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## **WORKING PAPER**

# **Motivated Consumer Innovativeness: Concept and Measurement<sup>1</sup>**

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## **Abstract**

Existing consumer innovativeness scales ignore the multitude of motivation sources of buying innovations. The objective of this paper is to incorporate recent motivation research into a multi-dimensional innovativeness scale to better account for the consumer-product relation. An exploratory and confirmatory study (with 780 respondents in total) indicates that four types of motivations underlie consumer innovativeness: functional, hedonic, social and cognitive. The proposed 28-item Motivated Consumer Innovativeness scale proves to be reliable, valid and goes beyond existing innovativeness scales.

## **Keywords**

Consumer innovativeness, Motivation, Scale development

## **Motivated Consumer Innovativeness: Concept and Measurement**

Since the early seventies, several researchers have tried to predict consumers' innovative buying behavior (i.e., the purchase of innovations or new products) by means of different scales intended to measure innovativeness as a personality trait or inherent predisposition. However, the correlation between innovativeness as measured by these scales and actual innovative buying behavior is rather weak: inherent innovativeness explains only 10 percent of the variance of innovative behavior (Roehrich, Valette-Florence, & Ferrandi, 2003). Thus, the measurement instruments of consumer innovativeness currently available fail short in accurately predicting consumers' innovative buying behavior. Ostlund (1974) states that it is not solely the personality traits that are relevant as a predictor variable, but also the consumer's product perception. Previous research disregards this link between consumers and their personality and motivation, on the one hand, and product features on the other hand (Gatignon & Robertson, 1985; Goldsmith & Flynn, 1992; Subramanian & Mittelstaedt, 1991). Consumers who accept or buy every new product that they are aware of are rare, even non-existent. Therefore, in order to understand consumer innovativeness well, attention must be paid to the interaction between the consumer and the product itself. As a first attempt, Goldsmith and Hofacker (1991) launch the idea of domain-specific innovativeness (i.e., innovativeness within a specific domain of interest). This scale has a higher predictive validity with correlations ranging from .38 to .63 with innovations purchase, but Roehrich et al. (2003) question its discriminant validity because the scale relates stronger with the Laurent and Kapferer's (1985) product category interest scale than with an innovativeness scale (Roehrich, 1994).

Baumgartner (2002, p. 287) argues that “personality is best understood in terms of the goals that people pursue in their lives [...]”. Also, Lüthje (2004) states that users who experience new needs not addressed by existing market offers expect a higher benefit from an innovation than others and also expect that benefit to come earlier. Because of these unfulfilled needs, these consumers are motivated to purchase novelties in order to satisfy their needs more effectively. Building on the foregoing, we would like to take the notion of product-consumer interactions in consumer innovativeness one step further than existing, mostly unidimensional, scales by constructing a new consumer innovativeness scale which incorporates a diversity of underlying goals and motivations to buy an innovation. We base our research on Rogers (2003), who states that “[w]e should increase our understanding of the motivations for adopting an innovation. Such ‘why’ questions about adoption have seldom been probed effectively” (p.115). Also, Huffman, Ratneshwar, and Mick (2000) are convinced that motivational goals provide us with powerful explanations of consumer behavior.

In other words, the main objective of the current paper is to develop and validate a multi-motivational consumer innovativeness scale. Most of the current innovativeness scales focus on the hedonic purchase motivation, generally ignoring other motivation sources. Using an innovativeness scale that is more balanced with respect to potential purchase motivations might, however, increase the predictability of the innovativeness trait for innovative buying behavior. Below we first discuss the relevant literature on consumer innovativeness and consumer motivation (phase 1), after which we turn to our research procedure and analysis in more detail (phase 2 and 3).

## **PHASE 1: THEORETICAL BACKGROUND**

### **Consumer innovativeness: Literature review**

Interest in innovative consumer behavior starts in the late 1950s (Goldsmith & Foxall, 2003). Initially, academic researchers try to answer the marketers' problem to identify innovative consumers with a behavioral measure of innovativeness, that is, the act of adoption as measured by time of adoption or the number of new products bought from a list. Rogers and Shoemaker (1971, p. 27) define innovativeness as "the degree to which an individual is relatively earlier in adopting new ideas than the average member of his social system". This definition focuses on the behavioral level of innovativeness, which is observable and often called realized or actualized innovativeness. This measurement has several shortcomings (e.g., recall shortcomings of the respondents and specificity of the list) but, nevertheless, it was used for many years.

In the 1970s, researchers try to measure innovativeness as a personality trait. As Midgley and Dowling (1978) point out, innovativeness is a hypothetical construct and by definition not observable. According to them, realized innovativeness is a result of innate innovativeness. Innate innovativeness finds itself on a higher, more abstract level than realized innovativeness and does not correspond to a specific innovation as is the case for realized innovativeness (Foxall, 1988, 1995; Hirschman, 1980; Midgley & Dowling, 1993; Steenkamp, Hofstede, & Wedel, 1999).

Consumer innovativeness is part of a larger, global innate innovativeness concept. Goldsmith and Foxall (2003) describe this global innovativeness as a personality trait that measures someone's willingness to try new things. Roehrich (2004) calls this concept "life

innovativeness” and defines it as “the ability to introduce newness in one’s life” (p. 673). In other words, it is a concept that deals with more than only consumer behavior or new product adoption. Several researchers have proposed scales to measure this global/life innovativeness (e.g., Hurt, Joseph, & Cook, 1977; Kirton, 1976), but these scales only weakly predict innovative consumer behavior (see Lüthje, 2004; Im, Bayus, and Mason, 2003). This shortcoming led to the development of scales measuring consumer innovativeness, that is, a construct that measures the consumer’s intention to buy new products and should therefore predict innovative consumer behavior in a more accurate way (Leavitt & Walton, 1975). Foxall, Goldsmith, and Brown (1999) define the construct as “the tendency to buy new products in a particular product category soon after they appear in the market and relatively earlier than most other consumers in the market segment” (p. 41). Leavitt and Walton (1975) are amongst the first researchers to develop a self-report measure of consumer innovativeness and others follow with different kinds of scales (e.g., Goldsmith & Hofacker, 1991; Hartman, Gehrt, & Watchravesringkan, 2004; Le Louarn, 1997; Manning, Bearden, & Madden, 1995; Roehrich, 1994; Steenkamp & Baumgartner, 1992; Tellis, Yin, & Bell, 2005; Venkatraman & Price, 1990). Table 1 gives an overview of the different consumer innovativeness scales and their definitions.

Table 1 here.

For most products, consumer innovativeness should have an impact on realized innovativeness (Craig & Ginter, 1975; Joseph & Vyas, 1984; Midgley & Dowling, 1978; Venkatraman, 1991). Also Foxall (1994) states that innate innovativeness should provide an

explanatory basis for actualized innovativeness. Still, many problems have been reported about the predictive validity of these scales (e.g., Foxall, 1995). Most (consumer) innovativeness scales demonstrate rather low correlations between what they claim to measure and innovative behavior (Roehrich, 2004). Im et al. (2003) give an overview of the weak correlation problem and conclude that the literature is inconsistent on the predictive validity of most scales and this across both product categories and innovativeness scales used. Some researchers (Citrin, Sprott, Silverman, & Stem, 2000; Foxall & Goldsmith, 1988) are not able to detect significant results, others do find a positive relationship, but this correlation accounts at best for 10 percent of the behavioral variance (Cotte & Wood, 2004; Foxall & Haskins, 1986; Hirunyawipada & Paswan, 2006; Roehrich et al., 2003). When combining these innovative predispositions with other variables (such as consumer involvement, communicated experience, and situational variables), the relation with innovative behavior becomes stronger (Midgley & Dowling, 1978, 1993; Venkatraman, 1991).

Researchers also doubt the importance of decision autonomy as part of consumer innovativeness (Midgley & Dowling, 1978). Manning et al. (1995) incorporate the trait Consumer Independent Judgement Making (CIJM), besides Consumer Novelty Seeking (CNS), in their consumer innovativeness construct. However, the correlation between CIJM and new product trial is very weak ( $p=.06$ ,  $r=.19$ ) as evidenced in other research investigating this relation (Bearden, Calcich, Netemeyer, & Teel, 1986; Carlson & Grossbart, 1984; Midgley & Dowling, 1993). Other researchers confirm this insignificant link (Citrin et al., 2000; Foxall & Goldsmith, 1988; Hirschman, 1980; Im et al. 2003; Le Louarn, 1997;

Vandecasteele & Geuens, 2008). Roehrich (2004) concludes that “autonomy in decision may probably be neither an antecedent nor a facet of innovativeness” (p. 672).

The nomological net of the innovativeness concept has been widely investigated. Consumer innovativeness has a positive relation with personality traits such as openness to change (sensation/stimulation seeking, novelty seeking, and variety seeking), risk-taking and venturesomeness, inner-directedness, social mobility and participation, opinion leadership, and mass media interest. Geeroms (2007) concludes that “[...]consumers driven by underlying motives of Vitality or Recognition scored significantly higher on consumer innovativeness ( $M=3.5$ ) compared to [...] consumers driven by underlying motives of Conviviality or Security ( $M=2.9$ ).” (p. 151). Clearly, Consumer Innovativeness (CI) correlates negatively with frugality, empathy, dogmatism, conservatism, inertia, other-directedness, and uncertainty avoidance. An overview of these and other nomological results can be found in Table 2.

Table 2 here

### **Introducing different motivations into consumer research**

In the fifties, some marketing researchers (e.g., Levy, 1959) recognize the existence of psychological and symbolic aspects of consumption next to the more functional ones (Arnould and Thompson, 2005). Since then, researchers (e.g., Chulef, Read, & Walsh, 2001; Ford & Nichols, 1987) formulate a number of motivation taxonomies, using a diversity of consumer motives and desires. Brown and Venkatesh (2005) and Foxall et al. (1999) show that goods and services are seldom purchased for their functional values alone; consumers

also want to impress others, raise their social status and enjoy themselves with these products.

A division into two dimensions can be found in work of Rossiter and Percy (1991), who make a distinction between informational (i.e., problem removal, problem avoidance,... which can be interpreted as functional) and transformational (i.e. sensory gratification, intellectual stimulation, social approval,... which can be interpreted as hedonic, cognitive and social) motivations.

Shopping motivation research uses a three-way division frequently. Tauber (1972) and other researchers (e.g., Dholakia, 1999; Geuens, Brengman, & S'Jegers, 2003; Westbrook & Black, 1985) show that shopping may occur not only for acquiring goods (functional motivation), but also for satisfying social and personal (hedonic or cognitive) needs. Park, Jaworski, and MacInnis (1986) explore the same division from an image management perspective and conclude that “[t]he method for maintaining this concept-image linkage depends on whether the brand concept is functional, symbolic, or experiential” (p.135).

The value research papers by Sheth, Newman, and Gross (1991) and Sweeney and Soutar (2001) distinguish even five main consumption values: functional value, emotional (hedonic) value, social value, epistemic value, and conditional value. However, the last factor is not used in Sweeney and Soutar's (2001) study because it is interpreted as a specific case of the other types of value. The epistemic value can be defined as “the perceived utility [...] to arouse curiosity, provide novelty, and/or satisfy a desire for knowledge” (Sheth et al., 1991, p. 162) and comes close to a separate cognitive dimension. Also Vallerand (1997) acknowledges the existence of such a cognitive motivation source within his intrinsic motivation dimension. He defines it as an intrinsic motivation to know and relates it with

constructs such as learning goals and intellectuality. Besides this motivation dimension, he also mentions the intrinsic motivations toward accomplishments (i.e., functional), intrinsic motivations to experience stimulation (i.e., hedonic), and extrinsic (i.e., social) motivations.

To conclude, most studies end up with broad categories of consumer needs which are categorized into three or four main groups: (1) functional motivations (physiological needs to solve problems, to work more effectively, and to create more utility), (2) hedonic motivations (the “just for fun” motivations such as cognitive and experiential needs), (3) social motivations (including status, prestige and symbolic needs) and sometimes a distinct (4) cognitive motivations dimension (including curiosity and a desire for knowledge) as well.

#### **A multi-motivational consumer innovativeness scale: Domain specification**

Most innovativeness scales focus on the hedonic dimension of innovativeness. One example, often used as a measure for innovativeness (Chesson, 2002; Steenkamp et al., 1999), is Baumgartner and Steenkamp’s (1996) *Exploratory Consumer Buying Behavior* (ECBB) scale. The ECBB scale is based on those kinds of behavior that provide “the consumer with a satisfactory level of stimulation” (p. 122). This construct is divided into two subscales: EAP (*Exploratory Acquisition of Products* as stimulation of the senses) and EIS (*Exploratory Information Seeking* as stimulation of the mind). The problem with the ECBB scale, amongst other innovativeness scales, is that it ignores the multitude of motives that can drive consumers to adopt a particular innovation. Other researchers do acknowledge the importance of other motivations (e.g., Daghfous, Petrof, & Pons, 1999). Hirschman (1984) and Venkatraman (1991) introduce a distinction between so-called cognitive (innovative) consumers, who are more attracted to functional or useful (new) products, and sensory

(innovative) consumers, who prefer hedonic (new) products. Babin, Darden, and Griffin (1994) and Voss, Spangenberg, and Grohmann (2003) propose a similar distinction in shopping values (named utilitarian reasons for buying products versus hedonic or affective reasons). Still other researchers have stressed the importance of the social or symbolic component of consumer innovativeness (Roehrich, 2004; Rogers, 2003). Arnould (1989) and Fisher and Price (1992) observe that social rewards and social differentiation may both stimulate new product adoption. After all, consumers can receive power, knowledge, and status through the adoption of innovations. Simonson and Nowlis (2000), finally, state that the possession of innovations is a socially accepted way of making a unique impression. Desire for Unique Consumer Products (Lynn & Harris, 1997) is caused by a person's need for uniqueness, status, and materialism. Consumers build a certain identity through the possession of new products on the condition that these innovations are visible for others (Tian, Bearden, & Hunter, 2001; Tian & McKenzie, 2001). Despite all this evidence in favor of recognizing different motivation sources, the number of motivation sources included in current consumer innovativeness scales is limited to two at most (Roehrich, 1994; Venkatraman & Price, 1990).

Taking both the foregoing and the general motivation taxonomies into account, it is surprising that hardly any innovativeness scale has been developed that includes a broader variety of potential consumer motives. However, a multi-dimensional consumer innovativeness scale is useful, and therefore called for by marketing researchers and managers to help them predict new product adoption more effectively and more efficiently and play a part in new product development and marketing communications development. The main objective of the current research is to fill this gap and to develop and validate such

a multi-dimensional scale, called Motivated Consumer Innovativeness (MCI), taking into account the different motivations of innovative consumers.

## **RESEARCH OVERVIEW AND OBJECTIVES**

To develop a more comprehensive measure for consumer innovativeness, that is, one that takes different motivations into account, we will use the procedures suggested by Churchill (1979), DeVellis (2003), and Netemeyer, Bearden, and Sharma (2003). First, in Phase 2 below, we report on the two exploratory studies that we have conducted. The literature review given in the previous section and these two studies serve as the basis for a first pool of items. With the help of experienced researchers, experts, and other judges, these items are edited and reduced in terms of their content and the results of face validity tests. Next, in Phase 3, we present the pilot tests, investigate the multi-dimensional structure of the scale, and assess its reliability and validity. Moreover, we also relate the different dimensions of this construct to conceptually related constructs. All of this allows us to come to a workable and validated MCI scale.

## **PHASE 2: EXPLORATORY RESEARCH**

### **Study 1: Exploratory interviews**

In our first study, we further explore the domain of innovative consumers by means of in-depth interviews with consumers who recently bought innovations and thus are experts. We ensured we interviewed individuals from relevant populations (Netemeyer et al., 2003).

The objective of these interviews is conceptual groundwork on motivations of innovativeness aimed at enriching our pool of items and to ascertain that all content areas of the construct and its dimensions are incorporated.

### *Procedure*

In the exploratory interviews, a convenience sample of 37 innovative adult consumers of mixed age (mean age=35.2 years) and gender (22 males versus 15 females) was asked to come up with reasons for actual innovation purchases in the past. Business school students were asked to gather innovative consumers who were further selected based on self-reports of their innovative buying behavior. Respondents who reported to have bought a minimum of two products from a list of 502 innovations were invited to participate in the study. The list of innovations consisted of a variety of product categories going from food and drinks over cosmetics, cleaning products, media, services, office equipment to innovations for use in the garden. The list was drawn up by the authors and their master students, taking the following descriptions into account: “An innovative consumer is a consumer who frequently acquires innovations earlier than the average consumer.” We used the following description of an innovation: “An innovation is a newly (<2 years) launched product, service or brand on the consumer market.” Innovations are thus used to distinguish innovative consumers from non-innovative consumers. A pure product replacement, for example, cannot be regarded as an innovation because of the non-distinctiveness between innovative and non-innovative individuals. Respondents were allowed to add a product on this non-exclusive list after we checked its innovativeness by means of the above-mentioned definition.

For each interview we took about one hour, relying on the Means-End Chain (MEC) theory. This theory assumes that product attributes are linked to more abstract (consumption) goals and values. MECs are obtained through a process called “laddering interviews” to develop an understanding of how consumers translate product attributes into meaningful associations and more abstract (consumption) goals and values (Gutman, 1982). We followed Reynolds and Olson (2001) in setting up our interview process, keeping in mind Cohen and Warlop’s (2001) remark that “our fascination with both deeper needs and higher values should not blind us to the fact that consumers are looking for toasters that toast properly, foods that taste good, and carpets that resist wear and tear” (p. 391). In other words, “functional benefits need not to be connected – at least in consumers’ minds – to these more abstract or higher level sources of value” (p. 407).

### *Results*

During the 37 interviews 74 different products, varying from new food products to very specialized electronics, were discussed (e.g., digital tv recorder, beer cans that cool faster, all-in-one pasta, Twix white chocolate, K-Swiss sport shoes, blue-ray writer,...).

The motivations that the respondents reported fit in with the taxonomies found in the literature, and more specifically, with the distinction into functional, hedonic, and social motives. Table 3 and the exemplary quotes below illustrate this. A clear, separate cognitive factor does not really emerge as only one cognitive item (i.e., ‘curiosity’) was rarely mentioned by the respondents. For the time being, we group ‘curiosity’ under the hedonic dimension.

Table 3 here.

Some examples:

The majority of the reasons mentioned for buying novelties are functional. Some interviewees state that the new product is easier to use: *“All those problems with changing dust bags belong to the past”* (Birgit, 24, bagless vacuum cleaner), or is handier: *“I think that the only thing that is of importance is its handiness in baking a cake”* (Vincent, 28, Netflex flexible cake tin). Others mention that the new product is more comfortable: *“You don’t have problems with smoke and you have an even fire”* (Philippe, 43, firelighter liquid), or possesses a higher quality level: *“If you wash your pullover with another product, it gets pills on it but with Woolite it’s much better”* (Lisbet, 18, Woolite).

Other mentioned reasons for buying certain innovations are of a hedonic nature. Some respondents mention the enjoyment and pleasure they experience from the new product: *“Usually, I use these products to spoil myself, just to amuse myself”* (Jens, 19, Ipod Photo), *“I can enjoy more the colors, the sound, the special effects, the sense of reality,...”* (Walter, 69, LCD High Definition television). Variation and change is also an important motivation source: *“It’s different from the usual slice of bread every morning”* (Wim, 22, Yoghurt with cereals), *“Some variation in life, something else than usual... I don’t always want to drink the same in my life”* (Gerald, 24, Coca-Cola Zero). Curiosity and the love of experiment are other hedonic motivation sources: *“If you try something new, you run the risk of having a bad product, but you’re curious about it as well. If you take something you already know, then it’s more a routine ...”* (Nathalie, 22, Yakitori with soya sauce), and *“I*

*like to experiment, not necessarily to stick to that product. I use that product for a while to test it and then I draw my conclusions about it” (Suzanne, 46, Dash Lenor).*

Social motivations are mentioned least. Some statements are: *“People have to see that you keep up with the times and that you can use the technology” (Gerald, 24, Vodafone life card). “I like visitors at home saying: nice, is this new?” (Pascale, 42, Lipton pyramid tea) and “I’m an enthusiastic person. We often play little games among friends and it is always nice to win. It’s nice to play at the same level” (Robert, 25, innovative squash racket).*

### *Discussion*

These in-depth interviews corroborate earlier research on the motivational structure of innovative consumers. Except for a minority of external reasons of innovation buying (e.g., obliged to buy for work or as a gift,...) all the buying reasons that we were able to elicit during the interviews fit into three categories found in literature. To conclude, three main motivations can be distinguished, which we will refer to in the remainder of this paper as Functionally, Hedonically, and Socially Motivated Consumer Innovativeness. Functionally Motivated Consumer Innovativeness (fMCI) can be defined as consumer innovativeness motivated by functional aspects such as usefulness, handiness, compatibility, efficiency, comfort, ease, quality, reliability, etc. Consumers’ reason to buy these innovations is to solve functional problems, so these innovations are not a goal on their own, but a means to an end (i.e., satisfying functional needs). Hedonically Motivated Consumer Innovativeness (hMCI) can be conceptualized as consumer innovativeness motivated by hedonic aspects such as seeking variation, pleasure, fun, sensation, fantasy, excitement, enjoyment, creativity, tension, experimentation, desire, stimulation, or to give in to an irresistible urge, escape from

the daily round, discover new things, etc. Here, adoption of innovations is a goal on its own: the consumer wants to keep his/her stimulation level high enough by buying innovations. Socially Motivated Consumer Innovativeness (sMCI) can be defined as consumer innovativeness motivated by being different and unique and by, status, standing, prestige, distinction, opinion leadership, manipulation, visibility, social reward, trendiness, symbolism, showing success, sense of belonging, image, etc. Innovations bought for social reasons are not a goal on their own, but a means to distinguish oneself from others or to be rewarded by others.

A majority of the interviewees in this study reported that they would buy a new product because of its functional merits and less because of its hedonic stimulation. However, most innovativeness scales would probably not detect this accurately, because they focus on hedonic motivations. It was harder to identify social factors that were relevant to the adoption of new products. A possible reason could be that popularity, image, status, uniqueness, and being trendy have a negative connotation, which makes them harder for the interviewees to mention (Fisher, 1993). To minimize the social desirability bias, we decided to use third person statements, based on research by Fisher (1993), in a quantitative follow-up study.

## **Study 2: Quantitative exploration of consumer innovativeness motives**

The objective of the quantitative follow-up is twofold: (1) to check whether the same three motivational dimensions are present in a larger sample than in the small sample of the qualitative study, and (2) to discover any motivational dimension that is discriminant from the three dimensions we found earlier. To make sure no important motivation dimension

would be omitted, we did not restrict the questionnaire to the three dimensions revealed in the qualitative study, but we used the comprehensive list of general human motivations developed by Chulef et al. (2001).

### *Procedure*

An Internet survey was made available from 26 February 2007 to 30 March 2007 and received 1,023 visitors. Of these visitors, 401 started to fill out the survey, 279 (27.2%) finished it. To motivate the respondents to finish the questionnaire, we used an incentive (five tokens of €10 to be divided among the participants). The respondents were recruited via the website of a European business school and by sending mails to staff members of that school.

### *Measures*

On the website's homepage, visitors were told that the objective of the study was to distill all the possible motivations that underlie innovative purchasing behavior. They were invited to evaluate all of Chulef et al.'s (2001) 135 motivation items. They were also given a definition of what it means to be an innovative consumer: someone who buys as one of the first — or does so faster than the 'average' consumer — a newly launched brand, product or service, i.e., innovations in very different product categories such as new food and drink products, technology, (home) electronics, cleaning products, media, other non-food products,... A first open-ended question was "When you think of a new product, brand or service, what product, brand or service comes to your mind?" This question checked whether

the respondent understood the ‘innovation’ concept. A second open-ended question was added to make respondents think about possible motivations for consumer innovativeness.

Next, they were presented with the 135 motivation items of Chulef et al. (2001) in a random order, each item being introduced by the sentence “I think people acquire innovations (and therefore are innovative) because ...”, which was followed by the motivation statements (e.g., “... they are perhaps in a better position to make decisions for others”). Respondents answered on a five-point Likert scale (1 = “strongly disagree”, 5 = “strongly agree”). Finally, they filled out their sociodemographic characteristics (gender, age, income, education, and place of residence). Afterwards, they could choose to answer the incentive questions or not.

### *Respondents*

Seven out of ten respondents are women. Moreover, 68% are aged 18 to 25, which takes down the mean age to 27 because half of the respondents are undergraduate students.

### *Results*

First, the 612 answers to the open-ended question about consumer innovativeness motivations can be divided into the three categories derived earlier (see Table 4). However, the curiosity item (cognitive motivation) becomes more important.

Table 4 here.

Secondly, we carry out an exploratory factor analysis with promax rotation on the motivation items that have a mean significantly greater than three (this means that these motivation items are of importance for consumer innovativeness:  $n=49$ ) and with Eigenvalue greater than 1 (Hair, Anderson, Tatham, & Black, 1998). The analysis yields 14 factors. Seven factors have more than one item per factor and a Cronbach's alpha larger than .60 (see Table 5).

Table 5 here.

The scree plot, however, suggests a four-factor structure rather than the three-factor structure borne out in the qualitative study. Therefore, four- and three-factor structures are assessed as well (see Table 6).

Table 6 here.

According to the three-factor solution, the first factor can be interpreted as the hedonic factor (openness, sensation, and adventure). The second factor can be seen as the social factor, which deals with social recognition, approval, and leadership. The third factor deals with intellect, ratio, knowledge, and ambition and seems to be the cognitive factor we also found in a few value research papers cited earlier. When we extract four factors, an easiness or functional dimension appears<sup>4</sup>.

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<sup>4</sup> Because the sample is not representative for the general population with respect to age and gender, we investigated the factor structure for each group separately. The structure found for the total sample is confirmed in each group.

## **Discussion**

We can conclude from our quantitative exploration of consumer innovativeness motives that an extra factor, i.e., a cognitive dimension, may be appropriate for the Motivated Consumer Innovativeness scale. This cognitively Motivated Consumer Innovativeness (cMCI) is consumer innovativeness motivated by knowledge, information, intelligence, wisdom, eagerness to learn, logical thinking, insight and understanding, reason, brainpower, stimulation of the mind, ... These innovations are a goal in their own right: the consumer likes stimulation of the mind and wants to keep this stimulation level high enough by buying these innovations.

An important difference between the two exploratory studies presented above lies in the relative number of times that consumer innovativeness is explained in terms of social motivation sources. In the qualitative exploratory study, social motivations were mentioned least whereas in the quantitative exploratory study, they outnumbered all the other dimensions. There are at least two reasons that might explain this finding. First, the respondents in the quantitative study had to think of reasons why people in general (i.e., not necessarily themselves) buy novelties. Consumers seem to think that other people like to buy new products for social reasons but that they themselves buy innovations for other reasons. A second reason why the two exploratory studies yield different results for the social motivation source is the demographic differences. The respondents of the quantitative study are mainly undergraduate students who are younger (mean age=27.0 years) than the interviewees of the qualitative study (mean age=35.2 years). As younger people tend to be more influenced by identity and normative pressure of reference groups (Park & Lessig,

1977), this could well explain part of the difference between both studies. We will keep both possibilities in mind when further validating the MCI scale.

In the third phase, we will incorporate these motivation studies into the concept of innovativeness. We will investigate the multi-dimensional structure of the scale and assess its reliability and validity. Moreover, we will also relate the different dimensions of this construct to conceptually related constructs.

### **PHASE 3: SCALE DEVELOPMENT**

#### **Item generation**

As observed by DeVellis (2003), “In general, the larger the item pool, the better.” (p. 66). Bearing this in mind, we generate a large pool of possible items (n=243) for the MCI scale. These 243 items originate from the literature review (n=68), the different consumer innovativeness scales that exist (n=77) – both dealt with in the theoretical background section of the paper – the interviews (n=67) (i.e., Study 1), and the exploratory quantitative research (n=31) (i.e., Study 2). We use those items from Chulef et al. (2001) that load clearly on one of the four factors and are not used as an item yet. In the next study, we will purify the scale, to have a more workable and valid scale.

#### **Study 3: Scale purification with content validation**

In order to lighten the content validation work of the five expert judges (all of them Marketing Department faculty members) and the six consumer judges, the authors reduce the number of items to 154 by removing those that fail to distinguish clearly between innovative

and non-innovative consumers, on the one hand, and between the different dimensions of the scale, on the other hand. To this end, the authors rate each of the 243 items on both criteria, using a score between 1 (low) and 3 (high). Every item that gets a low score is deleted. As proposed by Hardesty and Bearden (2004), the Marketing Department faculty members judge the items on content validity, representativeness, and dimensionality (after reading our definitions of the three dimensions). First, the expert judges have to rate whether the items distinguish innovative from non-innovative persons unambiguously, using the following scale: 1=yes, 2=no, 3=doubtful. Second, they have to choose the correct motivation source of the items. Finally, they can give extra comments on each item (doubts, other terms, deletions, extensions, ...). The consumer judges assess the items on comprehensibility and lack of ambiguity. Both characteristics are judged on the same three-point scale used for the faculty members' judgment. The consumer judges, too, can give extra comments. To be included in the provisional scale, only one "no", one "no" and one "doubtful", and two "doubtful" answers are allowed. Moreover, only one wrongly assigned motivation source is tolerated. Some items are reformulated to meet the judges' suggestions for improvement.

The remaining items (n=90) consist of 24 functional, 24 hedonic, 22 social, and 20 cognitive items. Examples of these items can be found in Table 8.

#### **Study 4: Pilot study**

This quantitative pilot study wants to assess some basic psychometric properties of the MCI scale and purify the scale towards a more manageable number of items. We use exploratory and confirmatory factor analysis to obtain these objectives.

### *Procedure and measures*

Respondents were recruited via 35 web forums and snowball sampling via the personal social networks of the authors, their university colleagues, and undergraduate students in order to get a sample from relevant populations (Netemeyer et al., 2003). The internet survey was online from 6 July 2007 until 6 August 2007 and received 1,567 visitors. Of these visitors, 452 (28.8%) completed the survey, which is more than the 300 proposed for larger pools with multidimensional constructs (Netemeyer et al., 2003). An incentive was used identical to that of the quantitative survey exploring consumer innovativeness motives.

Almost 54% of the respondents are women. The respondents' age ranges between 14 and 79 with a mean age of 36. The mean age differs between men (M=39) and women (M=34) because there is an overrepresentation of men in the highest age group (+55). We have to keep these significant differences in mind when interpreting the results of the survey. The respondents earn a median monthly net family income between €1,500 and €2,499, about half of them are married or living together with a partner (52%) and the majority (58%) has a bachelor's degree or higher. More detailed sample characteristics are given in Table 7.

Table 7 here.

The real objective of the study was withheld from the respondents to avoid response biases. Respondents were told that the survey would explore their purchase behavior and purchase motivation and kept silent about the innovativeness purpose. The online questionnaire included the 90 MCI items divided over four pages and randomly rotated to

minimize any order of presentation. Further, to be able to establish convergent validity, for half of the respondents the Hedonic and Social Consumer Innovativeness (H-SCI) scale of Roehrich (1994), which consists of 11 items, was included. We expect a significantly higher correlation between the respective hedonic and social components of Roehrich's (1994) scale and ours than between the other dimensions. The EAP (Exploratory Acquisition of Products) variety seeking subscale of Baumgartner and Steenkamp (1996) and the Extraversion scale of Eysenck, Eysenck, and Barrett (1985) were added for the other half of the respondents to establish discriminant validity. EAP (10 items) measures the "[...] tendency to seek sensory stimulation in product purchase through risky and innovative product choices and varied and changing purchase and consumption experiences" (Baumgartner & Steenkamp, 1996, p. 124). However, as EAP is sometimes used as an innovativeness scale in the past (e.g., Weijters, Geuens, & Roehrich, 2004), there could be a convergence with (certain dimensions of) MCI as well. The Extraversion scale measures the extent to which people are extrovert and consists of 12 items like "I love meeting new people". We expect no or a relatively low correlation between these two scales and the MCI scale. Respondents answered to all scales on a five-point Likert scale (1 = "strongly disagree", 5 = "strongly agree"). Finally, respondents had to fill out questions about their sociodemographic profile (gender, age, place of residence, education, marital status, and income). Afterwards, they could choose whether they wanted to participate in the incentive competition or not.

### *Factor analyses results*

Principal component analysis with an oblique (promax) rotation results in 14 factors with Eigenvalue greater than 1 (Hair et al., 1998). An oblique rotation allows underlying

dimensions to be correlated because of possible correlations between some of the factors (Roehrich, 1994) and because an oblique rotation reveals the more meaningful theoretical factors (Netemeyer et al., 2003). Only items that load higher than .50 on one dimension and not higher than .30 on another are retained. In this way, four factors are obtained. We also run an extra 90-items factor analysis with varimax rotation, which results in an identical factor structure. Both rotations are repeated with a four-factor restriction. All Kaiser-Meyer-Olkin tests of sampling adequacy and Bartlett's test of sphericity prove that factor analysis is meaningful. In order to get a workable number of items for a second pilot test, we delete the items that load least clearly on only one factor. This results in 56 items in total.

We repeat these exploratory factor analyses with the 56 items left to verify the factor structure. As a result of both analyses, we delete the worst fitting items, which results in a total of 43 items: 10 social items, 12 functional items, 13 hedonic items, and 8 cognitive items. A factor analysis carried out on each dimension separately brings out that the items appear to load highly on a single factor. Table 8 shows the retained 43 final items, their loadings, and the Cronbach's alphas for the MCI scale ( $\alpha=.958$ ) and the four dimensions separately ( $\alpha_{\text{social MCI}}=.928$ ;  $\alpha_{\text{functional MCI}}=.907$ ;  $\alpha_{\text{hedonic MCI}}=.928$ ;  $\alpha_{\text{cognitive MCI}}=.902$ ). These alphas are comfortably high.

Table 8 here.

The four factors account for 57.7% of the total variance and each factor minimally explains 5.4% of the total variance, which fulfills the minimal requirements of Netemeyer et

al. (2003). All item-to-total correlations exceed .50 and the inter-item correlations exceed .30 for each dimension.

On the basis of a confirmatory factor analysis (CFA with SAS CALIS Procedure), we delete the items with factor loadings below .60 and squared multiple correlations below .50. CFA on the remaining 28 items results in an acceptable overall fit (TLI=.945, CFI=.950, RMSEA=.050). Also, the factors prove to possess high internal validity and show sufficient discriminant validity. Composite reliability (CR) and average variance extracted (AVE) is satisfying for sMCI (CR=.93, AVE=.64), fMCI (CR=.87, AVE=.54), hMCI (CR=.91, AVE=.56), and cMCI (CR=.91, AVE=.58). AVE is always larger than the squared correlations between the factors (cf., Fornell & Larcker, 1981), which proves discriminant validity between the dimensions. Another recommended test of discriminant validity compares the chi-square values of the proposed model and a baseline null model. In this study, the proposed model shows  $\chi^2=663.0$ ,  $df=344$ , and the independence model  $\chi^2=6826.3$ ,  $df=378$ . The increase in  $\chi^2$  is significant (critical value = 65.25, with  $p<.001$ ) and suggests that the discriminant model outperforms the other models. The same is true for a 1-factor model ( $\chi^2 = 2716.8$ ,  $df=350$ ), a 4-factor uncorrelated model ( $\chi^2 = 1145.9$ ,  $df=349$ ), and a 1-factor 2<sup>nd</sup>-order model with MCI as the higher order factor and the four subdimensions ( $\chi^2 = 681.9$ ,  $df=346$ ). Table 9 shows more fit results.

Table 9 here.

We can conclude that this MCI scale and its dimensions have a good internal consistency. The use of summated scales is allowed for further validity analyses.

### *Socio-demographic differences according to (x)MCI*

A multivariate analysis of variance with MCI and its four dimensions as dependent variable and gender, age, income, and education as independent variables shows a significant main effect only for age ( $F=2.64, p<.001$ ). There are significant effects for MCI ( $F=6.34, p<.001$ ) and the dimensions sMCI ( $F=5.13, p=.001$ ), hMCI ( $F=7.78, p<.001$ ), and cMCI ( $F=3.42, p=.011$ ): scores on all these MCI (sub)scales decrease with age. As for fMCI, there is no difference between age categories ( $F=1.24, p=.300$ ). Table 10 summarizes these results.

Table 10 here.

### *Convergent and discriminant validity*

To check for convergent validity, half of the respondents were asked to fill in Roehrich's (1994) H-SCI scale. The factor analysis of these 11 items (with promax rotation) gives only one factor with Eigenvalue  $> 1$ . When forcing two factors, the hedonic and social items load on the first and second factor respectively. The coefficient alpha estimates for this consumer innovativeness scale ( $\alpha=.922$ ), as well for its two dimensions ( $\alpha$  HCI=.866, SCI=.887), are satisfactory. Table 11 offers an overview of all bivariate correlations between our scale and Roehrich's and its dimensions.

Table 11 here.

The most interesting results are the strong correlations between the hedonic and social parts of Roehrich's scale ( $r=.752$ ), between MCI and H-SCI ( $r=.824$ ), between sMCI and SCI ( $r=.790$ ), and between hMCI and HCI ( $r=.728$ ). The first correlation was also reported in Roehrich's own 1994 study, which confirms the usefulness of oblique rotation in the factor analysis. Furthermore, as expected, the table shows weaker – but still significant – correlations between fMCI and H-SCI ( $r=.500$ ) and between cMCI and H-SCI ( $r=.629$ ). The correlations between the MCI dimensions differ as well: the highest correlations appear between hMCI, on the one hand, and cMCI ( $r=.606$ ) and sMCI ( $r=.601$ ), on the other. The lowest correlation occurs between fMCI and sMCI ( $r=.346$ ). All correlations are significant at the .001 level.

The second half of the respondents were asked to fill in the EAP dimension of the ECBB scale (Baumgartner & Steenkamp, 1996) and the Extraversion scale of Eysenck et al. (1985). The coefficient alpha estimates for these scales are respectively .863 and .901. Table 12 provides an overview of the correlations of the EAP and Extraversion scales with the (x)MCI scale.

Table 12 here.

The EAP scale correlates moderately but significantly with MCI ( $r=.232$ ,  $p=.002$ ) and all its subscales ( $r=$  between .170,  $p=.016$  for fMCI and  $r=.242$ ,  $p=.001$  for hMCI and cMCI), except for sMCI ( $r=.104$ ,  $p=.152$ ). MCI and its dimensions never correlate significantly with the Extraversion scale. This is a first discriminant validity test between MCI, on the one hand, and the EAP/Extraversion scales, on the other hand.

## **Discussion**

It is clear after the content validation that the cognitive motivation source is a structural and a discriminatory part of the MCI scale. That is why we added an extra definition of this type of consumer innovativeness, which we will use further on when validating this scale.

This study disproves the general consensus of earlier studies that older people are always significantly less innovative than younger people (cf. Table 2). Most existing innovativeness scales focus on hedonic and — to a lesser degree — social innovativeness. As older people are less interested in buying innovations purely for the sake of the fun, excitement or status they bring (i.e., hedonic and social motivations), it is only logical that they cannot be shown to be innovative according to these scales. However, this study allows us to observe that older consumers can be just as innovative as younger consumers if only for different reasons. Older consumers buy innovations for functional reasons rather than any of the others.

The younger respondents of this survey are significantly more socially motivated to buy innovations than older respondents. As observed above, this could explain why so many respondents of the quantitative exploratory study mentioned social motivations for being innovative unlike those who participated in the first, more qualitative exploratory study. Still, we cannot rule out the possibility of social desirability bias but further research is necessary to determine its effect.

From the correlation matrix in Table 11, it is clear that the correlations between our social and hedonic MCIs and Roehrich's (1994) H-SCI are significantly larger than the

correlations between our functional and cognitive MCIs and H-SCI. This can be interpreted as a first indication that the functional and cognitive motivation sources are less represented in Roehrich's scale, and possibly other scales as well. However, both scales are still significantly correlated with each other.

According to the discriminant validity tests (Table 12), the EAP scale of Baumgartner and Steenkamp (1996) correlates significantly with MCI and most of its dimensions. The highest correlation can be found for hMCI and cMCI ( $r=.242$ ). As observed in the theoretical part of this study, this follows logically from the fact that the EAP scale is based on the "Exploratory" Acquisition of Products. Other motivation dimensions are not (i.e., in case of the social dimension) or less (i.e., in case of the functional dimension) incorporated into this EAP construct. The social dimension of the MCI scale is clearly uncorrelated with EAP, a conclusion that also Weijters et al. (2004) arrived at. Furthermore, EAP deals with the product category of food and fast moving consumer goods (Weijters et al., 2004), while MCI is not restricted to any specific product category.

A possible reason for the low correlations/uncorrelatedness between (x)MCI and EAP – which is sometimes used as an innovativeness construct – could be the negatively worded items of Baumgartner and Steenkamp's (1996) scale: Only two items of the EAP scale are positively worded, meaning that the EAP scale is more an anti-variety-seeking scale. This means that the items of the EAP scale are mostly negatively related to innovativeness, while the MCI items are positively related to innovativeness. The use of reversals is a topic of debate in academic literature because they often introduce reversal bias into the scale (e.g., Quilty, Oakman, & Risko, 2006; Wong, Rindfleisch, & Burroughs, 2003).

The extraversion scale of Eysenck et al. (1985) is not correlated with MCI, nor with its dimensions. In other words, extrovert people do not necessarily have the intention to buy innovations.

## **CONCLUSION**

This paper tries to answer Roehrich's (2004) suggestion to include a wider range of different dimensions of innovativeness by incorporating the four main motivations of importance for consumer innovativeness (functional, hedonic, social, and cognitive) into a single scale.

There are several reasons why this new CI scale is useful. To begin with, the first dimensionality, reliability, convergence and discriminant validity tests of MCI prove satisfactory and indicate that the generally accepted thresholds are met. Secondly, this study provides a first proof that MCI measures more than the existing CI scales. First, it disproves the general consensus that older people are always significantly less innovative than younger people. Most existing innovativeness scales focus on hedonic and (to a lesser degree) social innovativeness. As older people are less interested in buying products for purely hedonic or social matters, it is clear that scales based on these will not bring out their innovativeness. However, the results of the current study indicate that older consumers are just as innovative as younger consumers when they are more functionally or cognitively motivated by the innovation. Secondly, the correlations between Roehrich's (1994) H-SCI and the social and hedonic dimensions of MCI is larger than the correlations with the functional and cognitive MCI dimensions. We interpret this as a first indication that the functional and cognitive

motivation sources of being innovative are less represented in Roehrich's scale. Further validation of the nomological network and the predictive validity of this scale will be carried out in a follow-up paper.

### *Research limitations and further research*

The focus of this paper was to construct a new multi-dimensional innovativeness scale. Some validity measures (e.g., test-retest, social desirability, predictability with behavioral measures) are not included yet, but will be subject of a follow-up paper.

However, this MCI scale has withstood the first validity and reliability tests. Since only three scales have so far been used to check for convergence and discriminant validity, it is clear that also other scales should be used to further test MCI's validity. Several other validity concerns should be addressed, too. A new study will set up extra surveys and develop an experimental design to test more convergent and discriminant validity, nomological validity, and criterion-related or predictive validity.

Because of the low mean of sMCI, the possibility of social desirability exists and should be further examined in the follow-up study. In the two studies that checked for the respondents' own social innovativeness (Studies 1 and 4), the majority denied that this motivation played a part. However, when having to judge third-person statements, most respondents thought that consumers are innovative mostly because of social reasons (cf. Study 2). Further research should clarify this point.

It seems that the motivations to acquire innovations are different according to the age that a person has. This can be a basis for further research, once the MCI scale is ready for use.

The authors will also further investigate the influence and moderation of other variables, such as consumer involvement, communicated experience, and certain situational variables. Opportunity and capacity, amongst other factors like motivation, can also explain the gap between consumer innovativeness as a concept and consumers' actual innovative behavior. This will be used as a moderator in a follow-up study or will be controlled for in experimental research.

In the discussion, we stated that MCI is not about a specific product category. The four dimensions, however, could be product category-specific. Intuitively, we can argue that innovative fast moving consumer goods are more likely to be bought by people who are hedonically motivated to buy new products than by other consumers. Durable innovations are probably more attractive to innovative consumers who are functionally or cognitively motivated. This product category specificity of the four dimensions can be part of the experimental design in a follow-up study.

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**Table 1**  
**Different Consumer Innovativeness scales with definitions**

<b>Author(s) (year)</b>	<b>Scale</b>	<b>Definition</b>
Leavitt & Walton (1975)	Innovativeness	A psychological trait underlying adoption of new ideas, services and products
Raju (1980)	Innovativeness as category within Exploratory Tendencies	“Eagerness to buy or know about new products/services” (p. 278)
Joseph & Vyas (1984)	Innovative Cognitive Style	“An individual’s intellectual, perceptual, and attitudinal characteristics that influence the ways in which he or she reacts to new products, new sensations, new experiences, and communications about them” (p. 160)
Goldsmith & Hofacker (1991)	Domain-specific Innovativeness	“Tendency to learn about and adopt innovations (new products) within a specific domain of interest” (p.211)
Roehrich (1994)	Hedonic Innovativeness	The drive to adopt innovations for hedonic reasons, i.e., to enjoy the newness of the product
	Social Innovativeness	The willingness to be relatively early in adopting an innovation as compared to others in one’s social system
Baumgartner & Steenkamp (1996)	Exploratory Product Acquisition as dimension within Exploratory Consumer Buying Behavior	“The potential for sensory stimulation in product purchase through risky and innovative product choices and varied and changing purchase experiences” (p. 123)
Le Louarn (1997)	Predisposition to innovate	A central predisposition to take innovative decisions, which expresses itself at every level of human activity
Hartman, Gehrt & Watchrevringskan (2004)	Teen Innovativeness Scale	No definition given
Tellis, Yin & Bell (2005)	Global Consumer Innovativeness	“Similarities and differences in consumer willingness to adopt new products across different countries of the world” (p. 3)

Note: The papers without quotation marks do not give a clear definition in their text.

**Table 2**

**Relation between consumer innovativeness and sociodemographic/personality variables**

<b>Independent variable</b>	<b>Relation with innovativeness</b>	<b>Authors (year)</b>
<b>Gender</b>	Men (more innovative)	Tellis, Yin, & Bell (2005); Venkatraman & Price (1990) for cognitive innovativeness.
	No relation	Venkatraman & Price (1990) for sensory innovativeness.
	Depends on product category	
	- social products: men	Weijters, Geuens, & Roehrich (2004).
	- food: men	West & Larue (2004).
	- fashion: women	Goldsmith, Kim, Flynn, & Kim (2005).
<b>Age</b>	Negative correlation	Tellis et al. (2005); Weijters et al. (2004); Goldsmith, Flynn, & Goldsmith (2003); Lee, Lee, & Schumann (2002); Steenkamp et al. (1999); Martinez, Polo, & Favian (1998); Manning et al. (1995); Venkatraman (1991); Venkatraman & Price (1990) for cognitive innovativeness; Dickerson & Gentry (1983); Raju (1980); Uhl, Andrus, & Poulsen (1970).
	No correlation	West & Larue (2004); Steenkamp & Gielens (2003); Im et al (2003); Venkatraman & Price (1990) for sensory innovativeness.
<b>Education</b>	Positive correlation	Tellis et al. (2005); Rogers (2003); Lee et al. (2002); Venkatraman (1991); Mahajan, Muller & Srivastava (1990); Venkatraman & Price (1990) for cognitive innovativeness; Gatignon & Robertson (1985); Dickerson & Gentry (1983); Raju (1980); Uhl et al. (1970).
	No correlation	Steenkamp & Gielens (2003); Im et al. (2003); Steenkamp et al. (1999); Venkatraman & Price (1990) for sensory innovativeness.
<b>Income</b>	Positive correlation	Tellis et al. (2005); Rogers (2003); Steenkamp & Gielens (2003); Lee et al. (2002); Martinez et al. (1998); Venkatraman (1991); Mahajan et al. (1990); Gatignon & Robertson (1985); Dickerson & Gentry (1983); Raju (1980); Uhl et al. (1970).
	No correlation	Im et al. (2003); Steenkamp et al. (1999); Manning et al. (1995); Venkatraman & Price (1990).
<b>Frugality (price sensitivity)</b>	Negative correlation	Tellis et al. (2005); Goldsmith et al. (2005); Goldsmith et al. (2003).
<b>Social mobility</b>	Positive correlation	Tellis et al. (2005); Rogers (2003); Gatignon & Robertson (1985); Dickerson & Gentry (1983); Uhl et al. (1970).
<b>Social participation</b>	Positive correlation	Im et al. (2003); Rogers (2003); Grewal, Mehta, & Kardes (2000); Gatignon & Robertson (1985); Dickerson & Gentry (1983); Uhl et al. (1970).
<b>Social independence</b>	Positive correlation	Clark & Goldsmith (2006a); Steenkamp et al. (1999); Goldsmith, d'Hauteville, & Flynn (1988); Bearden et al. (1986); Gatignon &

	No correlation	Robertson (1985); Carlson & Grossbart (1984); Hirschman (1980); Midgley & Dowling (1978); Midgley (1977). Tellis et al. (2005); Roehrich (2004); Le Louarn (1997). Clark & Goldsmith (2006b).
<b>Social reward interest</b>	Normative: positive Informational: negative Positive correlation Negative correlation	Fisher & Price (1992). Steenkamp & Gielens (2003); Bearden et al. (1986); Gatignon & Robertson (1985). Midgley & Dowling (1978).
<b>Inner-directedness</b>	No correlation Depends on product risk perception Positive correlation	Fisher & Price (1992); Bearden et al. (1986); Midgley & Dowling (1978). Steenkamp et al. (1999), Goldsmith (1984), Midgley (1977); Etzel, Donnelly, & Ivancevich (1976).
<b>Opinion leadership</b>	Positive correlation	Im et al. (2003); Goldsmith et al. (2003); Rogers (2003); Gatignon & Robertson (1985); Dickerson & Gentry (1983); Uhl et al. (1970).
<hr/>		
<b>Values</b>		
- <b>Openness to change</b>	Positive correlation	Weijters et al. (2004); Wood & Swait (2002);
- <b>Sensation/stimulation seeking</b>		Daghfous, Petrof, & Pons (1999); Steenkamp et al. (1999); Steenkamp & Baumgartner (1992); Goldsmith (1984); Raju (1980); Mittelstaedt, Grossbart, Curtis, & Devere (1976).
- <b>Risk-taking (venturesomeness)</b>		Rogers (2003); Steenkamp et al. (1999); Steenkamp & Baumgartner (1992); Gatignon & Robertson (1985); Goldsmith (1984); Dickerson & Gentry (1983); Midgley (1977); Ostlund (1974); Uhl et al. (1970).
- <b>Novelty seeking</b>		Rogers (2003); Dabholkar & Bagozzi (2002); Manning et al. (1995); Goldsmith (1984); Hirschman (1980).
- <b>Variety/change seeking</b>		Steenkamp et al. (1999); Steenkamp & Baumgartner (1992); Raju (1980).
- <b>Empathy (respect for self and others, security, ...)</b>	Negative correlation	Daghfous et al. (1999).
- <b>Conservatism, conformity, habituation, nostalgia, dogmatism</b>	Negative correlation	Rogers (2003); Steenkamp et al. (1999); Lascu & Zinkhan (1999); Gatignon & Robertson (1985); Goldsmith (1984); Robertson & Wind (1980).
- <b>Self-enhancement (achievement, power, status, ...)</b>	Positive correlation	Rogers (2003); Fisher & Price (1992); Burns & Krampf (1992).
	No correlation	Steenkamp et al. (1999).
	Depends on scale used	Weijters et al. (2004).
	- Positive with social, none with hedonic innovativeness	
<b>Inertia (absence of goal-directed behavior)</b>	Negative correlation	Tellis et al. (2005).
<b>Mass media interest</b>	Positive correlation	Lee et al. (2002); Blythe (1999); Midgley & Dowling (1993); Venkatraman (1991); Summers (1972).
<b>Product involvement</b>	Positive correlation	Lüthje (2004); Im et al. (2003); Wood & Swait (2002); Goldsmith & Hofacker (1991).

**Table 3****Interviews: List of motivations to buy innovations in decreasing order of frequency  
(qualitative exploratory study)**

Functional motivation (n=63)		Hedonic motivation (n=33)		Social motivation (n=16)	
Categories	#	Categories	#	Categories	#
Easier (to use)	8	Enjoyment/pleasure/nice	15	Belonging/popularity	4
Handier	7	Variation/change/break out	10	Image building	3
More comfortable	7	Curiosity	4	Status/standing/honor/power	3
More quality	7	To experiment/discover/test	4	Being unique/special/original	3
More efficient/effective	6			Show off/impress/display	2
Faster	6			Being in/trendy/hip/cool	1
Cheaper	6				
Functions/possibilities	5				
More compact	5				
Better	4				
Safer	3				
Healthier	2				
More ecological	1				

**Table 4**  
**Possible motivations of consumer innovativeness:**  
**Overview of open-ended question answers (quantitative exploratory study)**

Functional motivation (n=111)		Hedonic motivation (n=152)		Social motivation (n=349)	
Categories	#	Categories	#	Categories	#
Better	14	Curiosity	57	Being in/trendy/hip/cool/...	78
Easier	13	Interest/passion	42	Show off/impress/display	66
More efficient	10	Variation/change/break out	16	Status/standing/honour/power	50
Easier to use	10	To experiment/discover/test	8	Being unique/special/original	42
More effective	9	Adventure/tension/challenge	8	Being first/better/superior	41
More functional	7	Enjoyment/pleasure/nice	7	Belonging/popularity	22
More possibilities	7	Urge/impulsiveness	6	Image building	15
Handier	6	Greediness/materialism	4	Opinion leadership/ recognition	14
More comfortable	5	Openness	2	Snobbery	11
More quality	5			Ego/identity/charisma	9
Faster	5			Prestige	5
More compact	4			Competition	3
More ecological	3				
More useful	3				
Cheaper	2				
Other	4				

**Table 5****14 factors based on motivation items with score >3: Cronbach's alpha, mean, and standard deviation (SD) (in brackets if alpha <.60) sorted by mean (high to low)**

Factor	Number of items	Cronbach's alpha	Mean	SD
Materialism & comfort	3	.605	4.16	.59
Exciting life	1		3.92	.85
Adventure	4	.673	3.88	.62
Social recognition	5	.797	3.86	.73
Physical appearance	3	.650	3.75	.78
Social life	3	.543	(3.70)	(.66)
Entertaining	2	.450	(3.64)	(.77)
Leadership	4	.713	3.42	.71
Sensation	2	.521	(3.37)	(.84)
Freedom	3	.588	(3.35)	(.71)
Self-sufficiency	4	.697	3.31	.75
Knowledge	2	.474	(3.23)	(.80)
Order	2	.620	3.19	.87
Overcoming failure	1		3.17	1.11

The total number of items is lower than the 49 items used in the analysis, because only the 39 items that load significantly ( $>.43$ ) are taken into account (Hair et al., 1998).

**Table 6**

**3-factor and 4-factor solution based on 135 motivation items with Cronbach's alpha, mean, and standard deviation (SD) sorted by mean (high to low)**

3-factor solution (literature)	Cronbach's alpha	Mean	SD
Openness & sensation (6 items)	.687	4.09	.51
Social recognition (19 items)	.887	3.71	.54
Intellect, ratio, knowledge, & ambition (12 items)	.831	3.25	.61

  

4-factor solution (scree plot)	Cronbach's alpha	Mean	SD
Openness & sensation (4 items)	.700	4.08	.60
Social recognition (14 items)	.872	3.77	.56
Ease (6 items)	.651	3.66	.56
Intellect, ratio, knowledge, & ambition (12 items)	.827	3.26	.61

**Table 7**  
**Sample characteristics**

<b>Gender</b>		<b>Family situation</b>	
Male	46.1%	Living alone without children	18.3%
Female	53.9%	Living alone with child(ren)	4.0%
<b>Age</b>		Living together/married without children	22.7%
-26	35.4%	Living together/married with child(ren)	29.0%
26-35	21.7%	Living with (grand)parent(s)/family	19.7%
36-45	11.8%	Other	6.3%
46-55	17.3%	<b>Income</b>	
55+	13.9%	< €500	2.2%
<b>Education</b>		€ 500-1,499	14.1%
Elementary	2.1%	€ 1,500-2,499	21.6%
Lower secondary	8.0%	€ 2,500-3,499	15.6%
Higher secondary	32.4%	€ 3,500-4,499	6.1%
Higher (non-university)	33.4%	€ 4,500-6,000	3.8%
University	24.2%	> €6,000	1.8%
		Don't know	14.7%
		Private information	17.6%

**Table 8****Final loadings of four-factor analyses (varimax and promax rotations with Eigenvalue >1 and 4-factor solutions) and average loading per item**

Factor	Item	VAR>1	PRO>1	VAR4	PRO4
<b>Motivated Consumer Innovativeness scale (alpha=.958)</b>					
<b>Social Consumer Innovativeness (alpha=.929)</b>					
S	I love to use innovations that impress others.	.809	.866	.812	.880
S	I like to own a new product that distinguishes me from others who do not own this new product.	.809	.871	.808	.867
S	I prefer to try new products of which I can present myself to my friends and neighbors.	.802	.852	.799	.842
S	I deliberately buy novelties which are visible to others and which command respect from others.	.746	.815	.740	.792
S	I like to outdo others and I prefer to do this by buying new products which my friends do not have.	(.757)	.781	(.759)	.786
S	In general, I am among the first of my friends to buy a new product and I make sure this is visible to them.	.730	.749	.736	.772
S	I buy relatively many innovations which are visible to my acquaintances.	.705	.724	.699	.699
S	I buy a new product or brand to convince others to do this as well.	.649	(.668)	.661	.712
S	I like to influence the opinion of others by talking about the innovations I bought.	.547	.685	.666	.704
S	I buy as many new brands and products as possible ahead of friends and neighbors. If not, these brands/products become less interesting.	.661	.525	.547	.525
<b>Functional Consumer Innovativeness (alpha=.907)</b>					
F	If a new product gives me more comfort than my current product, I would not hesitate to buy it.	.745	.811	.741	.804
F	If a new time-saving product is launched, I will buy it right away.	.725	.785	.731	.794
F	If a new product makes my work easier, then this new product is a must for me.	.729	.788	.725	.781
F	If an innovation is more functional, then I usually buy it.	.722	.753	.722	.753
F	I hurry to the shop when I know of new products which are easier to use than their predecessors.	.701	.740	.699	.737
F	If I can work more efficiently by buying a novelty, then I will be among the first to do this.	.706	.708	.712	.716
F	I usually buy those innovations that make me work faster.	.691	.696	.705	.716
F	If I discover a new product in a more convenient size, I am very inclined to buy this.	(.646)	(.671)	.665	.698
F	If an innovation replaces the functions of several existing products, then I immediately replace these products by that innovation.	.642	.676	.637	.668
F	I am inclined to buy better-functioning products fast.	(.606)	.621	.602	.612
F	A new product which is handier to use is always on top of my wish list.	(.537)	(.518)	.563	.556
F	I often choose practical novelties on the consumer market.	(.488)	(.463)	.514	.500
<b>Hedonic Consumer Innovativeness (alpha=.928)</b>					
H	It gives me a good feeling to acquire new products.	.751	.829	.749	.835
H	Using novelties gives me a sense of personal enjoyment.	.732	.826	.729	.834
H	The discovery of novelties makes me playful and cheerful.	.725	.800	.727	.803

H	I like the excitement of using innovations.	(.675)	.737	(.671)	.741
H	I desire novelties in my life.	.635	(.728)	.639	.726
H	I like to treat myself to a new product once in while, just because I like that.	.651	.702	.652	.707
H	I often buy novelties because they offer a certain amount of amusement and entertainment value.	.662	.664	(.662)	.674
H	I love to experiment with new products.	.639	.680	.641	.683
H	Innovations make my life exciting and stimulating.	.659	.660	.659	.663
H	Acquiring an innovation makes me happier.	.649	.651	(.648)	.657
H	I like to treat myself to a new product just for the fun of it.	.644	.653	.641	.657
H	I like to try out novelties.	(.619)	.632	(.614)	.637
H	New products challenge my fantasy.	.597	.636	.600	.637
<hr/>					
Cognitive Consumer Innovativeness (alpha=.902)					
C	I find innovations which need a lot of thinking intellectually challenging and therefore I buy them instantly.	.739	.819	.722	.783
C	I am an intellectual thinker who buys new products because they put my brain to work.	.733	.793	.728	.783
C	I often buy innovative products which challenge the strengths and weaknesses of my intellectual skills.	(.731)	.787	(.720)	.763
C	I really need novelties which can impart wisdom to me.	(.675)	.762	.698	.809
C	If I find out that a new product has been launched which might stimulate me intellectually, I will be the first to buy it.	.698	.745	.702	.754
C	I mostly buy those innovations that satisfy my analytical mind.	(.641)	.683	(.612)	.624
C	I often buy novelties which expand my knowledge.	.625	.651	.620	.643
C	I often buy new products which make me think logically.	(.628)	.642	(.619)	.631

**Table 9**  
**Confirmatory factor analysis model fit comparisons**

Model	$\chi^2$	df	$\chi^2$ diff.	TLI	CFI	RMSEA
Null	6826.319	378				
1-factor	2716.809	350	4109.5**	.604	.633	.134
4-factor uncorr.	1145.859	350	1571.0**	.866	.876	.078
1-factor 2 <sup>nd</sup> order	681.862	346	464.0**	.943	.948	.051
4-factor corr.	662.996	344	18.9**	.945	.950	.050

Chi-square differences represent comparisons of subsequent models. \*\*p<.001; TLI = Tucker-Lewis Index; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation

**Table 10****Impact of gender, age, education, and income on (x)MCI: MANOVA results**

Dependent variables	F Gender	F Age	F Education	F Income
Multivariate	.298	2.642***	1.340	1.333
MCI	.485	6.335***	1.704	1.314
sMCI	.001	5.130**	1.062	2.274
fMCI	.162	1.235	1.496	.049
hMCI	.635	7.780***	1.609	1.327
cMCI	.778	3.423*	2.097	1.696

\*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 11**  
**Correlations between (x)MCI scale and the hedonic-social consumer innovativeness scale (Roehrich, 1994)**

	H-SCI	HCI	SCI	MCI	sMCI	fMCI	hMCI	cMCI
H-SCI	1							
HCI	.943	1						
SCI	.928	.752	1					
MCI	.824	.757	.754	1				
sMCI	.766	.624	.790	.777	1			
fMCI	.500	.524	.402	.699	.346	1		
hMCI	.755	.728	.653	.873	.601	.467	1	
cMCI	.629	.571	.596	.823	.515	.544	.606	1

All correlations are significant with  $p < .001$ ; H-SCI = Hedonic and Social Consumer Innovativeness, HCI = Hedonic Consumer Innovativeness, SCI = Social Consumer Innovativeness; MCI = Motivated Consumer Innovativeness, sMCI = socially Motivated Consumer Innovativeness, fMCI = functionally Motivated Consumer Innovativeness, hMCI = hedonically Motivated Consumer Innovativeness, cMCI = cognitively Motivated Consumer Innovativeness

**Table 12**  
**Correlations between (x)MCI scale and the EAP dimension of the ECBB scale**  
**(Baumgartner & Steenkamp, 1996) and the Extraversion scale (Eysenck et al., 1985)**

	EAP	EXT	MCI	sMCI	fMCI	hMCI	cMCI
EAP	1						
EXT	.057	1					
MCI	.232**	.106	1				
sMCI	.104	.020	.777***	1			
fMCI	.170*	.099	.699***	.346***	1		
hMCI	.242**	.131	.873***	.601***	.467***	1	
cMCI	.242**	.055	.823***	.515***	.544***	.606***	1

\*p<.05, \*\*p<.01, \*\*\*p<.001; EAP = Exploratory Acquisition of Products, EXT = Extraversion scale, MCI = Motivated Consumer Innovativeness, sMCI = socially Motivated Consumer Innovativeness, fMCI = functionally Motivated Consumer Innovativeness, hMCI = hedonically Motivated Consumer Innovativeness, cMCI = cognitively Motivated Consumer Innovativeness