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A Model of Autonomous Physical Health Management:

Exploratory Study

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Abstract:

This exploratory study focuses on autonomous physical health management among seniors, a growing market for health products. We identified three types of behavior: (1) toward information, (2) health therapies or health care, and (3) health preservation. In order to understand the underlying attitude structure of these behaviors, we recommend a three-dimension health attitude path (cognition, conation and affect) measured with five points Lickert scale. With respect to alternative and conventional health behaviors, our results show that people in our sample are seeking autonomy and do not turn toward alternative medicines because they reject conventional medicines, but rather because it is a means to gain control over their own physical health management.

Key words: physical health, health management, health behavior, alternative medicines, alternative care, autonomous care, seniors, online research
1 INTRODUCTION

In Western society, the body is glorified and the way it is perceived by an individual changes the way he relates to himself and others (Serres, 1999). Consequently, the desire to maximize the wellbeing in one’s life in order to strive to a form of immortality, has led to an increase in sales of health products; the effectiveness of which has not always been scientifically demonstrated (eg. DHEA, Glucosamine, Chondoitin or Melatonin, etc.). In addition, people tend to engage into healthier lifestyles and change their consumption habits. The health market evolves rapidly and allows to foresee the emergence of a new health consumer, one that becomes a producer of his own health and wellbeing, not merely a medication and a treatment consumer (Mermet, 1997). This active behavior concerns both the person suffering from serious health conditions, and the person who wishes to preserve and enhance his health or prevent the appearance of an illness. This research explores the underlying health attitude structure a person has toward his own physical health.

More than a century of progress and economic growth, an increase in the average level of education, and a general improvement of living standards has led to the emergence of individuals with greater ability to determine autonomously the way they act. Thus, a new customer has appeared, a partner of the company and part of the production process (Rochefort, 1997). This social actor learns to live with new communicational and commercial paradigms (de Rosnay, 1998), and his access to information continually increases his awareness (Mermet, 1997; Tixier et Pras, 1995). Furthermore, the worldwide expansion of Internet could lead to a major change in the social aspects of knowledge (Serres, 1997). These changes lead to the emergence of an individual who is producing the meaning he gives to his own consumption. In the course of our study, we will analyze the relation between the health producing customer, and the health specialists and health information sources.
In addition to these changes in attitude, a major demographic trend is influencing the market. Switzerland's population, like that of many other Western countries, is aging. The number of persons aged sixty-four and above has more than doubled since 1950, and that of eighty and above more than quadrupled. For instance, in Switzerland, from 13.9% in 1981, the proportion of people aged fifty and above has reached 15.3% in 1999 and might reach 25.9% in 2037 (OFS, 2000). This aging is due to the increase of life expectancy (Switzerland 1998: Women 82.5 years; Men 76.5 years) and to the decrease of the fertility rate (OFS, 1998). According to current demographic forecasts, in 2020, on average, a sixty year old man will still have twenty-three years to live, and a woman twenty-nine years (Filser, 2001). Most of those that will contribute to this growing segment were born during the baby-boom that began in 1947. They have increased spending power, more free time, an eagerness to discover (travel, culture, sports, etc.), are in good physical condition, and more confident and in control than past generations (Shiffman and Sherman, 1991). Since these elements lead us to believe that they are more prone to be in charge of their own health, we will focus our study on this segment.

In this exploratory study we describe how people develop specific attitudes toward their health. We have chosen the seniors, a population supposed more engaged toward their health. After having pretested a health attitude scale, we verified the existence of some antecedent variables found in the literature. We also examined the influence of these attitudes on three different sets of actions; actions concerning health preservation, treatments and information. This article ends by recommending some research paths based on this model.

2 FROM PUBLIC TO PRIVATE HEALTH
In almost thirty years of existence, social marketing has developed a set of methods used to cause social changes and progress, and specifically in the field of health (Kotler and Zaltman, 1971). Therefore, health marketing develops its own legitimacy, since progress in society
means changing permanently behaviors deeply embedded into culture, politics and the global economy, all this in a situation of limited resources (Lefebre, Flora, 1988, 1996). Nonetheless, confronted by this health policy, changes have occurred. These transformations concern as well the demographic structure (age pyramid, increased life expectancy, etc.), as some central aspects of social organization (duration and flexibility of work, communication means, etc.).

These elements combined with the increase of the general level of education and living standards, has led to the emergence of people able to autonomously choose their consumption habits. In this case, individuals are not anymore understood as consumers versus producers. They have become producers themselves through the continuous use of goods and services, as said, for example, Firat and Venkatesh (1995). These postmodernist authors reject the idea of a company creating value and a consumer destructor of this value. In a classical perspective, pharmaceutical laboratories are the creators of medical drugs, brought to the market through doctors and pharmacists, and the patient the destructor. The alternative is that consumers are co-producers of their health and take an actual part to the production process. 

*Our first research theme will examine the idea of an active and co-producing consumer.*

From a strictly economic standpoint, health expenses are dramatically increasing. This is due, among other things, to an increase in consumption of health care services and medications resulting from increased prevention, specialization and technical improvements, more comfort and extended medical services (OFS, 2000). Moreover, the desire to preserve the body has become a central concern for more people. This fact has led to some major changes in the way these consumers behave. For instance, decrease in alcohol and tobacco consumption, well-balanced diets, exercising, have all become essential priorities to these consumers.
In addition, the alternative care market is clearly expanding with the development of the *empowerment* concept in healthcare (Roth, 1994; Vernarec, 1999). This shift toward alternative medicines might be the result of the better personal attention given by these medicines and practitioners to the patient and his desires; unlike conventional medicines that are applied through scientists and medical doctors (Jonas, 2001). Thus, it is the patient who wishes to gain access to an actual alternative, independently from the conventional medical infrastructure. This trend to rely on alternative medical practices and therapies apparently concerns every segment of the population independent of age (Rebitzer, 2000). **Our second research topic should analyze this behavior concerning alternative medical practices and conventional medicines.**

Gould (1988) studied different aspects of health behavior with his Health Consciousness Scales (HCS). This scale measures attention, consciousness, and engagement toward health; according to his research this HCS can reasonably well predict a person's health behavior. His hypothesis is that "individuals who are more health conscious will be more evaluative and aware of scientific health information, will have more open attitudes toward unorthodox health care alternatives, will be more skeptical of established medical authority, and will be more preventative in outlook than those who are less health conscious.” Nonetheless, traditional marketing offers other explicatory factors to health behavior. For instance, traditional propositions of reasoned action based on the ends/means did suggest that the cognitive dimension is central (Ajzen and Fishbein, 1980). In addition, supporters of postmodernism believe that the individual is guided by emotion and a need for new experiences, rather than by reason (Firat and Venkatesh, 1993; Cova and Badot, 1995). **Therefore our third research topic will be about the multiple dimensions of attitude toward**
health, and on a potential discrimination of three dimensions, affect, cognition and conation.

Nowadays, a central question concerns the coexistence of relational and transactional paradigms. Indeed, most companies cannot anymore limit themselves to traditional mass communication based on simplistic market segmentation, but must respond to their customer's demands and characteristics (Colgate and Danaher, 2000; Berry, 1995). It is not about ideology, but about restoring permanently and with clarity an effective commercial relationship (Marion 1999). In our case, if the consumer is also a producer of his own health, it is imperative that the intermediaries, such as medical doctors and pharmacists, fully understand the relevance of relational marketing. Confronted by consumers that have chosen to engage in such an active health behavior, health intermediaries should develop a proactive relational marketing attitude. They could put into perspective the entire spectrum of available medical options: access to specialists, different therapies, and diagnoses and analysis means (Troy, 1997; Eder, 1997). These health specialists could also better integrate the consumer's information needs, personal health condition and means to determine that condition. (cf. Drug Store News, 1999). Nonetheless, to our knowledge, no comprehensive study has yet been published concerning the different ways this consumer as a co-producer of health takes action.

Our fourth research theme will concern three different types of actions available to our customer: a) Toward his own health, b) toward therapies and health care, c) toward different information sources.

Not many causes have been associated with specific health related behaviors (Moorman and Maturlich, 1993). Most studies have focused on distinct dependent variables, such as treatment of nutritional information (Russo and al., 1986) and patient satisfaction (Friedman and Churchill, 1987), or on an independent variable, such as age (Cole and Gaeth, 1990),
social class (Geld and Gilly, 1979), or health beliefs (Hayes and Ross, 1987). In most cases, research focuses on Health Behavior before the emergence of pathology (Steptoe and Wardle, 2001; Norman, 1994; Hayes and Ross, 1987). Some of these studies also limited themselves to emotions associated to these behaviors, like fear, pleasure or risk (Birkimer and Bledsoe, 1996, 1999). Other exhaustive research articles involve different variables and study their combined role such as intellectual abilities, locus of control, age, education and knowledge (Kenkel, 1991), income and health motivation (Oliver and Berger, 1979; Moorman and Maturlich, 1993). In view of these studies, our fifth and last research theme will be the exploration of the influence of potential antecedent variables on attitude toward health.

3 METHOD

3.1 CONCEPTION OF THE SURVEY
Our objective is to study the current trend toward empowerment in the health sector. We will focus our attention on the person who tries to maintain his health status before the occurrence of pathological symptoms. In order to grasp the different dimensions of attitude concerning health, and health behaviors, we conducted a series of qualitative interviews with specialists in the pharmaceutical sector. After these surveys, we pretested a questionnaire.

Health attitude scale: After a first refining of the scale in line with the Churchill paradigm (1979), we selected eleven items, four for the cognitive (from the initial HCS scale) and conative dimensions and four for the affective dimension (One was finally rejected after the first test). For instance, items for cognition are: "I am very conscious about my health"; for affect: "When we feel bad, we are not happy"; for conation: "To remain in good health, one has to change his living habits". We rated the items on a 0-to-4 Fully Disagree- Fully Agree response scale.

Antecedent variables: Selected variables were supposed to influence health behavior and thus have a potential effect on attitude toward health.
- **Age**: Actions based on the desire to maintain an optimal physical appearance and health status are mainly concerning younger persons and women (Hayes and Ross, 1987). In addition, a negative relation between age and ability to assimilate information has been established (Cole and Gaeth, 1990).

- **Gender**: Besides being more concerned with their appearance and health (Hayes and Ross, 1987), women also have a tendency to be more adventurous in their consumer behavior and have a better knowledge of the market; this is also true among seniors (Sherman, Shiffman and Mathur, 2001).

- **Income**: Persons with a modest income tend to be less concerned with health related activities, such as information gathering (Moorman and Matulich 1993; Stewart-Allen, 1997).

- **Education**: Generally, persons with higher education tend to have healthier life habits because they have a better understanding of the link between their behaviors and the consequences on health (Kenkel, 1991). Moreover, educated persons are more critical about conventional medicine (Gould, 1988).

- **Subjective health status**: A healthy person or one who believes himself to be in a healthy condition has a greater tendency to preserve his health (Moorman and Matulich, 1993). On the other hand, a sick person (or one who thinks he/she is) would make greater use of conventional treatments and doctors, but would also be more knowledgeable about medical issues (Gould, 1988).

- **Locus of control**: We introduced a control variable to verify if a positive or negative attitude toward health could be linked to a feeling of being in control of one’s own life. Therefore, we measured the LOC with an adapted four item scale (Rotter and Murlay, 1965)

*Dependent variables*: These concern the different health behaviors; we identified these behaviors through our preliminary interviews with health professionals. Three behavior categories were identified and introduced in our questionnaire.
- Health preservation behaviors were measured with questions such as: "I regularly have medical checkups", "When I am ill I wait until it goes away", "I take nutritional supplements", "I am careful with my diet".

- Behavior toward alternative medicines was measured with questions in the style of: "I am committed to conventional medicine" or "I use alternative medicines in complement to conventional medicine". By alternative medicines we mean, medical practices other than conventional medicine such as oriental medicines, natural care, homeopathy, acupuncture, holistic medicine, etc.

- Different information sources were identified: books, professional medical magazines, medical doctors, pharmacists, etc. These sources were either presented directly to the respondents or through questions such as: "I discuss about my health with friends", "I compare opinions from different doctors", etc.

3.2 Data collecting

We supposed that the Internet gathers together a specific category of seniors: innovative, open, curious, looking for new experiences (McMellon, Shiffman et Sherman, 1997; Bergadaà and Hebali, 2001). However, most health oriented websites discuss chronic diseases which largely concern seniors, but not the type we wish to reach. In addition, new projects, like the Senior Support On-Line in the USA, intend to establish a permanent connection between seniors and medical services through Internet terminals (Morrison, 2002).

We did not rely on such specialized websites to collect Emails, but rather, on general-interest websites for seniors: Seniorweb (Switzerland) and Poivre et sel (Quebec). These sites are much more representative of the segment we are trying to reach.

To collect the data we used a process similar to that of Aragon, Bertrand, Cabanel and Le Grand (2000). After selecting proper email addresses, we contacted the persons by email and included in the message the URL of the online HTML questionnaire (made with FrontPage
2000). The answers were then archived on our database in the format of an Access 2000 file. With 1100 Emails sent, 1009 did not bounce back; our response rate was 20.01% and 172 questionnaires were ready to be analyzed.

4 RESULTS

4.1 SAMPLE CHARACTERISTICS
The final sample (N=172) sample was composed of 39.5% were men, 60.5% women; 69.8% were retired; 75% had an income they consider to be average or above; 45.9% have a high school diploma and 38.4% have a university degree or equivalent. In addition, 69% declared being in good or very good health and 5.6% consider their health to be bad or very bad. Finally, 39% are from Quebec and 61% from Switzerland. With respect to age, 10% 51-55, 26% 56-60, 20% 61-65, 19% 66-70, 19% 71-75, 5% 76-80 and 2% 81-85.

4.2 AUTONOMY
Our first and second research questions relate to the autonomy individuals have toward their health. The analysis shows that 72.2% of the persons say that they treat themselves autonomously with conventional medicines, yet 78.7% still go to their doctor on a regular basis. In addition, alternative medicines are widely used. Indeed, 24.8% affirm going to a specialist in alternative medicine, 86.4% use alternative treatments or drugs and 13% replace most of the time conventional with alternative medicine. Apparently, being autonomous or using alternative medicines does not exclude going to a doctor.

To support this idea, we created two clusters based on the behavior toward alternative and conventional medicines. Both clusters had strong scores concerning conventional medicine, but their scores concerning alternative medicines were opposed. We had one cluster of strong supporters of alternative medicines (n=88) and another of strong detractors (n=64), but no one rejected conventional medicines (n.b. there were twenty missing values)
We verified whether this behavior was linked in some way to health status; but we found no significant link. Finally, as we shall see, we also did not find anything significant between health attitude and LOC. Therefore, a person becomes active toward his health, nor because he wishes to use one therapy instead of another, nor because he decides to take his destiny in charge.

At this point, we can suggest that an individual's autonomous health behavior is not triggered by his health status or because he believes he has some form of control over his destiny. Rejection of society through a refusal of conventional medicine is not either an explanation to this behavior. We suggest that we are simply witnessing an expression of this consumer who is also a producer. In light of these results we can also recommend that alternative medicines wouldn't be named "alternative" anymore since few people turn to it in rejection to conventional medical practices, treatments and medications. More than half the people surveyed remain deeply attached to conventional medicines, but in parallel also rely on other offers. Alternative medicines could be one of the only options available to actually feel like a creator of his health, and not depending solely from conventional health producers.

4.3 Attitudes Toward Health

Our third research question concerns the understanding of the different attitudes developed toward health. The 11 items of the cognitive scale (available upon request) were subjected to principal components analysis (PCA) using SPSS (version 11). Prior to performing PCA, the suitability of data factor analysis was assessed. Inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and above. The Kaiser-Meyer-Oklin value was 0.787, exceeding the recommended value of 0.6 and the Barlett’s Test of Sphericity reached statistical significance, supporting the factorability of the correlation matrix. Principal components analysis with Varimax rotation revealed the presence of three components with eigenvalues exceeding 1: Cognitive dimension (29.25 % variance explained), Conative
dimension (21.65 % variance explained), Affective dimension (16.12 % variance explained).
The three-factor solution explained 67.02 % of total variance. The results of this analysis support the use of the affect cognition, and conation items as separate scales.

We evaluated the internal consistency of each scale. Cronbach alphas were respectively, 0.87, 0.71 and 0.55 for cognitive, conative and affective scales.

Taking into consideration these results, we can suggest that attitude toward health has multiple dimensions, which is in line with the traditional propositions of marketing. That is to say that behavior is to be understood as a reaction to external stimuli, reasoned action and linked to the emotional and affective dimensions. We can thus analyze the respective influences of these dimensions on the general behavior of individuals.

4.4 Health behavior

The fourth research theme concern three different types of health behaviors: Toward health, toward therapies and health care, and toward different information sources.

- **Health preservation:** As for health habits, significant score differences exist between persons declaring engaging in the described activity and those who do not. Significant differences were noted in the use of food supplements regular and alternative, cautious eating habits, careful living habits (management of stress, sleep, workload, etc.) and a careful consumption of alcohol. For the first three items differences in scores were noted for the cognitive (Δ = 0.35, t-test sig. 0.018; Δ = 0.39 t-test sig. 0.024; Δ = 0.87, t-test sig. 0.002) and the conative (Δ = 0.22, t-test sig. 0.013; Δ = 0.31 t-test sig. 0.003; Δ = 0.72 t-test sig. 0.026) dimensions. For these items, people engaging in such health behaviors tend to have higher scores than those who do not. In the case of life habits, only the cognitive dimension had a higher score (Δ = 0.74, t-test sig. 0.001); as for tobacco use only conation scores differ (Δ = 0.29, t-test sig. 0.016); concerning alcohol consumption, the conative score was higher (Δ =
0.32, t-test sig. 0.014), but the affect score was lower (Δ = -0.43, t-test sig. 0.025). Nothing significant was revealed concerning exercising.

- Health therapies and health care: The results show that affect has little or no effect on health behavior, except for the initiative to take action in case of "feel ill". In this last case people with high affect scores tend to be more active when they (r = -0.211, sig. 0.006). Other health behaviors correlate significantly only with the cognitive and/or conative dimensions. Cognition and Conation influence positively the tendency to perform check ups (r = 0.405, sig. 0.0005; r = 0.197, sig. 0.010), to use alternative medicines (r = 0.206, sig. 0.009; r = 0.224, sig. 0.004), to replace conventional medicines with their alternative counterparts (r = 0.176, sig. 0.023; r = 0.227, sig.0.003) and, negatively, to take action in case of "feeling bad" (r = -0.271, sig. 0.0005; r = -0.170, sig. 0.029). We noticed correlations with only one dimension in the case of use of unconventional medicines as a complement, which only slightly correlates with conation (r = 0.173, sig. 0.026). Finally, no correlation with the tendency to use conventional medicines was found.

Toward information: Since information is a central aspect of medical empowerment, it is related to the degree a person is involved into autonomous health management. The survey, revealed a high information search rate, only 4% of respondents declared not to be seeking medical information on their own. In addition, 68% declared to be unsatisfied with the amount of information they have. Finally, 72.2% compare opinions from different medical doctors, a fact that shows their critical mind.

The tendency to search health related information, correlates with cognition (r = 0.219, sig. 0.004). We noticed positive differences in scores in the use of medical literature, television and the consultation of a specialist in alternative medicines. Those who make use of medical literature and alternative specialists have higher cognitive scores (Δ=0.37 t-test sig. 0.016; Δ=0.35 t-test sig. 0.038) and conative (Δ= 0.24 t-test sig.0.014; Δ= 0.29 t-test sig. 0.002), but
no difference was noticed on the affect scale. In the case of use of television as a source of medical information, we observed only a significant difference on the conative scale ($\Delta=0.2$ t-test sig. 0.045). We did not notice anything significant regarding Internet, mainstream magazines, support groups, medical doctors, chemists, friends and advertisement.

At this point we can suggest that, ideally, the medical world should support the patient to co-produce his health, and not ignore this need for information and autonomous action. For instance, risks associated with the use of alternative medicines are not widely known or taken into consideration (Silverstein, Spiegel, 2001). It is thus necessary to be aware of these needs that do not depend on emotion but on cognition and conation.

4.5 ANTECEDENT VARIABLES
The fifth research theme aimed at exploring the influence of potential antecedent variables on health attitudes. Each of the three dimensions identified above was turned into one single score by summing each item's score and dividing the total by the number of items. The final score varied from 0 to 4. The following observations were made:

- The usual demographic variables such as age, income, education did not show any significant relation to any of the three dimensions.
- The average score of women on the conation dimension tended to be higher than that of men. The average was respectively 2.21 for women and 1.90 for men (t-test sig. 0.031; u-test sig. 0.023).
- We noticed a significant difference between Canadians and Swiss on the cognitive scale; their average cognitive score was respectively 2.74 and 2.20 (t-test and u-test sig. 0.005).
- Subjective health did not show any correlation with cognition and conation, but only a negative correlation with affect ($r = -0.243$, sig. 0.001).
- Finally, LOC did not correlate either with cognition or conation, only very slightly and negatively with affect ($r = -0.174$, sig. 0.022)
In view of these results, we would propose to test other antecedent variables. For instance, since health co-production by consumers is part of their life project, attitudes toward projects or the future could be evaluated in light of these attitudes. Furthermore, differences between Canadian and Swiss seem to indicate that the social and cultural environments play a role. It might thus be useful to extend this study to other countries and regions in order to understand this cultural influence on health attitudes and behaviors.

5 CONCLUSION
To conclude we would like to complete this exploratory study by pointing to some further research paths.

First, research on health behavior is not very developed, especially in marketing. Most studies have focused on a limited number of independent variables or on some determined behaviors such as exercising, eating habits, intake of food supplements, use of a safety belt, etc. Furthermore, to our knowledge, no comprehensive study on autonomous health behavior has been conducted. Nonetheless, we managed to identify in the literature a series of factors and variables, such as gender, age or income, which had been identified by different authors as influencing directly or indirectly this behavior. Our exploratory research tried to go beyond these limitations, but there is still a strong need to develop comprehensive models based on these previous studies in order to understand the respective influence of these variables and their interactions.

Secondly, as we already pointed out, health management is not anymore thought in terms of good versus bad health (Gould, 1988), but as a continuum. This change affects different types of behaviors that also depend on a person's objective health status: Health behavior, Illness behavior, Sick-role behavior, Impaired-role behavior (Kihlstrom, 2000) or Preventive health behavior (Kasl et Cobb, 1966). Therefore, complementary study should take into consideration the objective health status instead of the subjective health status; it would be
reasonable to expect different attitudes and behaviors based on this objective characteristic. Nevertheless, this research focused on healthy people and we found evidence that these persons had specific attitudes toward their health.

Third, Western societies are undergoing major demographic change; the proportion of seniors is increasing. Obviously, this development will lead to major changes in the health market, especially if we take into consideration that these people, born during the baby-boom, have a significant purchasing power, particular consumer attitudes and will require great amounts of health treatments. It is thus quintessential to understand this segment, go beyond simplistic clichés and develop adapted services and products. These reasons explain why we decided to focus on this segment; but even though it permitted us to understand these people better, it limited our ability to build profiles we could generalize to other age groups or value based segments. Complementary studies with these other age, cultural, or regional segments could help us verify the stability of the health attitude structure and behaviors.

Lastly, we should not lose sight of the potential influence of the Internet. According to some authors, because of the information available through Internet, the consumer is evolving toward more autonomy (Buxton, 1994; Hoffman and Novak, 1996; Holbrook, 1994). Yet no study conducted until today found any evidence of this direction. Moreover, this analysis ignores the influence of personality on Internet use. Indeed, personality, through concepts such as self-confidence (Ram, 1987) or self-efficacy (Bandura, 1977), could explain people's refusal to accept this innovation. An additional research might try to identify needs and expectations of Internet surfers who are fully involved in managing their own health with the help of health portals. Since information is a key to medical empowerment we can't analyze this movement toward autonomous health management without studying the function played by Internet in this process.
Finally, this research indicates the possibility to build an integrative model based on structural equations. Prior to doing this, our next step will be to refine our attitude scale and test it with other populations, antecedent variables and health behaviors. Also, this research confirmed that the health market is promised to a great future. However, in order to take advantage of this expanding market, we must fully understand that the coming consumer is willing to take an active part in managing his physical health. Products and services will thus have to be developed in accordance with this evolution.

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