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Navigational Characteristics Effectiveness of Pharmaceutical Web Sites on Consumer Behavior and Pre-Purchase Intentions

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A Thesis

In

The John Molson

School of Business

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ABSTRACT

Navigational Characteristics Effectiveness of Pharmaceutical Web Sites on Consumer Behavior and Pre-Purchase Intentions

Marie-Odile Richard

Despite recent success by companies using the Internet to deal with their customers, one of the major remaining problems concerns understanding navigation on the Web and its relationship with Internet marketing. We study the factors that can affect customers' pre-purchase intentions by surveying visitors to a real pharmaceutical web site.

More specifically, this study analyzes the behavior of consumers when they are confronted with Internet advertising (navigational characteristics). The model of flow designed by Hoffmann and Novak and previous findings and theories about several relevant affective, cognitive, and conative variables are taken into account to propose our model of consumers' pre-purchase intentions.

Our findings suggest that navigational characteristics, skills, challenges, and optimum stimulation level positively and directly influence consumers' exploratory behavior when they visit the pharmaceutical web site. Surfers' involvement has a positive link with their pre-purchase intentions, optimum stimulation level, and attitudes toward the web site. Exploratory behavior has a positive relationship with attitudes toward the web site, whereas, need for cognition negatively influences customers' challenges and attitudes toward the web site. The impact of demographic variables such as gender, age and education on these affective, personality and behavioral variables is also investigated.

Future research directions and limitations of this research are fully examined and discussed.

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To my beloved grand-mother.

If you can make one heap of all your winnings
And risk it on one turn of pitch-and-toss,
And lose, and start again at your beginnings
And never breath a word about your loss;

If you can meet with Triumph and Disaster
And treat those two imposters just the same;
Or watch the things you gave your life to, broken
And stoop and build 'em up with worn-out tools;

If you can keep your head when all about you,
Are losing theirs and blaming it on you,
If you can trust yourself when all men doubt you,
But make allowance for their doubting too;

You'll be a Man my son!

Rudyard Kipling

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AST-I and -II	Arousal Seeking Tendency I and II
ATTI	Attitudes toward the Web Site
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CHAL	Challenges
CHPS	Navigational Characteristics of the Web Site
CSI	Change Seeker Index
EFA	Exploratory Factor Analysis
EXPB	Exploratory Behavior
INT	Interactivity
INV	Involvement toward the Web Site
ML	Maximum Likelihood
NFC	Need for Cognition
NFI	Normed Fit Index
NNFI	Non Normed Fit Index
OSL	Optimum Stimulation Level
OTC	Over-the-Counter
PII	Personal Involvement Inventory
PPURI	Pre-Purchase Intentions
REAS	Reasons to Visit a Web Site
RMSEA	Root Mean Squared Error of Approximation
RPII	Revised Personal Involvement Inventory
S-Bχ^2	Satorra-Bentler Chi-Square
SEM	Structural Equation Modeling
SKIL	Skills
SPI	Similes Preference Inventory
SSC	Sensation Seeking Scale

SSS-V	Stimulus Variation Seeking Scale
WMI	Web Motivation Inventory
χ^2	Chi-Square Value

I. INTRODUCTION

For the Canadian pharmaceutical industry, the objectives of disseminating information about nonprescription drugs are not to replace physicians, pharmacists, and other health care professional intermediaries. There are many related objectives such as to help create a better-informed consumer of nonprescription drugs, to ensure that Canadians have access to the medicines they need, to promote appropriate use and compliance, and to achieve cost-effective therapy and quality of life outcomes. The purpose of healthcare information is not just to deliver a message, but to effect change in consumers' knowledge, attitude, and eventually behavior (Marks, 1997).

Internet, the most recent type of advertising, is a very efficient medium for accessing, organizing, stocking, searching and communicating information powerfully and inexpensively. Among its other characteristics, we can mention the interactivity and the opportunity to provide information between firms and potential consumers, the ability not only to furnish perceptual experiences but also to serve as a transaction medium and as a physical distribution medium for certain goods (digital), and, finally, the relatively low entry and establishment costs for sellers (Peterson, Balasubramanian and Bronnenberg, 1997). It can be used as a forum for discussion, source of information, lobbying and promotional tool, and an aid to marketing (Marchant, 1999). Although Internet usage may never become as ubiquitous as television viewing, a large and broad cross section of consumers will be able to access the Internet for both business and pleasure (Peterson, Balasubramanian and Bronnenberg, 1997).

Hoffman, Novak and Chatterjee (1995) listed six functional categories of commercial activities on the web: online storefronts, Internet presence sites, content sites, malls,

incentive sites, and search agents. Kaul (1995) noticed that 18% of a random sample of 290 web sites were storefronts, the remaining were informational sites, directories of other commercial sites, image-based Internet presence sites and Internet presence sites displaying detailed information on a firm's offerings, creating an image and attempting to build an ongoing relationship with consumers.

The most common functions of advertising on the Internet appear to be home pages and interactive brochures. Now, more and more pharmaceutical companies consider the Internet as a major part of the promotional mix. The media invest money and time in reports concerning the kinds of advertising that are most likely to be effective on the Internet, the manner to measure advertising effectiveness, and to integrate Internet advertising within a global communication strategy (Berthon, Leyland and Watson, 1996).

Rust and Varki (1996) speculate that the Internet will functionally replace traditional mass media. Bank (1996) stated that the Internet is becoming a broadcast medium analogous to television, except that programming and advertising will be personalized for each user through "push" technologies. Push technologies mean that communications can be sent routinely to targeted recipients who are known to be interested parties because of their earlier visits to the web site, their queries and their general Internet browsing and shopping behavior.

A recent study by a consumer ad agency suggests that most of the current ads are not likeable and are ineffective. The study shows that as ad agencies use consumer techniques and approaches more emphatically on the patient and less on the product and conditions of use (Felix, 1999), more and more worldwide pharmaceutical companies

invest in Internet advertising for a more appropriate many-to-many communication model for hypermedia computer-mediated environments (Hoffman and Novak, 1996).

From a marketing point of view, one of the major advantages of the Web, compared to more traditional marketing media, is that it is directly traceable. By pressing a few buttons, the exact number of visitors to a Web site can be determined and their movements around the pages can be monitored and logged electronically (Marchant, 1999). Moreover, marketing through the Internet has neither time nor location constraints due to cost concerns (refreshment of the site messages, attraction of new visitors with updates) (Frankel, 1999).

According to a study by the Boston Consulting Group, patients do not explore health topics on the web for leisure or entertainment purposes, but for health issues and only when they have specific questions (77%). Internet users do not visit health sites directly when searching for information on health issues. When consumers need specific health care information, most of them (65%) use general search engines (e.g., Yahoo, AltaVista), health portals as their first stop (e.g., WebMD, InteliHealth) or disease-specific web sites (e.g., MSWatch) (Health Care Management, 2001).

Marketers have to recognize that consumers do not share necessarily the same motivation and their efforts should succeed if they are based on the quantification of what consumers perceive to be important about their health. Attitudes toward health information sources are also hard to change and are often deeply rooted in the person's own perceptions of life (Morgan and Levy, 1998).

Health-related information searchers are more influenced by the Internet than by other media (Bear Sterns, 1999). For consumers with a wired lifestyle (Bellman, Lohse

and Johnson, 1999), healthcare is the fourth most popular topic on the web, whereas for women and seniors, it is the second most popular web destination (Cyber Dialogue, 1999). The major concern of a pharmaceutical web site is to change the behavior of visitors by getting them to search for treatment and to ask for a specific brand name, by influencing their brand loyalty, or by getting them to recommend the over-the-counter (OTC) drugs to others (Reim, 2000).

Among the top-ten minor ailments, allergy/hay fever is the last one. Allergic people often recognize their symptoms as seasonal (cyclical pattern of recurrence) and begin a self-medication routine to relieve symptoms. They consult a physician only if problems persist. When suffering a minor ailment such as an allergy, Canadians will typically use an OTC drug they have on hand (36%), let the ailment run its course (29%), visit the drugstore to purchase a medication or consult a doctor (Reader's Digest/Roper Health Study, 1995). For the most part, Canadians say advertising helps them understand which OTC products are available for different ailments (58%), but only 38% of those surveyed agree strongly that advertising plays a large role in the selection of an appropriate product (HealthVision, 1996). Only 5% of content on the Internet was Canadian in 1998, whereas in the USA, over 50% of web sites were devoted to health and medicine in 1997. Fourty percent of Canadian households have access to the Internet, and one of the most common uses is accessing information (71%). 49.2% of Canadians read medical information on the Internet, and 11.3% purchase goods and services (www.crtc.gc.ca, Statistiques Canada).

A study in four big markets, i.e., USA, France, Japan and Germany, showed that 45% of Americans, 45% of French, 27% of Japanese and 33% of Germans visit medical

journals of Web sites that scored well for the pharmaceutical industry. There are over 200 million people who surf to search health information. One third to one half of the respondents mentioned commercial Web sites. On the average, one quarter of the respondents visit government sites, but over a third of Japanese visit them for trusted information. Finally, Internet health searchers surf the web sites of pharmaceutical companies, of which 34% are prescription drug company Web sites (USA) and 18% are pharmaceutical Web sites (France) (McKillen, 2002).

Consumers can choose by focussing on a product or service category or a brand at any stage of the information acquisition process, using either the Internet or brick-and-mortar stores (conventional retail channels) for information acquisition or for the final transaction and brand acquisition (Peterson, Balasubramanian and Bronnenberg, 1997).

The goal of this study will be to do an in-depth analysis of the behavior of consumers concerning Internet advertising (navigational characteristics). The model of flow designed by Hoffman and Novak and previous knowledge about affective (attitudes), cognitive (navigational characteristics of the web site, reasons to visit the site, skills, challenges, and interactivity), and conative aspects (exploratory behavior, involvement, and pre-purchase intentions) (Vakratsas and Ambler, 1999) will be taken into account to propose the final model.

II. LITERATURE REVIEW AND THEORETICAL BACKGROUND

To start, we address our conceptual model below and we will describe the constructs used in this model, according to a specific pattern (see below). Hypotheses will follow the presentation of each construct.

Following MacInnis and Jaworski (1989), our model can be divided into three parts: antecedents, processing, and consequences. Among antecedents, we find first motivation to navigate the web site with ability to process information (skills, challenges, and interactivity) and, second, opportunities and ways to process content information on the web site (reasons to visit a web site and navigational characteristics). These dimensions lead to processing variables, such as optimum stimulation level, exploratory behavior, involvement, need for cognition, and approach/avoidance behaviors characterized by willingness to return to this site, in-depth exploration of this site, time spent on this site, and amount of message processing. We complete this model by including the consequences, such as pre-purchase intentions.

The theory of flow is used to understand consumer navigation behavior in the World Wide Web and to describe human-computer interactions. Flow has many positive consequences such as increased consumer learning, exploratory behavior and positive subjective experience (Novak and Hoffman, 1997). Hoffman and Novak (1996); Novak, Hoffman and Yung (2000) have defined flow as the experience of flow (intrinsic enjoyment, loss of self-consciousness), structural properties of the flow activity (seamless sequence of responses facilitated by interactivity with the computer and self-reinforcement), and antecedents of flow (skills/challenges balance, focused attention, and telepresence) (Novak and Hoffman, 1996). It also suggests that involvement in a playful,

exploratory experience is self-motivating because it is pleasurable and encourages repetition. Situations in which challenges and skills are perceived to be equivalent could facilitate the emergence of positive affect, high levels of arousal, and intrinsic motivation. Flow is determined by high skills and challenges, and is increased by interactivity and telepresence.

High levels of skills and challenges (prerequisite for flow) are consistent with the theory of an optimal stimulation level (OSL) that leads to greater exploratory behavior on the Web (Novak and Hoffman, 1998; Hoffman and Novak, 1996). People with higher OSL show increased curiosity, variety seeking, risk-taking and exploratory behavior. They are more likely to possess motivation and experience flow.

Goal-directed and experiential behaviors are differentiated on the basis of involvement and search behavior. Goal-directed behavior is characterized by situational involvement and directed search (search for information and purchase intentions), whereas experiential behavior has led consumers to explore a web site for its own sake (curiosity) rather than purposely searching for specific information.

Motivation to process the product information is influenced by two types of involvement. Situational involvement for the product is more likely to result in a goal-directed behavior (transient and occurring only in the context of a situation). Enduring involvement is a stable phenomenon as it represents the consumer's personal interest in the product over long periods of time and is likely to result in experiential behavior (Raman and Leckenby, 1998).

Involvement influences motivation to attend and process information. If the consumer clicks more often across visits, consumer interest and involvement is more enduring.

Enduring involvement with the product/product class/ad has a long-term effect. Situational involvement is temporary and can be considered connected to consumers'short-term visit. If the site attracts consumers whose motivations for visiting the site are primarily goal-directed, current visit click responses indicating situational involvement will have a bigger effect in predicting click responses. Cumulative click behavior (enduring involvement) will play a dominant role in predicting click response (Chatterjee, Hoffman and Novak, forthcoming).

In the Elaboration Likelihood Model (ELM), low-involvement people process information through the peripheral rather than the central route (Petty, Cacioppo and Schumann, 1983), relying more heavily on cues as opposed to detailed and elaborate product specific information. With Internet, marketers can use a large number of cues (search engines, keywords, and search arguments) to attract and influence consumers (McGaughey and Mason, 1998).

Need for cognition (NFC) is one of the variables contributing to message involvement and motivation to process messages (Andrews et al, 1990). NFC is a tendency by individuals to engage in and enjoy thinking. High NFC people tend to enjoy tasks that provide opportunities to think and process all product information before making a decision, while low NFC people would tend to avoid tasks that require cognitive effort by relying on easily processable peripheral cues (Zhang and Buda, 1999). Many of the peripheral cues have a greater impact when "motivation and/or ability to scrutinize the central merits of the products are low" [when the consumers are not knowledgeable about the product category (Maheswaran, 1994) or when the purchase choice is not important (Maheswaran, Mackie and Chaiken, 1992)].

In conclusion, attitude toward the information content is a frequently used measure of ad effectiveness. In the web medium, consumers choose the amount of exposure to a web site, and decide what to watch, when, and how much. If they find that the web site is not useful or interesting, they will immediately end the visit. Attitude is positive when there is ease of navigation through a database or ability to get an overview of the structure. It leads to an increase in the number of visits to the site, as well as an increase in curiosity, depth of search, exploratory behavior and duration of time. Source attractiveness also influences the amount of information processing. Effectiveness of a message develops emotional responses such as pleasure and arousal that in turn mediate a variety of approach-avoidance behaviors. The latter are characterised as a general liking of the environment (flow); attitudes toward returning to the same web sites; shopping time; and in-depth exploration of the web site.

A. THEORY OF FLOW

Flow is a central construct for the study of the navigation of web sites (Hoffman and Novak, 1995) and it has been considered a useful construct for describing human-computer interactions (Csikszentmihalyi, 1990; Ghani, Supnick and Rooney, 1991; Trevino and Webster, 1992; Webster, Trevino and Ryan, 1993).

When we compare the different environment of the Internet to that of traditional media, classical marketing activities and theories have to be reconstructed more appropriately for this new medium (Hoffman and Novak, 1997). New bases for market segmentation have to be developed to maximize the chances for consumers to achieve flow (as consumers vary in their ability to do it).

At the beginning, Csikszentmihalyi (1975) identified four flow components: control, attention, curiosity, and intrinsic interest. Later on, Csikszentmihalyi (1990) replaced them with eight dimensions of the flow experience: clear goals and immediate feed-back, balance between challenges and skills, merging of action and awareness, focused concentration, sense of potential control, loss of self-consciousness, altered sense of time, and autotelic or self-rewarding experience. For the study of the different levels of skills and challenges needed to determine the flow, Csikszentmihalyi (1977, 1990) created a flow channel segmentation model including eight dimensions: skills and challenges are added (Apathy/Flow), challenges are substracted from skills (Boredom/Anxiety), challenges variations alone (Relaxation/Arousal) and skills variations alone (Worry/Control). This model was used by Novak and Hoffman (1997), who enhanced the number of dimensions. Consequently, Hoffman and Novak (1996, 1997) reported that challenges predicted arousal and thus, the flow. In the same manner, skills predict control and both of them predict playfulness. Playfulness is also related to challenges and exploratory behavior as for the flow construct.

Three major approaches are possible to measure the flow. The first is the narrative description of a flow experience and the evaluation of that experience using a survey instrument. The second is the participation in a selected activity and the retroactive evaluation of the experience using a survey instrument (concurrent or retrospective determination of the experience of flow for specific events). Finally, the third method is ESM (Experience Sampling Method) that Chen et al (1998) used with digital auto-ask technology to create a new online ESM technique. Among all these methods, the most widely used technique to measure flow is the Experience Sampling Method

(Csikszentmihalyi and Csikszentmihalyi, 1988; Csikszentmihalyi and Lefevre, 1989; Ellis, Voekl and Morris, 1994). This method consists of paging people throughout the day for one-week period and evaluating their activity at the time of being paged by using a survey instrument.

However, some results shed light on the variability of the consumers' answers to the flow state. In fact, some studies in non-Internet contexts found that 87% of US adults reported the experience of flow (Csikszentmihalyi, 1993). On the other hand, Chen and Wells (1999) found that 40% of the respondents lived the flow experience in Internet contexts. Novak et al (1999) also found 47% of respondents lived the flow experience when Nel, van Niekerk, Berthon and Davies' specific questionnaire (1999) was used for the Internet.

According to Hoffman and Novak (1996), flow is one of the key characteristics of consumer behavior on the Internet. Among the inhibitors of the flow that web sites builders and marketers must try to avoid, we can mention long downloading time, delays to download plug-ins, failure of navigation links (navigational factors), long registration forms, boring sites or non intuitive sites, slow responses, challenges greater than skills, phone line, Internet at work, and usage costs (Rettie, 2001). Advertisements can hinder or disturb the flow (Schlosser, Shavitt and Kanfer, 1999). To improve the likelihood of flow, we should try to maximize the interactivity and the user control of web sites (Rettie, 2001).

Quelch and Klein (1996) developed a model with four quadrants: two quadrants concern the web site content, characterized by transactions and information support/service only and the two others concern domestic and international audience

focuses. They found there are differences in flow between web sites classified into these four quadrants. They showed a pattern of decreasing flow from the information-support/services only categories (domestic or international) to transaction-focused categories (domestic and international) and decreasing flow scores from quadrants with a domestic focus to those with an international audience focus (Nel, van Niekerk, Berthon and Davies, 1999).

Different types of flow can facilitate various online behaviors such as one-time purchases and repeat purchases (Smith and Sivakumar, 2002). Repeat purchases (repeat visits to a distinct web site) increase if consumers' environment facilitates the flow. The objective of the first visit on the Internet should be to provide these flow opportunities (search variables which are related to the possibility of consumers entering the flow state) (Hoffman and Novak, 1997).

Some companies may induce browsing by providing expanded product offerings, detailed product information, and/or services not available in traditional retail settings in order to build brand recognition and consumer purchases in traditional retail settings (Smith and Sivakumar, 2002). In previous studies, willingness to purchase has been measured by purchase intentions, gift-giving, and word-of-mouth recommendations (Baker, Levy and Grewal, 1992; Dodds, Monroe and Grewal, 1991). As the Internet does not look like traditional retail settings, willingness to purchase can be a critical distinguishing factor (Smith and Sivakumar, 2002).

B. ABILITY TO PROCESS- VARIABLES OF FLOW

1. CHALLENGES

Novak, Hoffman and Yung (2000) described challenges as the opportunities for action on the Internet. To obtain an autotelic experience as noted by Csikszentmihalyi (1975), flow is derived from a balance between challenges (action opportunities) and the actor's skills (action capabilities). According to Massimini and Carli (1988), flow only begins when skills and challenges are balanced and are above the individual's mean for these scales. However, there are some limitations to the creation of the flow state as it does not depend entirely on either the objective nature of the challenges or the objective skills level (Csikszentmihalyi, 1975). The presence or not of flow depends entirely on the perception of skills and challenges (Csikszentmihalyi, 1975). In fact, with the same level of challenges, people can first feel anxious, then bored, and in a flow state immediately afterward (Csikszentmihalyi, 1975). Thus, it is impossible to predict with complete assurance in which state the people will be (Csikszentmihalyi, 1975).

The causal model of Ghani, Supnick and Rooney (1991) showed that the level of perceived challenges in human-computer interactions is positively associated with the achievement of the flow (operationalized as enjoyment, concentration, and concentration control) which, in turn, predicts exploratory use (Ghani and Deshpande, 1994). Thus, we formulate the following hypothesis:

H1: Challenges are positively related to consumers' exploratory behavior when surfing the web.

The level of challenges may have an impact on attitudes toward the web site. Web sites that are not challenging are considered boring sites (Anand and Sternthal, 1990). However, if a web site offers enough challenges, a more positive attitude is attainable by surfers (Luna. Peracchio and de Juan, in press). Challenges are positively related to attitudes towards the site only if the challenge level is not excessive. Flow can occur if surfers are challenged enough, that is neither are they bored nor they reach the point of anxiety (Csikszentmihalyi, 2000). Peracchio and Meyer-Levy (1997) presented the Resource Matching hypothesis: surfers with a higher level of available processing resources tend to evaluate more positively ads that demand a higher level of resources.

H2: Challenges have a positive impact on attitudes toward the web site when consumers surf the web.

People who have skills in using the web and who find it challenging are more likely to search for and purchase online a wide range of products; hence, skills and challenges would predict the online consumers' search and purchase behavior (Novak and Hoffman, 1997, 2000). There is a positive relationship between the difference between skills and challenges and online search and purchase of computer-related products, but a negative one with search and purchase of non-computers related products in traditional media (Novak and Hoffman, 2000). If skills are greater than challenges, search for entertainment online and purchase in retail stores will ensue. If challenges are greater than skills, then search and purchase in traditional media will occur (Novak and Hoffman, 2000). Until now, nothing was done to test these hypotheses with OTC drugs and to see if they respond to the same pattern as for other goods previously studied.

H3: Challenges are positively linked to customers' pre-purchase intentions for an OTC drug when they surf the web site.

H4: Skills are positively linked to customers' pre-purchase intentions when they surf the web site for an OTC drug.

Challenges positively affect information search and perceived interactivity. They may create arousal and lead to more activities on the web site (Jee and Lee, 2002).

H5: Challenges are positively linked to interactivity when consumers surf the web.

2. SKILLS

Novak, Hoffman and Yung (2000) described skills as the consumer's capacity for action during the online navigation process. Ghani and Deshpande (1994) reported that skills directly affect the flow. These researchers included skills in their model, showing that the level of perceived skills, as perceived challenges, is positively associated with the achievement of flow which, in turn, predicts exploratory behavior.

Ghani (1991) studied the behavior of students in an introductory computer class and discovered that flow is significantly related to exploratory use behavior (considered as the consequences of the flow (Hoffman and Novak, 1996)). People who experience a flow state (balance between skills and challenges) show more exploratory behaviors than those who do not (Hoffman and Novak, 1996). We can induce from the previous studies that skills could influence positively consumers' exploratory behavior.

H6: Skills are positively related to shoppers' exploratory behavior when they surf the web.

Ghani and Deshpande (1994) added that flow is present when skills and challenges are both high, since skills and challenges independently contribute to the flow, which was confirmed by other authors (Novak, Hoffman and Yung, 2000; Novak and Hoffman, 1998). Although these two constructs operate independently (Ghani and Deshpande, 1994), studies demonstrate that high skills/high challenges levels lead to a satisfying consumer experience on the Internet (Csikszentmihalyi, 1997; Hoffman and Novak, 1996). According to Wu (2000), even though a relationship exists only in one out of the two experiments that he conducted, consumers' web expertise, operationalized similarly as skills, is positively linked to perceived interactivity. Although marginally significant, skills are a predictor of perceived interactivity (Jee and Lee, 2002). More specifically, the hypothesis that people with high skills levels perceive the web site surfed as having greater interactivity is supported (Jee and Lee, 2002). People with more Internet-related skills tended to perceive the sites visited as more interactive (Jee and Lee, 2002).

H7: Skills are positively related to surfers' interactivity when they surf the web.

3. INTERACTIVITY

Contact interactivity, one of the antecedents of e-loyalty, refers to the bilateral dynamism occurring between an e-retailer and its customers through his/her web site. It is operationally defined as the availability and effectiveness of customer support tools on a

web site, and the degree to which a two-way communication with customers is facilitated.

Nowadays, Internet can incorporate levels of vividness and interactivity that traditional media cannot do (Coyle and Thorson, 2001). Internet is distinguished by the following characteristics: interactivity, irrelevance of distance and time, low set-up costs, global coverage, and ease of entry (Berthon, Pitt and Watson, 1996). Amongst them, interactivity is the key advantage of this medium (Rafaeli and Sudweeks, 1997; Morris and Ogan, 1996; Pavlik, 1996). There are different ways of defining interactivity in the Internet (Flaherty, 1985; Cook, 1994; Rice, 1984; Steuer, 1992; Williams, Rice and Rogers, 1988; Ariely, 1998; Cho and Leckenby, 1999). Rafaeli and Sudweeks (1997) considered interactivity as "the extent to which messages in a sequence relate to each other, and especially the extent to which later messages recount the relatedness of earlier message".

More specifically, Steuer (1992) defined interactivity as "the extent to which users can participate in modifying the form and the content of a mediated environment in real time".

Many different activities can be understood as interactivity on the World Wide Web (clicking; providing feedback; searching for information) (Gallagher, Foster and Parsons, 2001). More specifically, interactive sites give opportunities to engage customers in some exchange with the web site they visit or its sponsor. There are various interactive functions that include online problem diagnostics, games, virtual reality displays, and user groups. There are also variations on these interactive functions that have been

employed in other media such as coupons, dealer locators, surveys, and contact information (Gallagher et al, 2001).

There is little agreement among researchers concerning how interactivity should be conceptualized (Heeter, 2000). Initially, interactivity was considered as communication, through a medium. Later, it was assessed as a property of the medium (Ha and James, 1998). Interactivity was operationalized as a part of the communication process (Blattberg, Deighton, 1991; Kirsch, 1997; Milheim, 1996), a medium characteristic (Hoffman and Novak, 1996; Steuer, 1992), an individual trait (Chen, 1984), a psychological state (Newhagen, Corders, and Levy, 1995), and a variable characteristic of communication settings (Rafaeli, 1988). Contact interactivity is expected to have a major impact on customer loyalty for multiple reasons (Srinivasan, Anderson and Ponnavolu, 2002). According to Alba et al. (1997), interactivity enables a search process to quickly locate a desired product or service, thereby replacing dependence on detailed customer memory. A second reason is that interactivity unexpectedly increases the amount of information that can be presented to a customer (Deighton, 1996; Watson, Akselsen, & Pitt, 1998). This suited information helps the customer choose the precise products desired. Finally, the navigational process facilitated by interactivity dramatically increases the freedom of choice and the level of control experienced by the customer (Hoffman and Novak, 1996).

Interactivity is the surfers' perceptions that the site visited provides effective and personalized methods to search and retrieve site information, leading to the fact that the site permits surfers to build the information to which they would like to be exposed (Luna et al, in press). Interactivity reflects the perception that the site information is relevant to

consumers' needs (Ducoffe, 1996; Fortin and Dholakia, 2000), increasing the likelihood of positive attitude formation (MacInnis and Jaworski, 1989). Wu (2000) posits that perceived interactivity positively influences the attitudes toward the web site, the brand and purchase intentions. In that case, the higher the perceived interactivity of a web site is, the more positive the attitudes toward the site are. Moreover, Stout (2001) states that the intention to interact positively influences the attitudes of the surfers toward the web site and their purchase intentions.

H8: Interactivity has a positive relationship with attitudes toward the web site.

Perceived interactivity has a direct impact on consumers' intentions to revisit a web site and on consumers' purchase from it (Luna et al, in press). The effect of interactivity on purchase and revisit intentions is only partially mediated by surfers' attitudes and navigation experience (Luna et al, in press). However, other authors such as Jee and Lee (1992) conducted research where purchase intentions were not successfully predicted by interactivity (Jee and Lee, 2002).

H9: Interactivity is positively linked to purchasers' pre-purchase intentions when surfing the web site.

Ha and James (1998) combined the interpersonal perspective with a mechanical perspective. There are five dimensions of interactivity: playfulness, choice, connectedness, information collection, and reciprocal communication. If we apply these dimensions to web sites, an interactive web site should have a good mapping, quick

transitions between a surfer's input and resulting actions, and a large variety of ways to manipulate its contents. Although interactivity and vividness are attributes of the computer-mediated environment and thus are not similar to the involvement concept, participants' involvement with a site may hide effects that are due to progressive levels of vividness and interactivity. The more their attitudes toward web sites are positive, the more interactive and vivid the web sites are. As the correlations between attitudes toward the web site and product/site involvement are highly significant, high level of interactivity would lead to stronger attitudes toward the web site and more consistency between attitudes and behaviors. At that level, attitudes are more confidently held, more enduring, and more resistant to attack (Fazio and Zanna, 1981).

H10: Interactivity has a positive impact on involvement toward the web site when consumers surf it.

Interactivity could be positively related to exploratory behavior. As there is very little research done about the possible link between these two variables, we can only infer that greater interactions between the surfers and the Web when they search for information lead to greater exploratory behavior browsing and scrolling more specific web sites.

H11: Interactivity is related to customers' exploratory behavior when they surf the web.

C. OPPORTUNITIES AND WAY TO PROCESS

1. REASONS TO VISIT A WEB SITE

"A motive is a desire to do something, an activated state that contains both energy and direction" (Deci and Ryan, 1985). More than 100 web motives have been identified in the few studies that have examined reasons to use the Internet (Eighmey, 1997; Katz and Aspden, 1997; Maignan and Lukas, 1997; Stafford and Stafford, 1998). Four primary motives seem to result from these studies (Rodgers and Sheldon, 2002).

First, there is acquisition of information about products and services, companies, special interests, and news about the world (Abels, White, and Hahn, 1997; Eighmey, 1997; Katz and Aspden, 1997a; Korgaonkar and Wolin, 1999; Raman, 1997).

Second, communication is another predominant reason for web use. Some authors have studied this variable, utilizing both students (Perry, Perry, and Hosack-Curlin, 1998) and adults (Kraut et al., 1998). More specifically, Maignan and Lukas (1997) identified communication as a social use of the Internet, and Eighmey (1997) identified an "interest in continuing communication factor."

Third, although researchers call it by different names, they identified surfing (exploration) as another important web motive. Surfing has been considered the same as navigating (Hoffman and Novak, 1996), exploring (Eighmey, 1997), wandering (Raman, 1997), browsing (Fortin and Dholakia, 1999), and searching without any reason (Maignan and Lukas, 1997). As previously noted, the "surfing" experience is formulated as generally enjoyable, even exciting, which is consistent with Katz and Aspden's (1997a) finding that people use the Internet to fill out a curiosity need, and with Eighmey's (1997) entertainment factor, which identifies navigating web sites as "a

playful experience." Although surfing was defined as an intrinsically motivated activity (Deci and Ryan, 1985), the authors recognize that the outcome may not always be positive. In fact, people may become frustrated when surfing web sites, which take too much time to download.

Further, the process of surfing may ultimately lead to a more purposeful activity such as product or service purchase, which is the fourth and last factor (Rodgers and Sheldon, 2002). Researchers even found that high scores on the surfing motive factor predicted stronger intentions to click on surfing banners, whereas high scores on the shopping motive factor foresaw higher feelings of persuasion toward shopping banners.

Other studies using the Web Motivation Inventory (WMI) reported the four identical and primary needs, or motives for Internet use (researching, communicating, surfing, and shopping). Even though these motives were consistent across both student and non-student adult samples, other motives might emerge when using other samples or cross-cultural samples.

Stafford and Stafford (2001) similarly provide five factors representing consumer motivations or needs for using the Internet. The factors include "(1) search needs (for information updates and resources); (2) cognitive needs (a mix of learning and information searching highly content specific); (3) entertainment needs (4) social needs (interacting with friends and in news groups); and (5) unique and new needs (finding new and interesting ideas available on the Internet)".

Major inhibiting factors that make usage difficult, discourage usage, and in the long term might stop people from using the Internet are traffic and navigational problems (Katz and Aspden, 1997).

As the reasons to visit a web site can induce enjoyment, we can assume that arousal and playfulness, which ensue from it, can make the consumers develop positive attitudes toward this web site.

H12: Reasons to visit a web site are positively related to attitudes of customers toward the web site when they surf it.

We can shed some light on the fact that reasons to visit a web site could be positively linked to consumer's involvement. Customers who have reasons to surf a web site (information seeking, entertainment, or socialization), could be more motivated to surf the Web. In fact, they elaborate enduring involvement, a motivational state influenced by their perception of the Web based on their needs, values and interests (Zaichowsky, 1985), which predicts behaviors such as information search (Higie, 2001).

H13: Reasons to visit a web site have a positive impact on customers' involvement when they surf this site.

2. NAVIGATIONAL CHARACTERISTICS OF THE WEB SITE

It is suggested that characteristics of the products and the web sites that are encountered early in online browsing can significantly influence the level of arousal and pleasure (emotions) that consumers experience, and therefore can influence their shopping behavior. Two manipulations effected by Menon and Kahn (2002) show that if the starting experiences encountered by potential customers in a simulated Internet shopping trip are high in pleasure, then there is a positive influence on approach

behaviors (attitudes) and shoppers tend to engage in more arousing activities such as more exploration, more tendencies to examine new products and stores, and higher response to promotional incentives (Menon and Kahn, 2002).

H14: Navigational characteristics of the web site have a positive impact on consumers' exploratory behavior when they surf this site.

Lynch, Kent and Srinivasan (2001) identified three important characteristics of a web site (site quality, affect and trust) that significantly affect consumers' purchase behavior. Site quality is represented by ease of use, provision of helpful graphics, usefulness of search engines, and completeness of information (Lynch et al, 2001). Online sellers believe that site quality may influence surfers' probability of buying during the visit and returning to visit the web site (Lynch et al, 2001). The impact of site quality on purchase intentions depends on the selected product category and the world region examined (Lynch et al, 2001).

H15: Navigational characteristics of the web site are positively linked to shoppers' pre-purchase intentions when they surf this site.

In the brick-and-mortar shops, physical maneuvering of a store's environment (social, visual and design factors) by potential consumers is called wayfinding (Dailey, 2002). It is also possible to apply the wayfinding concept to the Internet, but the physical maneuver process is replaced with maneuvering through scrolling and linking on the Web. The act of wayfinding on the web can be labeled navigation. Hoffman and Novak

(1996) have defined navigation as the process of self-directed movement through a computer-mediated environment. Navigational cues are important in brick-and-mortar stores as well as on the web. Text and icon links are cues that help the consumer in one's navigation (Hoffman and Novak, 1996). There are two categories of cues: high-task relevant cues and design cues (Eroglu, Machleit, and Davis, 2001). Among the navigation cues, there are "next", "previous links", navigation bars, and site indexes coupled with navigation bars. If surfers' navigational control is hindered by navigational cues, their reactance may be stimulated and they may indirectly affirm their control by developing avoidance behaviors (negative attitudes) toward the site such as stopping exploratory site navigation; leaving the site, locating and browsing similar web sites. The attitude-behavior literature gives some support to that by suggesting that attitudes can lead to behavioral intentions and finally to behavior (Regan and Fazio, 1977; Eagly and Chaiken, 1993). If surfers experience negative attitudes toward a web site, they are likely to develop negative behaviors toward it. Flow has been associated with positive attitudes (Baronas and Louis, 1988; Csikszentmihalyi, 1977) as well as approach behaviors including increased exploratory behavior of the web site (Hoffman and Novak, 1996; Novak et al, 1999). When surfers are experiencing flow during web navigation, restrictive navigational cues may stop the flow by decreasing the surfers' control, resulting in possible negative attitudes and avoidance behavior toward the web site.

Intentions to revisit companies' web sites, one of the variables explaining attitudes toward a web site, are stimulated by good information on the web site, frequent change and newness in its content, personalised services, and contests (Ellsworth and Ellsworth, 1997). According to Chaffey, Mayer, Johnstone, and Ellis-Chadwick (2000), other

determinants of customers' intentions to return to the web sites are the high-quality content, ease of use, fast downloading, and frequent updatings (CHPS).

In the same way, Ducoffe (1996) stated that both informative elements (via the central route) and creative and entertaining elements (via the peripheral route) in Internet ads had positive effects on clientele's perceptions of the value of Internet ads. Singh and Dalal (1999) added that positive effects are present along the peripheral routes on attitudes towards the home page, the sponsor of the homepage, and tendency to explore more in-depth the underlying web site. Both creative/entertaining and informative elements of a site seem to affect attitudes towards the site, which affects behavioral intentions to revisit (Supphellen and Nysveen, 2001).

H16: Navigational characteristics of the web site have a positive impact on attitudes of consumers when they surf this site.

According to the Katz and Aspden study (1997), a quarter of respondents expressed concerns about traffic problems and delays/connection problems. A fifth of respondents complained about navigation problems ["difficult to find things/complicated", "difficulty in finding out what is there" and "not having a guidebook to the Internet."] The most desirable improvement to bring to the Internet is making it easier to use. Two-fifths of respondents said, "make the Internet more user-friendly," or "easy/improved access," or "having a map address" or "more powerful search commands." One-ninth of users wanted "quicker speed in accessing information" and "addressing the traffic problems" also mentioned previously.

D. GENERAL BEHAVIOR TOWARD THE WEB SITE

1. PERSONALITY VARIABLES

a) NEED FOR COGNITION

According to Cacioppo and Petty (1982), NFC is a personality variable and is evaluated as a motivational factor.

NFC was first conceptualized by Cohen, Stotland, and Wolfe (1955) as a need to understand and make reasonable the experiential world. They argued that stronger needs lead people to see a situation as ambiguous even if it is relatively structured, indicating that higher standards for cognitive clarity are associated with greater NFC. According to Cacioppo, Petty, Feinstein and Jarvis (1996), Cohen and his colleagues' conceptualization of NFC emphasized ambiguity intolerance and tension reduction, and as such appears closer to contemporary scales that measure ambiguity tolerance, need for structure, or need for closure.

On the other hand, Cacioppo and Petty (1982) proposed that NFC is a stable individual difference in people's tendency to engage in and enjoy effortful cognitive activity. Low NFC is defined as the relative absence of motivation for effortful cognitive activities that defines high NFC. They conducted a series of four studies to develop and validate a scale to assess the NFC. In the first study, a pool of 45 items was administered to groups known to differ on NFC. The criteria of ambiguity, irrelevance, and internal consistency were used, resulting in the selection of 34 items for subsequent studies. A principal-components analysis and a Scree test of these data revealed one dominant factor (30.1%). The second study served to validate the factor structure by administering the 34 items to a more homogeneous population. Cacioppo, Petty and Kao (1984) also

developed a short form of the NFC scale and found that the Cronbach alpha reached an asymptote after entering the 18 items of the short form of this scale in the 34-items scale that had the highest factor loadings. Reliability and factor analyses confirmed that the 18-items scale was highly correlated with the original 34-items scale, possessed high internal consistency, and was characterized by one dominant factor (37%).

Since 1982, a large amount of literature has emerged on individual differences in NFC in fields ranging from social personality, development and cognitive psychology to behavioral medicine, education, journalism, marketing, and law (Cacioppo et al, 1996).

In the advertising literature, high NFC individuals have been shown to process and evaluate advertising information more thoroughly than low NFC individuals. They tend to be influenced by message-relevant thoughts rather than peripheral cues such as endorser attractiveness (Haugtvedt and Petty, 1992), spokesperson credibility (Petty and Cacioppo, 1986), humour (Zhang, 1996) or the number of arguments presented in the message (Cacioppo, Petty and Morris, 1983). Furthermore, according to Inman, McAlister and Hoyer (1990), high NFC individuals tend to make more optimal in-store purchase decision because they tend to react to promotional signals only when a significant price reduction is offered. Conversely, low NFC individuals react when the product appears to be on special regardless of the amount of price reduction offered.

People with high NFC are intrinsically motivated intellectually, tend to exhibit curiosity, and are tolerant of different ideas (Bookstaber-Smith and Harris, 1991; Cacioppo and Petty, 1982; Olson, Camp, and Fuller, 1984; Tolentino, Curry, and Leak, 1990; Watt and Blanchard, 1994; Sadowski and Cogburn, 1997). High NFC individuals intrinsically enjoy thinking and doing complex tasks, are less likely to diminish their

efforts on cognitive tasks in situations where reduction of efforts typically occurs (Petty and Cacioppo, 1985; Cacioppo and Petty, 1982, 1984) and they tend to derive their attitudes based on the merits of the arguments presented (Haugtvedt, Petty, and Cacioppo, 1992).

Epstein (1994) cited NFC as a facet of his rational-experiential construct. According to Cacioppo and Petty (1982), NFC is a motivational factor. The concept of NFC has also greatly contributed to the persuasion literature (Petty and Cacioppo, 1986). In fact, NFC serves as an operationalization of the motivational component of the Elaboration Likelihood Model (ELM), which studies the process of responses to persuasive messages (Petty and Cacioppo, 1981,1986b). Consistent with the ELM, Cacioppo et al. (1986) found that people high in NFC are more likely to think about and elaborate cognitive processes on relevant information when they are forming attitudes than people low in NFC. Further, Haugtvedt and Petty (1992) stated that, even though the attitudes and beliefs of high and low NFC people may seem identical after a persuasive communication (information content), these attitudes differ in their probability of persisting over time and resistance counter-persuasion attempts. In particular, attitudes and beliefs of high NFC people displayed a greater persistence over time and a greater resistance to an immediate counter-message than those of low NFC people. According to the ELM, persuasion can use one of two routes, central or peripheral route, to change attitudes. Individuals develop both the motivation and the ability to evaluate message arguments thoughtfully via the central route. On the other hand, by way of the peripheral route, customers lack the required motivation or the ability to "scrutinize" message arguments carefully and use some heuristics or cues as the foundation of their judgment

(Petty and Cacioppo, 1984). Situational factors such as personal relevance can influence the extent of message processing and consequently, the type of routes to persuasion (Petty and Cacioppo, 1986a). Although several situational factors can influence the motivation to process message personal relevance, NFC seems to be the primary individual difference variable that influences motivation to think.

In a broad literature review of the subject, Cacioppo et al, 1996) found relationships between NFC and other individual-difference variables. Individuals who differ in terms of NFC, for instance, have been posited to differ in terms of their tendency to actively acquire information about a relevant stimulus or event and to engage in an effortful cognitive activity when given a task or making sense of the world. The range of NFC extended into broader personality functions. For example, the direct relationship between NFC and openness to experience is in accordance with high NFC people.

H17: Need for cognition is related to attitudes of consumers toward the web site when they surf the site.

NFC, which is an important predictor in traditional media environments, still has a certain impact in the Internet medium. High NFC surfers engage in more search activities that lead to a greater perceived interactivity. Consequently, NFC is viewed by Jee and Lee (2002) as a significant predictor of perceived interactivity. In fact, high NFC people perceive a site to possess greater interactivity than low NFC people do (Jee and Lee, 2002). Findings of Mantel and Kardes (1999) conclude that high NFC people are more likely to be exposed to interactive functions provided by the site or use them compared to low NFC people.

H18: Need for cognition has a positive impact on consumers' perceived interactivity when they surf the site.

Findings by Mantel and Kardes (1999) indicate that high NFC people are more likely to search for a web site before making a purchase decision compared to low NFC people.

H19: Need for cognition has a positive relationship with consumers' pre-purchase intentions when they surf the site.

We can assume customers' NFC has a positive impact on their exploratory behavior. NFC is defined as the motivation for effortful cognitive activities. Exploratory behavior has the curiosity-motivated search for product information and brand switching as dimensions. When people are motivated to process information on the Web, they search for the most accurate information, browsing more to get it. Consequently, we can propose that:

H20: Need for cognition is positively linked to consumers' exploratory behavior when they surf the site.

As there is no relevant literature on the impact of consumers' NFC on their challenges, we can surmise that NFC, a motivation for effortful cognitive activities, will not create many challenges. In our case, people with high NFC are very motivated, know where they go and what they want. We expect they will follow more the central route, will know well how to process, creating low levels of challenges.

H21: Need for cognition has a negative impact on customers' challenges when they surf the site.

b). OPTIMUM STIMULATION LEVEL

Optimum Stimulation Level (OSL) is a personality variable referring to the amount of stimulation people prefer in life (McReynolds, 1971). OSL is an important factor that explains a large variety of consumer behaviors with strong exploratory constituents such as risk taking, innovativeness, variety seeking, browsing, evaluation of "arousing stimuli fear-appeal ads" (Baumgartner and Steenkamp, 1996; Celsi, Rose and Leigh, 1993; Holbrook and Hirschman, 1982; Joachimsthaler and Lastovicka, 1984; McAlister and Pessemier, 1982; Mittelstaedt, Grossbart, Curtis and Deverre 1976; Raju, 1980, 1984; Steenkamp and Baumgartner, 1992; Steenkamp, Baumgartner and Vander Wulp, 1996; Venkatraman and Price, 1990; Zuckerman, 1979, 1994).

In the psychology literature, these five following scales have been used: the Sensation Seeking scale (SSC) (Zuckermann, Kolin, Price and Zoob, 1964), the Change Seeker Index (CSI) (Garlington and Shimota, 1964), the Stimulus Variation Seeking scale (SSS-V) (Penney and Reinehr, 1966), the Similes Preference Inventory (SPI) (Pearson and Maddi, 1966), and the Arousal Seeking Tendency scale (AST-I or AST-II) (Mehrabian and Russel, 1974). Arousal Seeking Tendency scale, in fact, measures what other researchers call OSL. This scale has high reliability and validity. According to Mehrabian and Russel (1974), an individual's preference for an environment is closely linked to one's preferred arousal level: some people characteristically prefer quiet settings, whereas others actively search to increase their arousal by selecting novel, complex, or unpredictable settings.

Previous research typically and predominantly used ASTI as a particular measurement instrument. Wahlers et al (1986) present some evidence that SSS-V may be inferior to AST-I and II. As both CSI and AST-II scales loaded highly on OSL in LISREL analysis. These two scales are recommended in future research on OSL.

High OSL people explore more new stimuli and situations because of a higher need for environmental stimulation, while low OSL people are more comfortable with familiar situations and stimuli and avoid new or unusual situations or stimuli (= NFC's low level) (Raju, 1980).

OSL is a key factor to determine the degree of exploratory tendencies of an individual across many situations (Raju, 1980). Several researchers have suggested a link between OSL and exploratory tendencies (Steenkamp and Baumgartner, 1992). Findings by Mittelstaedt et al (1976) showed that OSL is positively correlated with various exploratory tendencies in the consumer context, such as seeking information out of curiosity. Exploratory consumer behavior tendencies are categorized as curiosity-motivated behaviors, variety seeking, and risk taking (Raju, 1980). Even if there are many previous studies done on that subject, some gaps still remain in the understanding of the relationship between OSL and exploratory consumer behavior (Steenkamp and Baumgartner, 1992).

As Raju and Venkatesan (1980) suggested, exploratory behavior (EXPB) and OSL (underlying construct) are useful in studying individual differences. Links exist between personality traits, OSL (defined as arousal seeking tendency), and consumer exploratory behavior (Raju, 1977, 1980). More specifically, a relationship is possible between OSL and personality traits and between OSL and EXPB (Raju, 1980). Unfortunately, there is

little empirical research on the relationship between OSL and personality traits, as the only personality traits studied were intolerance for ambiguity, rigidity, and dogmatism. Since there has been no research on other personality traits, it is difficult to generalize that relationship. OSL mediates the relationship between personality traits and EXPB. However, no data were collected on personality, OSL and EXPB simultaneously. Joachimthaler and Lastovicka (1984) studied other personality traits and collected OSL and EXPB data. Raju reported that EXPB is not a unidimensional construct but has at least two dimensions. Apparent links may be present between personality traits including OSL and consumer EXPB. The more basic idea that personality traits explain consumer EXPB is reinforced, as with different personality traits and different consumer EXPB, OSL could be a mediator.

People with higher OSL are more likely to possess autotelic personality traits and develop the flow state, whereas those with low OSL more likely experience anxiety in their initial interactions with computer-mediated environments (Hoffman and Novak, 1996). In the Novak and Hoffman's study, there was no relationship between OSL and playfulness, but OSL led to a greater EXPB on the web (Raju, 1980).

The relationships between OSL and similar personality traits have emerged during the last decades. Authors have discovered that high OSL people are likely to develop high levels of monotony avoidance, NFC, impulsivity, curiosity, and intolerance of ambiguity and low levels of rigidity and dogmatism (Baumgartner and Steenkamp, 1994; Raju, 1980, Steenkamp and Baumgartner, 1995).

Consumers' OSL are systematically related to curiosity-motivated behavior, variety seeking, and risk taking (EXPB). Study of curiosity-motivated behaviors has not looked

at consumer reactions toward specific stimuli (specific curiosity). Acquisition of information to purchase a product and information seeking out of curiosity in order to learn more about the environment (exploratory behavior) are the two motives which lead to information seeking behavior (Steenkamp and Baumgartner, 1992).

People with higher OSL search for more information than those with lower OSL when information acquisition is motivated by curiosity. There is no reason to assume that OSL has an effect on purposeful information search behavior, but it seems to be only weakly related to information seeking. (Raju, 1980; Steenkamp and Baumgartner, 1992). Higher OSL people generate more cognitive responses (especially curiosity-type responses) while they are watching an ad than lower OSL people. However, it is very difficult to separate true exploratory information seeking from goal-directed information seeking. The extent to which a person engages in EXPB is a function of OSL. The size of the effects is not very large (see previous findings on the strength of the relationship between general personality and specific behaviors (Kassarjan and Sheffet, 1991)).

H22: Optimum stimulation level has a positive relationship with exploratory behavior when shoppers surf the web.

OSL is related to exploratory purchase behavior (Baumgartner and Steenkamp, 1994, 1996). More precisely, OSL is an antecedent of exploratory purchasing behavior tendencies (Baumgartner and Steenkamp, 1996). A high level of OSL tends to decrease the persistance of the same purchase response over time. OSL is positively related to the tendency to buy new products and brands (Raju, 1980; Venkatraman and Price, 1990).

H23: Optimum stimulation level has a positive impact on consumers' pre-purchase intentions when they surf the site.

2. AFFECTIVE VARIABLES

a) ATTITUDES TOWARD THE WEB SITE

As there is not much literature about attitudes toward the web site, we will try to adapt literature found on attitudes toward the ad for the web sites. Attitudes toward the ads, an affective construct, consist of consumers' feeling of favorability/unfavorability toward the ads itself and mediate the influence on brand attitude and purchase intentions (Mitchell and Olson, 1981; Shimp, 1981). Edell and Burke (1984), Laczniak and Muehling, (1990) and Lutz (1985) defined attitudes toward an ad as the predisposition of individuals to answer favourably or not to a particular ad stimulus during a particular exposure occasion.

Attitudes toward an ad are viewed as a unidimensional construct (purely affective without any cognitive or behavioral component) (Lutz, MacKenzie and Belch, 1983; MacKenzie and Lutz, 1989; MacKenzie, Lutz and Belch, 1986). For Gardner (1983), this construct appeared to be predominantly affective. Most authors conceptually perceive it as a situationally-bound construct. However, attitudes toward the ad can be described by a multidimensional construct composed of a cognitive dimension (conscious responses to executional elements) and an affective (emotional responses without any conscious process) dimension (Shimp, 1981). This author hypothesized that these two dimensions are likely to have an unequal impact on consumers. Other researchers such as Burton and Lichenstein (1988); Madden, Allen and Twible (1988); Muehling (1986); Zinkhan and Zinkhan (1985) and Muehling; Stoltman and Misra (1991) positioned the cognitive

dimension as high involvement (central processing), whereas the affective dimension is defined as low involvement (peripheral processing).

Lutz (1985) defined five antecedents of attitudes toward the ad: 1) ad credibility, 2) ad perceptions, 3) attitude toward the advertiser, 4) attitudes toward advertising in general and 5) mood.

As previously explained by the way of the ELM theory, attitude toward an object is based on both central and peripheral processes (Petty, Schumann, Richman and Strathman, 1993b; Cacioppo and Petty, 1989). Peripheral processes are determined by the use of simple decision rules (generated online or stored as heuristics), conditioning processes, mere-exposure processes, and others that do not involve scrutiny of the central merits of the attitude object (Petty and Cacioppo, 1986). Many peripheral cues have a greater impact when motivation and/or ability to investigate the central merits of the products are low (no knowledge about the product category (Maheswaran, 1994)) or purchase choice is not important (Darker et al, 1995; Maheswaran, Mackie and Chaiken, 1992)). Peripheral cues are used when attitudes cannot be based on central merits of the target because stimuli are difficult to estimate (Pelham and Neter, 1995) or targets are equally attractive (Heath et al, 1994). Motivation moderates the impact of peripheral cues by increasing the scrutinity of the central merits of the products, then decreasing the direct (non-thought–mediated) impact of peripheral cues (MacKenzie and Spreng, 1992; Haugtvedt, Petty, and Cacioppo, 1992). High NFC people are less influenced by peripheral cues than people low in NFC, but are more influenced by substantive arguments in an ad (Haugtvedt et al, 1992). Even though the ELM theory seems to be a good theory to explain the diversity of attitude change, neither the central nor the

peripheral approaches alone account for the explanation of the results (Petty, Cacioppo and Schumann, 1983). Other elements are influential in the diversity of attitude change. In some situations, people are avid searchers and manipulators of information, and in others, they are best described as cognitive people who avoid difficult intellectual activity (Burnkrant, 1976, McGuire, 1969).

According to the dual process models of attitude change, when the motivation or the ability to investigate attitude-relevant information is lacking, one or more peripheral processes are likely to determine persuasion results.

Stevenson, Bruner and Kumar (2000) showed that the construct of attitudes toward the web site is worth including in research of web sites, their content, and especially the ads they might include. Luna et al (in press) considered attitudes toward the site as an antecedent of flow that mediates the effect of three components of flow for a specific web site: two site characteristics (interactivity and challenges) and the psychological construct of focused attention.

Most of the research has assessed consumers' perceptions and usage of the Internet and its services. Among the various studies done, we can mention consumers' attitudes toward online services (Miller, 1996), online purchase (Gupta, 1995; GVU, 1999); Web usage (Gupta, 1995; GVU, 1999; Hammonds, 1997; Hoffman, Kalsbeek and Novak, 1996), recall of the sites visited (Diaz, Hammond and McWilliam, 1996), effect of banner ads on brand judgments (Briggs and Hollis, 1997), attitudes toward Internet advertising policies (Gordon and De Lima-Turner, 1997) and finally, awareness of the Internet itself (Fawcett, 1995).

However, Ducoffe (1996) conducted a research on the antecedents of consumers' attitudes toward web advertising with a sample of 318 business executives in New York City. The web advertising was perceived as more informative than entertaining (Ducoffe, 1996; Diaz et al, 1996). Unfortunately, we have relatively little information about Internet advertising, and more specifically about Internet advertising of pharmaceutical web sites.

Shimp (1981), Batra and Ray (1986), MacKenzie, Lutz and Belch (1986), Brown and Stayman (1992) found that attitudes toward the ad influence brand attitudes and purchase intentions. Thus, by analogy, attitudes toward the site will be an equally useful indicator of site value. A site can be estimated according to three content scales (entertainment, informativeness and organization) which account for attitudes toward web sites (Chen and Wells, 1999; Chen, Clifford and Wells, 2002). Attitudes toward the site scale remain a reliable and a unidimensional construct even though researchers carried out substantial changes in web sites, types of respondents and methods of administration (Chen et al, 2002).

On the other hand, Kwak, Fox and Zinkhan (2002) have a different explanation: attitudes toward online ads do not have any relationships with the overall Internet purchase process and it is a weaker variable than Internet involvement in explaining consumers' web buying in specific categories, whereas researchers measured attitude toward Internet ads in general.

Over time, attitudes toward the ad seem to be a good indicator of an ad's effectiveness (Batra and Ray, 1986; Haley and Baldinger, 1991; MacKenzie, Lutz and Belch, 1986). If web sites look like and reflect the characteristics of traditional ads,

attitudes toward the web site should lead to consequences identical to those found in attitude research (Jee and Lee, 2002). Flow construct mediates the effect of attitudes toward the site on consumers' intentions to revisit the site and to purchase this product, but it is not needed to predict consumer intentions (Luna et al, in press). According to some authors, attitudes toward the ad are an affective construct, which mediates the influence on brand attitudes and purchase intentions (Lutz, McKenzie and Belch, 1983; McKenzie, Lutz and Belch, 1986; Mitchell and Olson, 1981; Shimp, 1981; Homer, 1990). In the same manner, attitudes toward the web site have a positive and strong impact on attitudes toward the ad, attention to the commercial, brand attitude and purchase intentions (advertising hierarchy of effects model) (Bruner and Kumar, 2000).

H24: Attitudes toward the web site are positively linked to consumers' pre-purchase intentions when they surf the site.

It is worth noting that it is equally important to evaluate consumer attitudes towards the company behind the site, which is another element for the evaluation of the attitudes toward a web site (Supphellen and Nysveen, 2001).

3. BEHAVIORAL VARIABLES

a) EXPLORATORY BEHAVIOR

Exploratory behavior is classified as "behavior with the sole function of changing the stimulus field" (Berlyne, 1963). Raju (1980) listed risk taking, innovativeness, brand switching, repetitive behavior proneness, information seeking, exploration through shopping and interpersonal communication as aspects of exploratory consumer behavior.

There are four specific types of exploratory behavior analysed: innovative behavior (Foxall, 1986; Mittelstaedt et al, 1976), variety seeking in the context of food consumption behavior (Van Trijp and Steenkamp, 1992), cognitive responses to ads (Faison, 1977), and curiosity-motivated search for product information (Hirschman, 1980).

Theory and empirical studies suggest that a two-factor conceptualization of exploratory consumer buying behavior might be most useful: exploratory acquisition of products and exploratory information seeking (Baumgartner and Steenkamp, 1996).

Browsing, which is one of the constituents of EXPB for Internet, is performed when the surfers do not have a precise knowledge of the information that might be available and are not sure whether their requirements can be met or how these requirements may be reached. Browsing can be either general or purposeful. "Purposive" browsing occurs when the surfers have fairly specific requirements, whereas general browsing may be used as an opportunity for the surfers to fine-tune the perception of their requirements or to simply keep themselves up-to-date on the latest changes in a specific field or a product type (Rowley, 2000).

It is hypothesized that shoppers' exploratory behavior, characterized by information-search or exploration through purchasing, influences positively their attitudes toward the web site. The more they tend to explore the various possibilities offered by the Web, the more they will fine-tune their requirements and have a positive idea of the site they visit when surfing the Web, triggering approach behavior toward the web site.

H25: Customers' exploratory behavior has a positive relationship with their attitudes toward the site when they surf it.

b) INVOLVEMENT

Involvement is a very important variable in audience processing of both traditional advertising (Petty and Cacioppo, 1981, 1983, 1986) and web advertising (Raman and Leckenby, 1998; Cho, 1999).

According to Day, Stafford and Camacho (1995), involvement is a motivational state influenced by a person's perception of the object's relevance based on inherent needs, values and interests (Zaichkowski, 1985). Its major antecedents are the characteristics of the person, the stimulus/object, and the situation (Bloch and Richins, 1983; Zaichkowsky, 1986).

Zaichkowski (1985), by the use of her Personal Involvement Inventory (PII) scale, conceptualizes involvement as a unidimensional construct (McQuarrie and Munson, 1987). The PII scale consists of two groups of adjectives: the first one contains items-high face validity as indicators of involvement (states), whereas the second is associated with the measure of attitudes. Both of them represent conceptually two different constructs, but there is a caution that the involvement scale suffered from attitudinal contamination. On the other hand, Laurent and Kapferer (1985) considered involvement as a multifaceted construct because an involvement profile is containing importance, pleasure, self-expression and risk constructs required (McQuarrie and Munson, 1987). For products such as automobiles, cereals, television, facial tissue, headache drug, instant coffee, jeans, laundry detergent, mouthwash, the Revised Product Involvement Inventory (RPII) and PII were highly correlated with the attitudes, and involvement cannot be reduced to personal relevance or interest. Consequently, RPII is a viable alternative to the PII for measuring involvement (McQuarrie and Munson, 1987). Laurent and Kapferer

(1985) studied four antecedents dimensions of involvement: the importance of the product and consequences of making a wrong choice, probability of making a wrong purchase, and finally, symbolic and emotional (hedonic) values of the product.

There are two kinds of involvement: enduring involvement and situational involvement. Enduring involvement is viewed as a predictor of behaviors such as information search (Higie, 2001). There is an enduring involvement for a product category when there are intrinsic rewards (Schmidt and Spreng, 1996). Enduring involvement (measured as importance) directly predicts skills and challenges (two antecedents of the flow) (Novak, Hoffman and Yung, 1998). Situational involvement shows a link between a product or a situation and outcomes or consequences of that situation (Schmidt and Spreng, 1996). It leads to an increase in both attention and information processing because of the belief that these efforts will produce favorable outcomes (Schmidt and Spreng, 1996). However, its role had not been explored as well as goal-directed and experiential navigation behaviors (Novak, Hoffman and Yung, 1998). Based on involvement and search behavior, researchers differentiated flow states from these two behaviors. Among the numerous opposite characteristics they have, we can mention: extrinsic vs. intrinsic motivation, situational vs. enduring involvement, directed vs. non-directed research, goal-directed vs. navigational choice (Hoffman and Novak, 1996).

More explicitly, there are motivations that are both goal-directed (to obtain information) and experiential (to be entertained). Goal-directed usage of the Internet suggests that surfers use the Internet in an intentional and selective manner, reflecting a deliberating exposure to specific content (Rubin and Perse, 1987). When users log on,

they have a specific objective in mind. For example, an online session spent searching for specific information about an OTC drug's purchase would suggest a goal-directed motivation. In contrast, when people use the Internet for diversion, escape, and/or relaxation (experiential usage), there is not a specific outcome-oriented goal to their online session. The Internet is employed primarily for the experience (multiple automotive sites to try out different test-driving simulations). The focus is more directed on the medium than on special content and focuses on the satisfactions offered by the medium itself (Perse and Greenberg-Dunn, 1998).

However, as the online surfers are active and involved, researchers have tried to identify different factors influencing motivation. Eighmey (1997) studied surfers' perceptions of the use of commercial web sites and found that they appreciated information placed in an enjoyable milieu. Thus, both goal-directed and experiential gratifications can be obtained from the Internet. Korgaonkar and Wolin (1999) extended Eighmey's study to show that surfers likely seek both goal-directed and experiential gratifications in their web navigation.

The flow experience is positively correlated with fun, recreational and experiential uses of the Web, expected use of the Internet in the future, and the amount of time consumers spend online, but negatively associated with employing the Internet for work-related activities. In that way, surfers who experience flow on the Internet appear to search online shopping experiences that emphasize ease of use. Task-oriented activities (work, online search for product information and purchase) relate to skills and control, but not flow. However, this does not mean that such activities will not necessarily lead to flow, but rather online shopping, for example, is simply not an activity inducing the flow.

Most task-oriented online activities may neither currently supply the requisite levels of challenges and arousal, nor induce telepresence and time distortion, which are necessary to achieve the flow.

MacInnis and Jaworski (1989) studied the processing and the evaluation of the information by the consumers' motivation, their ability and their opportunity to process information. The level of information relevance (= involvement) can impact both their motivation to process that information (MacInnis and Jaworski, 1989) and the way information is processed (Johnson and Eagly, 1989, 1990). Ability to process information is operationalized as the consumers' skills or proficiency in interpreting information. Consumers' attention and comprehension processes are strongly influenced by the motivations, the abilities, and the opportunities to process salient information in their environments (Batra and Ray, 1986). Ability to process (skills+challenges) is a function of the amount and the type of knowledge that people had acquired through experience. Opportunity to process depends on the different facets of the immediate environment such as the situational distractions (noise, crowding), the information overload, the information brand (organized by brand or by attribute), and the modality (print/broadcasting) (Celsi and Olson, 1988). Motivation to process information is conceptualized as the involvement developed by the informational stimuli (Greenwald and Levitt, 1984; Lastovika and Gardner, 1979; Petty and Cacioppo, 1981; Zaichkowski, 1985).

However, with new media such as the Internet (particularly web sites), it can happen that there is some restriction in the information processing ability due to the inexperience, but not knowledge of consumers. Situational-information related effects have an impact

on the opportunity to process information. Consumers' attitudes toward the brand affect their processing of information in that site (MacInnis and Jaworski, 1989).

Highly-involved people will search for more information before purchase, process relevant information in depth, and use more criteria in their purchase decisions than others (Leong, 1993; Laaksonen, 1994; Maheswaran and Meyers-Levy, 1990). Internet-involved customers will more likely purchase online than people with low levels of involvement (Kwak, Fox and Zinkhan, 2002). In general, surfers acquired high involvement levels that are related to the overall Internet purchase and to most of the personal products and services (except for entertainment and music) (Kwak, Fox and Zinkhan, 2002). We do not have to forget that involvement with the product category is another important element of Internet purchasing behavior (Bulter and Peppard, 1998). Involved people react differently to a web site and accumulate different evaluations of it than less involved consumers (Balabanis and Reynolds, 2001).

H26: Involvement has a positive relationship with customers' pre-purchase intentions when they surf the site.

Balabanis and Reynolds (2001) posited that aspects of the web site related to the product attract the interest of highly-involved consumers, whereas low-involved ones focus more on the peripheral stimuli of the site (visuals, sounds, frames) or the site's design characteristics. The relationship between involvement and attitudes toward the site is partially dependent on the characteristics of the site (Balabanis and Reynolds, 2001). Prior attitudes of consumers towards a brand give birth to attitudes toward the web site associated with that brand (Balabanis and Reynolds, 2001). Findings in Balabanis and

Reynolds (2001) confirm the influence of live brand attitudes on the attitude formation of online shoppers. Harvin (2000) also indicates that consumers are more comfortable with companies' strong off-line brands that they already know and trust. Yoo and Stout (2001) posited that consumers with a high level of product involvement have more intentions to interact with a web site, leading to more extensive search and more interactive functions tried.

H27: Involvement is positively linked to attitudes toward the site, when consumers surf this site.

We can surmise that surfers' involvement varies according to their optimum stimulation level. Involved surfers are more prone to search for more information when surfing the pharmaceutical web sites and in doing that, explore more new stimuli and situations because of a higher need for environmental stimulation.

H28: Involvement is positively related to consumers' optimum stimulation level when they surf the site.

Consumers' involvement is important to study as their information search for an OTC drug is a function of their involvement in their purchase decision (Gore, Madhavan, McClung, and Riley, 1994). The presence of an active information-seeking behavior is more likely to happen among individuals involved in their over-the-counter nonprescription drug purchases (Gore et al, 1994). The greater their involvement is, the greater the likelihood that consumers will seek expert sources of information (Gore et al, 1994). High-involved consumers are more likely to search for information and

understand the importance of safe and effective use of over-the-counter drugs (Gore et al, 1994).

c) PREPURCHASE INTENTIONS

Online purchasing is one of the most rapidly growing forms of shopping, with sales growth rates that surpass buying through traditional retailing (Levy & Weitz, 2001). Business-to-consumer Internet sales in the United States grew by 120% between 1998 and 1999 to approximately $33.1 billion (Shop.org & Boston Consulting Group, 2000). Forrester Research (2001) reported that in 2000 Internet sales to consumers amounted to $48.3 billion, representing an annual growth rate of 45.9% (Shim et al, 2001).

According to Albert (1999), shopping is certainly becoming a major motivation for web use with cybersales estimated to be at $95 billion in 2001. This fact is also increasingly recognized in the literature (Deighton, 1997; Peterson, Balasubramanian, and Bronnenberg, 1997; Sarkar, Butler, and Steinfield, 1998). Eighmey (1997) found a "purchase intention" factor in his initial field study. Maignan and Lukas (1997) identified the Internet as "a medium which facilitates the consumption of other goods and services." Katz and Aspden (1997a) found that 10% of respondents used the Internet to shop.

Despite all these impressive sales growth rates, it appears that many consumers seek retailer web sites with the intentions to purchase, but subsequently give up this purpose. Jupiter Communications reported that approximately 72% of surfers researched products once per month (Shop.org, 2001). According to a 2000 Boston Consulting Group study, the rate of consumers who buy out of those who visit a web site remains low, ranging between 2.8% and 3.2% (Shop.org & Boston Consulting Group, 2000).

Among reasons commonly cited for the consumers' abortion of information search processes and shopping trials, researchers can include a lack of enthusiasm to supply personal and credit card information, technical problems with Web sites, and problems in locating products. This suggests that consumers' search experiences at Internet retailers' web sites are integral determinants of their online purchasing behaviors (Shim et al, 2001). More precisely, the same authors argue that information search may be the most important element leading to online purchase. If search intentions play a central role in predicting future purchasing intention, search attitudes could be a valuable research tool for foreseing the likelihood of consumer purchasing on the Web. Consequently, no purchase decision while shopping on the Web is largely the consequence of unfavorable reactions to a site rather than a broader lack of interest in this distribution channel (Shim et al, 2001). Search intention mediates relationships between purchase intentions and other key antecedents of purchase intentions, chiefly when shopping online. The perception of the surfers that the Internet's role in consumer information search is one of its most pronounced features (Maignan & Lukas, 1997; McGaughey & Mason, 1998; Rowley, 2000) seems to indicate that information search online will continue to progress as a major vehicle for comparison shopping as technologies will develop (Dickson, 2000).

Intentions consist of motivational components of a behavior (purchase in our case) and are characterized by the degree of conscious effort a person will practice to perform this behavior (Shim et al, 2001).

Donovan and Rossiter (1982) demonstrated that the store-induced pleasure and arousal were positively linked to the willingness to buy. Arousal is provoked by the level

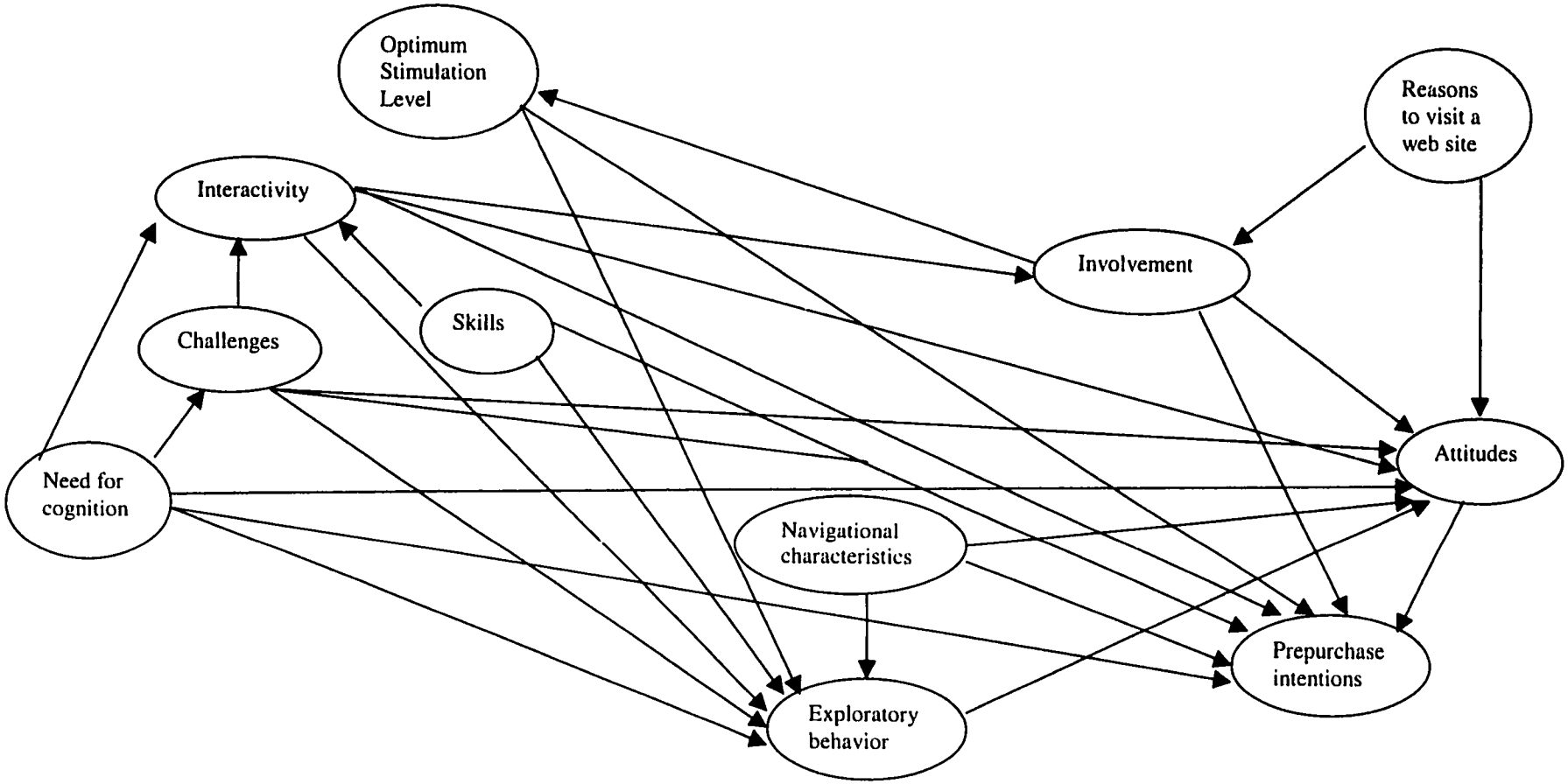
of challenges. Pleasure in atmospherics is similar to the playfulness variable in the theory of the flow. Playfulness is an important indicator of the flow and is predicted by the antecedents of skills (through control), challenges (through arousal), and focused attention during the interaction. It leads to the consequences of flow such as positive affect, more exploratory behavior on the web, and greater expected web use in the future. Moreover, a short but intense flow state can move consumers to the act of buying in an expedient manner by providing the feelings of pleasure control that result from flow, while reducing the amount of deliberation time necessary before buying (Smith and Sivakumar, 2002).

Shim et al (2001) showed that intention to use the Internet to search for information for search goods was not only the strongest predictor of Internet purchase intentions but also mediated relationships between purchase intention and other predictors such as attitudes toward online shopping, perceived control and online purchase experience.

A sample of students evaluated simulated OTC product labels for two product categories in random order. The results indicated that when consumers are involved in their purchase of OTC medications, they are significantly more likely to understand information from the label and evaluate it appropriately. However, involvement neither affects attitudes toward the product label nor enhances purchase intentions (Sansgiry, Cady and Sansgiry, 2001). Purchase intentions were influenced by their attitudes toward the web site, but not by the perceived interactivity (Jee and Lee, 2002).

All these variables and their interrelations are modeled and presented in Figure 1.

Figure 1: Conceptual Model of Consumers' Pre-Purchase Intentions



III. METHODOLOGY

A. QUESTIONNAIRE DEVELOPMENT

The questionnaire was a structured, non-disguised instrument, which used closed-ended questions (5-point Likert scale). It included statements designed to measure the effectiveness of pharmaceutical web sites characteristics. The survey also gathered additional information on the respondents' behavior (NFC, involvement, approach/avoidance behaviors) and their purchase intentions. We collected demographic information including gender, age, education, and occupation. The data for the study were collected from the homepage of an OTC drug from a large and well-known pharmaceutical company. A recent study by Ipsos PharmTrends reported that for now, this OTC drug was used by 23% of all U.S. allergy sufferers to treat this ailment, whereas the main competitor has a 32% share. Since it was a Canadian web site, we used English and French languages for the questionnaire. The measurement instrument is provided fully in appendices 6, 7, 8 and 9. The English version had been pre-tested and the validity as well as the reliabilities of the constructs had been well established before its translation into French. A first bilingual researcher translated the survey from English into French. Another bilingual person translated the French version back to English to evaluate the equivalency of meaning between both versions of this questionnaire. A few discrepancies between the two were resolved by a common agreement.

B. DATA PROCESSING

We programmed the data collection in order for respondents to directly send their responses into an online database. We used Survey Solutions for the Web (Perseus) to

create a file in html for both versions of the questionnaire. These files were connected to the university server in order to access the database by the way of FileMaker Pro 5.0. database. This avoided costly and time-intensive manual entry of survey responses into a database, as well as transcription errors.

As they were received, the researcher verified the questionnaires for completeness and consistency. Coding was fairly simple, given the highly structured nature of the questionnaire. Indeed, all the questions were already pre-coded on the questionnaire, with 1 being "strongly agree" and 5 being "strongly disagree".

Statistical analysis was conducted using descriptive statistics as well as structural equation modeling. This later method allows for both confirmation of the factor structure and testing of the stated hypotheses using the structural model. A summary of descriptive statistics is provided for each variable in Appendix 1.

C. SAMPLING AND DATA COLLECTION

1. SAMPLING FRAME

First, we pre-tested these two questionnaires by selecting 10-15 students from the John Molson School of Business, at Concordia University. The initial sampling frame consisted of Canadian consumers in general who surf the Web. However, several problems can be highlighted with respect to this sampling frame. First, the Internet has not yet been adapted completely by the general Canadian population. If researchers attempt to focus on consumer behavior in general, a systematic bias may be introduced in the representativeness of the sample, as most of the consumers with Internet access are more educated and well-off than the average population. In our case, our sample suffers

relatively less from this bias as we are interested in the study of the online consumer instead of the "generic" consumer. Finally, we are mostly interested in theory development, which justify the use of an online random but convenience sample (Calder, Phillips and Tybout, 1981).

The final sampling frame consisted of students from the John Molson School of Business. Data were collected using a convenience sample in a field setting. The snowball method was also applied, but we did not have any control over it as we requested people to ask their friends, colleagues and family members to participate in our research. On the other hand, the student sample seems to be appropriate as it represents a large market segment of college students with an immense size and economic potential (estimated at $90 billion) (Gannon, 1999; Hauer, 1974; Kessler, 1998). Enrollment in institutions of higher education is expected to increase by 12.8 %, from 14.28 million (1994) to 16.11 million (2007) (National Center for Education Statistics, 1996). As very frequent users of the web, students are an important target for understanding Internet advertising (Rosner, 1996). Consequently, a sample of students was drawn from a large array of courses offered during the summer program throughout the campus. From May to August 2002, trained field-workers went to several classes to briefly explain the purpose of the study and to distribute a cover letter describing the aims of the research, the procedure to follow, and indicating that participation was strictly anonymous and voluntary. The cover letter written in English and in French (see Appendices 4 and 5) also included a short paragraph informing respondents that the study would assist completion of a graduate thesis. No incentives were given for participating in the study. The chosen method was considered as the most appropriate for the data collection for the

purposes of the study, as it offered the lowest cost, the greatest geographic flexibility, very quick feedback, and the best opportunity for the respondents to answer anonymously in terms of their own time and place.

Self–reporting associated with the convenience sampling-type approach used in this survey represents a limitation of this study. Self-reported data in any kind of surveys are subject to idiosyncratic scales' use and even deliberate alteration of the answers through social desirability biases.

2. SAMPLE SIZE

The sample size was determined based on existing results in the relevant literature. Steenkamp and Van Trijp (1991) contend that maximum likelihood estimations should be robust if the sample size is greater than 100. More specifically, Hox and Bechger (1999) assume that with multivariate normal data, a reasonable sample size of about 200 observations is acceptable, although there are examples in the literature, which used smaller samples. Therefore, we estimated that our sample should include at least 200 respondents on account of the large number of factors included in the study. According to Tabachnick and Fidell (1989), it is recommended to obtain 5 to 10 respondents per item included in the factor analysis, with a minimum of 100 to 200 participants.

3. SAMPLE DESCRIPTION

Two hundred sixty-six respondents were recruited from undergraduate, MBA and M.Sc. courses at Concordia University in Montreal. All respondents volunteered to participate in the study. The demographic composition of the sample is summarized in

Table 1. The sample consisted of 116 males (44%) and 148 females (56%), with 68.7 % of them having at least a first degree, and with age ranging from 18 to 65 (80.5% are between 18 and 44).

Table1: Descriptive Statistics

Variables	**Range**	**Number**	**Total (%)**
Gender	Male	116	43.6
	Female	148	55.6
	Missing values	2	0.8
Age	18-24	64	24.1
	25 to 34	96	36.1
	35 to 44	54	20.3
	45 to 54	31	11.7
	55 to 64	17	6.4
	over 65	2	0.8
	Missing values	2	0.8
Profession	Educational, recreational and counseling services	10	3.8
	Fine and applied arts	3	1.1
	Humanities and related fields	9	3.4
	Social sciences and related fields	85	32.0
	Commerce, management and business administration	8	3.0
	Secretarial science	6	2.3
	Agricultural and biological sciences/technologies	13	4.9
	Engineering and applied sciences	7	2.6
	Nursing and nursing assistance	8	3.0
	Other health professions, sciences and technologies	30	11.3
	Mathematics and physical sciences	3	1.1
	All other	77	28.9
	Missing values	7	2.6
Education	Elementary school	1	0.4
	High school	22	8.3
	Trade/vocational school	8	3.0
	College, technical institute	50	18.8
	Bachelor degree	94	35.3
	Master degree	73	27.4
	Doctorate degree	5	1.9
	Degree in medicine, dentistry, veterinary medicine or optometry	11	4.1
	Missing values	2	0.8

D. MEASUREMENT INSTRUMENT

The measurement instrument in both English and French is provided in Appendices 6, 7, 8 and 9. The questionnaire contained items measuring the antecedents of flow

(interactivity, skills, challenges), the reasons to visit a web site, the optimum stimulation level, exploratory behavior, need for cognition, involvement, attitudes toward the site, and pre-purchase intentions. The "Characteristics of the site", another variable that could influence the flow and the purchase intentions, was also included. Finally, some demographic variables were measured.

All these dimensions have been studied previously, providing a large pool of existing valid items to use in our survey. The most appropriate measures for each concept were selected from the literature and adapted to meet the needs of our study.

The short Need for Cognition (NFC) Scale (18 items) developed by Cacioppo, Petty and Kao (1984) was adapted to measure the construct and it was operationalized with eight items. The "Reasons to Visit a Web Site" is one of the dimensions representing motivation to navigate. This scale, developed by Ducoffe in 1996, was operationalized with eight items. The "Optimum Stimulation Level" (OSL) scale, developed by Eighmey in 1997, was operationalized with five items and is another dimension of the construct "Motivation to Navigate." The "Interactivity" scale developed by Novak et al (1997, 1998) was operationalized with four items. The "Skills" scale, developed by Novak et al (1997, 1998) and Hoffman and Novak (1996), was operationalized with four items. The "Challenges" scale, developed by Novak et al (1997, 1998) and Hoffman and Novak (1996), was operationalized with five items. The "Exploratory Behavior" scale, developed by Novak et al (1997, 1998) was operationalized with eight items. The Involvement scale, represented by perceived message relevance and developed by Muehling et all (1990) and Zaichkowsky (1994) was operationalized with eight items. The scale concerning the "Characteristics of the Web Site", developed by Bell and Tang

in 1998, was operationalized with eleven items. Finally, the "Purchase Intentions" scale, developed by Gore et al in 1994, was operationalized with seven items. The reliability measures using Cronbach's coefficient alphas of most of the scales used in this study have been reported to be greater than 0.75, except for the OSL scale (0.62), the NFC scale (0.58), and the INT scale (0.61).

For each item, respondents indicated their degree of agreement or disagreement based on a five-point Likert scale, except for the construct of Involvement (INV) which uses a five point-semantic differential scale. The demographic information collected in the study included: gender, measured as: (1) male (2) female; occupation, measured by 13 different categories of work; education, measured on a eight-point scale ranging from (1) elementary school to (8) Ph.D/professional training; and finally age, measured on a six-point scale ranging from (1) 18-24 years to (6) over 65 years.

Before assessment of the overall model fit, it is important to discuss the specification of the need for cognition construct. Most of the past research dealing with the validation of this scale has found one dominant factor underlying the concept of NFC, and one or more other factors explaining relatively additional little variance (Cacioppo et al, 1996). While all of theses studies used exploratory factor analytic techniques, they nonetheless concluded that NFC was a one-factor construct. Forsterlee and Ho (1999) conducted a confirmatory factor analysis to validate the structure of the NFC scale using an Australian sample. They did an exploratory factor analysis first and found one major factor including all the positively worded items and a second factor comprising the negatively worded items. The authors argued that participants often have difficulties in answering negatively worded items, leading them to give inappropriate responses. This can be

considered as a method bias and may be responsible for the existence of different factors linked to positively and negatively framed items. Thus, they concluded that NFC is a single factor construct and that negative items accounted for the second factor. They also suggested that the negatively worded items should not be used in calculating factor scores. Consistent with Forsterlee and Ho's study (1999), the present research has only included the positively worded questions to specify the NFC factor, measured by four items.

IV. DATA ANALYSIS

A. EXPLORATORY FACTOR ANALYSIS

The objective of this study was to propose and empirically test a model describing the influence of some behavioral and situational variables on consumers' intentions to purchase an OTC drug. The graphical representation of this model presented at the end of the literature review (Figure 1, page 51) will facilitate the data analysis. The Purchase Intentions model as illustrated in Figure 1 displays ten other constructs: OSL, Reasons to Visit a Web Site, Interactivity, Skills, Challenges, Exploratory Behavior, NFC, Involvement, Attitudes towards the Web Site, and Web site Characteristics.

We began our statistical analyses with an Exploratory Factor Analysis (EFA) in order to determine how the observed variables were linked to their underlying factors. Knowing that some constructs studied could have items loading on more than one construct, we used a data reduction technique to identify the minimal number of factors underlying the observed variables (items) and explaining most of the variance observed.

Maximum Likelihood Extraction removes highly correlated variables from the data and varimax rotation ascertains that constructs are distinct. Initially, the number of factors for each construct was higher than 1 except for SKIL (skills) and INT (interactivity). The percentage of variance did not exceed 67% (SKIL and CHAL), and most Cronbach alpha coefficients were acceptable (higher than 0.60), except those of NFC and OSL.

Table 2: Initial Factor Analysis Results

Construct	Initial nb of items	Nb. of factors	% of variance	Cronbach Alpha
REAS	8	3	62.7	0.6830
OSL	5	2	60.1	**0.5116**
SKIL	4	1	67.3	0.8256
CHAL	5	2	67.3	0.6652
INT	4	1	46.5	0.6067
CHPS	11	2	51.3	0.8036
EXPB	8	2	58.1	0.7772
NFC	8	4	56.0	**0.3236**
INV	8	2	65.7	0.8690
ATTI	10	2	61.6	0.8885
PPURI	7	2	59.6	0.7488

A preliminary analysis of the psychometric properties of the items composing the different scales resulted in deleting certain items presenting poor psychometric values or changes in Cronbach alpha coefficients. After deletion of these items, each construct proned to be unidimensional and factorially distinct, all items used to operationalize a specific construct loading on a single factor.

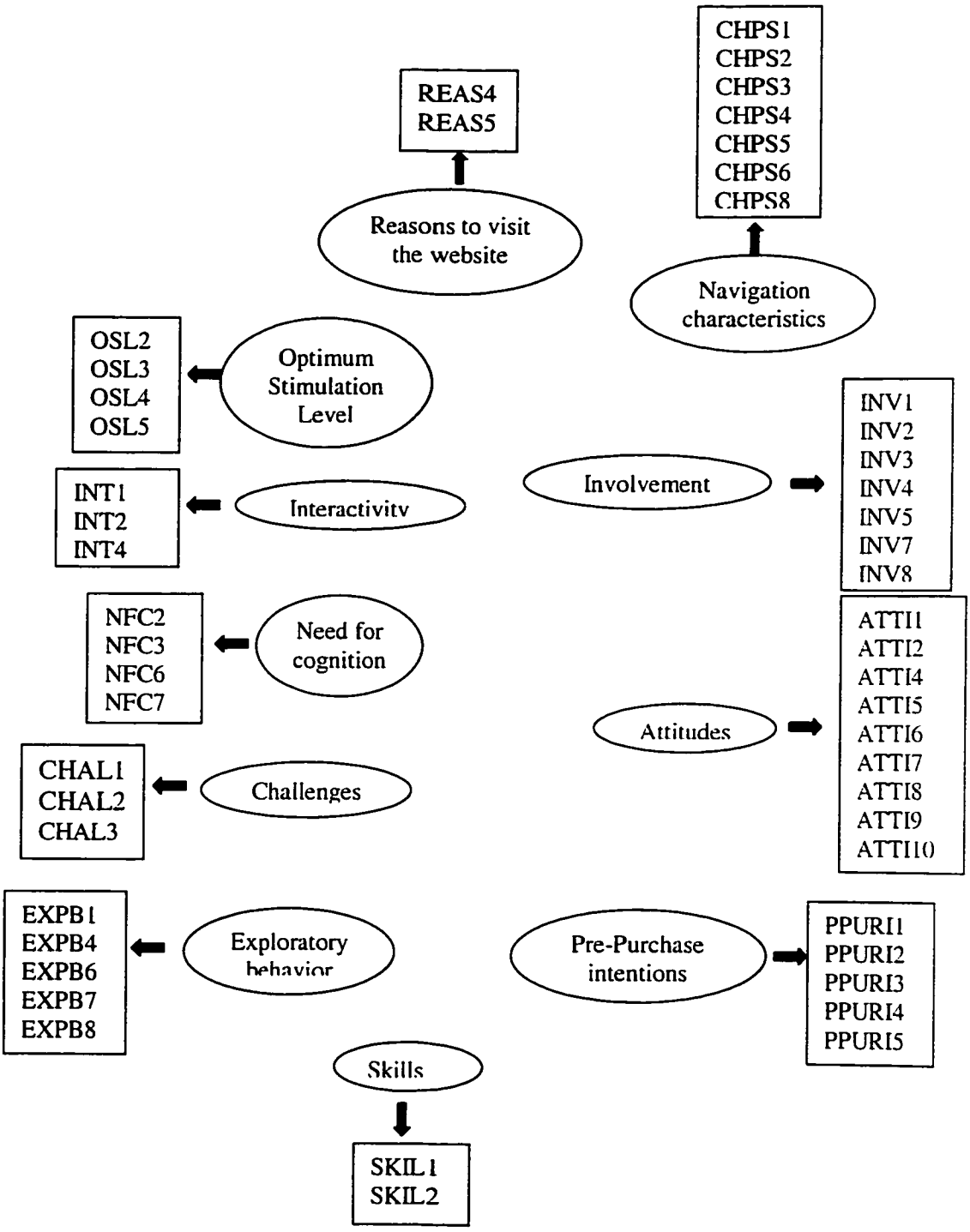
The EFA highlighted the existence of 11 factors with eigenvalues greater than 1.0. The criterion used to identify and interpret factors was that each item should have a factor loading greater than 0.4. According to Nunnally (1967), acceptable Cronbach alpha coefficients start at 0.60. In our study, all alpha coefficients except one were greater than 0.60. Need for Cognition had a coefficient alpha of 0.58, slightly below the cut-off value of 0.60. Eight of the eleven constructs had an alpha coefficient greater than 0.70, indicating very high reliability.

Table 3: Factorial Analysis Results after Deletions

Construct	Final nb of items	Deleted items	Nb of factors	% of variance	Cronbach alpha
REAS	2	1,2,3,6,7,**8**	1	82.7	0.7934
OSL	2	1,**4*,5***	1	47.3	0.6153
SKIL	2	3,4	1	91.9	0.9117
CHAL	2	**2***,4,5	1	71.2	0.7973
INT	2	3,**4***	1	56.6	0.6090
CHPS	7	**2***,7,10,11	1	50.1	0.8503
EXPB	5	2,3,**7***	1	51.4	0.8061
NFC	3	1,4,5,**6***,8	1	45.0	0.5819
INV	7	6	1	56.3	0.8715
ATTI	5	**2***,3,**7***,*9*,**10***	1	*58.7*	0.8964
PPURI	4	**5***,6,7	1	50.0	0.7518

* Items deleted during the CFA because they loaded on more than one factor are indicated in bold.

Figure 2: Factorial Model



The final measurement model (or EFA= exploratory factor analysis) consisted of 41 explaining 11 factors, which were used in the structural equation modelling techniques (see Figure 2).

B. STRUCTURAL EQUATION MODELING

Structural equation modeling (SEM) is a two step-statistical methodology involving first, a measurement model (confirmatory factor analysis) that tries to simultaneously determine how the observed variables are linked to their underlying latent factors and second, a structural model that shows the links among the latent variables. The full latent variable model allows the researcher to hypothesize the "impact of one latent construct on another in the modelling of causal direction" (Byrne, 1994).

This technique is used in the behavioral and social sciences for specifying, estimating, and testing hypothesized interrelationships among significant variables (Bentler, 1988; Joreskog and Sorbom, 1988). In fact, this methodology possesses specific properties that other procedures do not have, such as measurement errors, incorporation of observed variables and latent constructs, which are of real interest to social scientists. However, before using SEM, two major assumptions must underly its validity:

1- An adequate sample size.

2- A normal multivariate distribution of the data.

Checking the normality assumption for each variable independently is not enough to infer multivariate normality. In fact, the importance of multivariate normality originates from the fact that the chi-square (χ^2) statistic is extremely sensitive to departure from

normality. Hence, the significance of such a test makes no sense when there is extreme departure from normality (Bentler, 1989).

The first step in the data analysis was to check if these two assumptions were met. Assumption 1 was satisfied since 266 observations were collected. The second assumption was verified in the following section.

1. DATA DESCRIPTION

First, we checked the existence of any missing values, as SEM, like most multivariate methods, requires data to be complete. The EQS software program identified 22 cases with either no answer or only 30% of the questions completed. These cases were removed. Six cases (ID # 16, 18, 44, 57, 210, 220) which had some answers missing (less than 15%), had the missing values replaced with the mean of the variable in order to not reduce further the sample size.

Next, verification of the multivariate normality assumption was based on information provided by the univariate statistics (kurtosis and skewness), and by the normalized estimate of multivariate kurtosis. Byrne (1994) suggested that high values of kurtosis and skewness (above the absolute value of 1.5) demonstrate a violation of the normality assumption. Also, Bentler (1992) proposed that high values of normalized estimate of multivariate kurtosis suggest a violation of multivariate normality. The EQS output showed a slight to moderate violation of the kurtosis and skewness criteria. All the variables had a kurtosis and a skewness smaller than |1.5|, except CHPS 47 (web site characteristics) for which the kurtosis (2.2493) is greater than |1.5|. These preliminary

results did not suggest a violation of the multivariate normality assumption. The value of the normalized estimate of multivariate kurtosis was equal to 26.28.

The EQS program identifies outliers, removal of which can help improve the multivariate normality of the sample. EQS provides the six cases with the largest contribution to normalized multivariate kurtosis. Identification of an outlier is based on the estimate presented for one case relative to those presented for the five other cases. While there is no absolute value upon which to make this judgement, the rule of thumb is that estimates for outlying cases are substantially different from those representing the other cases. According to the EQS output for the full model, the observations that contributed most to normalized multivariate kurtosis were cases 55, 119, 127, 145, 189, and 248 with relative estimates of 1035.11, 907.85, 784.87, 1289.19, 1429.92, and 1034.56. Removal of these six cases resulted in a reduction of the normalized estimate of multivariate kurtosis to 18.44 (see Table 4). No further significant improvement was possible by the elimination of other cases.

Table 4: Cases with Multivariate Kurtosis

Cases eliminated	Normalized estimate of multivariate kurtosis
None	26.2763
189	24.4401
189, 145	22.8995
189, 145, 248	21.7413
189, 145, 248, 55	20.2857
189, 145, 248, 55, 119	19.2053
189, 145, 248, 55, 119, 127	18.4401

2. CONFIRMATORY FACTOR ANALYSIS

Confirmatory factor analysis (CFA) was used to test the measurement model before conducting a test of the structural model. In SEM, it is strongly suggested that a CFA he conducted before the analysis of the full structural model (Byrne, 1994). The purpose in estimating model fit is to establish the degree of similarity between the sample covariance matrix and the predicted covariance matrix (Byrne, 1994). Gap in fit between these matrices is represented by the residual covariance matrix and its standardized covariance matrix. The smaller the residuals the better the fit. EQS provides several model fit indices. First, the average off-diagonal value of the lower triangular standardized residual matrix, for which the smaller the value, the better the fit. EQS also displays the frequency distribution of the standardized residuals. Ideally this distribution should be symmetric and centred around zero. For parameter estimation purposes, slight to moderate departures from normality can be handled by the maximum likelihood (ML) estimation procedure. However, the chi-square value (χ^2) may not reflect an adequate evaluation of the model studied (Byrne, 1994). Ideally the χ^2 value should be small and its associated probability value should be greater than the selected significance level. However, as this statistic is extremely sensitive to sample size and statistical power, it would reject almost every reasonable model in a great statistical power condition (Raykov, Tomer, and Nesselroade, 1991). Typically, a non-significant χ^2 is sought, which indicates no significant difference between a hypothesised model and observed data. According to Baumgartner and Homberg (1995), there is a changing negative relationship of model complexity to CFI, but RMSEA is not affected by the complexity of the model. Browne and Cudeck (1993) suggested that the RMSEA values about or

below .05 indicate a close fit of the model in relation to degrees of freedom, and values below .08 indicate a reasonable fit. Bentler (1990) reported that a comparative fit index (CFI) with a minimum value of .90 is indicative of good model fit. In our study, the model is more complex than those appearing in the marketing literature. If we compare our conceptual model to median values found in a meta-analysis of 73 studies prepared by Baumgartner and Homberg (1995), our initial model counts more measured variables (41 vs. 11), number of parameters estimated (52 vs. 32), and degrees of freedom (816 vs. 49). This is why Satorra and Bentler (1988) developed a statistic that includes a scaling correction for the χ^2 statistic when distribution assumptions are transgressed. Its calculation takes into account the model, the estimation method, and the sample kurtosis values. This Satorra-Bentler chi-square (S-Bχ^2) is rated as the most reliable test statistic for evaluating covariance structure models under various distributions and sample sizes (Byrne, 1994). In EQS, the ROBUST option must be selected with the estimation method to compute the S-Bχ^2 statistic. When this option is chosen, robust standard errors are also computed. As for the practical fit indices (NFI, NNFI, and CFI), they range from 0 to 1 and are derived from a comparison of the hypothesized model with the null model. Values greater than 0.90 are considered to indicate acceptable fit to the data (Bentler, 1992).

The parameters of the model include the factor loadings of the variables and the variances of the independent variables (factors and residuals). It is important to note that for purposes of statistical identification as well as for setting the scale for the latent factors, the first measurement indicator for each factor (REAS1, OSL1, INT1, SKIL1, CHAL1, NFC1, EXPB1, CHPS1, INV1, ATTI1, and PPURI1) has been specified as

fixed. These parameters are constrained equal to 1. It is also worth noting that all the paths for the residuals (Es) are fixed to 1 since their variances are specified as free, except E2, E12, E15, and E70 which are estimated close to 0.

Adequacy of model fit was determined by the traditional χ^2 statistic and its p-value, the ratio χ^2/df, the Normed Fit Index (NFI), the Non Normed Fit Index (NNFI), the Comparative Fit Index (CFI), and the Adjusted Comparative Fit Index (CFI). Indeed, residuals analysis indicated that the Average Off-diagonal Absolute Standardized Residuals = 0.1155 and at 51.04% of the standardized residuals ranged from –0.10 to 0.10. Model fit was further confirmed by a looking at the various fit indices. The χ^2= 1807.2 for 864 degrees of freedom, yielded a ratio of χ^2/df = 2.09. Better still, the S-Bχ^2 = 1633.1, yielded a ratio of S-Bχ^2/df = 1.89. The probability value associated with the χ^2, however, was less than 0.001 in both cases. NFI = 0.643, NNFI = 0.763, CFI = 0.773, and the Adjusted CFI = 0.781. The overall indices did not suggest a good fit to the data. Some issues remained to be resolved.

3. STRUCTURAL MODEL

It included:

- 5 items measuring exploratory behavior
- 2 items measuring reasons to visit any web site
- 2 items measuring optimum stimulation level
- 2 items measuring interactivity
- 2 items measuring skills
- 2 items measuring challenges
- 7 items measuring pertinent characteristics to process a web site
- 3 items measuring NFC
- 7 items measuring involvement
- 5 items measuring attitudes toward the web site
- 4 items measuring purchase intentions

Parameter misspecifications can be determined in EQS with the LM (Lagrange Multiplier) test. The LM test showed that fit could improve if at least four parameters would be freed (see Table 5). There were six errors covariances between E84 and E82, E50 and E19, E30 and E28, E52 and E50, E85 and E21, and E67 and E29 and one factor covariance between F4 (SKILL) and D5 (CHAL). The LM test demonstrated that the error covariance should be freely estimated as parameters of the CFA model. Adding these parameters to the model should decrease the χ^2 value by 203.973, translating into a significant improvement of the overall model fit.

The CFA model was re-specified taking into account the above misspecification errors. The structural model was different from the measurement model by six error covariances and one factor covariance (F4, D5). Results are provided in Table 6.

Table 5: Initial and Final Measurement Model Fit

Fit Criteria	Initial Measurement Model	Final Measurement Model
Average Off-Diagonal Absolute Standardized Residuals	0.1155	0.1144
Distribution of Standardized Residuals		Normal
χ^2	1807.182	1603.209
S-Bχ^2	1633.1304	1466.387
Degrees of Freedom (df)	864	816
S-B$_x$2/df	1.89	1.96
NFI	0.643	0.678
NNFI	0.763	0.798
CFI	0.773	0.808
Adjusted CFI	0.781	0.814
Number of iterations before convergence	7	7
Number of parameter estimates close to 0	4 (E2, E12, E15, E70)	4 (E2, E12, E15, E70)
Respecification compared to initial model	Initial model	E84,E82=*; E50,E19=*; E30,E28=*; E52,E50=*; E85,E21=*; E67,E29=*; F4, D5= *,

Table 6: Full Structural Model Fit

FIT CRITERIA	FULL MODEL
Average Off-Diagonal Absolute Standardized Residuals	0.0626
Distribution of Standardized Residuals	Very good
X^2	1078.856
S-B_x2	995.7375
Degrees of Freedom (df)	744
S-B_x2/df	1.34
NFI	0.776
NNFI	0.908
CFI	0.916
Adjusted CFI	0.926
RMSEA	0.042
Number of iterations before convergence	14

According to Byrne (1994), to assess the fit of individual parameters, we have to determine their viability and their estimated values. We also have to analyze individual parameters' statistical significance. Besides providing the parameter estimates, EQS provides their standard errors and z-test statistics. Based on a 5% significance level, the test statistic must be greater than |1.96| before the hypothesis (parameter = 0) is rejected. Table 7 presents estimates of the factor loadings and their test statistics. Table 7 clearly shows that all factor loadings were statistically significant.

Table 7: Statistical Significance of Parameter Estimates

	Parameter estimate	Standard error	Test statistic	ROBUST standard error	ROBUST test statistic
REAS4	1.00	-	-	-	-
REAS5	1.072**	0.182	5.884	0.164	6.526
OSL2	1.00	-	-	-	-
OSL3	0.769**	0.148	5.180	0.164	4.679
INT1	1.00	-	-	-	-
INT2	1.647**	0.475	3.467	0.555	2.968
SKIL1	1.00	-	-	-	-
SKIL2	1.005**	0.080	12.544	0.080	12.619
CHAL1	1.00	-	-	-	-
CHAL3	0.929**	0.116	8.002	0.110	8.410
EXPB1	1.00	-	-	-	-
EXPB4	1.077**	0.107	10.038	0.097	11.106
EXPB6	1.130**	0.106	10.631	0.103	10.942
EXPB8	0.859**	0.111	7.707	0.101	8.482
NFC2	1.00	-	-	-	-
NFC3	1.704**	0.360	4.738	0.390	4.374
NFC7	1.210**	0.266	4.544	0.261	4.634
CHPS1	1.00	-	-	-	-
CHPS3	1.630**	0.144	11.302	0.144	11.298
CHPS4	1.424**	0.123	11.542	0.135	10.546
CHPS5	1.124**	0.125	9.020	0.131	8.610
CHPS6	1.084**	0.137	7.886	0.155	7.014
CHPS8	1.033**	0.126	8.183	0.129	8.021
CHPS9	0.865**	0.128	6.756	0.153	5.665
INV1	1.00	-	-	-	-
INV2	0.656**	0.083	7.874	0.094	6.998
INV3	0.891**	0.068	13.106	0.054	16.580
INV4	1.000**	0.068	14.733	0.076	13.153
INV5	0.983**	0.070	14.045	0.063	15.635
INV7	0.565**	0.063	8.922	0.078	7.256
INV8	0.656**	0.083	7.874	0.094	6.998
ATTI1	1.00	-	-	-	-
ATTI4	1.385**	0.134	10.322	0.127	10.902
ATTI5	1.190**	0.116	10.301	0.122	9.766
ATTI6	0.982**	0.111	8.866	0.119	8.258
ATTI8	1.150**	0.117	9.809	0.114	10.067
ATTI9	0.868**	0.112	7.762	0.119	7.264
PPURI1	1.00	-	-	-	-
PPURI2	1.751**	0.339	5.167	0.347	5.046
PPURI3	1.585**	0.313	5.062	0.385	4.119
PPURI4	1.999**	0.384	5.211	0.411	4.868

** significant at $p < 0.05$

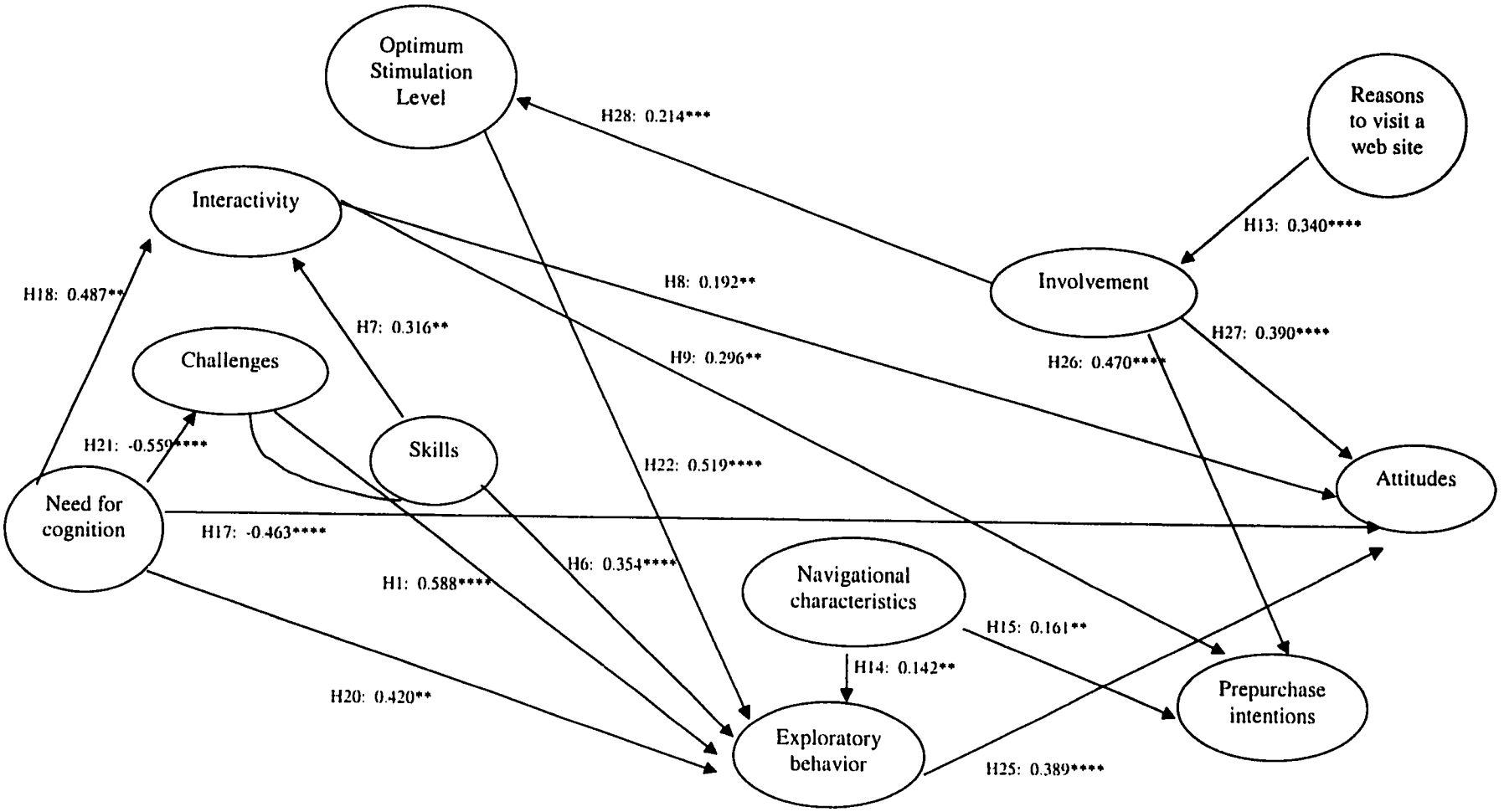
Finally, we analyzed the path coefficients representing the hypothesized relationships between the various constructs. Table 8 provides the regression coefficient estimates and their statistical significance. It also shows the standardized values of the regression coefficients and relates the paths to our original hypotheses. For a better comprehension of the statistical results, Figure 3 summarizes all the significant paths between the factors, their t-values, and associated probabilities represented by asterisks.

Table 8: Statistical Significance of Regression Coefficients' Estimates

	H	Parameter estimate	Standard error	Test statistic	ROBUST Standard error	ROBUST test statistic	Standardized estimate
CHAL→EXPB	H1	****	0.132	3.518	0.144	3.209	0.588
CHAL→ATTI	H2	NS	0.067	0.941	0.065	0.978	0.088
CHAL→PPURI	H3	NS	0.060	0.677	0.059	0.686	0.095
SKIL→PPURI	H4	NS	0.041	-1.115	0.041	-1.101	-0.112
CHAL→INT	H5	NS	0.086	0.948	0.089	0.921	0.172
SKIL→EXPB	H6	****	0.078	3.356	0.092	2.871	0.354
SKIL→INT	H7	**	0.058	2.447	0.062	2.303	0.316
INT→ATTI	H8	**	0.145	1.998	0.143	2.025	0.192
INT→PPURI	H9	**	0.130	2.057	0.138	1.932	0.296
INT→INV	H10	NS	0.174	-0.487	0.191	-0.442	-0.041
INT→EXPB	H11	NS	0.186	0.359	0.179	0.374	0.040
REAS→ATTI	H12	*one-sided test	0.049	1.590	0.048	1.625	0.100
REAS → INV	H13	****	0.081	4.439	0.084	4.263	0.340
CHPS → EXPB	H14	**	0.100	2.164	0.104	2.097	0.142
CHPS→ PPURI	H15	**	0.062	2.143	0.061	2.206	0.161
CHPS→ATTI	H16	NS	0.080	-1.269	0.080	-1.264	-0.073
NFC→ATTI	H17	****	0.211	-3.423	0.206	-3.509	-0.463
NFC→INT	H18	**	0.221	2.289	0.218	2.318	0.487
NFC→PPURI	H19	NS	0.150	-0.782	0.175	-0.671	-0.125
NFC→EXPB	H20	**	0.299	2.406	0.336	2.140	0.420
NFC→CHAL	H21	****	0.293	-4.147	0.322	-3.771	-0.559
OSL→EXPB	H22	****	0.110	4.804	0.133	3.970	0.519
OSL→PPURI	H23	* one-sided test	0.053	1.691	0.061	1.468	0.162
ATTI→PPURI	H24	NS	0.076	-0.278	0.079	-0.267	-0.036
EXPB→ATTI	H25	****	0.073	4.879	0.074	4.791	0.389
INV→PPURI	H26	****	0.054	3.791	0.059	3.500	0.470
INV→ATTI	H27	****	0.052	5.520	0.056	5.055	0.390
INV→OSL	H28	***	0.064	2.610	0.070	2.419	0.214

**** significant at $p < 0.001$
*** significant at $p < 0.01$
** significant at $p < 0.05$
* significant at $p < 0.10$

Figure 3: Final Structural Model



4. TEST OF HYPOTHESES

Concerning Hypothesis 1, we found a statistical significance of 0.1%, with a t-value of 3.52 (3.21) for the positive incidence of the challenges on the surfers' exploratory behavior.

Hypothesis 5 was not supported since we found a non-significant statistical t-value (0.95 (0.92)) and a $p < 10\%$ between challenges and interactivity.

Hypothesis 6, related to the relationship between skills and respondents' exploratory behavior, was supported with a confidence level of 99.9% and a z equals to 3.36 (2.87).

Hypothesis 7 also predicted a positive and significant relationship between skills and interactivity. In fact, t reached 2.45 (2.30) with a $p < 1\%$. It was supported.

Hypothesis 8 predicted a positive and significant relationship between interactivity and attitudes towards the site. The t-statistic was above the 1.969 minimum value required for a 95% confidence level (2.00 (2.02)), so H8 was supported.

Hypothesis 9 was supported and showed that interactivity had an effect on surfers' pre-purchase intentions, with a 95% confidence level and a t-value of 2.06 (1.93).

Hypothesis 12 predicted a positive relationship between surfers' reasons to visit a web site and their attitudes towards the web site. The results supported H12. The path between these two factors was positive and statistically significant (t= 1.59 (1.62) for one-way test) with $p < 10\%$.

Hypothesis 13 was fully supported by the data. A significant relationship was found between reasons to visit this web site and involvement, with a $p < 0.001$ and a t-value equal to 4.44 (4.26).

Hypothesis 14 was supported and showed that navigational characteristics of the web site had a strong effect on exploratory behavior, yielding a 95% confidence level and a t-value of 2.16 (2.10).

Hypothesis 15 was really interesting because we cannot relate it to any previous research done on this subject. According to our study, it seems that navigational characteristics of the pharmaceutical web site would have a positive and significant effect on consumers' pre-purchase intentions. We obtained a t-value of 2.14 (2.21) with $p<0.05$.

Need for cognition had an important effect on respondents' attitudes toward this web site. The results exhibited a significant and negative relationship between both constructs ($p < 0.001$; $t = -3.42$ (-3.51)), giving strong support for Hypothesis 17.

Hypothesis 18 predicted a positive and significant relationship between need for cognition and interactivity. The t-statistic was superior to the 1.969 minimum value required for a 95% confidence level (2.29 (2.32)), so H18 is supported.

Hypothesis 20 was supported by the data. A significant relationship was found between need for cognition and consumers exploratory behavior, with $p < 0.05$ and a t-value equal to 2.41 (2.14).

Hypothesis 21 was also supported since we found a high, negative and significant statistical t-test (-4.15 (-3.77)) with $p < 0.001$ between need for cognition and challenges.

Hypothesis 22 was also supported. A positive and significant relationship was found between optimum stimulation level and exploratory behavior. The t-statistic obtained was 4.80 (3.97) and $p < 0.001$.

Hypothesis 23, concerning the relationship between OSL and respondents' pre-purchase intentions, was marginallly supported with a confidence level of 90% (one-sided test done) and a t-value equal to 1.69 (1.47).

Curiously, Hypothesis 24 did not show any significance between attitudes and pre-purchase intentions, differing from previous studies where statistical significance was higher. Here, we obtained a t-value = - 0.28 (-0.27).

Hypothesis 25 displayed a positive and very strong relationship between surfers' exploratory behavior and attitudes toward the web site (t= 4.88 (4.79), $p < 0.001$).

Involvement influenced positively and significantly pre-purchase intentions ($p<0.001$, t = 3.79 (3.50)), giving strong support to H26.

Involvement had an important effect on respondents' attitudes towards this web site. The results exhibited a significant and positive relationship between involvement and attitudes toward the web site ($p < 0.001$; t = 5.52 (5.05)), giving strong support to Hypothesis 27.

Finally, involvement influenced positively and significantly OSL ($p < 0.01$, t = 2.61 (2.42)). This gave support to H28.

Therefore, some hypotheses were not supported. Among them, let us mention Hypothesis 2 (impact of challenges on attitudes), H3 (incidence of challenges on pre-purchase intentions), H4 (effect of skills on pre-purchase intentions), H10 (incidence of interactivity on involvement), H11 (incidence of interactivity on exploratory behavior), H16 (navigational characteristics implication on attitudes towards the web site), and finally, H19 (influence of need for cognition on pre-purchase intentions). The value of

their t-statistic was below 1.35, when the cutoff to obtain significant results being higher or equal to 1.64 for a $p < 10\%$.

C. EFFECTS OF DEMOGRAPHIC VARIABLES

Besides testing the proposed model, the researcher was also interested in other findings. In our study, it seemed interesting to test for possible effects of demographics (age, education, and language) on the following factors: REAS, OSL, INT, CHAL, SKIL, EXPB, CHPS, NFC, INV, ATTI and PPURI.

RQ1: Does age have an impact on these factors?

RQ2: How can we interpret the eventual impact of age on some of these factors?

RQ3: Does education have an impact on these factors?

RQ4: How can we interpret the eventual impact of education on some of these factors?

RQ5: Does language have an impact on these factors?

RQ6: How can we interpret the eventual impact of language on some these factors?

RQ7: Women develop a greater need for cognition than men when they surf a pharmaceutical web site.

RQ8: Women intend to buy more easily a pharmaceutical product than men after surfing the pharmaceutical web site.

RQ9: Women take more into account the characteristics of the web site than men when surfing the pharmaceutical web site.

RQ10: Men are more skilled than women when surfing the pharmaceutical web site.

RQ11: Men are more challenged than women when surfing the pharmaceutical web site.

First, we started by applying a one-way ANOVA, an extension of the two-sample test, to check whether or not the means of two or more groups were significantly different, and then, discussing the implications of the data on Internet research.

1. AGE

The Levene test assesses the homogeneity of variances. When $p < 0.05$, H_0: group variances are equal is rejected. In our case, CHAL (0.016) and SKIL (0.002) don't show an equality of variances with other dependent variables. The F-test tries to establish if there are differences or not between group means (see Table 9). If $p < 0.05$, H_0: average of scores is equal across age groups, is rejected.

Table 9: Age differences

	Mean Square	F	Sig.
INV	2.539	4.424	.002
ATTI	1.598	2.683	.032
PPURI	1.463	3.032	.018
SKIL	5.190	6.155	.000
CHAL	6.003	6.166	.000

Involvement, attitudes toward the site, pre-purchase intentions, skills, and challenges differed among the different groups. Thus, in order to study the differences among the five categories of age, we used a Tamhane (T2) test (see Table 10). Findings are summarized as follows:

Table 10: Multiple-comparisons (TAMHANE'S TEST) on Age

Dependent variables	I (AGE)	J (AGE)	Mean difference (I,J)	Standard error	Sig.
INV	1(18-24)	5(over 55)	0.567	0.147	0.004
	2(25-34)	3(35-44)	0.377	0.130	0.043
	2(25-34)	5(over 55)	0.590	0.137	0.001
PPURI	1(18-24)	5(over 55)	0.534	0.157	0.016
	2(25-34)	5(over 55)	0.455	0.145	0.036
SKILL	1(18-24)	4(45-54)	-0.770	0.243	0.029
	2(25-34)	4(45-54)	-0.770	0.237	0.024
	2(25-34)	5(over 55)	-0.680	0.223	0.054
CHAL	1(18-24)	3(35-44)	0.590	0.194	0.031
	2(25-34)	3(35-44)	0.650	0.173	0.003

Significant when $p < 0.05$

- The 18-24 group was significantly more involved and were more likely or show higher pre-purchase intentions than the over 55-aged group.
- The 25-34 group was significantly more involved and more challenged than people in the 35-44 group.
- The 25-34 group was significantly more involved but less skilled, and also intended more to purchase a product than the over 55-aged group.
- The 18-24 and 25-34 groups were significantly less skilled than the 45-54-aged group.
- The 18-24 group was significantly more challenged than the 35-44-aged group.

Kish and Busse (1968) found that the middle age group shows the highest OSL. In our study, we can't display any age differences for this variable. According to Schlosser, Shavitt, and Kanfer (1999), age has an influence on attitudes towards ads in general. Most studies about online buying showed that age plays an important role. Unlike previous findings, Kwak, Fox and Zinkhan (2002) quoted that age does not play an important role in web purchase, except for computer products. Smith and Whitlark (2001) found no significant gender differences relative to general online purchase behavior, using a sample of 315 respondents, most of them being students (69%). In our case, we found significant purchase intentions, even though most of our respondents were students. However, according to Gore et al (1994), age was not significantly correlated with the degree of involvement in purchase decisions.

According to Steenkamp and Burgess (2002), exploratory purchase behavior generally increases with age. In our study, we did not find such a result.

Age is negatively correlated with skills level (Harrison and Rainer, 1992). In our study, according to the theory of flow, when skills are lower than challenges, it means that instead of developing the flow (skills equal to challenges), surfers are anxious. Here, as the mean of skills (5.190) is lower than the one of challenges (6.003), we can conclude then that age influences network navigation.

2. EDUCATION

We joined the last two groups of respondents to form the doctorate level, as we did not collect enough respondents to obtain accurate results. The first group, primary school, was removed as there was only one respondent. The Levene test indicated that only

CHAL (0.003) did not show an equality among the educational groups. We applied then the F-test which showed differences between group means for OSL, EXPB, INV, ATTI, PPURI, and CHAL (see Table 11). Kish and Busse (1968) also found that education was positively correlated with OSL, which corroborates our results. According to Schlosser, Shavitt, and Kanfer (1999), education has an influence on attitudes towards ads in general, which supports our assertions. Across all the behaviors and ethnic groups, higher educated people exhibited higher exploratory behavior, which is consistent with the greater ability of higher educated people to process new and complex information (Capon and Burke, 1980).

Table 11: Educational Differences

	Sum of Squares	Mean Square	F	Sig.
OSL	5.264	1.053	2.679	.022
EXPB	9.614	1.923	4.376	.001
INV	16.991	3.398	6.201	.000
ATTI	19.740	3.948	7.415	.000
PPURI	7.979	1.596	3.437	.005
CHAL	22.390	4.478	4.764	.000

The Tamhane test identified the following differences among educational groups (see Table 12).

- The high school group was significantly less involved, less challenged, exhibiting a behavior less exploratory, and developed less positive attitudes toward the web site than people from the doctorate degree group.

- The high school group was significantly less involved and developed less positive attitudes toward the web site than the master degree group.
- The first degree's group was significantly less involved, developed less positive attitudes toward the web site and exhibited a behavior less exploratory than the doctorate degree group.
- Finally, the first degree's group developed less positive attitudes toward the web site and intended less to purchase a product than the master degree group.

Table 12: Multiple-comparisons (TAMHANE TEST) on Education

Dependent variables	I (Education)	J (Education)	Mean difference (I,J)	Standard error	Sig.
EXPB	2	6	-0.642	0.160	0.005
	4	6	-0.392	0.130	0.050
INV	2	5	-0.659	0.169	0.006
	2	6	-0.811	0.170	0.000
	4	6	-0.520	0.133	0.003
ATTI	2	5	-0.751	0.165	0.001
	2	6	-0.856	0.159	0.000
	4	5	-0.430	0.137	0.033
	4	6	-0.530	0.130	0.002
PPURI	4	5	-0.380	0.116	0.022
CHAL	2	6	-0.630	0.190	0.029

Significant when $p < 0.05$

3. LANGUAGE

As we did not collect enough French questionnaires, we pooled data from both questionnaires to test our model. Relationships among the variables in our model were not expected to vary as a function of language of the web site. Thus, both questionnaires included in the model were supposed to increase the relevance of our study. To verify it, the pooling procedure was appropriate. We used the relatively-robust Levene test. As we found no significant differences ($p > 0.10$), we pooled both questionnaires across language.

In order to test for the language effect, an independent-samples t-test was conducted to compare the average scores of English- and French-speaking respondents on all the factors (REAS, OSL, CHPS, SKIL, CHAL, INT, EXPB, NFC, INV, ATTI and PPURI).

The Levene test showed that PPURI (0.026) and NFC (0.051) did not have equality of variances between language groups.

The t-statistic test for equality of means showed that the difference between the two groups was significant for OSL, EXPB, REAS, AND CHAL (see Table 13). Furthermore, the negative sign of the t-test indicated that English-speaking respondents had higher scores for the factors (OSL, EXPB, and CHAL) than French-speaking respondents, whereas a positive one meant the opposite (REAS).

The F-test demonstrated that there were in fact effectively differences between French and English speaking respondents for OSL ($F = 22.212$, $p < 0.000$), EXPB ($F = 7.078$, $p < 0.008$), REAS ($F = 3.253$, $p < 0.046$), and CHAL ($F = 3.932$, $p < 0.053$).

Table 13: Language differences

		t	Sig. (2-tailed) (a)
OSL	Equal variances assumed	-4.713	0.000
EXPB	Equal variances assumed	-2.66	0.008
REAS	Equal variances assumed	2.003	0.046
CHAL	Equal variances assumed	-1.946	0.053

4. GENDER

Internet users tend to be young, male, and well educated (GVU, 1998).

According to some studies, male surfers far exceed the number of female surfers (Lueg, 2002). However, the 2000 U.S. Census data reports indicated that both genders used the Internet to the same extent. Media digest studied the web usage by gender and found that the gap in weekly Internet usage between males and females is closing. Since December 2000, weekly usage among women increased faster than for men. As of December 2001, 47% of adult women were connected to the Internet on a weekly basis, compared with 55% for men. Smith and Whitlark (2001) demonstrated that men and women have different needs and motivations when using the Internet. Women expected the Internet to be entertaining and educational, while men were information hungry. A growing number of women surf general reference materials and are interested by online books, medical information, cooking ideas, chatting and government information. In contrast, males want detailed and accurate information about investments, product purchases and their personal interests. They also tend to focus on free softwares, exploring and discovery (Smith and Whitlark, 2001).

The Levene test showed that CHAL (0.008), SKIL (0.000) and INV (0.016) did not have an equality of variances between the gender groups. The F-test demonstrated there were differences between males and females for CHPS ($F= 8.381$, $p < 0.004$) and SKIL ($F= 8.124$, $p < 0.005$).

The t-test for equality of means showed that the difference between the two groups was significant for SKIL ($t= -2.945$, $p= 0.004$) and CHPS ($t= 2.895$, $p= 0.004$). Furthermore, the negative sign of the t-test indicated that women were more skilled than men, whereas a positive sign meant that women were less preoccupied by the effectiveness of navigational characteristics than men.

According to the results gathered, it appears that there is no gender difference in NFC when surfing a pharmaceutical web site. This finding is supported by previous research (Cacioppo and Petty, 1982; Sadowsky and Cogburn, 1997; Tolentino, Curry, and Leak, 1990) that argued for the absence of relationship between NFC and gender. According to Schlosser, Shavitt, and Kanfer (1999), gender influences attitudes toward ads in general. We cannot ascertain this relationship in our case, as we measured the attitudes after surfing the web site and reading information about the product. No gender differences in either challenges or purchase intentions were found when surfing the web site. On one hand, Kwak, Fox and Zinkhan (2002) reported that gender and income were the primary influential demographic factors when studying purchase intentions. Men were more likely to purchase online than women. More precisely, consumers who frequently surf the web engage in online purchase more often for books, computer products, education, electronic goods, entertainment, Internet-related products, and travel than others. In our study, for an OTC drug, we found that there were no significant gender differences for

purchase intentions. Note that we did not specify the kind of purchase done. It could be either done online or from a brick and mortar retailer (pharmacies, department stores, etc.). On the other hand, Harris Interactive (1999) found that the number of women who planned to shop online in the Christmas season of 1999 was significantly larger than the number of males. Moreover, NPD Research (1999) forecasted that female shoppers would soon outnumber male shoppers in every product category the survey examined. More specifically for non-prescription drugs, Gore et al (1994) quoted that female were more involved in purchase decisions. Involvement in buying decisions was also inversely related to the education (Gore et al, 1994).

Men have more skills related to the Internet use than women. Harrison and Rainer (1992) mentionned that there is a relationship between gender and the level of computer skills. Males are more likely to have better computer skills. Some studies found that females have greater computer anxiety than males (Igbaria, Chakrabarti, 1990, Gilroy and Desai, 1986) while other studies do not shed any light on gender differences (Parasuraman and Igbaria, 1990, Howard and Smith, 1986). In our study, according to the theory of flow, when skills are lower than challenges, it means that instead of developing the flow (skills equal to challenges), surfers are anxious. According to the means of skills and challenges, men as well as women developed anxiety (see Table 14).

According to Novak and Hoffman (2000), women find that using the web is more challenging than men, regardless of how many hours a day they use the web. In our case, we found no significant differences between gender. This difference can be explained by the fact that most of the respondents were students and probably motivated to surf the web and developed thus, high challenges.

Table 14: Gender Differences on Skills and Challenges

	Gender	N	Mean	Std. Deviation
SSKIL	.Male	116	2.0086	.79121
	Female	148	2.3412	1.04334
SCHAL	.Male	116	3.6013	1.13107
	Female	148	3.6182	.94105

We also observed that men were more prone to surf when navigational characteristics of the web site were effective than women. Until now, there is no academic research done to validate the results found in our study.

In conclusion, we can say that we did not have any bias concerning the timing because there was no delay between the experience of flow and the respondents' answers to the questionnaire. There was also no loss of information through memory decay. Furthermore, respondents were not disturbed when they were in the flow state by interruptions or questionnaires to fill out, problems found in most of previous research.

We hope that working with a real web site and linking our questionnaires to it improved the ecological validity of this research over what researchers could expect with a fictitious web site in a controlled field experiment.

Normally, when studying web sites in general, Canadian researchers could include sites in French and English to increase the external validity of this research, as web surfers around the world frequently access web sites both in their native language and in English (Crockett, 2000). As a proof, most of Fortune 100 companies only give sites in English although they expect to gain more than 50% of their online marketing from countries outside the USA (Cutitta, 2002).

V. DISCUSSION

A. EXAMINATION OF THE RESULTS

To summarize the findings from the full structural model, the results supported hypotheses H1, H6, H13, H17, H21, H22, H25, H26 and H27 very significantly with $p < 0.001$; hypothesis H28 at the 0.01 level; and, finally, hypotheses H7, H8, H9, H14, H15, H18, and H20 at the 0.05 level. There were no significant effects for H2, H3, H4, H5, H10, H11, H16, H19 and H24. Next, each finding will be interpreted according to its corresponding hypothesis.

1. CHALLENGES

Hypothesis 1 showed that the "challenges" variable has an indirect link with attitudes towards the web site, mediated by the consumer's exploratory behavior, with a positive significant relationship. In fact, with opportunities for action on the Internet, surfers will be more inclined to explore the web site, generating more interest and more positive attitudes toward it.

However, there is no direct link between challenges and attitudes, as demonstrated by hypothesis 2. According to researchers, levels of challenge may have an impact on attitudes toward the web site. First, unchallenging web sites are considered boring, creating probably avoidance behaviors. Second, with a web site offering enough challenges, a more positive attitude (or approach behavior) is reachable by surfers. Finally, challenges are only positively related to attitudes towards the site if the challenge level is not excessive. Increasing opportunities for action on the Internet do not necessarily relate directly to the development of positive attitudes toward a specific web

site. Surfers can visit the web site out of curiosity without reinforcing positive attitudes- such as building a relationship with the company, revisiting the Web site in the future, spending time on it, or collecting more information about the company.

There is also no relationship between challenges and pre-purchase intentions, as hypothesized in this study (Hypothesis 3). We found the same results for skills (Hypothesis 4). It seems obvious that even though the opportunities for action on a web site are numerous, they do not affect eventual pre-purchase intentions.

Although hypothesis 5 demonstrated that challenge is positively linked to interactivity when customers are in the web site, this path was not significant and not supported by theory. We can interpret this non-significance by the fact that as challenge and skills are highly correlated (see Appendix 2), the effect of challenge is already imbedded in the skills variable. Normally, as challenges are considered opportunities for action on the Internet, and as interactivity reflects the consumers' perception that the site information is very need relevant, the more the surfer is challenged, the more interactivity he/she can probably develop.

2. SKILLS

Hypothesis 6 showed that "skills" has an indirect link with attitudes towards the web site, mediated by the exploratory behavior variable, to which "skills" is linked positively and significantly. It is interesting to note that the more skilled a surfer is, the more exploratory behavior he/she can develop. It is true that skills are an important element to possess in order to surf the web site easily and cleverly. Thus, the greater the skills, the

more likely the customer is to increase exploratory behavior, particularly information seeking or exploration through shopping.

According to Hypothesis 7, skills also influence indirectly attitudes towards the site via interactivity. The more skilled the surfer, the more it is possible to develop interactivity between the web site and himself/herself to experience the flow state. Jee and Lee (2002) proved that people with high internet-related skill levels perceived the web site as having a greater interactivity. Here, interactivity was operationalized as a mediating characteristic that can be defined as the extent to which surfers can participate in changing the form and the content of a mediated environment in real time by clicking, providing feedback or searching information. Thus, we can infer that this level of interactivity can trigger approach behavior toward this site.

Hypothesis 4 demonstrated no significant relationship between skills and consumers' pre-purchase intentions. More precisely, skills were linked neither directly to pre-purchase intentions nor indirectly through (1) exploratory behavior or interactivity, (2) attitudes). However, there is a non-significant relationship between attitudes toward the web site and pre-purchase intentions. It is probably due to the fact that involvement and attitudes toward the web site correlate highly (see Appendix 3), the effect of attitudes toward the web site being already present in the involvement variable. Second, both variables, attitudes toward the web site and pre-purchase intentions, did not directly concern the web site since although the pre-purchase intentions construct is based on the web site, the corresponding items are more directed toward the drug (or brand of that company).

3. INTERACTIVITY

Hypothesis 8 indicated that interactivity has a positive impact on attitudes toward the web site. Perceived interactivity has a direct link with consumers' intentions to revisit a web site, which is considered in our study one of the components of attitudes toward the web site. However, Luna, Perrachio and de Juan (in press) demonstrated that the effect of interactivity on the revisit intentions variable is only partially mediated by surfers' attitudes and navigation experience. Therefore, we should study the separate effects of interactivity on attitudes toward the web site and of the revisit the web site variable to see if we find different results. The former would be represented as a factor and the latter, as an indicator.

Hypothesis 9 indicated that people's interactivity has a positive and direct link with shoppers' pre-purchase intentions. As posited by some researchers, interactivity tends to show the site is need relevant, and depending on the traits of surfers, (trust and/or loyalty to the web site or to its product(s), innovators concerning the application and the use of new technologies) they are prone to purchase a product fast and easily. Two categories of purchasers are identified: compulsive and impulsive purchasers. Compulsive shoppers develop a positive emotional state (arousal, playfulness), making them evaluate more favourably the web site. They tend to buy more things and make more spontaneous purchases (particularly for e-business). Shoppers who buy on impulse tend to buy "spontaneously, unreflectively immediately, and kinetically" (Rook and Fisher, 1995) depending on the occasion.

Hypothesis 10 suggested that interactivity increases customers' involvement. This path was not significant though. With a significant correlation between attitudes toward

the web site and involvement, interactivity would lead to approach attitudes toward the Internet and involvement (Ha and James, 1998). In our case, we cannot apply this idea. As involvement and attitudes toward the web site are highly correlated (see Appendix 3), it seems that these variables have an influence on each other. This influence could vary depending on the other variables on which these variables have an impact.

Hypothesis 11 proposed that interactivity is positively related to exploratory behavior. However, this path was not significant. It is possible that there are some mediators between these two factors that could explain this result. In fact, the Revised Structural Equation Model for Flow (Novak, Hoffman and Yung, 1998) showed two mediators: control and playfulness, as antecedents of exploratory behavior.

4. REASONS TO VISIT A WEB SITE

Hypothesis 12 argued for a positive relationship between reasons to visit a web site and attitudes toward it. We had two items measuring reasons to visit a web site: I am interested in a particular product category, and I am interested in a particular brand; the others had been eliminated because of cross-loadings (multicollinearity). In fact, when an average consumer searches something (information, shopping or entertainment), he/she has precise reasons to visit a web site. Hence, the consumer will choose the site according to some specific criteria and, in that way, he/she will likely develop positive attitudes toward the visited site.

Hypothesis 13 shed some light on the fact that strong and precise reasons to visit a web site are linked to consumers' involvement. When shoppers have precise reasons to surf a web site they know what they want and they will be involved in searching for more

information in the sites they have deliberately chosen in a curiosity-seeking way rather than in an entertaining one.

5. NAVIGATIONAL CHARACTERISTICS

Hypothesis 14 predicted that the effectiveness of the navigational characteristics of the web site visited increases surfers' exploratory behavior. This link is straightforward: when the conditions of navigation are optimal (limited navigational problems, good search agents, easy keywords, immediate accessibility to the product information, links to sites with relevant information, back and forth switching between topics), shoppers will get more involved in the web site and will be more keen to search for information.

In Hypothesis 15, navigational characteristics of the web site are positively related to surfers' pre-purchase intentions. We can induce from this path that when navigational characteristics are positive, surfers can develop some arousal (not measured). It is suggested that the characteristics of products and web sites encountered early in online browsing can significantly influence not only the level of arousal and pleasure that consumers experience but also their shopping behavior (Menon and Kahn, 2002).

In Hypothesis 16, it was proposed that whatever the kind of navigational characteristics, these had no impact on attitudes toward the web site. Good navigational cues (text, icon links, navigation bars and site indexes coupled with navigation bars) help the surfers' navigation. If their navigational control is hindered by navigation cues, they may indirectly affirm their control by developing avoidance attitudes toward the site. When surfers are experiencing flow during web navigation, restrictive navigational cues may stop the flow by decreasing the surfers' control, resulting in possible negative

attitudes toward the web site (stopping exploratory site navigation, leaving the site, locating and browsing similar web sites). In our case, characteristics such as ease of use, limitation of navigational problems, good search agents, easy keywords, immediate accessibility to product information, good linkages, right predictability of the address and good level of banner ads, do not have any effect on the development of approach attitudes toward the web site. It is possible that other variables (e.g., control) not measured in our study could be the mediators needed to confirm the hypothesis.

6. NEED FOR COGNITION

Results for hypothesis 17 showed that individuals' need for cognition is negatively related to attitude toward the web site. The results did not fully support the proposed relationship, suggesting that consumers with high need for cognition are less likely to adopt an approach attitude. As opposed to individuals with low NFC, those displaying a high level of NFC are known to favour information search and use all the features of the web site in order to develop an attitude or judgement. Those individuals are so accurate and demanding that they do not adopt approach attitudes for this web site. On the other hand, individuals with low NFC are known to be less motivated to engage in effortful thinking and intensive information processing and more prone to come back to this site to get other information. Haugtvedt and Petty (1992) stated that the attitudes of high and low NFC people seem similar after receiving persuasive information content. According to the ELM, persuasion can use either central or peripheral routes to change attitudes. People develop both the motivation and the ability to evaluate informative elements thoughtfully via the central route. On the other hand, with the peripheral route,

individuals use some creative and entertaining elements as the foundation of their judgment.

Hypothesis 18 showed that consumers' NFC is positively linked to their interactivity toward the web site. People with high NFC are intrinsically motivated, tend to exhibit curiosity, intrinsically enjoy thinking and doing complex tasks, and are less likely to decrease their efforts on cognitive tasks. Furthermore, individuals' high need for cognition induces an increase of their interactivity as they can participate in changing the form and the content of a mediated environment in real time by clicking more seeking more feed-back or searching for more information.

Hypothesis 19 pinpointed that surfers' NFC is not linked to their pre-purchase intentions concerning the brand. In brick-and-mortar stores, high NFC people tend to make more optimal in-store purchase decision because they tend to react to promotional signals only when a significant price reduction is offered. Conversely, low NFC individuals react when the product appears to be on special regardless of the amount of price reduction offered. Regarding the Internet, nothing comparable applies to our study.

Hypothesis 20 showed that customers' NFC has a positive impact on their exploratory behavior. High NFC is defined as the motivation for effortful cognitive activities, whereas the exploratory behavior construct includes, amongst its dimensions, curiosity-motivated search for product information and brand switching. Moreover, according to the literature, browsing increases when the surfers do not have a precise knowledge of the information available on the web and are not sure if their requirements can be met or how they may be reached. Thus, we can infer that people with a high NFC would develop an extensive exploratory behavior.

Hypothesis 21 shows that people's NFC is highly negatively linked to their challenges. NFC, a personality variable, is described as the motivation for effortful cognitive activities. In our case, people with high NFC are expected to follow more the central route and to know well how to process, creating, thus, low levels of challenges.

7. OPTIMUM STIMULATION LEVEL

Hypothesis 22 showed that OSL has an indirect link with attitudes toward the web site, mediated by the exploratory behavior variable, with which OSL has a positive and extremely significant relationship. OSL is defined as the amount of stimulation that people develop generally in specific situations. According to Raju (1980), OSL determines, in our case, the degree of exploratory behavior of surfers. It means that people with high OSL will show increased exploratory behavior as they are going to be more inclined to scroll and browse.

In Hypothesis 23, there is a direct and positive path between OSL and pre-purchase intentions. OSL is an antecedent of exploratory purchasing behavior tendencies. According to some researchers, OSL is positively related to intention to pre-purchase new products and brands. Consequently, surfers' high stimulation provokes a positive emotional reaction that expresses itself in the possibility of purchasing a specific product presented in the web site visited.

8. ATTITUDES TOWARD THE WEB SITE

Hypothesis 24 proposed that attitudes toward the web site have a positive effect on the surfers' pre-purchase intentions. According to the results, this relationship is not

significant. It is probably due to the fact that involvement and attitudes toward the web site are highly correlated (see Appendix 3), with the effect of attitudes toward the web site being already included in the involvement variable. Second, both constructs, attitudes toward the web site and pre-purchase intentions, are not directly associated to the web site per se. Even though pre-purchase intentions generally are related to the web site, the items concern more specifically the drug (or brand of that company).

9. EXPLORATORY BEHAVIOR

Hypothesis 25 demonstrated that people's exploratory behavior (repetitive behavior proneness, information seeking or exploration through shopping) develop a positive link to their attitudes toward the web site. More browsing and scrolling are done when surfers do not have a precise knowledge of the information that might be available and when they are not sure whether their requirements can be met or how these requirements may be reached. Purposeful browsing occurs when the surfers have fairly specific requirements, when they want to fine-tune the perception of their requirements or to simply keep themselves up-to-date on the latest changes in a specific field or a product type, triggering positive attitudes toward the web site.

10.INVOLVEMENT

The results of the study offered full support for hypotheses 26, 27, and 28.

Hypothesis 26 demonstrated that shoppers' involvement has a positive impact on pre-purchase intentions. The more involved people are, the more they will search for information before purchase, process relevant information in depth, and use more criteria

in their purchase decisions than others. Moreover, Internet-involved customers will more likely purchase online than those with low levels of involvement.

Hypothesis 27 proposed that customers' involvement is related positively to their approach attitudes. The results showed a strong and positive relationship between these two concepts. High-involved consumers are more attracted by web site aspects related to the product (information content), whereas low-involved ones focus more on the peripheral stimuli of the site (visuals, sounds, frames) or the site's design characteristics. We can thus infer that high-involved surfers can develop positive attitudes toward the site leading to behaviors such as repeat visits to collect up-to-date information.

Hypothesis 28 asserted that surfers' involvement is linked to their optimum stimulation level. High-involved surfers are more prone to search for more information when surfing the pharmaceutical web sites and by doing so, increasing their amount of stimulation.

B. RESEARCH QUESTIONS FINDINGS

According to our results, it appears that people aged 25-34 considered as the median age rank of surfers, equally involved in surfing the pharmaceutical web site than 18-24 group or more involved in surfing the pharmaceutical web site than other groups. The youngest groups seem to be less skilled than the older ones. This finding is another result not existing in previous research. A lot of confounds can take place in research depending on the sampling frame and the definition of the different constructs used to prove or disprove hypotheses based on demographic characteristics. Nevertheless, the large 18-35

aged group exhibited much higher pre-purchase intentions than the older group, which is in accordance with other studies.

The less educated people are, the lesser their involvement, exploratory behavior and positive attitudes when they surf pharmaceutical web sites.

English-speaking consumers appeared to be more challenged and to exhibit more exploratory behavior and higher optimum stimulation level than their French-speaking counterparts. However, French-speaking consumers tend to have more reasons to visit a web site than the English-speaking ones. Since the constructs used are behavioral in nature, it is normal to find differences between these two groups. Moreover, the cross-cultural differences found in this study confirm this variability.

Concerning gender, women are more skilled than men, whereas men are more susceptible to the effectiveness of the navigational characteristics of the web site than women.

Finally, according to our findings, and consistent with previous research findings, it appears that there is no gender difference in NFC in relation to surfing a pharmaceutical web site.

VI. CONCLUSIONS

Table 15: Summary of the findings

Hypothesis	Result	Conclusions
H1	Supported	"Challenges" is positively related to consumers' exploratory behavior when they surf the web.
H2	No effect	"Challenges" does not have a positive impact on attitudes toward the web site when consumers surf the web.
H3	No effect	"Challenges" is not positively linked to customers' pre-purchase intentions for an OTC drug when they surf the web site.
H4	No effect	"Skills" is not positively linked to customers' pre-purchase intentions when they surf the web site for an OTC drug.
H5	No effect	"Challenges" is not positively linked to interactivity when consumers surf the web.
H6	Supported	"Skills" is positively related to shoppers' exploratory behavior when they surf the web.
H7	Supported	"Skills" is positively related to surfers' interactivity when they surf the web.
H8	Supported	"Interactivity" has a positive relationship with attitudes toward the web site when consumers surf it..
H9	Supported	"Interactivity" is positively linked to purchasers' pre-purchase intentions when surfing the web site.
H10	No effect	"Interactivity" does not have a positive impact on involvement toward the web site when consumers surf it.
H11	No effect	"Interactivity" is not related to customers' exploratory behavior when they surf the web.
H12	Supported	"Reasons to visit a web site" is positively related to attitudes of customers toward the web site when they surf it.
H13	Supported	"Reasons to visit a web site" has a positive impact on customers' involvement when they surf this site.
H14	Supported	"Navigational characteristics of the web site" has a positive impact on consumers' exploratory behavior when they surf this site.
H15	Supported	"Navigational characteristics of the web site" is positively linked to shoppers' pre-purchase intentions when they surf this site.
H16	No effect	"Navigational characteristics of the web site" does not have a positive impact on attitudes of consumers when they surf this site.
H17	Supported	Depending on its level, "Need for cognition" is related to attitudes of consumers toward the web site when they surf the site.
H18	Supported	"Need for cognition" has a positive impact on consumers' interactivity when they surf the site.
H19	No effect	"Need for cognition" does not have a positive relationship with consumers' pre-purchase intentions when they surf the site.
H20	Supported	"Need for cognition" is positively linked to consumers' exploratory

		behavior when they surf the site.
H21	Supported	"Need for cognition" has a positive impact on customers' challenges when they surf the site.
H22	Supported	"Optimum stimulation level" has a positive relationship with exploratory behavior when shoppers surf the web.
H23	Supported	"Optimum stimulation level" has a positive impact on consumers' pre-purchase intentions when they surf the site.
H24	No effect	"Attitudes toward the web site" is not positively linked to consumers' pre-purchase intentions when they surf the site.
H25	Supported	Customers' exploratory behavior has a positive relationship with their attitudes toward the site when they surf it.
H26	Supported	"Involvement" has a positive relationship with customers' pre-purchase intentions when they surf the site.
H27	Supported	"Involvement" is positively linked to attitudes toward the site when consumers surf this site.
H28	Supported	"Involvement" is positively related to consumers' optimum stimulation level when they surf the site.

VII. LIMITATIONS OF THE STUDY

Internet can provide three types of information sources: log files, secondary data from public sources, and data brought out from web site visitors (Sen et al, 1998). In our case, we obtained our data from web site visitors. However, the use of log files and extended log files would have provided us with supplemental information. All the entries are collected whenever a surfer interacts with a web site by clicking on a link to or at it. The server on this site automatically records all the data in log files. Even though log files contain some information about surfers' entries in a web site, they don't provide important information that marketers would need because of the impossibility to identify each access to a specific user and because of the difficulty to track clients when their web's session begins and ends. However, the use of cookies and tokens (Padmanabhan et al, 1996) can help undertake wisely session-tracking and user-tracking (called extended log files). Unfortunately, because of privacy concerns, the company was unable to try these technical methods for our study. In our case, it would have been interesting to obtain this quantitative information such as in-depth exploration of this site (banner ads-links), time spent on this site, amount of message processing to reinforce data found for interactivity (multidimensional construct) and for attitudes toward the web sites. We have to note that the duration of visit is another particular and neat way used to measure the level of interactivity in a web site and is useful to measure the effectiveness of advertising on the web (Raman and Leckenby, 1998).

Another limitation concerned the loyalty to a brand, a construct that was not measured in our study. When we measured attitudes toward the web site, we did not take into account the fact that consumers can be affectively loyal or not to a brand and can be

motivated to process all new information about this new brand in a biased manner (top-down processing, Eagly & Chaiken 1993). It would mean that, instead of investigating the specific aspects of the web site and using this information to evaluate it (bottom-up processing), consumers may link their positive or negative evaluation of the brand to the web site. As long as the site works reasonably well, the positive attitude toward the brand is applied to the evaluation of the web site.

The major problem we have with Internet surveys is that the external validity of the results (generalisability and projectability) to the Canadian population is low. Indeed, the population and sampling frames for this kind of surveys are limited to people who are connected to the Internet. More specifically, most fulfilled questionnaires come from the same city. Hence, problems occur when survey results need to be valid and representative for nation-wide populations (Comley 1996; Mehta and Sivadas, 1995). Moreover, as our online sample is not representative of the general population of Web users, we are not able to generalize the findings to the entire population of Web users.

Research efforts may also be effectively aimed at the behavioral influences on flow. We restricted our study of involvement to enduring involvement, as measured by the importance of the Web to the surfer. Neither the role of situational involvement is explored in this research nor are the distinctions between task-oriented and experiential navigation behavior.

VIII. IMPLICATIONS FOR ACADEMICS AND PRACTITIONERS

A. THEORETICAL IMPLICATIONS

The goal of this study was to examine the impact of navigational characteristics concerning Internet advertising on the behavior of consumers and its impact on pre-purchase intentions. The model of flow designed by Hoffman and Novak and previous knowledge about affective, cognitive, and conative aspects was used to propose our final model. More specifically, some of the antecedents of the flow such as skills, challenges and interactivity can be considered as cognitive variables, which define the ability to process information. Reasons to visit a web site and navigational characteristics of the web site are other cognitive variables that conceptualize opportunities and ways to process information. Finally, we define under the concept of general behavior toward the web site, three different dimensions of behavior in general. First, there are personality variables represented by NFC and OSL. Second, there is one affective variable, viz. attitudes toward the web site. Finally, there are conative variables such as exploratory behavior, involvement, and pre-purchase intentions. This research also helps provide a better understanding of Internet consumers' behavior and findings from the study of this model will be of interest to behavioral scientists both in marketing and psychology.

The theoretical implications of this research take several forms. First, our study empirically confirmed several previous relationships discussed in the literature.

1- According to Novak and Hoffman (1997) and Novak et al (1998), the positive path between OSL (personality variable) and exploratory behavior is validated by our study.

2- Following Wu (2000) and Stout (2001) studies, interactivity induces the formation of positive attitudes, which is confirmed by our results.

3- Jee and Lee (2001) and Mantel and Kardes (1999) reported that NFC has a significant impact on perceived interactivity, which is supported by our research.

4- We found the same results as Kwak et al (2002) who posited that high involvement leads to an overall Internet purchase.

Second, the proposed model tested several other relationships that had not been studied previously in the literature.

1- The negative influence of a surfer's NFC (personality variable) on his/her attitude toward the web site (affective variable) and the negative influence of NFC on challenge (ability to process information) are interesting results both for marketing scholars and for social psychology researchers.

2- Our results show that consumers require efficient navigational characteristics in a pharmaceutical web site (opportunities and ways to process information) to develop their exploratory behavior (conative variable) when they want to obtain online product–related information.

3- We also found that surfers' reasons to visit a web site (opportunities and ways to process information) influence their involvement behavior (conative variable) when seeking information.

4- We did not notice any significant path between interactivity and exploratory behavior.

5- We detected a positive and significant link between NFC and exploratory behavior.

6- Surfers' exploratory behavior impacts their attitudes toward the web site (affective variable). Although some researchers, e.g., Raju (1980) and Baumgartner and Steenkamp (1996), have done studies on these variables, this relationship has never been examined in an Internet situation.

7- We observed that consumers' involvement (conative variable) encourages the development of their OSL when surfing the Internet in search of information.

8- Nothing was detected concerning the effect of navigational characteristics on pre-purchase intentions. However, according to Lynch, Kent and Srinivasan (2001), site quality, represented by ease of use and usefulness of search, affect, and purchase behavior. In our study, navigational characteristics measured (ease of use, search agents, keywords, accessibility to information, links, predictability of the URL) have an impact on pre-purchase intentions.

9- Fazio and Zanna (1981) reported a highly significant correlation between attitudes toward the ad and perceived interactivity (ability to process information). When we adapted this path for the Internet, we did not notice any significance.

10- We also find evidence that challenges and skills (ability to process information) influenced directly and positively surfers' exploratory behavior (conative variable) when they have a specific activity (information seeking), while Ghani and Deshpande (1994) observed that skills and challenges had a

positive and indirect impact on exploratory behavior, mediated by the achievement of flow.

11- Finally, Balabanis and Reynolds (2000) noticed that involvement has an indirect relationship with attitudes because of the mediation of the characteristics of the web site. In our case, we found a direct relationship between these variables.

Third, our study fails to find support for some relationships examine in previous studies.

1- Jee and Lee (2002) suggested that challenges affect perceived interactivity. We did not find any support for this relationship between these two variables.

2- Novak and Hoffman (1997, 2000) conducted some studies about Internet in general. They predicted that when skills and challenges are present, pre-purchase intentions are developed, predicting purchase behavior. In our study, we did not detect any significant link either with skills or challenges on pre-purchase intentions.

3- Mantel and Karder (1999) quoted that high levels of NFC led to search information before purchase behavior, compared to low levels. In our case, we did not obtain any significant relationship between NFC and pre-purchase intentions (conative variable).

4- Luna, Peracchio and de Juan (in press) noted that consumers with enough challenges are open to more positive attitudes. In our case, this path was not significant.

Finally, we noticed that some of our results contradicted previous findings.

1- Some authors reported contradictory findings about the significance of the perceived interactivity on purchase intentions. On one hand, Wu (2000); Yoo and Stout (2001) observed a significant interaction between interactivity and purchase intentions. While on the other hand, Jee and lee (2002) invalidated this path. Further, Luna, Peracchio and de Juan (in press) discovered that interactivity had an indirect link to purchase intentions, partially mediated by attitudes toward the site. In our case, the results appear to support Wu (2000) and Yoo and Stout (2001).

2- Other contradictory results concern the incidence of skills on perceived interactivity. Wu (2000) operationalized web expertise as skills and found a positive link between them in one out of two studies. Jee and Lee's study (2002) showed that skills predicted perceived interactivity with a marginal significance. In our study, we detected a positive and significant path between skills and perceived interactivity.

3- Attitudes toward the web site impact attitudes toward purchase intentions (Bruner and Kumar, 2000). However, Kwak, Fox and Zinkhan (2002) demonstrated that attitudes toward online advertisements generally did not have any impact on the overall Internet purchase process. More precisely, we found the same results as Kwak et al. (2002), but with the effect of attitudes on pre-purchase intentions.

4- According to Hoffman and Novak (1996), negative navigational characteristics of the web site may stop the flow, inducing negative attitudes.

Chaffey et al (2000) revealed that navigational characteristics of the web site (ease of use, fast downloading) had an impact on intention to return to a web site. In our case, the latter variable is one of our items explaining attitudes toward the web site. We observed the same results as Chaffey et al (2000).

B. MANAGERIAL IMPLICATIONS

This study provides marketing practitioners with insights into some of the individual, emotional and behavioral variables that influence consumers' pre-purchase intentions of an OTC drug when they use the Internet channel to seek and collect information.

The findings generally indicate what type of consumers (according to their skills, challenges and behavior) are more likely to seek product-related information from the Internet, what is the influence of navigational characteristics on them, and under which circumstances they engage in this activity (reasons to visit a web site).

Consequently, companies must study the characteristics of surfers who visit their web sites. They must collect demographic and psychographic information from consumers at "both the within-site and across-site levels to web sites " in order to link consumer navigation and transaction behavior with consumer behavior (Internet Profiles Corporation, 1996).

In fact, the major categories of determinants of an effective web site that consumers and potential buyers online cited are page loading speed, content, navigation efficiency, security and marketing (Turban and Gehrke, 2000). According to Ranganathan and Ganapathy (2000), there are four key dimensions of business-to-consumer perceived by surfers: information content, design, security and privacy. Three characteristics (site

quality, affect and trust) significantly affect consumers' purchase behavior (Lynch, Kent and Srinivasan, 2001). These three studies confirm the importance of navigational characteristics on consumer behavior that marketers must continue to improve.

Given the early positioning of information search in the buying decision process, if marketers can identify which consumer segments in their market niche rely more heavily on navigational characteristics, and how to decrease the difficulty of navigating on their site for the novice surfers (skills and challenges), they can tailor their communication strategies to suit these segments. The literature review also sheds some light on the trust and loyalty as factors that contribute to increase the online purchase behavior of consumers.

Future research should address some of the limitations encountered in this project. In later studies of the subject, interactivity should be treated as a multidimensional construct and its relevant dimensions analyzed. Quantitative studies could be conducted using the log files and extended log files. Furthermore, researchers could use cross-cultural research in order to know if people from different populations and cultures differ in their behavior vis-à-vis the model investigated.

It is also strongly suggested that future studies test for other potential influencers not included in this model. In this regard, qualitative research may prove exceptionally useful in identifying variables that may have not been anticipated or have been overlooked by the researcher.

Among other factors of interest, we can mention experience with and control on the Internet. Experience with the Internet is important to consider when we want to study possible relationships with other behavioural or personality variables when consumers

surf specific web sites and make online purchases. Fox (2000) found that novice Internet users are less likely to make a purchase online: 27% of users with less than six months of experience using the Internet bought something online, compared to 60% of those with three or more years of Internet experience. In addition, novice users worried more about online credit card stealing (70%) than do experienced Internet users (46 %) (Fox, 2000). Arousal and trust are also other influencers to study in relation to the factors found in this research in order to bring out more accurate information for this model.

In this study, our concern was to discover if people, after surfing the web site and examining the effectiveness of its navigational characteristics, would engage in a possible purchase of the product, irrespective of the location (Internet, brick-and-mortar stores or pharmacies) where they can find the product.

Next, research could also shed some light on the importance and the effectiveness of the information content of the web site on consumers' purchase intentions and intentions to revisit the web site. In the same way, as Shim et al (2001) noticed, intention to seek information may be used for predicting Internet purchase, and it will be important to better understand the relationship between intentions to use the Internet for both information seeking and purchasing. For this purpose, we could employ the Klein's Interaction Model that highlights the important role of information search in consumers' Internet purchase behavior in the context of goods (search vs. experience goods) that differ based on the type of information sought before buying.

We could evaluate if the constructs studied can affect purchase intentions and loyalty factors, which can systematically differ across search, experience and credence goods. Also, future researchers need to investigate how variables at the individual's level (such

as expertise with the product category, familiarity with the web site, etc.) interact with web site characteristics in determining purchase intentions.

To insure the validity of the model presented in this study of pharmaceutical products (OTC drugs), we should apply the same methodology to the range of other existing OTC drugs and see if this model is applicable to other pharmaceutical web sites

We did not test statistically the presence of flow in our respondents' panel. First, a cut-off must be chosen to distinguish people belonging to these different categories: low vs. high skills and low vs. high challenges. According to the literature, most surfers experiencing flow can have skills and challenge levels particularly high, but depending on the specificity of the activities, these levels can vary. From a marketing point of view, it would be interesting to know what is the precise level of skills and challenges needed for the shoppers who are in the flow state when surfing the web to seek information or when purchasing a product (in our case, OTC drug). More specifically, we can propose a model that incorporates flow as a segmentation basis with flow experienced during search for information and purchasing. Consumers can be segmented according to the degree of which they experience flow on the Web. Surfers who more often experience flow consider the Web as fun; whereas those who seldom experience flow rate the Web as work. In the "high-flow" segment, some shoppers may find flow during experiential activities, some during task-directed activities, and others during both. On the other hand, in the "low-flow" segment, shoppers could probably experience flow during task-oriented activities.

However, since most of our respondents were students who use the Internet and software everyday, we can surmise they are part of a skilled group. Accordingly, we

think that our results can be applied to an important segment of the Web population. Furthermore, over time, as more and more novice users are likely to enter this sophisticated segment, we think that our results offer a window on what we can reasonably expect in terms of Internet consumer behavior. Future research should endeavor to replicate these results with samples that represent the broader spectrum of the population of Web users.

Longitudinal studies should be done to trace the evolution and adaptation of consumers' behavior when technological developments and improvements are brought in to navigational characteristics, to visual and audio capabilities and to the quality of the information found on the Web.

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APPENDIX 1

VARIABLES	CASES	MEAN	STD DEVIATION	SKEWNESS	KURTOSIS
*REAS1	266	1.650	0.764	1.148	1.392
*REAS2	266	1.421	0.598	1.533	4.058
REAS3	266	2.500	1.061	0.363	-0.416
REAS4	264	2.235	0.989	0.701	0.260
REAS5	266	2.368	1.005	0.556	-0.020
REAS6	264	2.405	1.060	0.405	-0.361
REAS7	266	2.680	1.116	0.312	-0.528
*REAS8	263	2.753	1.147	0.312	-0.721
*OSL1 (rc)	266	2.590	1.099	0.524	-0.501
OSL2	266	2.342	0.919	0.561	0.262
OSL3	266	2.098	0.876	0.826	0.693
OSL4	266	2.733	0.767	-0.109	0.673
OSL5	265	3.257	1.162	-0.104	-0.867
INT1 (rc)	265	2.521	1.012	0.386	-0.499
INT2	266	2.312	0.867	0.645	0.113
INT3 (rc)	264	2.549	0.974	0.533	0.045
INT4	264	2.057	0.775	0.641	0.905
SKIL1	266	2.158	0.974	0.691	0.184
SKIL2	266	2.233	1.009	0.742	0.177
SKIL3	265	1.917	0.803	0.815	0.973
SKIL4 (rc)	265	2.011	1.006	1.103	0.927
CHAL1	266	3.737	1.165	-0.859	-0.025
CHAL2	266	3.098	1.138	-0.100	-0.816
CHAL3	265	3.491	1.168	-0.329	-0.782
CHAL4	266	2.135	0.913	0.985	1.216
*CHAL5 (rc)	265	2.842	0.895	0.062	0.166
NFC1	264	2.610	0.977	0.305	-0.350
NFC2 (rc)	264	3.527	1.002	-0.405	-0.368
NFC3 (rc)	262	2.668	1.062	0.231	-0.576
*NFC4	263	3.038	0.924	-0.164	-0.337
*NFC5	263	3.023	0.891	-0.045	-0.106
NFC6 (rc)	262	2.584	0.843	0.293	0.206
NFC7 (rc)	263	2.650	0.882	0.107	0.071
*NFC8	261	3.138	0.922	0.227	-0.185
EXPB1	265	2.577	0.994	0.391	-0.228
*EXPB2 (rc)	263	2.319	1.076	0.893	0.222
*EXPB3 (rc)	265	3.064	1.069	-0.072	-0.897
EXPB4	264	2.758	1.058	0.265	-0.513
EXPB5(rc)	264	2.451	1.070	0.485	-0.449

EXPB6	264	2.864	1.030	0.108	-0.694
EXPB7	265	3.026	1.321	0.050	-1.203
EXPB8	262	3.191	1.112	-0.029	-0.833
CHPS1	266	1.699	0.684	0.892	1.216
CHPS2	265	2.008	0.853	0.835	0.716
CHPS3	266	2.041	0.916	0.837	0.713
CHPS4	266	1.936	0.805	0.990	1.914
CHPS5	266	1.835	0.803	1.235	2.629
CHPS6	265	2.162	0.937	0.755	0.519
*CHPS7 (rc)	263	2.350	1.094	0.468	-0.398
CHPS8	265	2.042	0.808	0.574	0.032
CHPS9	266	1.977	0.828	0.604	0.093
*CHPS10	264	2.360	0.874	0.195	-0.301
*CHPS11 (rc)	264	2.814	1.153	0.308	-0.516
INV1	265	2.442	1.134	0.578	-0.271
INV2 (rc)	263	2.605	1.120	0.433	-0.374
INV3	262	2.504	0.986	0.570	0.174
INV4	264	2.625	1.153	0.531	-0.455
INV5	265	2.374	1.004	0.713	0.342
*INV6 (rc)	265	2.694	1.049	0.261	-0.129
INV7	264	2.515	0.845	0.314	0.670
INV8 (rc)	264	2.462	1.013	0.458	0.041
ATTI1	265	2.766	0.999	0.300	-0.140
ATTI2	265	2.736	1.093	0.400	-0.340
*ATTI3	265	2.049	0.840	1.258	2.673
ATTI4	265	3.268	1.148	-0.206	-0.698
ATTI5	264	3.364	0.989	-0.235	-0.146
ATTI6	263	3.228	0.989	0.053	-0.060
ATTI7	264	2.742	1.007	0.377	-0.109
ATTI8	264	3.250	1.023	-0.024	-0.431
ATTI9	265	2.925	1.020	0.023	-0.437
ATTI10	263	3.190	0.913	0.069	0.143
PPURI1	263	2.928	0.995	-0.158	-0.596
PPURI2	264	2.201	0.956	0.562	-0.214
PPURI3	263	2.118	0.932	0.676	-0.042
PPURI4	263	2.411	1.073	0.468	-0.552
PPURI5	263	2.498	1.062	0.573	-0.115
PPURI6	263	2.783	0.888	0.110	0.641
*PURI7	263	2.494	1.026	0.283	-0.104

- rc: Reverse-coded items
- *: Items that are eliminated during factor analysis and during the confirmatory factor analysis

APPENDIX 2

	INV81	INV82	INV83	INV84	INV85	INV87	INV88	ATTI89	ATTI92	ATTI93	ATTI94	ATTI96	ATTI97	PPURI99	PPURI100	PPURI101	PPURI102
INV81	1.000																
INV82	0.479	1.000															
INV83	0.646	0.388	1.000														
INV84	0.680	0.464	0.578	1.000													
INV85	0.613	0.414	0.678	0.640	1.000												
INV87	0.355	0.246	0.455	0.358	0.503	1.000											
INV88	0.426	0.507	0.470	0.387	0.477	0.380	1.000										
ATTI89	0.336	0.104	0.291	0.204	0.274	0.301	0.218	1.000									
ATTI92	0.464	0.161	0.341	0.336	0.341	0.283	0.274	0.563	1.000								
ATTI93	0.388	0.261	0.263	0.352	0.279	0.207	0.214	0.520	0.605	1.000							
ATTI94	0.287	0.106	0.192	0.212	0.231	0.221	0.090	0.474	0.478	0.570	1.000						
ATTI96	0.302	0.127	0.230	0.254	0.270	0.238	0.223	0.491	0.588	0.626	0.519	1.000					
ATTI97	0.329	0.126	0.313	0.254	0.263	0.253	0.203	0.395	0.373	0.388	0.417	0.388	1.000				
PPURI99	0.142	-0.070	0.050	0.163	0.127	0.070	0.023	0.101	0.157	0.082	0.116	0.117	0.129	1.000			
PPURI100	0.262	0.163	0.276	0.283	0.352	0.260	0.199	0.148	0.167	0.116	0.066	0.048	0.206	0.368	1.000		
PPURI101	0.263	0.199	0.256	0.223	0.305	0.214	0.273	0.156	0.212	0.099	0.079	0.112	0.174	0.182	0.432	1.000	
PPURI102	0.269	0.273	0.200	0.282	0.288	0.237	0.219	0.224	0.283	0.186	0.111	0.185	0.294	0.334	0.499	0.464	1.000

APPENDIX 3

	INT15	INT17	SKIL18	SKIL19	CHAL22	CHAL24	EXPB30	EXPB33	EXPB35	EXPB37	PPURI99	PPURI100	PPURI101	PPURI102
INT15	1.000													
INT17	0.385	1.000												
SKIL18	0.187	0.199	1.000											
SKIL19	0.219	0.235	0.838	1.000										
CHAL22	-0.030	-0.050	-0.396	-0.372	1.000									
CHAL24	0.012	0.000	-0.251	-0.213	0.546	1.000								
EXPB30	0.183	0.244	0.149	0.157	0.103	0.218	1.000							
EXPB33	0.161	0.109	0.167	0.139	-0.019	0.130	0.488	1.000						
EXPB35	0.200	0.181	0.180	0.180	0.157	0.202	0.551	0.539	1.000					
EXPB37	0.057	0.151	0.084	0.039	0.079	0.192	0.396	0.480	0.391	1.000				
PPURI99	0.009	0.074	-0.098	-0.002	0.199	0.179	0.070	0.035	0.106	0.070	1.000			
PPURI100	0.087	0.269	-0.023	0.040	0.104	0.143	0.098	0.162	0.148	0.106	0.368	1.000		
PPURI101	0.141	0.206	-0.063	-0.002	0.072	0.025	0.072	0.150	0.198	0.089	0.182	0.432	1.000	
PPURI102	0.017	0.097	-0.177	-0.078	0.143	0.138	0.104	0.078	0.142	0.077	0.334	0.499	0.464	1.000

APPENDIX 4

AN INNOVATIVE RESEARCH !

Your participation is appreciated !

My name is Marie-Odile Richard. I am a Master student in marketing, at the John Molson School of Business (Concordia University). The objective of my research is to study the consumer's navigational behavior on Internet and how this behavior can change according to the effectiveness of web sites' information content.
World Wide Web is an important tool for surfers who want to be better informed and collect accurate information. This is why the study of this medium is really useful and will facilitate its use in the following years.

HOW CAN YOU PARTICIPATE IN ?

- Please, first, surf the web site: **www.claritin.ca**
- After, click on the survey link on the Claritin's homepage and reply to the questionnaire
- Finally, I would appreciate if you invite people around you to participate in this study

WHY YOUR PARTICIPATION IS IMPORTANT?

- To improve the presentation of this site and better meet your needs
- To provide you with precise and clear information about drugs that are offered
- To make you better understand what is an allergy and how people with allergies react

Your participation, which will stay confidential, will help us to better serve you and will facilitate the evolution of scientific research.

Marie-Odile Richard, M.Sc.student, JMSB
odile10@hotmail.com

APPENDIX 5

UNE RECHERCHE INNOVATRICE !

Votre participation est appréciée !

Je m'appelle Marie-Odile Richard. Je suis étudiante en maîtrise, option marketing, à l'école de gestion John Molson (université Concordia). Mon sujet traite du comportement du consommateur lorsqu'il navigue sur Internet et comment ce comportement peut changer en fonction de l'efficacité du contenu informationnel des sites web.
Internet est un instrument incontournable pour l'internaute qui veut être de mieux en mieux informé et recueillir de l'information adéquate. C'est pourquoi l'étude de ce moyen de communication est très utile et facilitera son utilisation dans les prochaines années.

COMMENT POUVEZ-VOUS PARTICIPER ?

- *D'abord, naviguez dans le site:* **www.claritin.ca**
- *Ensuite, cliquez dans le lien sondage situé au bas de la page principale de ce site et répondez au questionnaire*
- *Finalement, si possible, invitez les gens de votre entourage à participer à cette étude*

POURQUOI VOTRE PARTICIPATION EST IMPORTANTE?

- *Pour améliorer la présentation du site et ainsi mieux répondre à vos besoins*
- *Pour vous présenter une information précise et claire des médicaments qui vous sont proposés*
- *Pour que vous puissiez mieux comprendre ce qu'est une allergie et comment les personnes qui en sont atteintes réagissent*

Votre participation, qui restera confidentielle, nous aidera à mieux vous servir et facilitera l'évolution de la recherche scientifique.

Marie-Odile Richard, étudiante M.Sc., JMSB
odile10@hotmail.com

APPENDIX 6

Questionnaire: English Version

Dear Fellow Internet User,

Thank you for agreeing to participate in this academic study. Please, kindly answer a few questions concerning this Web site and the Internet in general. The aim of my Master's thesis is to determine if this site provides pharmaceutical consumers such as yourself pertinent information on drugs and health-related matters. Your feed-back will lead to design sites that are better suited to your needs.

Your participation is voluntary. No personal identification information will be collected and your responses will be kept strictly confidential. It should take about 12 minutes to complete.

Thank you in advance for participating in this academic study. It is important that you answer ALL of the following questions. If at any point you do not know the exact answer, please provide your best estimate.

Marie-Odile Richard, M.Sc. Student

---

1. ***What are the main reasons I visit any Web site ?***

Please assign a rating on a scale from 1 to 5, where 1 represents "Strongly agree" (SA) and 5 represents "Strongly disagree" (SD).

(SA): Strongly agree, (A): Agree, (N): Neutral, (D):Disagree, and (SD): Strongly disagree.

	SA	A	N	D	SD
	1	2	3	4	5
I like to search for detailed information.	o	o	o	o	o
It is a convenient way to get information.	o	o	o	o	o
I want to learn more after viewing an informative ad.	o	o	o	o	o
I am interested in a particular product category.	o	o	o	o	o
I am interested in a particular brand.	o	o	o	o	o
The Web address is highly visible.	o	o	o	o	o
I plan to purchase soon.	o	o	o	o	o
I am curious about Web sites in general.	o	o	o	o	o

2. ***Which of the following statements best describe yourself ?***

	SA	A	N	D	SD
	1	2	3	4	5
I like to continue doing the same things rather than trying new and different things.	o	o	o	o	o
I like to experience novelty and change in my Web site navigation.	o	o	o	o	o
When things get boring, I like to find some new and unfamiliar experience.	o	o	o	o	o
I feel satisfied as I end my visit with a Web site.	o	o	o	o	o
I would not mind registering my name to use a Web site like this.	o	o	o	o	o

3. ***Which of the following statements describe your experience with the Web ?***

	SA	A	N	D	SD
	1	2	3	4	5
Interacting with the Web is slow and tedious.	o	o	o	o	o
Today's Web browsers allow me to navigate the Web in a natural and predictable manner.	o	o	o	o	o
The range of what can be manipulated on the Web is narrow.	o	o	o	o	o
At any time, there are many different actions available to me as I navigate the Web.	o	o	o	o	o

4. ***Which of the following statements best describes your skills in using the Web ?***

	SA	A	N	D	SD
	1	2	3	4	5
I am very skilled at using the Web.	o	o	o	o	o
I consider myself very knowledgeable about good search techniques on the Web.	o	o	o	o	o
I find the Web very easy to use.	o	o	o	o	o
It is very hard for me to find information on the Web.	o	o	o	o	o

5. ***Which of the following statements best describe your performance with the Web ?***

	SA	A	N	D	SD
	1	2	3	4	5
Using the Web is a great challenge for me.	o	o	o	o	o
Using the Web provides an excellent test of my skills.	o	o	o	o	o
I find that using the Web stretches my capabilities to the limits.	o	o	o	o	o
The Web provides numerous things for me to do.	o	o	o	o	o
I've seen this kind of Web sites too many times. It's the same old thing.	o	o	o	o	o

6. ***How do you engage in processing Web sites ?***

	SA	A	N	D	SD
	1	2	3	4	5
I much prefer watching educational to entertainment sites.	o	o	o	o	o
I much prefer simple to complex Web sites.	o	o	o	o	o
I always try to anticipate and avoid navigation on Web sites where I'll have to think in depth about something.	o	o	o	o	o

7. ***How do you explore Web sites ?***

	SA	A	N	D	SD
	1	2	3	4	5
I always enjoy visiting unfamiliar Web sites just for the sake of variety.	o	o	o	o	o
I never visit Web sites I know nothing about.	o	o	o	o	o
Even though there are thousands of different kinds of Web sites, I tend to visit the same types of Web sites.	o	o	o	o	o
When I hear about a new Web site, I'm always eager to check it out.	o	o	o	o	o
Surfing the Web to see what's new is a waste of my time.	o	o	o	o	o
I like to browse the Web and find out about the latest sites.	o	o	o	o	o
I like to browse shopping sites even if I don't plan to buy anything.	o	o	o	o	o
I always click on a link just out of curiosity.	o	o	o	o	o

8. ***How do you engage in processing this pharmaceutical Web site ?***

	SA	A	N	D	SD
	1	2	3	4	5
I always prefer a site that is intellectual, difficult and important, to a site that is somewhat important but does not require much thought.	o	o	o	o	o
I am always tempted to put more thought into a pharmaceutical site than the job minimally requires.	o	o	o	o	o
I always have difficulty in thinking in new and unfamiliar situations on the pharmaceutical Web sites.	o	o	o	o	o
I always feel relief rather than satisfaction after completing a pharmaceutical Web site's navigation that required a lot of mental effort.	o	o	o	o	o
I always enjoy thinking about a pharmaceutical Web site even when the results of my thoughts will have no outcome on this site.	o	o	o	o	o

9. ***Which of the following characteristics are important to you in using this pharmaceutical Web site ?***

	SA	A	N	D	SD
	1	2	3	4	5
It is easy to use.	o	o	o	o	o
Navigational problems are limited.	o	o	o	o	o
There are good search agents to find information.	o	o	o	o	o
Easy keywords to find information are used.	o	o	o	o	o
Product information is immediately accessible.	o	o	o	o	o
There is linkage to sites with relevant information.	o	o	o	o	o
There is linkage that goes nowhere.	o	o	o	o	o
It is possible to switch back and forth between topics.	o	o	o	o	o
Address is predictable.	o	o	o	o	o
It allows a search on single page.	o	o	o	o	o
There are too many advertisements (banners,...).	o	o	o	o	o

10. ***Please evaluate the site you have just visited.***

	SA	A	N	D	SD
	1	2	3	4	5
Confusing site	o	o	o	o	o
Irritating site	o	o	o	o	o
Exciting site	o	o	o	o	o
Imaginative site	o	o	o	o	o
Entertaining site	o	o	o	o	o
Attractive site	o	o	o	o	o
Informative site	o	o	o	o	o
Useful site	o	o	o	o	o
Resourceful site	o	o	o	o	o

11. ***How would you rate the information you saw on this site ?***

	SA	A	N	D	SD
	1	2	3	4	5
It resolves a question about a health problem.	o	o	o	o	o
Information is useful.	o	o	o	o	o
Information is concise.	o	o	o	o	o
Information is non-repetitive.	o	o	o	o	o
Information is superficial.	o	o	o	o	o
Information is accurate.	o	o	o	o	o
Information is up-to-date.	o	o	o	o	o
Product information is complete.	o	o	o	o	o
Source of information is convenient.	o	o	o	o	o
It is very easy to understand information.	o	o	o	o	o

12. ***How would you rate the structure of this site ?***

	SA	A	N	D	SD
	1	2	3	4	5
The structure is well-organized.	o	o	o	o	o
It allows a great overview of its structure.	o	o	o	o	o
The structure is straightforward.	o	o	o	o	o
Presentation and organization are innovative.	o	o	o	o	o
Subsections are poorly named.	o	o	o	o	o

13. ***When you saw the Web site, you felt that the information on the site might be:***

	High		Med		Low	
	1	2	3	4	5	
Important to me	o	o	o	o	o	Unimportant to me
Means nothing to me	o	o	o	o	o	Means a lot to me
Worth remembering	o	o	o	o	o	Not worth remembering
Relevant to my needs	o	o	o	o	o	Irrelevant to my needs
Worth paying attention to	o	o	o	o	o	Not worth paying attention to
Not involving	o	o	o	o	o	Involving
Convincing	o	o	o	o	o	Unconvincing
Boring	o	o	o	o	o	Interesting

14. ***What is your attitude toward the pharmaceutical Web site you have just visited?***

	SA	A	N	D	SD
	1	2	3	4	5
This Web site makes it very easy for me to build a relationship with the company.	o	o	o	o	o
I want to visit this Web site again in the future.	o	o	o	o	o
I am comfortable in surfing this Web site.	o	o	o	o	o
Surfing this Web site is an excellent way for me to spend my time.	o	o	o	o	o
I was smiling while I was exploring this Web site.	o	o	o	o	o
I was part of a like-minded group of people while using this Web site.	o	o	o	o	o
This Web site is an essential tool.	o	o	o	o	o
This Web site was a playful experience.	o	o	o	o	o
I want more information about the company from this Web site.	o	o	o	o	o
Compared with other Web sites, I would rate this one as the best.	o	o	o	o	o

15. ***Based on the information you have seen on this site, which of the following statements would you agree with ?***

	SA	A	N	D	SD
	1	2	3	4	5
It takes a very long time to decide before buying drugs.	o	o	o	o	o
I get as much information as possible before purchasing a drug.	o	o	o	o	o
I am very interested in reading information about how drugs work.	o	o	o	o	o
I always compare product characteristics among brands of a specific drug.	o	o	o	o	o
Before looking at this site, I will be interested in reading about the needed drug.	o	o	o	o	o
The next time I purchase drugs, I will buy brands from this pharmaceutical company.	o	o	o	o	o

16. ***How willing are you to buy drugs from this pharmaceutical company ?***

	High		Med		Low	
	1	2	3	4	5	
Extremely willing to buy	o	o	o	o	o	Definitely not willing to buy

Please provide some demographic information about yourself.

17. Gender

o Male	o Female

18. Age category

o 18-24	o 25-34	o 35-44	o 45-54	o 55-64	o 65 and more

19. Education

20. Profession

Thank you for taking the time to complete this survey. It will help us a lot. Please, select Submit now to send your responses to us.

Submit

APPENDIX 7

Questionnaire: French Version

Cher(e)s internautes,

Nous vous remercions de bien vouloir participer à notre étude universitaire. Pour ce faire, nous vous demandons seulement de répondre à quelques questions concernant l'internet et le site pharmaceutique que vous venez de visiter. La thèse de maîtrise que je prépare pourra me permettre de déterminer si ce site offre aux consommateurs de produits pharmaceutiques tels que vous, toutes les informations pertinentes sur les produits présentés et leurs relations avec votre santé. Par vos réponses, nous pourrons concevoir des sites mieux adaptés à vos besoins.

Votre participation est facultative. Aucun renseignement personnel ne sera retenu et vos réponses resteront strictement confidentielles. Une douzaine de minutes seront nécessaires pour répondre à ce questionnaire.

Merci d'avance pour votre collaboration à cette étude. Il est important que vous répondiez à toutes les questions quelle que soit votre connaissance du sujet faisant l'objet de la question.

Marie-Odile Richard, étudiante de M.Sc.

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1. ***Quelles sont les principales raisons qui vous poussent à visiter un site Web ?***

Sur une échelle de 1 à 5, indiquez dans quelle mesure vous êtes d'accord avec l'énoncé, la réponse 1 signifiant fortement d'accord, (FA) et la réponse 5, fortement en désaccord, (FD).

(FA) : fortement d'accord, (A) : d'accord, (N) : neutre, (D) : en désaccord et (FD) : fortement en désaccord.

	FA	A	N	D	FD
	1	2	3	4	5
J'aime rechercher de l'information détaillée.	o	o	o	o	o
C'est une façon pratique d'obtenir de l'information.	o	o	o	o	o
Je veux en apprendre plus après avoir vu une publicité informative.	o	o	o	o	o
Je m'intéresse à une catégorie particulière de produits.	o	o	o	o	o
Je m'intéresse à une marque particulière.	o	o	o	o	o
L'adresse Web est très visible.	o	o	o	o	o
Je prévois acheter bientôt.	o	o	o	o	o
Je m'intéresse aux sites en général.	o	o	o	o	o

2. ***Dans quelle mesure les énoncés suivants vous décrivent-ils ?***

	FA	A	N	D	FD
	1	2	3	4	5
J'aime continuer à faire les mêmes activités plutôt que de me livrer à des expériences nouvelles et différentes.	o	o	o	o	o
J'aime la nouveauté et le changement lorsque je navigue sur le Web.	o	o	o	o	o
Quand les choses deviennent ennuyantes, j'aime en découvrir d'autres qui sont nouvelles et originales.	o	o	o	o	o
J'éprouve un sentiment de satisfaction lorsque je termine la visite d'un site.	o	o	o	o	o
Je n'aurais pas d'objection à m'inscrire comme utilisateur d'un tel site.	o	o	o	o	o

3. ***Dans quelle mesure les énoncés suivants décrivent-ils votre expérience du Web ?***

	FA	A	N	D	FD
	1	2	3	4	5
L'interaction avec le Web est lente et pénible.	o	o	o	o	o
Les navigateurs actuels permettent de surfer sur le Web de manière aisée et prévisible.	o	o	o	o	o
Les possibilités de manipulation sont restreintes sur le Web.	c	o	o	o	o
En tout temps, lorsque je navigue sur le Web, les choix qui s'offrent à moi sont nombreux.	o	o	o	o	o

4. ***Dans quelle mesure les énoncés suivants décrivent-ils vos capacités d'utilisation du Web?***

	FA	A	N	D	FD
	1	2	3	4	5
Je suis très compétente dans l'utilisation du Web.	o	o	o	o	o
J'estime très bien connaître les techniques efficaces de recherche sur le Web.	o	o	o	o	o
Je trouve le Web très facile à utiliser.	o	o	o	o	o
J'ai beaucoup de difficultés à trouver de l'information sur le Web.	o	o	o	o	o

5. ***Dans quelle mesure les énoncés suivants décrivent-ils votre maîtrise du Web ?***

	FA	A	N	D	FD
	1	2	3	4	5
Utiliser le Web représente pour moi un grand défi.	o	o	o	o	o
Utiliser le Web est un excellent moyen de mettre mes compétences à l'épreuve.	o	o	o	o	o
Je trouve que l'utilisation du Web pousse mes capacités à leurs limites.	o	o	o	o	o
Le Web m'offre de nombreuses choses à faire.	o	o	o	o	o
J'ai trop vu de sites de ce genre. C'est toujours la même chose.	o	o	o	o	o

6. *Comment choisissez-vous les sites Web?*

	FA	A	N	D	FD
	1	2	3	4	5
Je préfère de loin les sites éducatifs aux sites de divertissement.	o	o	o	o	o
Je préfère de loin les sites simples aux sites complexes.	o	o	o	o	o
J'essaie toujours de prévoir et d'éviter de naviguer sur les sites qui m'obligeraient à approfondir ma réflexion.	o	o	o	o	o

7. *Comment explorez-vous les sites Web ?*

	FA	A	N	D	FD
	1	2	3	4	5
J'aime bien visiter les sites que je ne connais pas pour le simple plaisir de varier mes choix.	o	o	o	o	o
Je ne visite jamais les sites qui me sont inconnus.	o	o	o	o	o
Même s'il existe des milliers de sites différents, j'ai tendance à visiter le même type de sites.	o	o	o	o	o
Lorsque j'entends parler d'un nouveau site, c'est toujours avec impatience que j'envisage de le découvrir.	o	o	o	o	o
Surfer sur le Web à la recherche de nouveautés est une perte de temps pour moi.	o	o	o	o	o
J'aime parcourir le Web et découvrir les sites les plus récents.	o	o	o	o	o
J'aime fureter sur les sites commerciaux même si je prévois ne rien acheter.	o	o	o	o	o
`Je clique toujours sur un lien par simple curiosité.	o	o	o	o	o

8. ***Comment procédez-vous à la consultation de ce site Web pharmaceutique ?***

	FA	A	N	D	FD
	1	2	3	4	5
Je préfère toujours un site intellectuel, difficile et important à un site d'une certaine importance mais qui exige peu de réflexion.	o	o	o	o	o
J'ai toujours tendance à consacrer à un site pharmaceutique plus de réflexion que le minimum requis.	o	o	o	o	o
J'éprouve toujours de la difficulté à réfléchir aux situations nouvelles et peu familières rencontrées sur les sites pharmaceutiques.	o	o	o	o	o
Je ressens toujours du soulagement plutôt que de la satisfaction quand j'ai fini de naviguer sur un site pharmaceutique qui a exigé beaucoup d'effort cérébral.	o	o	o	o	o
J'aime toujours analyser un site pharmaceutique, même lorsque les résultats de ma réflexion n'ont pas de répercussions sur ce site.	o	o	o	o	o

9. ***Quelle est l'importance des caractéristiques suivantes à vos yeux dans l'utilisation de ce site Web pharmaceutique ?***

	FA	A	N	D	FD
	1	2	3	4	5
Le site est facile à utiliser.	o	o	o	o	o
Les problèmes de navigation sont restreints.	o	o	o	o	o
Les agents de recherche qui facilitent le repérage de l'information sont efficaces.	o	o	o	o	o
Les mots-clefs qui servent au repérage de l'information sont simples.	o	o	o	o	o
L'information relative aux produits est immédiatement accessible.	o	o	o	o	o
Le site suggère des liens avec les sites contenant de l'information pertinente.	o	o	o	o	o
Certains liens n'aboutissent nulle part.	o	o	o	o	o
Il est possible de faire des allers-retours entre les différentes sections du site.	o	o	o	o	o
L'adresse est prévisible.	o	o	o	o	o
Le site permet de consulter l'information recherchée sur une seule page.	o	o	o	o	o
Les messages publicitaires sont trop nombreux (bannières, etc.).	o	o	o	o	o

10. ***Évaluez le site que vous venez de visiter.***

	FA	A	N	D	FD
	1	2	3	4	5
Le site est embrouillant.	o	o	o	o	o
Le site est exaspérant.	o	o	o	o	o
Le site est passionnant.	o	o	o	o	o
Le site est imaginatif.	o	o	o	o	o
Le site est divertissant.	o	o	o	o	o
Le site est attrayant.	o	o	o	o	o
Le site est informatif.	o	o	o	o	o
Le site est utile.	o	o	o	o	o
Le site est plein de ressources.	o	o	o	o	o

11. ***Comment évalueriez-vous l'information que vous avez obtenue sur ce site ?***

	FA	A	N	D	FD
	1	2	3	4	5
L'information me permet de résoudre un problème de santé.	o	o	o	o	o
L'information est utile.	o	o	o	o	o
L'information est concise.	o	o	o	o	o
L'information n'est pas répétitive.	o	o	o	o	o
L'information est superficielle.	o	o	o	o	o
L'information est exacte.	o	o	o	o	o
L'information est à jour.	o	o	o	o	o
L'information relative aux produits est complète.	o	o	o	o	o
La source d'information est pratique.	o	o	o	o	o
L'information est facile à comprendre.	o	o	o	o	o

12. ***Comment évalueriez-vous la structure de ce site ?***

	FA	A	N	D	FD
	1	2	3	4	5
Le site est bien structuré.	o	o	o	o	o
La composition du site permet une excellente vue d'ensemble de sa structure.	o	o	o	o	o
La structure est simple.	o	o	o	o	o
La présentation et l'organisation sont innovatrices.	o	o	o	o	o
Les sous-sections de ce site sont mal titrées.	o	o	o	o	o

13. ***Comment évalueriez-vous l'information que contient ce site Web, selon l'impression que vous avez eue en le consultant?***

	Élevée		Moyenne		Faible	
	1	2	3	4	5	
Est importante pour moi	o	o	o	o	o	Est sans importance pour moi
Est sans intérêt pour moi	o	o	o	o	o	Est d'un très grand intérêt pour moi
Est utile à retenir	o	o	o	o	o	Est inutile à retenir
Répond à mes besoins	o	o	o	o	o	Ne répond pas à mes besoins
Vaut la peine qu'on s'y arrête	o	o	o	o	o	Ne vaut pas la peine qu'on s'y arrête
Ne me concerne pas	o	o	o	o	o	Me concerne
Est convaincante	o	o	o	o	o	N'est pas convaincante
Est ennuyeuse	o	o	o	o	o	Est intéressante

14. ***Quelle est votre attitude à l'égard du site Web pharmaceutique que vous venez de visiter ?***

	FA	A	N	D	FD
	1	2	3	4	5
Grâce à ce site, il m'est beaucoup plus facile d'établir des contacts avec l'entreprise.	o	o	o	o	o
J'ai l'intention de revisiter ce site ultérieurement.	o	o	o	o	o
Je peux aisément surfer sur ce site.	o	o	o	o	o
Surfer sur ce site est une excellente façon de passer le temps.	o	o	o	o	o
J'ai souri en explorant ce site.	o	o	o	o	o
En parcourant ce site, je pensais faire partie d'un groupe qui partage les mêmes idées.	o	o	o	o	o
Ce site est un outil essentiel.	o	o	o	o	o
La visite de ce site a été une expérience distrayante.	o	o	o	o	o
J'aimerais trouver sur ce site davantage d'information sur la compagnie.	o	o	o	o	o
Comparativement aux autres sites que j'ai visités, je dirais que celui-ci est le meilleur.	o	o	o	o	o

15. ***En vous basant sur l'information que vous avez tirée de ce site, dans quelle mesure êtes-vous d'accord avec les énoncés suivants ?***

	FA	A	N	D	FD
	1	2	3	4	5
La décision d'acheter des médicaments prend beaucoup de temps.	o	o	o	o	o
J'obtiens le maximum d'information avant d'acheter un médicament.	o	o	o	o	o
La lecture d'information sur les effets des médicaments m'intéresse au plus haut point.	o	o	o	o	o
Pour un médicament donné, je compare toujours les caractéristiques de ce produit en fonction des marques existantes.	o	o	o	o	o
Avant de consulter ce site, je voudrais me renseigner sur le type de médicament dont j'ai besoin.	o	o	o	o	o
La prochaine fois que j'achèterai des médicaments, j'achèterai les marques de cette compagnie pharmaceutique.	o	o	o	o	o

16. ***Dans quelle mesure accepteriez-vous d'acheter des médicaments de cette compagnie pharmaceutique ?***

	Élevée		Moyenne		Faible	
	1	2	3	4	5	
J'accepterais sans aucune hésitation	o	o	o	o	o	Je n'accepterais en aucun cas.

Veuillez nous fournir les renseignements démographiques suivants:

17. Sexe

Homme	Femme

18. Âge

18-24	25-34	35-44	45-54	55-64	65 et plus

19. Scolarité

20. Profession

Merci d'avoir bien voulu consacrer quelques minutes à ce questionnaire. Vos réponses seront extrêmement utiles pour notre étude. S'il vous plaît, cliquez sur «Submit» pour nous envoyer vos réponses.

Submit

APPENDIX 8

Profession and Education Questions (English Version)

PROFESSION

1. Elementary school
2. High school
3. Trade/vocational school
4. Community college, technical institute or CEGEP
5. Bachelor degree
6. Master degree
7. Doctorate degree
8. Degree in medicine, dentistry, veterinary medicine or optometry

EDUCATION

1. Educational, recreational and counselling services
2. Fine and applied arts
3. Humanities and related fields
4. Social sciences and related fields
5. Commerce, management and business administration
6. Secretarial science
7. Agricultural and biological sciences/technologies
8. Engineering and applied sciences
9. Engineering and applied sciences technologies and trades
10. Nursing and nursing assistance
11. Other health professions, sciences and technologies
12. Mathematics and physical sciences
13. All other

APPENDIX 9

Profession and Education Questions (French Version)

Scolarité

1. École primaire
2. École secondaire
3. Diplôme d'une école de métiers
4. Autre diplôme non universitaire (collège communautaire, CÉGEP, institut technique)
5. Baccalauréat
6. Maîtrise
7. Doctorat (Ph.D.)
8. Doctorat en médecine, art dentaire, médecine vétérinaire ou optométrie

PROFESSION

1. Enseignement, loisirs et orientation
2. Beaux-Arts et arts appliqués
3. Lettres, sciences humaines et disciplines connexes
4. Sciences sociales et disciplines connexes
5. Commerce, gestion et administration des affaires
6. Secrétariat
7. Sciences et techniques agricoles et biologiques
8. Génie et sciences appliquées
9. Techniques et métiers du génie et des sciences appliquées
10. Sciences infirmières et soins infirmiers auxiliaires
11. Autres professions, sciences et technologies de la santé
12. Mathématiques et sciences physiques
13. Autres