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The Determinants of Preventive Health Behavior: Literature Review and Research Perspectives

Carolina Obino Corrêa WERLE

Introduction

People normally know they should follow a few preventive health behaviors in order to have a better and long life: to not smoke, to have a balanced diet low in fat and rich in vegetables and fruits, to exercise regularly, to avoid heavy drinking, to take medical screens for dangerous diseases, to have immunizations and to use seatbelts while driving. But even knowing that these measures can prevent serious future problems, some people do not adopt them. From a managerial and academic standpoint, it is important to understand the factors behind why people develop preventive health behaviors such as those cited above. On one hand, this is a primary question for public health when major diseases could be avoided by such simple actions. In addition, scant attention has been paid to this subject in the marketing literature in France.

Preventive health behaviors have been defined as “any activity undertaken by a person who believes himself to be healthy for the purpose of preventing disease... in an asymptomatic stage” (Kasl and Cobb 1966, p. 246). As such, they do not provide the same response as health behaviors developed to treat diseases that have already been diagnosed through symptoms, exams or medical opinion. Therefore, the decision to develop preventive health behavior is based on other factors which are less objective than those symptoms or formal diagnoses given by a doctor. Furthermore, several preventive health behaviors present advantages not easily accessible in the short term (like the effects of a balanced diet in cholesterol levels, obesity and heart disease prevention), while its costs impact the consumer’s life directly (i.e., the control of sugar or fat consumption through following a balanced diet).

Several models have been created in order to explain whether people develop preventive health behaviors or not. Many of them are social cognition models which consider that people engage in preventive health behaviors after: the analysis of its consequences, an assessment of the disease’s perceived risk, and an evaluation of self-efficacy, e.g. personal capability to develop the target behavior (Bandura, 1989). Much research has shown that self-efficacy is the main determinant of preventive health behaviors (Schwarzer, 1992; Schwarzer and Fuchs, 1996). But the impact of self-efficacy on preventive health behaviors may be influenced by other variables such as emotions associated with previous experiences with the target behavior. For example, a young obese woman who has had many unsuccessful dieting experiences may have negative emotions associated with the preventive behavior of having a balanced diet. Will these negative emotions linked to previous dieting experiences influence her perceived ability to follow a balanced diet? This is one of the questions that this article analyzes.

Another factor that may influence the decision to undertake preventive health behaviors are individual characteristics, such as temporal orientation (Bergadàa, 1990) or future time perspective

(Zimbardo and Boyd, 1999; Keough, Zimbardo and Boyd, 1999; Simons and Lens, 2003). According to Bergadãa's temporal orientation construct, future-oriented people are more proactive, they seek change and opportunities of personal development, while past-oriented people are more reactive and resist external stimuli. Future time perspective (FTP, De Volder and Lens, 1982) is very similar to temporal orientation since it refers to the present anticipation of future goals. People with a short FTP place most of their goals in the near future, while people with a long or deep FTP place their goals in the distant future. Those with an extended FTP are more motivated for their present activities, put more effort into them, and perform better on subsequent tests (Simons and Lens, 2003, 5). Empirical evidence has shown that an extended FTP is positively correlated with student's motivation and academic performance. There is empirical evidence of the importance of the Future Time Perspective construct as a predictor of the reported use of alcohol, drug and tobacco (Keough, Zimbardo and Boyd, 1999). Therefore, the individual's time perspective may also influence the adoption of other health behaviors, such as preventive health behaviors. We may thus suppose that future-oriented people (or people with an extended FTP) will be more prone to develop preventive health behaviors than past-oriented people (or people with a short FTP).

Nevertheless, people may engage in preventive health behaviors not only for health reasons. They may develop such behaviors according to their desires (Reach, 2003), in order to respond to other motivations such as ego-related or socially oriented ones (Jayanti and Burns, 1998). The influence of motivations not directly linked to health in the decision to engage in preventive health behaviors is a subject that requires further research.

This article investigates the role of emotions associated with past experience, ego-motivations and individual's time perspective on preventive health behavior. The objective is to propose a model exploring the influence of each one of these variables on key predictors of preventive behaviors as self-efficacy, perceived risk and outcome expectancies. To do so, we first analyze preventive health behavior models from cognitive psychology, clinical psychology and behavioral medicine. We then propose a model integrating variables that have been neglected by current literature on this subject. Finally, we propose a research framework to test this model.

① Literature review

Preventive health behaviors have been treated by different fields of study. Cognitive and clinical psychology and behavioral medicine have long tried to explain why people engage in this kind of behavior. Below we shall chronologically present the main models used by scholars to explain preventive health beliefs.

Cognitive Psychology

The main social cognition models used to explain preventive health behaviors - the Health Belief Model (HBM) (Rosenstock, 1974; Janz and Becker, 1984), the Protection Motivation Theory (PMT) (Rogers, 1975, 1983), the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB) (Ajzen and Fishbein, 1980; Azjen, 1985, 1991) – have the same conceptual basis: the theory of subjective expected utility (SEU theory). They consider that when making a decision, a person will analyze the positive and negative potential consequences of each option using a rational decision rule.

The **Health Belief Model (HBM)** (Rosenstock, 1974; Janz and Becker, 1984) is one of the most commonly-used models of health behavior change used to guide the development of health interventions. It was developed in the early 1950's as a framework for promoting preventive behaviors (such as immunizations) (Janz & Becker, 1984) and it considers that people will act to protect their health if they perceive that they are at risk and that a particular action will enable them to deal with such a risk, without triggering excessive personal sacrifice.

Briefly, the HBM suggests that preventive health behaviors are influenced by five factors: 1) **Perceived susceptibility** – one's subjective perception of the risk of contracting a condition; 2) **Perceived severity** – perceptions concerning the seriousness of the illness if it is contracted or left untreated; 3) **Perceived benefits** – beliefs regarding the effectiveness of the actions available in reducing the threat of the disease; 4) **Perceived barriers** – the potentially negative aspects of a particular health action (e.g., physical, psychological and financial aspects: side effects, pain, time-constraint and expense) and 5) **Cues to action** – reminders about a potential health problem (e.g., newspaper and magazine article, mass media campaigns, advice from others). It should be noted that cues to action can be external (e.g., the recommendation of a physician or mass media messages) or internal (e.g., symptoms), but in the case of preventive health behaviors only external cues to action are relevant, because there are no symptoms. According to the HBM, individuals consider the potential benefits of the recommended response against the barriers of the action when deciding to act.

Several health interventions and research projects have used the HBM as a conceptual basis, even if the model presents some significant limitations. The main HBM limit is the assumption that beliefs will directly impact behavior. Further research (see Protection Motivation Theory, Theory of Reasoned Action and Theory of Planned Behavior for more details) has proven that **attitude** mediates this relation and is the best predictor of behavior, increasing the model's explained variance (Oliver and Berger, 1979). Further, the HBM proposes a simple list of variables, intervening at the same time and with the same importance in the decision to engage in a target behavior. Other models have suggested a sequential order: before the preventive action evaluation (**perceived benefits** and **perceived costs** of preventive action), people evaluate the threat at hand through **perceived severity** of the disease and **perceived personal susceptibility** (see Protection Motivation Theory for details).

Finally, the HBM core assumption (based on SEU theory) that people rationally evaluate potential consequences and benefits of a behavior neglects significant subjective aspects such as emotions, decisional biases and situational factors that have been proven to impact preventive health behavior (Oliver and Berger, 1979; Burns, 1992; Moorman and Matulich, 1993; Jayanti and Burns, 1998; Kahn, 2003).

Furthermore, the Health Belief Model does not take into account the role of past experiences with the target behavior. Direct or indirect previous experiences with the preventive health behavior are taken into account only through variables such as perceived barriers or perceived benefits of the behavior. If we consider the emotions associated with past behaviors to be strong, they may directly impact the future adherence to the target behavior. This aspect is neglected by the Health Belief Model.

The **Protection Motivation Theory (PMT)** (Rogers, 1975) was originally proposed to provide conceptual clarity to the understanding of fear appeals. A later revision of Protection Motivation Theory (Rogers, 1983) extended the model to a more general theory of persuasive communication, with an emphasis on the cognitive processes mediating behavioral change.

The PMT proposes that the intention to protect oneself depends upon four factors: 1) the **perceived severity** of a threatened event – seriousness of a disease; 2) the **perceived vulnerability** – chance of contracting a disease; 3) the **efficacy of the recommended preventive behavior** – the perceived response efficacy: the analysis of benefits and barriers associated with the preventive health behavior; and 4) the **perceived self-efficacy** – e.g., the level of confidence in one's ability to undertake the recommended preventive behavior (Bandura, 1989).

Protection motivation is the result of the **threat appraisal** and the **coping appraisal**. Threat appraisal is the estimation of the chance of contracting a disease (**vulnerability**) and estimates of the seriousness of a disease (**severity**). **Coping appraisal** is an evaluation of one's ability to face the threat through an action (**response efficacy**) and through his or her personal ability to carry out this action (**self-efficacy**). **Protection motivation** is a mediating variable whose function is to arouse, sustain and direct protective health behavior (Boer and Seydel, 1996). According to Prentice-Dunn and Rogers (1986) this variable has the role of an attitudinal variable, and is normally assessed through attitudinal measures, even if the label – protection motivation – is different.

The PMT is quite similar to the HBM. First of all, both theories have the same basis. Furthermore, the PMT takes into account all the dimensions of the HBM: it directly assesses perceived severity and perceived susceptibility. The response efficacy summarizes the effects of two variables in the HBM: the barriers and the benefits of the preventive health behavior. The difference is located in the way these variables are assessed. The PMT proposes that people evaluate a preventive health behavior through two sequential processes: the threat appraisal and the coping appraisal. Next, PMT takes into account perceived self-efficacy, a variable neglected by the HBM, where it is only measured indirectly through the variable of perceived barriers against the preventive behavior.

However, the PMT's premise that perceived severity, perceived vulnerability, response efficacy and perceived self-efficacy are equally important in determining behavioral intentions has been proved to be inadequate (Block and Keller, 1998). They suggest that people at different stages of readiness to change their behavior are differentially affected by levels of these variables.

At the same time that PMT was created, a more general theory was developed in order to investigate the relationship between attitudes and behaviors: the **Theory of Reasoned Action (TRA)** (Ajzen and Fishbein, 1980). This theory is based on the principle of compatibility (Ajzen, 1980). This principle states that each attitude and behavior has the four elements of 1) action, 2) target, 3) context and 4) time, and states that the correspondence between attitudes and behaviors will be greatest when both are measured at the same level with respect to each of these elements. Following this principle, attitude is the best predictor of behavior.

According to the TRA (Fishbein and Ajzen, 1980), two sets of beliefs must be altered prior to behavioral change: beliefs about the consequences of performing a certain behavior and the evaluation of those consequences (**attitude**); and beliefs about what other people or referents think about the behavior to be performed and the motivation to comply with those referents (**subjective norm**). Only when a message targets the salient beliefs of these variables do attitudes and subjective norms change, and in consequence there is an alteration of intentions and behavior.

The **Theory of Planned Behavior (TPB)** (Ajzen, 1985, 1991) was developed in order to cover a limit of the TRA concerning the control people have over their behaviors. To do so, an extra dimension was included in the model – the **perceived behavioral control**. This construct is especially important in situations where people do not control their behaviors due to intervening environmental conditions. Perceived Behavioral Control is determined by two factors: Control Beliefs and Perceived Power. It indicates how a person's motivation is influenced by how difficult the behaviors are perceived to be, as well as the perception of how successfully the individual can, or cannot, perform the activity. This construct is quite similar to the notion of self-efficacy (Bandura, 1989).

In summary, according to the TPB when a person considers the decision to adopt a balanced diet, for example, he or she will analyze the **potential consequences of this behavior** (i.e., lose weight in the long term and change dietary habits in the short term) and these perceptions will be reflected in an attitude towards the behavior. In addition, the person will also analyze what other people will think about the fact that he or she will be dieting and his or her willingness to comply with these opinions (**subjective norm**). Finally, the **perceived behavioral control** will indicate the difficulty to perform the behavior (ease or difficulty in following the diet). These three elements will determine the intention to comply with a diet, and it follows that this intention will directly influence the behavior.

Despite the great contribution of the TPB to the understanding of preventive health behaviors, it nevertheless presents some intrinsic limitations. First, the model deals with *perceptions* of control

and not with actual control, so elements may exist but may not be taken into account in the individual's perception of control. Second, this model neglects variables that may interfere with the link between attitude and behavior, such as situational factors. Third, the TPB, as well as other models presented previously, does not consider the direct effect of emotional responses associated with past experiences. Finally, the model does not consider the influence of individual characteristics on the decision to engage in preventive health behavior.

Much research has attempted to compare social cognitive models and has come up with mixed results. Oliver and Berger (1979) compared the HBM with the TRA and found that the TRA was a stronger predictor of inoculation behavior. Hill et al. (1985) also compared these two models in order to identify the determinants of women's intentions to perform breast self-examination and to have a pap test. Both models predict the intentions to perform target behaviors, but the HBM explained more variance (probably because the authors measured more constructs of the HBM than of the TRA). Mullen et al. (1987) also compared the HBM and the TRA in order to predict changes in a range of health behaviors over an eight-month period, and showed that the HBM explained more variance. However, Rutter (1989) showed that the TRA was superior to the HBM when predicting AIDS-preventive behavior. Conner and Norman (1994) examined the determinants of attendance to a routine health check-up and found that both models had the same predictive power. In sum, there is no unanimity concerning the comparison between the TRA and the HBM and comparative research indicates that both models measure similar constructs.

Through an analysis of the HBM, the PMT, the TRA and the TPB we identify six main determinants of preventive health behavior: **perceived vulnerability** and **perceived severity** (forming the threat appraisal dimension), **perceived benefits**, **perceived barriers** and **self-efficacy** (forming the coping appraisal dimension), and the **subjective norm**. According to Floyd, Prentice-Dunn and Rogers (2000) and Janz and Becker (1984), the variables having greater predictive power are the coping ones: **coping appraisal** variables (perceived benefits and barriers to develop the target behavior) and **self-efficacy**. The HBM also points out that **cues to action** may influence preventive behavior, while the PMT assumes that **sources of information** will influence the individual's response. The main dependent variable is the preventive behavior, but the relation between the determinants and this variable is mediated by the **attitude** towards the preventive health behaviors, that is its main predictor.

Clinical Psychology

Research in Clinical Psychology has also attempted to explain the adoption of preventive health behaviors. The **Transtheoretical Model** (DiClemente and Prochaska, 1982) is based on the analysis of behavioral change in clinical psychology. According to DiClemente and Prochaska (1982) people change their behavior through six phases:

1) **Pré-contemplation** - stage when people still resist change, deny the problem and have no intention of changing;

2) **Contemplation** - stage when people assume they have a problem, but do not take any action to resolve it;

3) **Preparation** - stage when people plan to take action and prepare themselves to do so through specific plans;

4) **Action** - stage when people modify their behavior;

5) **Maintenance** - stage when people reinforce the preventive behavior over time and

6) **Terminance** – stage when it is clear that the problem will not return and is not a threat anymore.

Linear progression through the stages may occur, but people normally cycle and recycle back several times. In each phase different beliefs need to be reinforced in order to allow behavioral change.

This model is especially pertinent to study preventive behaviors that are developed over the long term such as dieting, exercising and to quit smoking because it takes into account the temporal dimension of behavioral change. Some research has used this model to analyze health-related behaviors such as smoking cessation, alcohol abuse, AIDS risk reduction, exercise adoption and others (Block and Keller, 1998; DiClemente and Prochaska, 1985; Prochaska and DiClemente, 1982; Prochaska, Norcross and al., 1994; Prochaska, Redding, Harlow, Rossi and Velicer, 1994).

Even if there are some empirical studies that use the Transtheoretical Model, it remains a relatively unexplored framework that needs further elaboration and empirical applications (Norman and Conner, 1996). Behavioral change takes place over time and is normally not only an isolated event. Therefore, the influence of each cognitive variable during each stage may be further explored in order to provide elements to intervene in each phase.

Behavioral Medicine

Besides clinical and cognitive psychology, behavioral medicine has also tried to identify determinants of preventive health care behavior. Reach (2003) proposes a philosophical approach and suggests that people decide to engage or not in health behaviors according to their desires (Reach analyzed health behaviors in general, including preventive health behaviors). Therefore, a person may develop a preventive health behavior such as dieting not because it's better for his/her cholesterol control, but because he/she wants to improve personal appearance and considers that this action will help achieve this goal. As opposed to the majority of socio cognitive models, this author suggests the importance of emotional factors behind health behaviors.

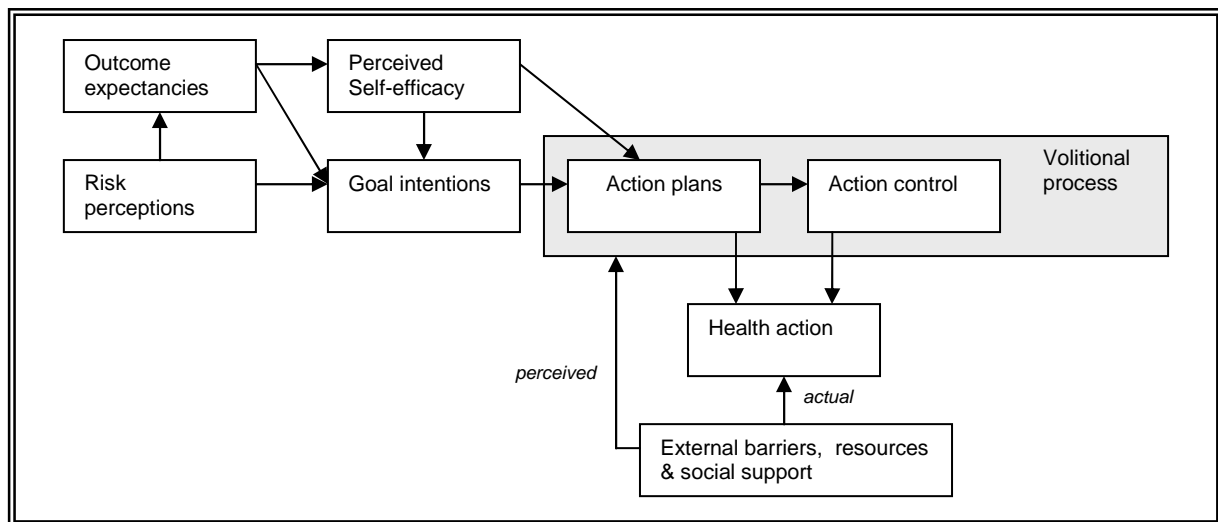
Reach (2003) and Jayanti and Burns (1998) point out the importance of other reasons for developing preventive behaviors – i.e., following a balanced diet to improve personal appearance

rather than for general health reasons or exercising frequently to be socially accepted. I contend that a key to developing compliance towards preventive health behaviors can be found through reinforcing ego-motivations or social motivations naturally associated with target behaviors. These motivations may also influence the adherence to preventive health behaviors, and their importance in comparison to health motivations may be assessed through further research.

Integrative Model

Some research has tried to integrate social cognitive models and the process approach proposed by stage models aforementioned. It is the case of the **HAPA – the Health Action Process Approach** (Schwarzer, 1992). This model considers that the adoption, initiation and maintenance of health behaviors must be conceived as a process with at least two stages: a motivation phase and a volition phase (subdivided into a planning phase, an action phase and a maintenance phase) (Schwarzer and Fuchs, 1996). Self-efficacy influences both phases while other beliefs will influence only one of them: perceived risk influences only in the moment that people will progress from the contemplation to the motivation phase, while outcome expectancies influences occur during the motivation phase only.

Self-efficacy, perceived risk and outcome expectancies will influence the intention to perform the health behavior. When this intention takes form, and before actual behavior takes place, there is a planning stage during which people will develop action plans. Self-efficacy, external barriers and resources, and self-referent thought will influence this phase. The following figure summarizes the HAPA:



The health action process approach (adapted from Schwarzer, 1992, 233)

Empirical evidence confirms the importance of this model. Schwarzer and Fuchs (1996) tested the model in a survey with 800 Berliners (Germany). This research was made in two waves with a 6 months interval between the two. In the first wave the following variables were measured:

- ❖ Self-efficacy

- ❖ Positive outcome expectancies
- ❖ Negative outcome expectancies
- ❖ Risk perception
- ❖ Previous healthy eating behavior
- ❖ Intention to eat healthy foods (dependent variable)

In the first wave, self-efficacy accounted for 16% of the intention's variance. For the second wave, the intention to eat healthy foods was added as a predictor of self-reported health behavior during the preceding six months. Results (reported in the table below) indicate differences by gender. Intention was the best predictor for men (0.24) while self-efficacy was the best predictor for women (0.28).

Table: Prediction of healthy eating behavior half a year later (wave 2)

Predictor	Men (n = 353) Beta	Women (n = 462) Beta
Intention to eat healthy foods	0.24**	0.12*
Risk perception	0.07	-0.01
Self-efficacy	0.23**	0.28**
Positive outcome expectancy	0.19**	0.19**
Negative outcome expectancy	0.01	-0.10*
Risk perception X Self-efficacy	-0.07	-0.05
Positive outcome expectancy X Self-efficacy	-0.03	0.02
Negative outcome expectancy X Self-efficacy	0.00	-0.01
Positive outcome expectancy X risk perception	0.03	0.02
Negative outcome expectancy X risk perception	-0.08	-0.02
	R = 0.48 (Adj R ² = 0.21)	R = 0.47 (Adj R ² = 0.20)

* path coefficient significant at $p < 0.05$; ** $p < 0.01$

(Schwarzer and Fuchs, 1996)

These results suggest that respondent's gender moderates the self-efficacy influence towards behavior. Further research about this model (Schwarzer and Renner, 2000) indicates that other individual characteristics may also influence this relationship. Schwarzer and Renner (2000) replicated the previous study and added an extra variable: the coping self-efficacy, or the post-intentional self-efficacy. Following the same design from Schwarzer and Fuchs (1996) (n = 580, 2 waves, with a 6-month interval), risk perceptions, outcome expectancies and action self-efficacy were specified as predictors of intention in the first wave. Behavioral intention and coping self-efficacy served as mediators linking the three predictors in wave one, with self-reported nutrition behaviors in wave two. The model was analyzed through covariance structure analysis and a good fit was obtained. Differences by age and weight emerged, confirming that individual characteristics may moderate the impact of self-efficacy on behavior. This disparity of individual characteristics provides precisely a starting point for future research that I propose to carry out in further detail.

② Discussion

We have thus far analyzed the main models created in order to explain preventive health behaviors. Even if these models have brought about important contributions to the understanding of

these behaviors, they do not explain the totality of this phenomenon (the variance explained remains minor), and there are still some avenues of research that should be developed. For example:

Past experiences influence self-efficacy perceptions (Schwarzer, 1992; Schwarzer and Fuchs, 1996; Norman and Conner, 1996) but there is a need for further clarification on this influence. In a study about mammography false-alarm tests, Kahn and Luce (2003) demonstrated that negative experience with the preventive health behavior in question generates stress and negatively impacts future adherence to this behavior. Therefore, we could hypothesize that positive or negative emotions associated with these past experiences could differently influence self-efficacy beliefs. Positive emotions associated with past experience will positively influence self-efficacy beliefs, thus enhancing self-efficacy. For instance, if we analyze the decision to start exercising regularly and the individual has positive feelings associated with his or her past experiences with it (he or she had a good moment, had a good performance in exercising...), we may suppose that he or she will feel more able to exercise regularly in the future. Inversely, when the person has negative feelings associated with past exercise experience, his or her perceived self-efficacy could be diminished.

The same rule applies to outcome expectancies. Emotions associated with past experiences may also influence outcome expectancies, since the person will judge the results he or she could obtain from the target behavior according to his or her past experiences and the emotions associated with them. Positive emotions associated with past experiences will positively influence outcome expectancies, and inversely negative emotions associated with past experiences will negatively influence outcome expectancies¹. This is the first response to a gap in current research that I am proposing to fill in my current research (Doctoral Dissertation – estimated completion 2007).

As mentioned earlier, individuals' temporal orientation, which is essentially another name for Future Time Perspective (FTP), may influence the self-efficacy construct². I contend that temporal orientation or FTP, will moderate the impact of self-efficacy on preventive health behaviors. For future-oriented people or those with an extended FTP, self-efficacy beliefs will positively impact intentions and behavior, while for past-oriented people (or those with a short FTP) the impact will be negative, given that they do not anticipate long term benefits. This leads to my second response to another unexplored area in current research.

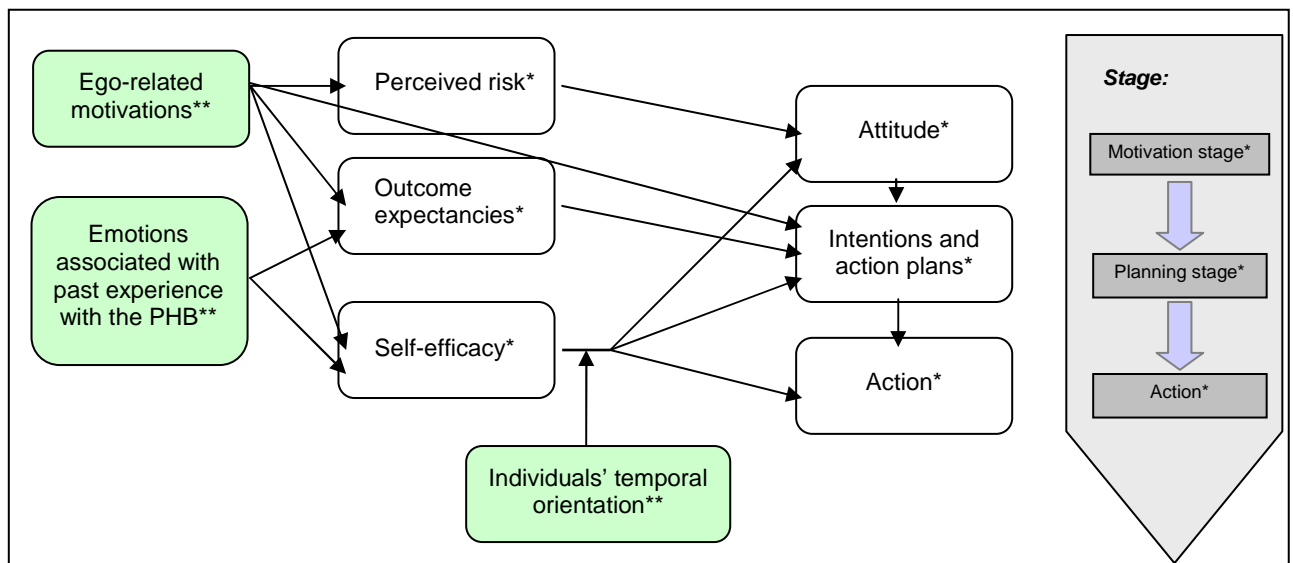
Even if individual characteristics may moderate the relationship between self-efficacy and preventive health behaviors, the third and final factor that merits further study is the *motivation* behind preventive behaviors. Ego-related motivations are those not directly related to health outcomes but that may be achieved through preventive health behaviors. Examples may include personal appearance or

¹ If we consider the example of regular exercise, the person having negative emotions associated with past exercise experience will probably expect to have continued negative outcomes from this target behavior.

² According to Bergadàa (1990) future-oriented people are more proactive, seek change and opportunities of personal development. Likewise, people with an extended FTP present the same characteristics (Zimbardo and Boyd, 1997; Keough, Zimbardo and Boyd, 1999; Simons and Lens, 2003).

group acceptance motivations. I assert that people develop preventive health behaviors motivated by non-health reasons. In addition, ego-related motivations may also influence outcome expectancies, and individuals following ego-related motivations may in turn reinforce positive consequences influencing preventive behavior. Furthermore, as stated earlier, ego-related motivations may directly impact the attitude towards a preventive behavior. In this case, preventive health behavior is motivated only by ego-related motivations that may short-cut cognitive processes and may directly assess attitudes towards the behavior, characterizing a spontaneous processing model (Fazio, 1990).

The following figure summarizes the hypothetical relationships.



* Aforementioned research; ** proposed research avenues.

Further exploratory research will allow us to verify the importance of the proposed variables with regards to the decision to engage in preventive health behaviors. This will be useful in identifying the main ego-related motivations that enable preventive behaviors. Finally, this research will review other significant individual characteristics whose relation to and impact on self efficacy and preventive behaviors have up until now not been revealed.

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