

## **Mediating role of empowerment in understanding preventive health behavior of consumers with chronic disease**

### **Abstract**

Towards a better understanding of the preventive health behavior (PHB) adoption of the consumer with chronic disease, this paper develops and test an integrative model following the mobilization of empowerment process. Quantitative data were collected from a sample of 553 consumers with type 2 diabetes. The results of the structural equations modeling analysis highlight the mediating role of empowerment in health behavioral approach taking into accounts the experiential, emotional and informational factors. The results offer a new conceptual structure to broaden theoretical and practical perspectives of marketing.

**Key-words:** Healthcare marketing, Preventive health behavior, Empowerment, Quantitative study, mediating effect, Model validation.

## INTRODUCTION

Resulting from the health promotion (WHO, 1986), empowerment is gaining a wide popularity in the health literature for individuals with disabilities to adopt healthy behavior (Gibson 1991, Feste and Anderson, 1995; Ben Ayed and El Aoud, 2017). Empowerment allows consumers suffering from illness the power appropriation following management of their threatening situations such as powerlessness feelings of vulnerability, perceived risk, and loss of control (Ben Ayed and El Aoud, 2017). This process of appropriation reflects recognizing, promoting and enhancing consumer's psychosocial skills in order to feel in control of their health behavior (Gibson, 1991; Ben Ayed and El Aoud, 2017).

Empowerment remains promising in the health marketing literature, allowing the consumer to voluntarily transform his health behavior manifested by an effective participation in the decision-making process and a greater control over actions on their health determinants (Crié and Chebat, 2013; Ben Ayed and El Aoud, 2017). Towards a better understanding of the health behavior adoption of the consumer with chronic disease, an attempt to mobilize empowerment in the PHB model is likely to offer a new conceptual structure to broaden theoretical and practical perspectives of marketing.

In the multidisciplinary literature, several researchers have studied empowerment linked to the adoption of health behavior (Feste and Anderson, 1995, Aujoulat et al., 2008; Tengland, 2016), but the efforts to mobilize this concept in a model and empirically test its impact on the preventive health behavior (PHB) components remain very low or even absent. This research attempts to fill this gap, and seeks to answer the following question: Does the predictive power of empowerment related to preventive health behavior adopted by consumers with chronic illness is validated?

As a result, the main objective of this research is to test a conceptual model in order to predict the health behavior of a consumer in chronic disease circumstances. The paper is organized as follows: a first part will present the conceptual framework and hypotheses of the research. Then, a second part, will describe the methodology of quantitative research administered to diabetic consumers. The results of the study will be proposed in a third part. Finally, discussion and list of limitations and future directions of research will be noted.

### 1. THE CONCEPTUAL FRAMEWORK AND HYPOTHESES

Towards a better understanding of the adoption and maintenance of the PHB, a confrontation of the literature review with a qualitative study results<sup>i</sup> was adopted. This confrontation helped to delineate the conceptual framework of research: empowerment, its antecedents and its consequences (see Figure 1).

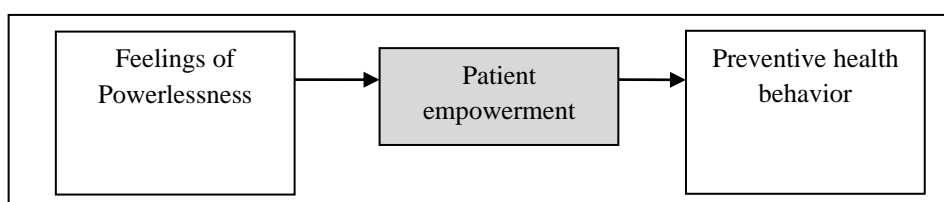


Figure 1: Preliminary model

#### 1.1. The antecedents of patient empowerment

##### *Negative emotions related to PE with PHB*

The feelings involved by consumers who fail to adopt and maintain a PHB over time are feelings of powerlessness (Chapman and Coups, 2006). Similarly, having repetitive failures related to the health behavior adoption will generate negative emotions related to past

experiences with PHB (e.g. worry, anxiety, loss of control,) which leads to an alienating situation (Werle, 2011; Ben Ayed and El Aoud, 2017).

In the literature, threat situations are sources of feelings of powerlessness (Aujoulat et al., 2007) such as feeling of insecurity (loss of control of the physical and relationship environment) and feeling of loss of identity (poor self-image, dissonance, conflict,).

This alienating situation can trigger the process of empowerment. Kieffer (1984) and Gibson (1991) agree that empowerment occur when an individual feels insecure and deprived of resources. In this situation, the consumer suffering from a chronic illness expresses negative emotions related to past experience with the health behaviors adoption. Thus we posit the following hypothesis:

H1a: Negative emotions with PE with the PHB is positively associated patient with empowerment

#### *Outcomes expectancies*

Based on the reflections of Werle (2011), the emotions associated with past experiences with the PHB can also influence outcomes expectancies of a preventive action. The individual will evaluate the results that they could obtain from the target behavior based on their past experiences and the emotions generated from their experiences. Werle (2011) suggests that there a negative relationship between negative emotions and outcomes expectancies, hence the following hypothesis:

H1b: Negative emotions with PE with the PHB is negatively associated with the outcomes expectancies

#### *Perceived risk*

The results of qualitative investigation have shown that negative experiences with the health behavior is related to a perception of risk (financial, functional and social) that refers to the perceived vulnerability to disease and barriers to behavioral functionality. Schaninger (1976) has shown, in the marketing context, that anxiety is positively correlated with the level of consumer perceived risk. Chaudhuri (1997) also stated that experienced negative emotions lead to greater perceived risk. According to the above, we posit that:

H1c: Negative emotions with PE with PHB are positively associated with the perceived risk

Outcomes expectancies can also be a result of an indirect influence of negative emotions following the perception of risk. However, it is important to note that a negative correlation between risk perceptions and attitude towards preventive behavior can be reproduced over time (Weinstein et al., 1998). It is indicated by the fact that if the individual still perceives that he is at risk although he has changed his behavior, he will be less likely motivated to maintain the behavioral change.

H2a: The perceived risk negatively influences the outcomes expectancies

H2b: The perceived risk negatively influences attitude towards a PHB

Thus, negative outcome expectations of the PHB present a factor that impairs the intention to commit to behavior (Schwarzer, 1992, Werle, 2011), while this factor is likely to influence both the patient's desire and ability to initiate an empowerment process (Kieffer, 1984, Gibson, 1991); we therefore make the following two hypotheses:

H3a: The negative outcomes expectations of the PHB positively influence patient empowerment.

H3b: The negative outcomes expectations of the PHB negatively influence the intention to adopt a PHB.

### *Perceived health information*

The marketing literature has shown that the consumer can be empowered when he is sufficiently informed about his illness, treatments and health choices (Shoham et al., 2012). The consumer's perception of health incentives (i.e. awareness campaign, health education, recommendation of a caregiver,) can be translated by an effort of collection, cognitive processing and exchange of health-knowledge information (Roth, 1994; Pires et al., 2006; Camerini et al., 2012). Thus we hypothesize that:

H2: Consumer perceived health information is positively associated with patient-empowerment

### *1.2. The patient empowerment dimensions*

Ben Ayed and ElAoud (2016) validated a three-dimensional measurement scale of the consumer/patient empowerment. Patient empowerment is a high-order construct composed of reflectively measured first-order factors: self-awareness, self-determination and self-efficacy. Patient empowerment is conceptualized also as a process (Gibson, 1991); therefore there are linear relationships between three dimensions. As a result, we can advance the following hypothesis:

H1 Patient empowerment is a second-order construct formed by three reflective dimensions that form a process: (a) self-awareness is positively associated with self-determination (b) self-determination is positively associated with self-efficacy

### *1.3. Outcomes of patient empowerment*

There is a positive relationship between patient empowerment and health behavior change (Tengland, 2016.). According to Werle (2011) the determinants of health behavior are: attitude towards the PHB, intention and action plan, and actions.

#### *Attitude towards the PHB*

In a literature review aimed at clarifying the concept of empowerment, Gibson (1991) identifies attitudinal indicators as cognitive outcomes of the empowerment process: have a sense of personal satisfaction, have a sense of internal control, security and consistency. These are supposed to be essential to have the desire for behavioral change. This concept represents a cognitive approach to health, since by developing motivation, self-confidence, and ability, the individual becomes better able to identify their own health needs (Mackintosh, 1995).

H4a: Patient empowerment is positively associated with attitude towards the PHB

#### *Behavioral intention*

Empowerment is an ongoing intentional process through which individuals with lack of valued resources gain wide/greater access to and control over those resources (Perkins and Zimmerman, 1995). When the person makes their choices based on their resources and skills, they will take action and the likelihood of doing so will be high (Hungerford and Volk, 1990). Empowerment is the power to transform choice into decision (Drolet, 1997, p.76)

Based on the above, we can advance the following hypothesis:

H4b: Patient empowerment is positively associated with intention and action plan of PHB

#### *Action and maintenance of the PHB*

Theoretical studies analysis confirms that implementation and increasing control of behavior change are relevant results of empowerment (Feste and Anderson, 1995; Anderson, 1996; Aujoulat et al., 2007, Tengland et al. 2012). This can be explained by that the behavioral approach of empowerment is an achievement a perceived control purpose: the person has a

sense of control over the action (internal control) and has the ability to act on and adapt to these actions (external control). Thus, we posit that:

H4c: Patient empowerment is positively associated with preventive action

Based on the studies of Fishbein and Ajzen (1975), Ajzen and Madden (1986) and Ajzen (1991), we can argue that attitude towards the PHB influences behavioral intention that it is also a better predictor of the desired preventive action. Thus, we posit that:

H5a: Attitude has a positive impact on the consumer's preventive intent

H5b: Intention has a positive impact on the preventive action of the consumer

H5c: Preventive action has a positive impact on behavioral adherence

On the basis of the results presented above, the conceptual model of the research is schematized as follows (see Figure 2).

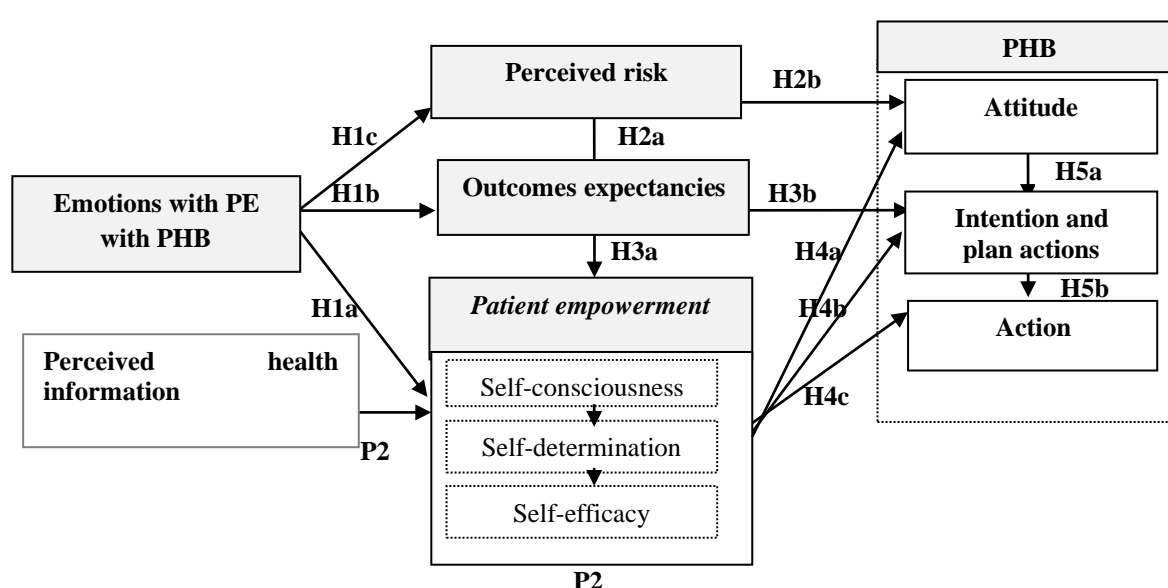


Figure 2: The conceptual model of research

## 2. RESEARCH METHOD

### Sample and data collection

A quantitative study on the preventive health behaviors (diet and physical exercise) of the chronically ill consumer was conducted to assess, firstly, the predictive power of the patient empowerment, and secondly, the relevance of mobilizing empowerment as a mediating concept in the PHB's theory.

The data were collected from 10 endocrinology-diabetology offices. These offices are receiving the target respondents: diabetics have at least one year's treatment experience, with different socio-demographic profiles which ensures unbiased data collection and reliability in testing causal relationships of the model.

The quantitative study was distributed using a convenience sample of 768 consumers/patients who experienced powerlessness situations in health behavior adoption. In addition to demographic data, the questionnaire included 46 questions to access the perceived health information, negative emotions related to PE with PHB, empowerment dimensions, perceived risk, outcomes expectancies and PHB components.

A pre-test was done on a conventional sample of diabetic patients (n = 30) to improve the structure of the questionnaire and estimate time of response which was at 15 minutes (see

Table 1). Finally, we collected 553 usable questionnaires, yielding a response rate of approximately 72 per cent.

**Table 1.** Structure of the final questionnaire

Topics	Designation
<b>Introduction</b>	- Presentation of the object of the study, instructions, definition of the PHB supported
<b>Filter question</b>	- List of PHBs adopted by patients.
<b>1. Your perception of health information</b>	- Collection, knowledge and sharing of health information.
<b>2. Your experience powerlessness situation</b>	- Emotions related to PE with PHB, - Perceived risk, - Outcomes expectancies.
<b>3. Your skills assessment</b>	- Patient Empowerment: - Self-consciousness, - Self-determination - Self-efficacy.
<b>4. Your current and future PHB adoption</b>	- Attitude towards the PHB, - Behavioral intention, - Behavioral action, - Maintenance of the PHB.
<b>Respondent identification</b>	Socio-demographic variables.

### *Measurement*

Theoretical constructs considered in the study were measured using scales adopted from the literature and qualitative research. So in order to fit our research setting, we first reviewed related previous research and secondly adopted measurement scales (1) either by using the same scale of measurement validated in previous research, (2) either by selectively combining items that have been used and validated in previous research and incorporating others from qualitative study, (3) either by developing a fully proposed scale from qualitative study (Table 2).

- *Consumer/ patient empowerment* was measured with the 12 items of the three-dimensional measurement scale adapted and validated by Ben Ayed and El Aoud (2016) regarding self-consciousness, self-determination and self-efficacy dimensions.

- Intention and planning actions was measured with two items from Conner and Norman (2005).

- *Negatives emotions with PE with PHB*: seven items for negative emotions related to PEs with PHBs are explored from the qualitative study. One item selected and adapted from previous research of Chapman and Coups, (2006). These items reflected loss of identity, loss of security, loss of control and anxiety experienced with PHB.

*Perceived risk*: six items of the measurement scale proposed by Jacoby and Kaplan (1972) consisting of six types of risk and four items were integrated from the qualitative study. Finally, a scale of 14 items with 6 dimensions (financial, performance, physical, psychological, social and global risk) has been proposed.

*Outcomes expectancies*: 4 items were adopted from the qualitative survey.

*Perceived health information*: 4 items adopted from the qualitative study.

The validity and reliability of the measurement scale are justified for all constructs.

All items were assessed on a five-point Likert scale, ranging from “totally disagree” to “totally agree”.

### 3. Research finding

The majority of respondents (62.9 per cent) were female, with age over 55 years (59.00 per cent), with a bachelor's or master's degree (75.8 per cent), who is retired person (26.3 per cent).

Results for structural model

The results of the structure model indicate a good quality of fit obtained following series of modifications is presented in the following table:

Table 2: Summary of the fit quality of the structure model

Indices	$\chi^2$ (ddl)	$\chi^2$ /dl	GFI	AGFI	RMR	RMSEA	TLI	NFI
Seuil d'acceptation	-	<2	> 0.9	> 0.9	< 0.05	< 0.05	> 0.9	> 0.9
M :	953.705	1.500	0.918	0.905	0.024	0.031	0.984	0.957

The results of the hypotheses test will be presented at three levels: the central hypothesis tests, the antecedent hypothesis tests and the consequence hypothesis tests.

Central hypothesis tests

The results reveal that the three dimensions contribute significantly to the prediction of the patient's empowerment (the standardized solution displays the coefficients 0.773, 0.603 and 0.528 respectively for the three variables: self-awareness, self-determination and self-efficacy). The weight of this participation differs from one component to another, the most important being self-efficacy with the highest R<sup>2</sup> (MSC) 0.619. The results also support the causal links between the empowerment dimensions (self-consciousness-self-determination, and self-determination-self-efficacy). The three dimensions participate in the explanation of the empowerment-process. We interpret that the causal link between the self-determination and the self-efficacy is twice as strong as that between self-awareness and self-determination.

Tests of the antecedent hypothesis

We have advanced the hypotheses that negative emotions positively influence patient empowerment (H1a), negatively the expected results (H1b) and positively perceived risk (H1c).

The non-standardized solution of the effect of negative emotions related to situations of powerlessness in triggering the process of empowerment, displays a significant value H1a ( $\gamma_{1.2} = 0.621$ ,  $es = 0.160$ ,  $t = 4.070$ ,  $p = 0.000$ ) who says that the more the individual has lived negative emotions related to his preventive experiences, more he is empowered. These negative emotions are strongly generated by feelings of loss of control ( $\lambda_2 = 0.943$ ).

The influence of negative emotions on the negative outcomes expectancies was tested by illustrating a positive and significant link, H1b ( $\gamma_{2.2} = 0.976$ ,  $t = 6.309$ ,  $p = 0.000$ ).

Perceived risk is a three-dimensional factor (financial/time risk, functional risk and social risk). The significance of this hypothesis H1c is inspected respectively on the basis of the three links (H1c1, H1c2, H1c3). The results show, on the one hand, the non-significance of the performance risk, which has a zero explained variance, and therefore the non-significance of its causal link with negative emotions ( $\gamma_{3.2}$ ,  $2 = 0.069$ ,  $t = 0.394$ ,  $p = 0.694$ ). Thus, we can postulate the rejection of hypothesis H1c2. On the other hand, we value the significance of the link with the financial / time risk: ( $\gamma_{3.1}$ ,  $2 = 0.568$ ,  $es = 0.173$ ,  $t = 3.281$ ,  $p = 0.001$ ) and that of the link with social risk: ( $\gamma_{3.3}$ ,  $2 = 0.452$ ,  $es = 0.192$ ,  $t = 2.358$ ,  $p = 0.018$ ).

In accordance with the theoretical approach, the two significant causal effects between negative emotions and the perception of risk (H1c1 and H1c3) are supported: the more the consumer generates negative emotions, the more he will tend to perceive the financial/time risk and social risk.

In summary, the test of direct relation of negative emotions to perceived risk partially supports hypothesis H1c.

#### Influence of perceived risk (H2)

The influence of perceived risk refers to the study of the perceived risk-outcome expectancies link (H2a) and the perceived risk-attitude toward the PHB link (H2b) (see Figure 2).

The results show, on the one hand, the significance of the two causal links: the financial risk on the outcome expectancies H2a1 ( $\beta_2, 3.1 = 0.135$ , e.s. = 0.037,  $t = 3.194$ ,  $p = 0.001$ ), and the social risk on the outcome expectancies H2a3 ( $\beta_2, 3.3 = 0.187$ , e.s. = 0.032,  $t = 0.578$ ,  $p = 0.000$ ); and on the other hand, the non-significance of the link between the performance risk and the outcome expectancies H2a2 ( $\beta_2, 3.2 = 0.000$ ). These results partially support the hypothesis (H2a).

The hypothesis (H2b) postulates that perception of perceived risk negatively influences attitudes towards the PHB.

The test of the perceived risk-attitude relationship asserts a weak negative effect of hypothesis H2b3 ( $\beta_4, 3.3 = -0.083$ , e.s. = 0.036,  $t = -2.233$ ,  $p = 0.026$ ). This link indicates that social risk perception negatively influences attitude. Hypothesis H2b3 is accepted.

As for the two other links: H2b2 is zero while H2b1 is positive although it is significant ( $\beta_4, 3.1 = 0.145$ , e.s. = 0.042,  $t = 3.466$ ,  $p = 0.001$ ). In other words, the financial risk does not negatively affect the attitude towards the PHB. Therefore, hypothesis H2b is partially accepted.

#### Influence of outcome expectancies (H3)

The results show that, consistent with previous research, the outcome expectancies have a positive and significant effect on patient empowerment ( $\beta_1, 2 = 0.201$ , e.s. = 0.046,  $t = 4.328$ ,  $p = 0.000$ ). The variance explained is strong. This supports the hypothesis H3a. We hypothesized that PHB outcome expectations negatively influence behavioral intention. The test of this non-significant link ( $\beta_5, 2 = 0.033$ , e.s. = 0.034,  $t = 0.962$ ,  $p = 0.036$ ) does not support this hypothesis. As a result of this structural link, H3b is rejected.

##### • Test of perceived health information

The analyzes show that the regression link between health information and empowerment, displaying a value ( $\gamma_{1.1} = 0.527$ ,  $t = 6.889$ ,  $p = 0.000$ ), is significant. In light of these findings, the proposed (P2) that postulates that perceived health information has a positive influence on patient empowerment is validated.

#### 3.3. Tests of hypotheses consequences: H4, H5 and P3

Hypothesis H4, which assumes that empowerment has a positive influence on attitude, intention and action, is fully accepted: in terms of the results, a significant causal relationship ( $\beta_4, 1 = 0.268$ , es = 0.064,  $t = 3.921$ ,  $p = 0.000$ ) is observed between empowerment and attitude, which validates hypothesis H4a. It should also be emphasized that there is a significant relationship ( $\beta_5, 1 = 0.215$ , es = 0.048,  $t = 3.884$ ,  $p = 0.000$ ) between empowerment and intention that confirms the hypothesis H4b and a positive and significant effect on the behavioral action ( $\beta_6, 1 = 0.230$ , es = 0.051,  $t = 4.306$ ,  $p = 0.000$ ) which certifies that hypothesis H4c is validated.

With regard to the mediating effects of empowerment on preventive action, the results confirm the significance of the indirect effects respectively for the following three



independent variables: negative emotion (0.343), health perceived information (0.179) and perceived risk (0.024 and 0.010).

In sum, the results of empowerment on the three PHB determinants attest to the significance of the mediating role of empowerment between its antecedents (negative emotions and perceived health information) and the determinant of the PHB.

The results support the positive and significant linearity links between the components of the PHB according to the literature review. As a result, we validate the hypotheses H5a and H5b.

Empowerment has a direct, positive and significant influence on the adherence ( $\beta_7$ ,  $t = 0.638$ ). Compared with its effects on the components of the PHB, this concept has significant direct effects on attitude ( $\beta_4$ ,  $t = 0.268$ ), intention ( $\beta_5$ ,  $t = 0.215$ ) and action ( $\beta_6$ ,  $t = 0.230$ ), but much less important than on the adherence.

The results show, moreover, that the direct impact of empowerment on the adherence is higher than the indirect one in the presence of the three mediating variables. We attest that the indirect effect of empowerment on behavioral adherence is more accentuated by simple mediation via preventive action.

## **Discussion and conclusion**

A discussion of the results makes it possible to evaluate the predictive power of empowerment following its mobilization in the behavioral approach.

Firstly, it should be mentioned that empowerment is a dynamic process, not a static concept, linked to an experience in a particular context (chronic illness). In these circumstances, empowerment is understood as a process of awareness and identity transformation at the end of which the consumer/patient is more balanced in a situation initially perceived as threatening.

Taking into account the dynamics of empowerment-process brings a significant light on the prediction of the PHB:

First, and in relation to the results of empowerment-process, we focus our discussion on the effect of negative emotions related to the experience on the empowerment dimensions (i.e. self-consciousness, the self-determination and self-efficacy).

By further studying the indirect effects of emotion on these dimensions, through simple mediation of empowerment, we find that the triggering of empowerment-process is carried out from the moment the consumer/patient becomes aware that he is threatened. The effect of emotion on awareness is the most significant ( $\lambda C2 = 0.170 > \lambda D2 = 0.115 > \lambda E2 = 0.103$ ). We can announce that empowerment-process is initially determined by the awareness of the individual of the situation he is living. This result is consistent with the comments of Gibson (1991) who states that in order to respond to a feeling of threat; the individual provokes a confrontation with his environment that announces the initiation of the empowerment process. Nevertheless, according to the results of this research, the perceived risk exerts a negligible influence on the attitude which leads to a weak influence on the behavioral change. Similarly, the effect of negative outcomes expectancies on behavioral change is entirely governed by patient empowerment, while there is no independent (direct) effect on the PHB.

Secondly, the results most associated with the empowerment-process have been linked to the dimension of the PHB, which include the change of the attitude towards the PHB, the behavioral intention, the preventive action as well as the sustainability of the PHB. The research results show that empowerment has a positive and significant influence on each of these components. It is not surprising to see similar effects on the components of the PHB, but what is unexpected is the importance of the link on the adherence to the PHB.

Third and following the study of the antecedent role of perceived health information in relation to empowerment and its consequences, the results show that the higher the level of perceived health information, the more empowerment is explained and therefore positively

influences health outcomes. The results of the additional analyzes indicate that this cognitive variable (i.e. health information) has a positive influence on the three components of empowerment and that its effect on self-awareness is greater compared to the other two dimensions ( $\lambda_{C2} = 0.159 > \lambda_{D2} = 0.108 > \lambda_{E2} = 0.097$ ). So, we can confirm that consumers/patients who receive health information are more likely to be aware of their health status.

As a result, the study of the effect of empowerment, as a variable mediation, on health behavior proves the health-related behaviors adoption should not be performed as long as the feelings of anxiety and not managed by the consumer.

Thus, it is justified following the results, that the perceived risk and the outcome expectancies record significant effects on the health behavior only through their mediation by the concept empowerment (see Figure 3). In the absence of this mediating path, the direct effect of the perceived risk on the attitude towards the PHB was negligible and even positive. The same is justified for outcome expectations, having a direct and non-significant effect on behavioral intention.

Second, it should also be mentioned that the results of the factor analysis on the antecedents of empowerment highlight the dominating weight of the cognitive treatment of health information in situations of powerlessness (negative emotions, perceived risk, expectations of negative results,).

### **Managerial implications**

The integrative model proposed in this research is a conceptual response to needs of the consumers unable to adopt and maintain a PHB. This research offers a better estimate of the psychosocial determinants associated with chronic circumstances, which greatly contribute to increasing the capacity of the consumer/ patient. These determinants remain marginalized in the theoretical models, while they really centralize the power of predicting the health behavior of consumers with chronic diseases.

The conceptual model validations propose a variety of managerial recommendations for marketers and actors in the health field.

Public and regulatory restrictions and reforms are needed in the health context. At this level, there is a need to rethink the public strategy to integrate prevention into a more global approach to promoting public health.

Relevant strategies to increase the power appropriation of people with chronic disease and their ability to participate in healthy behaviors can be developed. These strategies called "empowerment marketing strategies of consumers/patients" should increase self-awareness, exchange new health information, manage the negative emotions, promote solutions for past experiences, and mobilize the internal and external resources of the consumer according to the situation.

One of the major barriers to successful health interventions is the poor understanding or translating of the theory into relevant marketing actions. Health professionals should taking into account the phases of the theory and adapt the health action to the stage at which the consumer/patient is located. As an example for health communication, health information in the form of rational arguments (e.g. real statistics that value positive experiences) can be effectively addressed to patients who have succeeded in achieving their internal coherence, having a balance between their cognitions and their emotions and involved in health decisions, however this same message may be ineffective when it is addressed to the patient who has not managed to manage the emotions related to his experiences.

In conclusion, empowerment is described as a balance of dynamic interaction between internal and external stimuli (information, emotion, perceived risk) and gains in terms of internal competence and control (self-awareness, autonomy, self-efficacy, self-control,)

Some limitations should however be rose. A first limitation concerns the absence of socio-demographic variables in our model that can lead to differences in the relations tested. Future research can deepen this study by introducing some socio-demographic characteristics.

A second limitation is that the capacity and desire of the patient to adopt a process of empowerment can vary according to the type of chronic disease (obesity, cancer, hypertension,), the type of PHB (vaccination influenza, screening,) and the stage of the disease (Aujoulat et al., 2007). Possible research may cover other types of chronic diseases, namely obesity, hypertension, cancer, etc.

A third limitation is related to the cultural context that may bias the external validity of this research. Future research can determine the extent to which the incorporation of cultural values explains the influence of empowerment on health decisions in a group with chronic diseases.

In conclusion, the study revealed new drivers of the process of change and behavioral maintenance; namely the causal dynamics of the empowerment process, the association of emotional and cognitive flows for a better stimulation of empowerment, the strong direct influence of empowerment on behavioral adherence and the empirical validation of the effect mediator of empowerment on behavioral variables; thus reinforcing the predictive power of this concept of chronic disease prevention behavior.

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<sup>i</sup> An exploratory study on the experience of health behaviors (exercise and physical exercise) was conducted among 29 consumers with type 2 diabetes.