R. (2000). Hunger, eating, and ill health. *American Psychologist, 55*(10), 1105–1116.

Rabiau, M., Knäuper, B., & Miquelon, P. (2006). The eternal quest for optimal balance between maximizing pleasure and minimizing harm: The compensatory health beliefs model. *British Journal of Health Psychology, 11*, 139–158.

Rabiau, M., Knäuper, B., Nguyen, T. K., Sufrategui, M., & Polychronakos, C. (2009). Compensatory beliefs about glucose testing are associated with low adherence to treatment and poor metabolic control in adolescents with type 1 diabetes. *Health Education Research, 24*(5), 890–896.

Radtke, T., Scholz, U., Keller, R., Knäuper, B., & Hornung, R. (2011). Smoking- specific compensatory health beliefs and the readiness to stop smoking in adolescents. *British Journal of Health Psychology, 16*(3), 610–625.

Rhodes, R. E., & Courneya, K. S. (2003). Investigating multiple components of attitude, subjective norm, and perceived control: An examination of the theory of planned behavior in the exercise domain. *British Journal of Social Psychology, 42*, 129–146.

Rogers, R. W. (1985). A protection motivation theory of fear appeals and attitude change. *The Journal of Psychology: Interdisciplinary and Applied, 91*, 93–114.

Ryan, M., & Deci, E. L. (2000a). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*, 68–78.

Ryan, R. M., & Deci, E. L. (2000b). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology, 25*, 54–67.

Sheeran, P. (2002). Intention-behavior relations: A conceptual and empirical review. *European Review of Social Psychology, 12*, 1–36.

Sheldon, K. M., & Elliot, A. J. (1999). Goal striving, need satisfaction, and longitudinal well- being: The self-concordance model. *Journal of Personality and Social Psychology, 76*, 482–497.

Smith, J. R., Manstead, A., Terry, D., & Louis, W. (2007). Interaction effects in the theory of planned behavior. The interplay of self-identity and past behaviour. *Journal of Applied Social Psychology, 37*(11), 2726–2750.

Tinkajee, S., & Pumwiset, P. (2016). Behavioral strategies for losing weight among undergraduate students in Nonthaburi province. *Journal of Graduate Studies Valaya Alongkorn Rajabhat University, 10*(1), 72–82. [in Thai]

World Health Organization. (2000). *The Asia-Pacific perspective: Redefining obesity and its treatment*. Sydney, NSW, Australia: Health Communications Australia Pty Ltd.