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ScienceDirect
Journal of Business Research 60 (2007) 597 – 605
JOURNAL OF BUSINESS RESEARCH

Personality determinants of online shopping: Explaining online purchase intentions using a hierarchical approach

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Received 1 November 2005; received in revised form 1 April 2006; accepted 1 June 2006

Abstract

What determines whether one purchases products online or through another channel? Just as retailers seek to develop online retail websites as profitable channels of distribution, researchers have pursued answers to this very question. In pursuing this line of research, several approaches have been utilized including those based upon behavioral economics, lifestyle analysis, and merchandising effects. While some of this work identifies the potential moderation of personality traits most of it focuses on factors related to time, costs and benefits, and shopping context. Following the hierarchical approach to personality developed by Mowen (Mowen J. The 3M Model of Motivation and Personality. Norwell, MA: Kluwer Academic Press, 2000.), this study seeks to understand online purchase intent using personality constructs. The present study uses data from an online consumer panel to develop a hierarchical model of personality useful for predicting consumer intentions to purchase products and services online.

Keywords: Online shopping; Personality; Traits; Shopping motives; 3M Model

1. Introduction

What determines one's willingness to purchase products online? Just as retailers seek to develop online retail websites as profitable channels of distribution, researchers pursue answers to this very question. In pursuing this line of research, several approaches are utilized including those based upon behavioral economics (c.f., Thompson and Yu, 2005), demographics and lifestyle analysis (c.f., Sorce et al., 2005; Alreck and Settle, 2002; Swaminathan, 2003), and online merchandising effects such as product recommendations and shopping lists (c.f., Senecal et al., 2005; McKinney, 2004; Mandel and Johnson, 2002; Wind and Rangaswamy, 1999). While some of this work identifies the potential moderation of personality traits, an understanding of personality traits as they relate to online shopping behavior is an underdeveloped area of online consumer behavior. This study seeks to provide a framework for understanding personality determinants of online shopping behavior. The model described follows the hierarchical approach to personality developed by Mowen (2000). Using data from an online consumer panel, the study develops a hierarchical model of personality useful for predicting consumer intentions to purchase products and services online.

The paper begins with a brief review of the dispositional factors used to explain the willingness to make online purchases. In doing so, the study provides an overview of what is known of the determinants of online shopping, but also exposes the few personality correlates examined to date. Notably, the review supports the proposition that an integrative model of online shopping is needed. It also sets the stage for the general description of the hierarchical model of personality and motivation, the 3M Model (Mowen, 2000), which serves as

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doi:10.1016/j.jbusres.2006.06.008

the foundation for this exploratory study aiming at predicting and explaining the willingness to use the Internet for shopping.

2. Determinants of online shopping behavior

Several approaches are applied to the task of identifying determinants of online shopping behavior. Pachauri (2002) classifies the various approaches into four broad categories: (1) economics of information approach, (2) cognitive costs approach, (3) lifestyle approach, and (4) contextual influence approach.

The *economics of information approach* deals primarily with the perceived efficiency of buying online. Specifically, this approach explains consumer preferences for shopping channels by examining the subjective costs of information search for different channels, especially the time costs. To the extent that these costs decrease when shopping online, consumers should prefer shopping on the Internet to other modes. However, if the consumer perceives the costs as equal or greater, he will prefer other modes. In this paradigm, consumers prefer the mode of buying that has the best ratio of search costs (i.e. time needed to find the 'best' product for the lowest price) and the expected benefits of making a decision.

While the economics of information approach highlights the *time costs* of information search, the *cognitive costs approach* focuses on the costs stemming from search-related cognitive processes. According to this view, consumers try to optimize their decisions regarding price and quality of products, as well as regarding reliability and credibility of online merchants. At the same time, they seek to minimize the cognitive costs associated with evaluating alternatives and making decisions. Studies on determinants of the willingness for online shopping, conducted within this paradigm, often focus on perceived risk of online shopping (Cases, 2002; Kolsaker and Payne, 2002; Miyazaki and Fernandez, 2001), as well as on credibility and trustworthiness of online merchants (Diekmann and Wyder, 2002; Thompson, 2002; Yoon, 2002).

The *lifestyle approach* studies sociodemographic characteristics of potential consumers, their way of life, and patterns of spending time and money. Besides those relatively easily observable behaviors, most lifestyle typologies also include internal factors, such as buying motives and needs, interests, values, and opinions. For instance, Joines et al. (2003) find that online shopping behaviors are related to consumer perceptions of time control, desired control of the shopping environment, and need for social interaction. Alreck and Settle (2002) investigate the motive of time savings and online shopping behavior. Interestingly, they find that while the Internet is perceived as an efficient channel in terms of time spent shopping, consumers do not shop online for this reason.

The *contextual influence approach* analyzes the influence of navigational aides as well as atmosphere (or ''websphere'' — see Childers et al., 2001) on online-shopping behavior (Cui et al., 2003; Eroglu et al., 2003; Konradt et al., 2003; McKinney, 2004). For example, Senecal et al. (2005) studies the decision making processes for consumers who are exposed to product recommendations and those that are not. They find that recommendations make the decision making process more complex but do not change buying behavior.

While the research associated with each of the four approaches provides a foundation of knowledge about the motivations of shoppers online, it does not directly examine traits affecting the willingness to shop online. Yet, the research does suggest that such dispositional correlates of the willingness to shop online exist. For example, both the economics of information and the cognitive cost approaches suggest that interindividual differences in willingness to engage in cognitive efforts and make evaluative judgments may affect online shopping behaviors.

Only four studies are known to have included personality-related correlates of online consumer behavior. Donthu and Garcia (1999) find significant differences in a variety of psychological constructs between people who shop online and those with Internet access but who do not use it for shopping. In that study, online shoppers are more willing to innovate and take risks, more impulsive and are more often variety seekers than non-Internet-shoppers. The results support the importance of personality traits as determinants of online shopping behavior, but the study suffers from limitations in the research design.

According to LaRose and Eastin (2002), limited self-regulating ability (which is correlated with dispositional emotional instability) positively relates to the likelihood of online shopping. This reflects the more general finding from consumer research that people who are emotionally less stable sometimes use shopping to regulate their moods. The Internet may be especially convenient for this purpose since the (visual) sensory stimulation is easily accessible at all times (see also Mooradian and Olver, 1996, for the relationship between buying motives and the Big Five dimensions of personality).

Copas (2003) analyses bivariate correlations of vigilance and openness to change, two of the 16 personality factors described by Cattell (Conn and Rieke, 1994), with self-reported online buying motives and attitudes towards online shopping. She finds that vigilance, defined as the tendency to trust as opposed to being suspicious about others' motives and intentions, does significantly and negatively relate to self-reported frequency of buying online ($r=-.16$). The relationship of vigilance and attitudes towards online shopping is even stronger ($r=-.26$ to $-.29$). Openness to experience is significantly and positively correlated to self-reported frequency of online shopping ($r=.33$) and related attitudes ($r=.34$). A study by Kwak et al. (2002) finds that people with higher scores on scales of sensation seeking (Zuckerman, 1979) and opinion leadership (Feick and Price, 1987) are more likely to buy online than people with lower scores on those scales. A literature review by Monsuwe et al. (2004) proposes that self-efficacy and need for interaction should be related to online shopping, but their propositions are not examined empirically.

Overall, this literature provides only a first step toward understanding the variety of individual differences and personality traits which may affect the willingness to buy online. The few indirect and direct indices of possible significant

factors are insufficient in building an integrative framework for understanding online shopping behavior.

Mowen's (2000) 3M Model, a hierarchical model of personality first developed as a general model of consumer behavior, may provide just such a framework. To examine it's applicability in the area of online shopping, the present study begins by describing this model.

3. An overview to the 3M model of motivation and personality

Despite numerous and barely successful attempts to explain consumer behavior using personality traits and individual differences, attempts to establish an integrative picture of 'consumer personality' appeared only recently (Baumgartner, 2002). One of those integrative models is described by Mowen (2000), who applies it in a variety of consumption-related domains. Mowen's model terminologically draws upon Allport's (1961) work and consists of four hierarchical levels. These four levels are surface traits, situational traits, compound traits, and elemental traits.

The *surface traits* are the immediate determinants of behavior. This level consists of highly context- and behavior-specific dispositions, closely related to the concept of behavioral intentions. Typical examples are proneness to bargaining or a tendency to favor health-promoting products (for an overview of other such traits see Mowen, 2000). *Situational traits* affect the surface traits positioned on the next hierarchical level. The situational traits apply to whole classes of situations, for example to different situations in which one can act in health-promoting ways. A common situational trait underlying such behavior is 'health motivation' (Mowen, 2000; Chapter 10). Situational traits are often associated with the concept of involvement, well known in marketing literature (Zaichkowsky, 1994). The third level consists of *compound traits*. These traits, such as self-efficacy or need for activity and stimulation, often develop during socialization. However, they are shaped not only by external influences, but also by the interaction of one's learning experiences and socialization history with the traits at the highest level of the model (elemental traits). Genetic predispositions and early learning experiences determine the *elemental traits*. In Mowen's model, these traits include the Big Five personality traits (Costa and McCrae, 1985), as well as other constructs such as need for material resources and need for arousal.

In general, Mowen's model might be promising for further application to different consumption-related areas, as well as for further development. The following section presents a study which examines the applicability of a hierarchical model for the area of online shopping, based upon the work of Mowen (2000).

4. An exploratory study to explain consumers' willingness to shop online

4.1. Problem statement and hypotheses

The study's first objective is to investigate the applicability of a hierarchical model of personality, based on Mowen's (2000) approach, to explain and predict people's willingness to

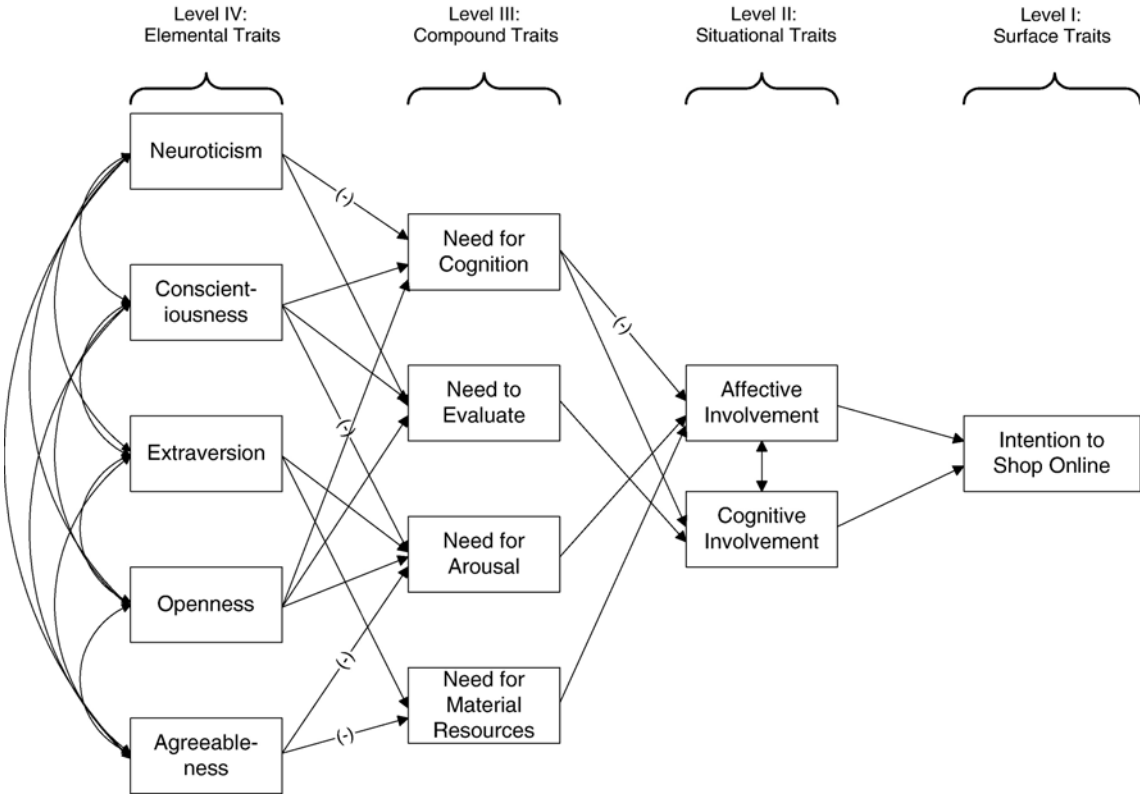

Fig. 1. Initial hierarchical model to predict and explain the willingness to shop online. All factors are positively related, with the exception of those marked by (−).

make online purchases. The explanatory power of the model should be reflected in the extent to which it can reproduce the data, or – in the language of structural equation modeling – in the extent to which it fits the data. A measure of the model's predictive aspect is the amount of variance of future online purchases that it can explain. The second objective is to examine the sufficiency of the model. In other words, are there other relevant factors, which are not included in the present model? If so, what might those factors be?

The study begins with a fully mediated initial model with, similar to Mowen's model, four hierarchically ordered levels of traits: (I) surface traits, (II) situational traits, (III) compound traits, and (IV) elemental traits. These traits are listed in the upper part of Fig. 1.

As shown in Fig. 1, elemental traits (level IV) include the Big Five dimensions of personality (Mowen, 2000). Compound traits (III) include four needs that should be relevant to different consumption-related situations. The economics of information and cognitive costs approaches previously described indirectly support two of those constructs. These approaches recognize the search and evaluation costs incurred when buying goods and services on the Internet. Consequently, the willingness to buy online could be affected by individual differences in Need for Cognition and Need to Evaluate. Need for Cognition is a measure of interindividual differences in engaging in and enjoying cognitively demanding tasks. People with higher values on this construct are, compared to those with lower scores, more inclined to engage in cognitively demanding challenges and tend to use deeper information processing strategies (Cacioppo and Petty, 1982). Need to Evaluate reflects a "chronic tendency to engage in evaluative responding" (Jarvis and Petty, 1996, p. 172). People with higher scores on this scale tend to form more evaluative judgments about objects and events in their environment than do people with lower scores.

Among the compound traits, the model includes two traits that Mowen (2000) originally classifies as elemental traits: Need for Material Resources and Need for Arousal. Here the study tends to agree with Baumgartner (2002), who doubts the necessity of further extending the Big Five. Therefore, the study classifies Need for Material Resources and Need for Arousal at the compound trait level. Need for Material Resources refers to one's inclination to value material goods, while Need for Arousal refers to a dispositional need for new experiences and stimulation. Compared to Need for Cognition, the Need for Arousal has more pronounced physiological and affective aspects, as opposed to cognitive aspects. The previously described work of Kwak et al. (2002) and Donthu and Garcia (1999) support the inclusion of the Need for Arousal.

Among the situational traits (level II), the model includes two facets of personal relevance related to the involvement construct (Zaichkowsky, 1994): Cognitive Involvement and Affective Involvement. The facet of Cognitive Involvement reflects personal relevance of the Internet as a shopping medium, stemming from its perceived functional characteristics. More cognitively involved persons are, for example, more likely to believe that the Internet can increase their shopping efficiency (e.g. because one can find lower priced products and/or have more alternatives to consider). On the other hand, affective factors, such as hedonic and symbolic expectations, can also determine the personal relevance of a shopping medium. This second facet if operationalized as Affective Involvement (Zaichkowsky, 1994).

At the final level of the model, surface traits (level I), the model includes a measure of the intention to shop online in the future. The directed arrows in Fig. 1 denote hypothetical relationships between the constructs. Negative signs (−) mark relationships hypothesized as negative, while relationships hypothesized as positive are unmarked. Given the large number of hypotheses suggested by the model, this study focuses its description on determinants of the constructs at levels I through III of the model.

In the initial model, the intention for online shopping is shown as directly dependent on Affective and Cognitive Involvement. (1) Need for Cognition (negative effect), (2) Need for Arousal, and (3) Need for Material Resources in turn determine the Affective Involvement. Specifically, the less one enjoys cognitive tasks in general, the more one has need for new experiences, and the more one values material goods, the higher his or her Affective Involvement in using the Internet for purchases should be. On the other hand, the Need for Cognition and Need for Evaluation should positively affect Cognitive Involvement. For the sake of simplicity in the interpretation of the model, the study begins with a fully mediated model. In other words, it does not postulate any direct relationships bypassing certain layers of the model.

4.2. Method

4.2.1. Sample

The analyses are based on $N=808$ participants of a pre-recruited panel of Internet users (as defined by Couper, 2000). The panel is developed for marketing research purposes by the research institute Puls, Croatia. Online panels typically consist of Internet users who agreed to participate periodically in online surveys. The data used in this analysis originate from a Web-based screening questionnaire administered to new participants of the Puls panel. There are no incentives offered for completing this initial questionnaire.

The average age of the respondents in the sample is 33.4 years ($SD=10.5$). Sixty-three percent of the respondents are male, and about half of the participants have at least some post-secondary education. Sixty-seven percent are employed, 20.7% are full-time students, 6.9% are unemployed, and 3.9% are retired (1.5% did not answer this question). Sixty-two percent of the participants report that they do not buy anything online in the preceding 12 months; 12.8% report making one purchase online, 17.8% make up to five purchases online, 3.4% make six to ten purchases online, and 4% make more than ten purchases.

4.2.2. Materials and measures

The screening questionnaire is first developed in English and then translated into Croatian. Backward translation is used to ensure the semantic equivalence of questions. The willingness to make online purchases in the future is examined

Table 1
Ranges, means (M), standard deviations (SD), disattenuated correlations and Cronbach alpha coefficients (N=808)

	Variable (and range)	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Intention to shop online (0–10)	2.76	3.03	.85												
2	Affective involvement (1–7)	4.24	1.29	.47	.88											
3	Cognitive involvement (1–7)	4.03	1.49	−.09	.20	.79										
4	Need for cognition (1–7)	4.32	2.06	−.34	−.06	.44	.88									
5	Need to evaluate (1–7)	5.16	1.28	−.02	.03	−.03	.04	.83								
6	Need for arousal (1–9)	4.21	1.17	.07	.07	−.15	−.09	.14	.69							
7	Need for material resources (1–9)	3.06	1.49	.05	.18	.03	.00	.16	.15	.86						
8	Big five: openness (1–5)	3.91	0.60	.10	.06	−.11	−.01	.31	.39	.05	.58					
9	Big five: conscientiousness (1–5)	3.95	0.70	.00	.12	.03	.09	.35	.00	.06	.24	.71				
10	Big five: extraversion (1–5)	3.57	0.74	−.01	−.01	−.11	.08	.23	.37	.09	.49	.35	.64			
11	Big five: agreeableness (1–5)	3.75	0.65	.00	.17	.02	.13	.07	.00	−.14	.29	.49	.42	.55		
12	Big five: neuroticism (1–5)	2.60	0.79	−.08	−.03	−.01	−.10	.02	−.07	.06	−.15	−.33	−.30	−.54	.67	
13	Past behavioral frequency (0–5)	1.75	1.11	.83	.36	−.15	−.14	.02	.06	.07	.08	−.04	.03	−.04	−.05	.85

Notes. Alpha coefficients are presented along the diagonal. Alpha reliability scores for intention to shop online (1) and past behavioral frequency (13) are set to .85.

with an 11-point likelihood scale (the so-called ''Juster-scale'' for measuring likelihood of purchases; Juster, 1966). To measure the two facets of involvement, the study uses a scale developed by Zaichkowsky (1994). The scale consists of 10 pairs of opposite adjectives, five of which measure cognitive facets of involvement (e.g. worthless–valuable, relevant–irrelevant), while five measure the affective facet of the construct (e.g. exciting–unexciting, appealing–unappealing).

Need for Cognition is measured by five items from the short scale developed by Cacioppo et al. (1984). Need to Evaluate is measured by five items from the scale constructed by Jarvis and Petty (1996). The shortened versions of both scales are necessary in order to minimize respondents' burden and avoid premature break-offs. The items measuring Need for Arousal (six items) and Need for Material Resources (five items) are taken from Mowen and Spears (1999). A short scale consisting of 22 items, developed by Rammstedt and John (2003), captures the Big Five personality traits.

To check the sufficiency of the model, the study uses a measure of past behavioral frequency (number of online purchases in the past 12 months), following Ajzen (1991, 2002). The extent to which past behavior explains one's intention to make future purchases, over and above the constructs included in the model, indicates the extent to which other factors, not accounted for in the model, affect intentions. To learn about any factors that may have been relevant, but that the model did not account for, the respondents have to answer an open question about factors that foster or hinder their willingness to make online purchases.

4.2.3. Data preparation

To test the model, the study uses path analysis based on a disattenuated correlation matrix (Table 1). Following Hunter and Schmidt (1990), the manifest variables (here: scales constructed by averaging the individual items) are adjusted for the estimated reliability for both variables correlated. Cronbach's alpha coefficients are used as reliability estimates. For single-item measures, .85 is used as the reliability score. By doing so, the study deliberately underestimates the respective 'true' intercorrelations.

4.3. Results

4.3.1. Fitting the fully mediated initial model

The initial path model, presented in Fig. 1 and estimated using Maximum-Likelihood method within EQS 6.1b (Bentler, 2003), does not fit the data well (chi^2=322.1, df=37, p<.01; chi^2/df=8.71; CFI=.86; NNFI=.76; SRMR=.06; RMSEA=.10, 90% CI=.09, .11). Given the unsatisfactory fit indices, the estimated model weights would be inappropriate for interpretation. This suggests a need for modifications to the model.

The matrix of residuals and the corresponding modification indices (LM test, Wald test) suggest that a better model might include arrows between non-adjacent levels (not only between adjacent levels, as postulated in the study's initial model). For example, it is possible to improve the model fit by introducing direct arrows from the Big Five constructs Neuroticism, Openness to Experience, and Agreeableness to online buying intention. The model fit is also improved after removing the arrow from Cognitive Involvement to the buying intention.

4.3.2. Modified hierarchical personality model

Fig. 2 shows a modified path model for prediction and explanation of online buying intention. This model provides a satisfactory fit to the data (chi^2=74.8, df=30, p<.01; chi^2/df=2.49; CFI=.98; NNFI=.95; SRMR=.03; RMSEA=.04, 90% CI=.03, .06). As the model is very complex, our discussion focuses only on the most significant findings.

In this model, the willingness to buy online is explained through (1) Affective Involvement, with standardized path coefficient of .47; (2) Need for Cognition (−.31); (3) Neuroticism (−.16); (4) Agreeableness (−.14); and (5) Openness to Experience (.09). In other words, while exercising due caution because of the sometimes low path coefficients, the determinants of the willingness to buy online could be summarized as follows: The higher one's affective involvement, the lower one's enjoyment in cognitively demanding tasks, the higher one's emotional instability, the lower one's agreeableness, and the more open one is for new experiences, the higher is one's willingness to buy products and services online.

As opposed to the study's initial model, Cognitive Involvement – reflected in perceived functional characteristics of online shopping – does not appear to be a significant determinant of online buying intention. Instead, the sole facet of involvement that predicts buying intentions is Affective Involvement. In addition, a fully mediated hierarchical model is not supported by these data. There is a direct arrow from the Need for Cognition (level III), as well as from several traits at level IV, to the willingness to buy online (level I). Finally, these data indicate that Need to Evaluate has neither a significant direct nor mediated effect on the willingness for online shopping.

4.3.3. Checking the predictive value and sufficiency of the model

Because the model's coefficient of determination (R^2=.35) translates into an effect size of f^2=.53, one can conclude (following Cohen, 1988, 1992) that the model has a large predictive value. On the other hand, if the frequency of past behavior as a further indicator of one's intention to make online purchases in the future is included, the coefficient of determination rises to R^2=.73. According to Ajzen (2002), the incremental contribution of past behavior can serve as an indicator of effect of factors that are significant but are not included in the model. This means that some factors, for which the model does not account, play a large role in explaining online buying intention.

The respondents' answers to the open-ended question on the determinants of their willingness to buy online provide clues to the other factors which may influence online shopping behavior. A content analysis of responses reveals that 40% of the comments deal with the perceived usefulness of shopping online, in particular the time- and cost-efficiencies of so doing.

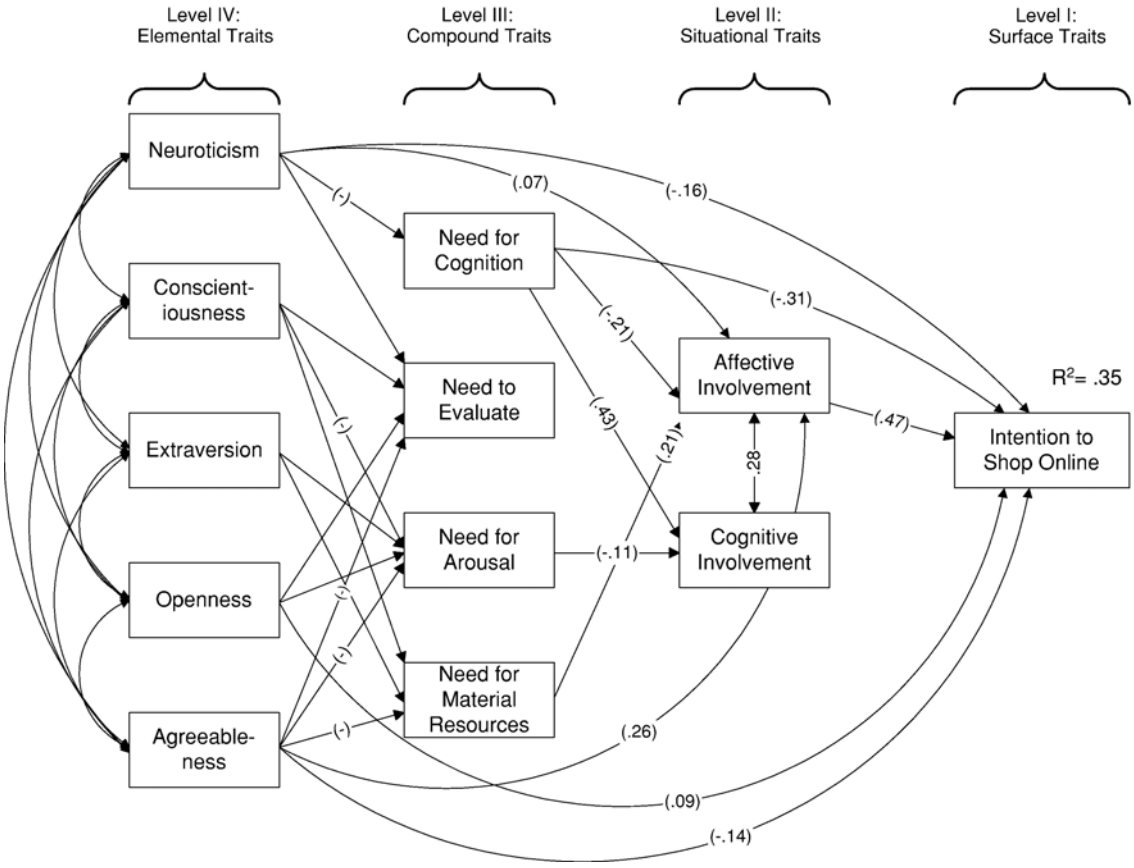

Fig. 2. Modified hierarchical model to predict and explain the willingness to shop online with standardized path coefficients, resulting from a path analysis based on a disattenuated correlation matrix and $N = 808$. Parameter estimations of levels III and IV as well as all error terms are omitted for the sake of clarity of presentation.

Another 35% of responses deal with functional barriers to shopping online associated with the necessity of using a credit card to shop online and difficulties accessing retail websites.

4.4. Discussion

Although the study's initial, fully mediated model does not fit the data well, the modified model offers interesting insights into the determinants of the willingness to buy online. Following Mowen's (2000) interpretation of direct paths between constructs, the study concludes that personality characteristics of *different levels of generality* affect decisions about future online purchases. Three of the Big Five factors – Neuroticism, Openness to Experiences, and Agreeableness – have small, but significant influences on the willingness to buy online. In addition, Need for Cognition has a direct negative effect. These direct effects could stem from the relative inexperience of the study's sample in Croatia with online shopping. Lack of online shopping experience could accentuate the effects of personality traits on the estimation of likelihood of future online purchases.

Surprisingly, only Affective Involvement, but not Cognitive Involvement, is a significant determinant of intentions to purchase online. The results imply that the decision to shop online is made with *emotion* rather than reasoning. This finding has significant implications for retailers planning advertising strategies designed to increase traffic to their websites. For instance, eBay strategically uses emotion to drive traffic to its site by showing in its advertising the emotional excitement associated with winning an online auction. Given the many advantages of online shopping (enhanced information, more alternatives, price comparisons), perhaps it is this prevalence of emotion over rational explanations that is to blame for the "dot-com" bust and related failures of online businesses.

The negative effect of Need for Cognition on buying intention depicts the most likely online shoppers as 'cognitive misers'. In other words, such consumers seek to minimize their efforts through the use of heuristics and other short-cuts to online shopping. It would be interesting to investigate whether the same relationship holds for those who use the Internet for product- and price-related search and comparison, whether or not their purchases are made online. It is likely that Need for Cognition positively relates to online searching for information, although it is negatively related to actual order behaviors.

The finding that the compound trait Need to Evaluate is unrelated to situational traits is somewhat disappointing, given the past research.

Although the predictive ability of the modified hierarchical model is considerable, the large incremental contribution of past behavior to the explanation of intention to purchase online in

the future emphasizes that the model does not account for all possible factors. The responses to the open-ended question about other factors that affect the willingness to shop online suggest that models of technology acceptance such as those proposed by Davis (1989, 1993) may be useful extensions to this model. In Davis' (1989, 1993) model, perceived usefulness and perceived difficulties play an important role in formation of attitudes and intentions related to technology use. Both factors surface in the themes expressed by respondents as they explained factors affecting their online shopping or lack thereof. If such factors are added to the hierarchical model, they would be appropriate at the level of situational traits.

In this exploratory study, we make compromises that reduce the generalizability of the results. The opportunity to examine the research questions within a marketing research study demands minimizing the number of items by shortening the original scales. This, unfortunately, threatens the semantic equivalence of the original and shortened scales, and possibly lowers their construct validity. Cultural specifics could have further reduced the usefulness of the study's results. The spectrum of online products and services in Croatia is rather narrow. It is easy to imagine that, in more developed markets, different product groups may have different determinants of buying intentions. Future research should seek to examine the hierarchical model from a global perspective. Finally, the model should pass one more reality check: it should be tested with actual behavior (actual online purchases) as the final outcome variable.

5. Outlook

Given the fragmented findings on the determinants of online shopping present in the literature and the results of this study, there is reason to believe that Mowen's (2000) hierarchical model of personality provides a good integrative framework. Such a framework can help as researchers seek to understand different dispositional predictors of online consumer behavior. The model presented in this paper offers numerous starting points for future extensions. Drawing upon models of technology acceptance might be one fruitful direction. An inductive approach to understanding consumption-related needs might be useful in determining the factors that should be included in the model. Furthermore, it would be interesting to find to what extent the model holds for different subgroups of Internet users and in different cultures. It is possible that people without previous online shopping experience determine their willingness to make future purchases in different ways than people who already had such experience.

The practical significance of an elaborated and successfully validated personality model can hardly be overstressed. For online retailers interested in servicing more customers online, motivating customers to make repeated purchases online, and promoting customers' loyalty, personality models provide an explanation of the most relevant underlying factors and processes. This does not mean that situational influences do not also determine consumer behavior. Contextual elements such as design and promotion of online retail sites interact with different behavioral dispositions and lead to interindividual differences in behavior. An understanding of the behavioral spectrum of different 'consumer personalities' can help in formulating marketing activities that are, as opposed to many present today, better targeted and more effective.

References

Ajzen I. The theory of planned behavior. Org Behav Human Decis Process 1991;50:179–211.

Ajzen I. Residual effects of past on later behavior: habituation and reasoned action perspectives. Personal Soc Psychol Rev 2002;6(2):107–22.

Alreck P, Settle R. The hurried consumer: time-saving perceptions of Internet and catalogue shopping. J Database Manage 2002;10(1):25–35.

Allport G. Pattern and Growth in Personality. New York: Holt, Rinehart and Winston; 1961.

Baumgartner H. Toward a personology of the consumer. J Consum Res 2002;29:286–92.

Bentler P. EQS 6 Structural Equations Program Manual. Encino, CA: Multivariate Software Inc; 2003.

Cacioppo J, Petty R. The need for cognition. J Pers Soc Psychol 1982;42(1):116–31.

Cacioppo J, Petty R, Kao C. The efficient assessment of need for cognition. J Pers Assess 1984;48(3):306–7.

Cases AS. Perceived risk and risk-reduction strategies in Internet shopping. Int Rev Retail Distrib Consum Res 2002;12(4):375–94.

Childers T, Carr C, Peck J, Carson S. Hedonic and utilitarian motivations for online retail shopping behavior. J Retail 2001;77:511–35.

Cohen J. Statistical Power Analysis for the Behavioral Sciences. 2nd ed. Hillsdale, NJ: Lawrence Erlbaum; 1988.

Cohen J. A power primer. Psychol Bull 1992;112:155–9.

Conn S, Rieke M. 16PF Technical Manual. 5th Ed. Champaign, IL: Institute for Personality and Ability Testing, Inc; 1994.

Couper M. Web surveys. A review of issues and approaches. Public Opin Q 2000;64:464–94.

Copas G. Can Internet shoppers be described by personality traits? *Usability News* 2003; retrieved June 20, 2004, Available at http://psychology.wichita.edu/surl/usabilitynews/51/personality.htm.

Costa P, McCrae R. The NEO Personality Inventory. Odessa, FL: Psychological Assessment Resources; 1985.

Cui C, Roberts A, Lewis B. Purchasing inhibitors on the Internet: a comparative study between the UK and the US. J Cust Behav 2003;2:193–217.

Davis F. Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Q 1989;13:319–40.

Davis F. User acceptance of information technology: system characteristics, user perceptions, and behavioral impacts. Int J Man-Mach Stud 1993;38:475–87.

Diekmann A, Wyder D. Vertrauen und Reputationseffekte bei Internet-Auktionen. Köln Z Soziol SozPsychol 2002;54(4):674–93.

Donthu N, Garcia A. The Internet shopper. J Advert Res 1999;39(3):52–8.

Eroglu S, Machleit K, Davis L. Empirical testing of a model of online store atmospherics and shopper responses. Psychol Mark 2003;20(2):139–50.

Feick L, Price LL. The market maven: a diffuser of marketplace information. J Mark 1987;51(1):83–97.

Hunter J, Schmidt F. Methods of Meta-analysis: Correcting Error and Bias in Research Findings. Newbury Park, CA: Sage; 1990.

Jarvis B, Petty R. The need to evaluate. J Pers Soc Psychol 1996;70:172–94.

Joines J, Scherer C, Scheufele D. Exploring motivations for consumer web use and their implications for e-commerce. J Consum Mark 2003;20(2/3):90–109.

Juster F. Consumer buying intention and purchase probability, New York: National Bureau of Economic Research, Columbia University Press, 1966.

Kolsaker A, Payne C. Engendering trust in e-commerce: a study of gender-based concerns. Mark Intell Plann 2002;20(4):206–14.

Konradt U, Wandke H, Balazs B, Christophersen T. Usability in online shops: scale construction, validation and the influence on the buyers' intention and decision. Behav Inf Technol 2003;22(3):165–74.

Kwak H, Fox R, Zinkhan G. What products can be successfully promoted and sold via the Internet? J Advert Res 2002;42(1):23–38.

LaRose R, Eastin M. Is online buying out of control? Electronic commerce and consumer self-regulation. J Broadcast Electron Media 2002;46(4):549–64.

Mandel N, Johnson E. When web pages influence choice: effects of visual primes on experts and novices. J Consum Res 2002;29:235–45.
McKinney L. Creating a satisfying internet shopping experience via atmospheric variables. Int J Consum Stud 2004;28(3):268–83.
Miyazaki A, Fernandez A. Consumer perceptions of privacy and security risks for online shopping. J Consum Aff 2001;35(1):27–44.
Mooradian T, Olver J. Shopping motives and the five factor model: an integration and preliminary study. Psychol Rep 1996;78:579–92.
Monsuwe T, Dellaert B, Ruyter de K. What drives consumers to shop online? A literature review. Int J Serv Ind Manag 2004;15(1):102–21.
Mowen J. The 3M Model of Motivation and Personality. Norwell, MA: Kluwer Academic Press; 2000.
Mowen J, Spears N. Understanding compulsive buying among college students: a hierarchical approach. J Consum Psychol 1999;8(4):407–30.
Pachauri M. Researching online consumer behaviour: current positions and future perspectives. J Cust Behav 2002;1:269–300.
Rammstedt B, John O. BFI-K Form S. Mannheim, Germany: ZUMA; 2003.
Senecal S, Kalczynski P, Nantel J. Consumers' decision making processes and their online shopping behavior: a clickstream analysis. J Bus Res 2005;58(11):1599–608.
Sorce P, Perotti V, Widrick S. Attitude and age differences in online buying. Int J Retail Distrib Manag 2005;33(2/3):122–33.
Swaminathan V. The impact of recommendation agents on consumer evaluation and choice: the moderating role of category risk, product complexity, and consumer knowledge. J Consum Psychol 2003;13(1/2):93–101.
Thompson T. Attitudes toward online shopping and the Internet. Behav Inf Technol 2002;21(4):259–71.
Thompson T, Yu Y. Online buying behaviour: a transaction cost economic perspective. Omega 2005;33(5):451–65.
Wind J, Rangaswamy A. 1999, "Customerization: the second revolution in mass customization," E-business Research Center Working Paper, 06-1999, Pennsylvania State University. Retrieved on May 9, 2006 from http://www.smeal.psu.edu/ebrc/publications/res_papers/1999_06.pdf.
Yoon SJ. The antecedents and consequences of trust in online-purchase decisions. J Interact Mark 2002;16(2):47–63.
Zaichkowsky J. The personal involvement inventory: reduction, revision, and application to advertising. J Advert 1994;23(4):59–70.
Zuckerman M. Sensation Seeking. Beyond the Optimal Level of Arousal. Hillsdale, NJ: Erlbaum; 1979.