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WORKING PAPER

Motivated Consumer Innovativeness:

Validation and Moderation[1]

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[1] This paper is a follow-up paper following the paper *Motivated Consumer Innovativeness: Concept and Measurement* by Vandecasteele and Geuens (2008).

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Abstract

The objective of this follow-up paper was to further validate the new Motivated Consumer Innovativeness (MCI) scale of Vandecasteele and Geuens (2008), which takes four encompassing motivations to buy innovations into account. A combination of six studies (with about 2,500 respondents in total) confirmed the dimensionality, reliability and internal validity of the scale and its four dimensions. MCI did not suffer from social desirability bias. Moreover, the results of the studies indicate nomological and predictive validity for every MCI dimension. The final 4-dimensions MCI scale consists of 20-items and proves to measure more than existing Consumer Innovativeness scales: (1) it disproves the general consensus that older people are always significantly less innovative than younger people; (2) the different MCI dimensions fit into a different network of relationships (i.e., nomological network); (3) differently motivated innovative consumers attach greater importance to different values, and finally, (4) differently motivated innovative consumers have a different media usage.

Keywords

Consumer innovativeness, Motivation, Scale validation

Motivated Consumer Innovativeness: Validation and Moderation

To incorporate the reasons for buying innovations, Vandecasteele and Geuens (2008) developed a new Consumer Innovativeness (CI) scale: Motivated Consumer Innovativeness (MCI). A series of qualitative and quantitative studies showed that innovativeness can be induced by four different motivation dimensions: functionally Motivated Consumer Innovativeness (fMCI), hedonically Motivated Consumer Innovativeness (hMCI), socially Motivated Consumer Innovativeness (sMCI) and cognitively Motivated Consumer Innovativeness (cMCI). Although, the scale proved to possess content and face validity, extra validation studies are needed to set up a nomological network, to investigate test-retest correlations, to indicate criterion-related (predictive) validity, and to test the scale for social desirability bias. The central goal of this paper is to fulfill these extra requirements. The different steps undertaken to pursue this goal are listed in Table 1.

Table 1 here.

MCIs SCALE REFINEMENT

In order to refine the scale, we conducted two extra studies: A confirmation study and a test-retest study with a sample of students from a West European university.

Confirmation study

The main objective of this study was to confirm the previously obtained results of the pilot study with adults (cf., Vandecasteele and Geuens, 2008). In that study, a list of 90 items was used plus 33 items of scales measuring convergent and discriminant validity. It took 20 to 25 minutes for respondents to answer all questions and propositions. The answers on the items

of this long survey had a good chance that they suffered under fatigue of the respondents. That is why we repeated this test with the best 30 items of the previous study.

Respondents, procedure and measures

Students from the departments of Economics and Business Administration (36%) and Political and Social Sciences (63%) of a West European university were recruited through the websites of their respective departments. About 63% of the total sample was female. The mean age was 20.7 and ranged between 17 and 37. The survey was online from 30 November 2007 until 10 December 2007 and received 548 visits and 349 completely filled in surveys[1]. An incentive was offered to enhance the motivation of the students to participate in the survey: They could win cinema tickets if they answered a question about the history of their university correctly. The online survey included the 30 MCI items, next to a few short sociodemographic questions (gender, age, undergraduate study) and the incentive questions.

Results

Principal component analysis with an oblique (promax) rotation resulted in five factors with Eigenvalue greater than 1 (Hair, Anderson, Tatham, and Black, 1998). On the basis of theory and the results of Vandecasteele and Geuens (2008), a four dimensional solution was expected. However, the fifth dimension in this study only had an initial Eigenvalue of 1.005, whereas the other dimensions had much higher Eigenvalues (from 9.165 to 1.920). Furthermore, the screeplot pointed to a 4-factor solution. On top of this, the fifth dimension consisted of only two items (H6 and H16 in Table 2) dealing with amusement and entertainment which overlap to a high extent with the hedonic dimension. We therefore chose

[1] As we deal with 30 items in the Motivated Consumer Innovativeness scale, we meet the requirements of Hair, Anderson, Tatham and Black (1998) of 10 times as many respondents than items to carry out a confirmatory factor analysis.

for a 4-factor solution. The statistics of the individual items and the (sub)scales are summarized in Table 2.

Table 2 here.

The Cronbach's alphas were satisfactory high for the MCI scale (alpha=.921) and the four dimensions separately ($alpha_{sMCI}$=.894; $alpha_{fMCI}$=.825; $alpha_{hMCI}$=.856; $alpha_{cMCI}$=.889). The respective factor loadings are put between brackets when the items load lower than .60 on one factor and higher than .30 on other factors. We verified the factor structure with an extra varimax rotation and the same results appeared. The four factors accounted for 55.2% of the total variance and each factor minimally explained 6.4% of the total variance, which fulfilled the minimal requirements of Netemeyer, Bearden, and Sharma (2003). All item-to-total correlations exceeded .50 except one functional and one hedonic item (between brackets in Table 2). The inter-item correlations exceeded .30 of each dimension except two: F16 and F17 had a correlation of .25 and H16 and H17 correlated with .28. We kept these weaknesses within the scale in mind when analyzing the results of the confirmatory factor analysis (CFA), described hereunder.

This CFA (with SAS Calis Procedure) results can be found in Table 3.

Table 3 here.

CFA on the 30 items with the 4-factor correlated model showed an acceptable overall fit (TLI=.922, CFI=.929, RMSEA=.048). This model proved to be the best model, compared to a null-, a 1-factor, a 4-factor uncorrelated and a 1-factor 2nd-order model with MCI as the higher order factor and the four subdimensions. The χ^2-difference test always showed a

significant difference in χ^2. However, the individual item statistics were less convincing. The squared multiple correlations (SMC) often were below the .50 threshold, particularly for the functional and the hedonic items. The average variance extracted (AVE) from these two subdimensions was below the .45 threshold for new scales (Netemeyer et al., 2003). However, the composite reliabilities (CR) of the dimensions were satisfactory high (between .83 for fMCI and .90 for sMCI) and AVE was always larger than the squared correlations between the factors (cf., Fornell and Larcker, 1981) which indicated discriminant validity between the dimensions. On the basis of these results, we deleted the worst performing items, that is the items with low factor loadings (item S8, F17, H6, and H8), relatively low SMC (item H17) and relatively high modification indices (item C9 and S18). After a CFA with the 23 items left, the AVEs enhanced slightly (from .43 for fMCI to .63 for sMCI), but the CRs declined to .82-.89 (probably because of the number of items going down). Contrary to the low AVEs and SMCs, the fit indices (TLI=.969, CFI=.972, RMSEA=.035) indicated a good model (this model was significantly better than the null, 1-factor and 4-factor uncorrelated model) and the squared correlations between the factors were lower than the AVEs, which means that the four dimensions were discriminant valid enough.

Test-Retest Study

As the MCI scale is a personality scale based on motivations, the concepts measured should be stable over time. Moreover, respondents should not respond to the items of this scale in a socially desirable matter. This consistency over time and the socially desirable response bias was tested in this study.

Procedure and Measures

All respondents from the previous study, who volunteered to participate in future surveys, were invited through e-mail to fill out a second questionnaire. Still 111 students (32% response rate, M_{age}= 21.3, 67% women) took part in this follow-up study. The time lag between both studies ranged between 36 and 60 days. The retest questionnaire consisted of the 23 MCI items and a shortened version of the Marlowe-Crowne Social Desirability scale (11 items scale of Ballard, 1992). At the end of the survey, the definition of MCI and its dimensions was included together with a 5-point self-rating scale (1=totally disagree, 5=totally agree) in order to collect further convergent validity proofs.

Results

Principal components analysis of the retest offered similar results as previous analyses: Four factors with Eigenvalue greater than one, no item loadings lower than .68 (except of item H16 about entertainment and amusement with a loading of .52) on one factor and higher than .30 on another. The factors accounted for 65% of the total variance and each factor minimally explained 7.1% of the total variance. The Cronbach's alphas ranged from .839 for the social dimension to .919 for the MCI scale itself. All item-to-total correlations exceeded .50 and the inter-item correlations exceeded .30. CFA on the 23 items with the 4-factor correlated model showed an acceptable overall fit (TLI=.925, CFI=.933, RMSEA=.060). Five of the 23 SMCs were slightly below the .50 threshold (four of them between .44 and .49; the hedonic amusement item (H16) clearly performed worse again with an SMC of .32). The AVEs ranged between .52 (sMCI) and .61 (cMCI), the CRs between .85 (sMCI) and .90 (cMCI) and AVE was always larger than the squared correlations between the factors.

Test-retest correlations for MCI and its four dimensions ranged from .58 (fMCI), over .68 (sMCI), .73 (both hMCI and cMCI) to .76 (MCI). The correlations between MCI and its

dimensions on the one hand, and the self-rating of each dimension on the other averaged .60 (range between .51 for hMCI and .68 for cMCI). All correlations were significant, which provided additional evidence of convergent validity. According to the social desirability tests, only two out of 23 items (i.e., F5 and S16) correlated significantly, but weakly (r=-.20, p=.033; r=-.20, p=.038 respectively) with social desirability. Neither the overall MCI scale, nor its dimensions, nor the self-ratings show significant correlation with the social desirability scale.

MCIs NOMOLOGICAL NETWORK

In order to further evaluate the validity of MCI, investigating a nomological network is called for. Voss, Spangenberg, and Grohmann (2003) stated that "[t]he extent to which a measure defines a construct depends on how well the measure fits into a network of expected relationships called a 'nomological network'" (p.317).

First, two hypotheses (re)checked the relations between MCI and the Exploratory Consumer Buying Behavior (ECBB) scale of Baumgartner and Steenkamp (1996). This scale consisted of two dimensions: Exploratory Acquisition of Products (EAP) defined as stimulation of the senses and Exploratory Information Seeking (EIS) defined as stimulation of the mind. Based on these definitions we expected:

H1: EAP is significantly more positively associated with hMCI than with the other MCI dimensions.

H2: EIS is significantly more positively associated with cMCI than with the other MCI dimensions.

Secondly, as need for uniqueness is a potential antecedent of consumer innovativeness a positive correlation between MCI and Desire for Unique Consumer Products (Lynn and

Harris, 1997) could be expected. Lynn and Harris report "[…] a positive relationship between the self-attributed need for uniqueness and the tendency to be a consumer innovator" (p. 604). Moreover, Roehrich's (1994) social dimension of Consumer Innovativeness was based on the need for uniqueness measure: People are innovative because they want to be unique.

H3: DUCP is significantly more positively associated with sMCI than with the other MCI dimensions.

Thirdly, Voss et al. (2003) constructed a Hed/Ut scale which measured the hedonic and utilitarian dimensions of consumer attitude towards product categories and different brands within categories. The first dimension resulted from "sensations derived from the experience of using products" (p. 310) and the second dimension is "[…] derived from functions performed by products (p. 310).

H4: The hedonic dimension of consumer attitude is significantly more positively associated with hMCI than with the other MCI dimensions.

H5: The utilitarian dimension of consumer attitude is significantly more positively associated with fMCI than with the other MCI dimensions.

Finally, Jain and Srinivasan (1990) developed a New Involvement Profile (NIP), defined as a multidimensional approach to measuring involvement that includes five facets: relevance, pleasure, sign, risk importance and risk probability. Voss et al. (2003) also used this scale to predict hedonic and utilitarian attitude: affective involvement predicted hedonic attitude, whereas cognitive involvement predicted utilitarian attitude. The first three facets of NIP were of most importance for MCI.

H6: The relevance dimension of NIP is significantly more positively associated with fMCI than with the other MCI dimensions.

H7: The pleasure dimension of NIP is significantly more positively associated with hMCI than with the other MCI dimensions.

H8: The sign dimension of NIP is significantly more positively associated with sMCI than with the other MCI dimensions.

Procedure and Measures

In total, 716 students from a West European university business school (M_{age}= 21.5, 77% women) filled out the survey. They were recruited via the website of the institution, via e-mail and flyers. The questionnaire randomly consisted of the 10-item EAP, the 10-item EIS, the 8-item DUCP, the 10-item Hed/Ut, the 15-item NIP, the 23-item MCI, and three socio-demographic questions (age, gender and school department).

MCI Results

Exploratory factor analysis (promax rotation) on MCI with Eigenvalue greater than one, resulted in the four factors mentioned before. All items loaded higher than .60 on one and not higher than .30 on another dimension, except one cognitive (C19) and one functional (F16) item. The four factors accounted for 59.9% of the total variance and each factor minimally explained 6.4% of the total variance. The Cronbach's alphas were comfortably high (between .826 for fMCI and .918 for MCI). All item-to-total correlations exceeded .56 and the inter-item correlations exceeded .40 of each dimension. The CFA on the 23 items with the 4-factor correlated model showed an acceptable overall fit (TLI=.951, CFI=.957, RMSEA=.044). The individual item statistics still showed squared multiple correlations below .50 and one AVE slightly below the .45 threshold, however, the CRs were satisfactory (fMCI: AVE=.43, CR=.82; hMCI: AVE=.47, CR=.84; cMCI: AVE=.49, CR=.85; sMCI: AVE=.61, CR=.89). AVEs were always larger than the squared correlations between the factors. As one item of the functional (F16), hedonic (H16) and cognitive dimensions (C19)

performed relatively bad (in previous studies as well) on the factor loadings and SMCs, the final scale we propose, consists of 20 items (cf., Table 4).

Table 4 here.

In order to prove that reducing the MCI scale from 90 items to the final 20 items did not result in excluding an important part of the construct, we correlated the 90-items MCI and 20-items MCI and their respective dimensions with each other. This resulted in satisfying correlations between .90 (for fMCI and hMCI), .91 (for cMCI), .94 (for sMCI) and .97 (for MCI).

Nomological Validity Results

All coefficient alpha estimates for the scales used, ranged between .678 (Sign dimension NIP) and .840 (EIS). To test the associations between these constructs and MCI, we did not use regression analysis, that implies a cause-effect relation, as it is not always clear from literature, whether a variable is an antecedent or a consequence of MCI. That is why we used correlations to check the nomological validity. The results of this correlation analysis are summarized in Table 5.

Table 5 here.

In contrast with the two first hypotheses, (1) EAP correlated the most with cMCI (r=.21, p<.001), however there was no significant difference with the correlation with hMCI (r=.14, p<.001) following the formulae of Steiger, 1980 (T_2=1.74[2]), and (2) EIS was

[2] T_2 is distributed as a Student's t, with d.f. = N-3

significantly more positively associated (T_2=4.12) with hMCI (r=.30, p<.001) in comparison with cMCI (r=.15, p<.001). Secondly, DUCP was significantly more positively associated with sMCI (r=.45, p<.001) and hMCI (r=.44, p<.001) than with the other two dimensions (T_2>2.27). Thirdly, the hedonic dimension of consumer attitude (HED) was significantly most positively associated with hMCI (r=.50, p<.001; T_2>2.72). The utilitarian dimension of consumer attitude (UT) was only positively associated with fMCI (r=.14, p=.002) and negatively associated with sMCI (r=-.16, p<.001). UT was uncorrelated with cMCI and hMCI. Finally, (a) the three correlations between the relevance dimension (REL) of NIP on the one hand and hMCI (r=.27, p<.001), fMCI (r=.22, p<.001) and cMCI (r=.22, p<.001) on the other, did not significantly differ from each other (T_2<1.43) (b) The pleasure dimension (PL) of NIP was by far significantly more associated with hMCI (r=.59, p<.001; T_2>10.03); (c) the sign dimension of NIP was significantly more associated with sMCI (r=.46, p<.001; T_2>2.61) than with the other MCI dimensions.

The results of the regression analyses supported H4, H5, H7, and H8 clearly: The correlations between the existing scales or their dimensions were significantly more associated with the specific MCI dimension as hypothesized. Next to that, for H3, the correlation between DUCP and sMCI was the highest among the significant ones, but the correlation with hMCI was not significantly different, so we could only partially confirm this hypothesis. The same was true for H1 and H6: These hypotheses were also partially confirmed as the hypothesized correlations were not significantly different from the highest correlations. The only hypothesis that was different than expected is H2: EIS was least correlated with the expected cMCI (r=.15) compared with the other dimensions. When analyzing the separate items and their correlations with the dimensions, EIS consists of items with respect to reading mail advertising and talking to friends about purchases. This is a different interpretation of stimulating the mind than is used here.

Predictive validity 1

An innovativeness scale also needs to predict innovative consumer behavior in everyday life. For the MCI scale, there should be a unique correlation between each motivation dimension and the buying (intention) behavior of innovations satisfying these specific functional, hedonic, social or cognitive needs. We checked this predictive validity in the next two studies.

In the survey for the first predictive study, we described four different non-existing innovations for mobile phones which represent each motivation dimension: A cognitive option (i.e., a mobile phone with infrared technology in order to scan the barcodes of products to know more about origin, history, product content,…), a social option (i.e., a mobile phone with radio technology which notifies the user if his/her friends or family are within a certain distance), a hedonic option (i.e., a mobile phone with sensors that change the look, color and screen depending on the mood of the user), and a functional option (i.e., a mobile phone with solar cells which can charge the battery automatically, without mains current).

Pretest

We conducted a pretest to test these innovative options on the different motivation sources and the differences between the options according to the extent of uniqueness, complexity, newness, realism, usability and whether these innovations are perceived as non-existing (one-item questions, for example: "This option is unique within society"). The respondents (N=85, M_{age}= 36, 48% women) were recruited through a personnel e-mail list from a European university business college. The one-way ANOVA results proved that the four options were identical concerning uniqueness ($F_{(3,362)}$=2.07, p=.104) and complexity

($F_{(3,364)}$=1.61, p=.186), but not on newness ($F_{(3,359)}$=5.25, p=.001), realism ($F_{(3,364)}$=53.05, p<.001) and usability ($F_{(3,362)}$=14.39, p<.001). Three of the four motivations measured the intended motivated innovativeness: the social option was assigned to the correct motivation by 78% of the respondents, the hedonic option by 84%, and the functional option by 95%. The cognitive option was assigned correctly by 57% only. About 36% assumed this option was a functional one. Because of these results, we adapted the cognitive option to make it more cognitive and less functional, and we added the questions on newness, realism and usability into the final predictive validity study as a potential covariate.

Procedure and measures

The invitation to participate in the predictive validity survey was e-mailed to the 509 participants of the nomological validity study who volunteered to participate in other surveys. As we did incorporate MCI in that nomological validity questionnaire, and as we could link the two questionnaires of each respondent with each other, we did not have to repeat the MCI measurement. The minimum interval between the survey for both studies was one week. All the surveys were completed within a two-week interval. About 225 (44%) respondents filled out this follow-up survey (M_{age}=21.5, 85% women). The questionnaire consisted of the 4-item product class involvement scale (Beatty and Talpade, 1994) with regard to mobile phones (alpha=.85), a description of the four innovative options, questions on the extent of newness, realism and usability, awareness and trial ("Did you hear about/buy a mobile phone with this option yet?" with "yes"/"no" or "unsure" answer possibilities, with "unsure" answer coded as "no", based on Manning, Bearden, and Madden, 1995), attitude toward the product (based on the four most used items in Bearden and Netemeyer, 1999: Seven-point good-bad, favorable-unfavorable, pleasant-unpleasant, and like-dislike; alpha's between .86 for the functional option and .94 for the social option) and buying intention measurements ("If this option is

launched on the market, what is the chance, in %, that you will buy a mobile phone with this option"). We also included filler-items of the Short Schwartz's Value Survey (Lindeman and Verkasalo, 2005). Finally, respondents had to score each innovative option on a seven-point Likert scale describing the four possible innovative motivations.

Predictive Validity Results

The regression analyses, with the four dimensions as independent variables and the buying and attitude variables of the mobile phone innovations as dependent variable, were not completely as expected (see Table 6): Two out of four MCI dimensions (sMCI and cMCI) did not predict any dependent variable (buying intention, willingness-to-pay, or attitude towards these innovations) for any innovation. Moreover, hMCI predicted the wrong behavioral variable, that is the behavior towards the social mobile phone option. Only the functional dimension of MCI clearly predicted the buying intention (Standardized Beta = .21, p=.010) and attitude (Standardized Beta = .24, p=.003) towards the functional innovation. For the other innovations, fMCI was not a significant predictor, as expected.

Table 6 here.

Other results from this study

The survey for this study contained some other constructs which we used to gain more insight into the MCI concept.

First, we checked whether consumer involvement with mobile phones influenced the buying intention of the four innovative options more than consumer innovativeness. Midgley and Dowling (1978) mentioned interest in the product category as an antecedent of innovation adoption. Roehrich, Valette-Florence, and Ferrandi (2003) proved that this product interest

can have more influence on the adoption behavior than a general innovativeness trait. However, a regression analysis with MCI and the product class involvement scale as independent variables and the sum of all scores on the mobile phone innovations buying intention as dependent variable showed that MCI had a larger effect on buying intention (Standardized Beta = .26; $p<.001$) than mobile phone involvement (Standardized Beta = .19; $p=.008$).

A regression analysis with buying intentions as dependent variable and the MCI dimensions and the questions about newness, realism and usability as independent variables, showed that there was no significance difference as presented in Table 6 when taking the product characteristics, that differed in the pretest, into account.

The survey had as filler-items the Short Schwartz's Value Survey (Lindeman and Verkasalo, 2005). With these items, we could repeat the study of Weijters, Geuens, and Roehrich (2004) looking for a relationship between consumer innovativeness and consumer value systems. Table 7 gives an overview of all significant coefficients of regressions with the different consumer innovativeness scales and their dimensions as dependent variable and the 10 consumer values of Schwartz (1992) as independent variables.

Table 7 here.

The results further validated the nomological network as the four dimensions had a different relation with the consumer value system. First, based on the regression analysis with the different dimensions of MCI as dependent variable, the functional innovativeness was not related to any particular value dimension of Schwartz which was expected when taking Cohen and Warlop's (2001) following remark into consideration: "functional benefits need not to be connected – at least in consumers' minds – to these more abstract or higher level sources of

value" (p. 407). Secondly, and in contrast with the functional dimension, the social dimension was most influenced by these consumer values as the R^2 of the regression analysis is the highest of all R^2s (R^2=.17). sMCI was significantly associated most with the value Power (i.e., social power, authority and wealth). The other value dimension it was significantly associated with, was Security (i.e., national security, family security, social order, cleanliness, and reciprocation of favor). These two values clearly link with the social character of this MCI dimension. Thirdly, the hedonic dimension was associated significantly with Power, but next to that, hMCI was also associated with Self-direction (i.e., creativity, freedom, curiosity, independence, and choosing one's own goals). Finally, the cognitive dimension of consumer innovativeness is significantly associated with Stimulation (i.e., daring, a varied and challenging life, and an exciting life) and surprisingly Universalism (i.e., broad-mindedness, beauty of nature and arts, social justice, a world at peace, equality, wisdom, unity with nature, and environmental protection).

Predictive validity 2

The reason we did not get clear-cut results from the previous predictive validity study, could be that we used fictitious innovations in only one product category (i.e., mobile phones). To overcome these problems, we used a list of existing innovations from different product categories. The innovations used, were chosen in such a way that they scored high on one motivation dimension and low on the other three dimensions. To control that the respondents filled out the questionnaire in a serious way, we incorporated an instructional manipulation check (Oppenheimer, Meyvis, and Davidenko, 2007) which checks for satisficing behavior.

Pretest

To check which motivation each of these innovations satisfies, a new pretest was set up. Based on the list of 502 innovations we composed for the exploratory research phase (cf., Vandecasteele and Geuens, 2008) and an extensive search for "new" products/services in the shelves of different Belgian supermarkets, shops and on websites of national brands of a variety of product categories and advertisements for these products and services in magazines, 96 innovations were selected. Products or services were withdrawn from this selection when they did not meet the conditions in the definition of an innovation (Vandecasteele and Geuens, 2008) or could not be used or bought by everybody (e.g., innovations within female hygiene products), not everyone could afford or buy them (e.g., luxury products, products specifically used by persons within certain age ranges) or because of fashion trends (i.e., more subject to personal taste). These innovations were randomly divided over three groups of 62 respondents (M_{age}= 32, 44% women) in total. The respondents were staff members from the Economics and Business departments of two European institutions for higher education. They had to score each product on the four motivation dimensions (e.g., "This new product is bought for functional reasons", given a definition of each motivation and a score on a 7-point Likert scale with 1=totally disagree, 7=totally agree). The innovations that scored significantly higher on one motivation dimension than on the other three dimensions were withheld to be incorporated in the second predictive validity survey (i.e., 7 functional, 6 hedonic and 2 social innovations). As there were not many extreme cognitive and social innovations, we added 4 extra social and 3 cognitive innovations that scored high as well (but not significantly different from other dimensions). The different products incorporated in the survey, with their pretest scores on each dimension can be found in Table 8.

Table 8 here.

Procedure and Measures

Respondents. Predictive validity was tested through online self-report surveys of consumers who were recruited via an announcement in Metro, a Belgian newspaper, distributed for free in train and bus stations, schools, universities, etc. Moreover, several e-mail databases composed during previous surveys, and internet forums were used to collect respondents. Five gift boxes worth €250 in total were offered to respondents as an incentive to fill out the survey completely. The recruitment efforts resulted in 2,098 individuals visiting the survey website being online from 20 May 2008 until 8 June 2008. More than half (i.e., 1,101 or 52.5%) completed the survey that took on average 20 minutes (M_{age}=32.1, 58% women).

Measures. The questionnaire consisted of the list of 22 existing innovations randomly mixed with the four non-existing innovations we used in the previous predictive validity study. A description of each innovation was accompanied with a picture of the product and a link to a web site of the innovation. Of each product, an awareness question was presented, followed by a trial question, both with *yes*, *no*, or *not sure* answering categories. If the trial question was answered negatively, an extra question concerning the reason for not buying the innovation was asked to check for external reasons (they could not buy it because they did not have the possibility or responsibility to buy these products, because of budget constraints, etc.) or internal reasons (they did not want to buy it). Finally, the respondents had to answer a buying intention question on all innovations on an 11-point scale (the chance from 0 to 10, that the respondent would buy the product within the next 12 months, taking external reasons such as budget restraints, responsibility, etc. into account). After the list of innovations, the Need for Cognition scale (Ncog) of Epstein, Pacini, Denes-Raj, & Heier (1996) and several filler items on media usage of the respondents were added to the questionnaire. Next, the 20-

items MCI scale was added with an instructional manipulation check as an extra item, to detect participants that did not read the items carefully (Oppenheimer et al., 2007). The instruction told them not to answer the Likert scale below, but clicking on the button in the bottom right corner of the screen. To be retained, respondents had to fulfill two conditions: (1) the item stating that the Likert scale below it had to be ignored, should not have been answered, and (2) respondents needed to have clicked on the button at the bottom of the screen. Finally, the respondents were asked some socio-demographic questions.

Predictive Validity Results

First, the instructional manipulation item was analyzed to delete those respondents who did not read the items sufficiently enough. Exactly 25% of all respondents did not read and follow the instructions as asked for in the manipulation check question. These respondents were deleted from the dataset (i.e., 826 respondents left).

Exploratory factor analysis (promax rotation) on MCI with Eigenvalue greater than one, resulted in the four factors mentioned before. All items load higher than .68 on one and not higher than .14 on another dimension. The four factors accounted for 67.4% of the total variance and each factor minimally explained 6.2% of the total variance. The Cronbach's alphas were comfortably high (between .84 and .93). All item-to-total correlations exceeded .62 and the inter-item correlations exceeded .48 for each dimension. The CFA on the 20 items with the 4-factor correlated model showed an acceptable overall fit (TLI=.98, CFI=.98, RMSEA=.034). The discriminant model outperformed the other models, except for the 1-factor-2nd-order model which had the same fit. The individual item statistics still showed three squared multiple correlations slightly below .50 but all AVEs exceed the .50 threshold and the CRs are satisfactory (fMCI: AVE=.51, CR=.84; hMCI: AVE=.58, CR=.87; cMCI: AVE=.59,

CR=.88; sMCI: AVE=.67, CR=.91). AVEs were always larger than the squared correlations between the factors.

To test the predictive validity, multiple regression was used as all variables are continuous. First, we discuss the results for the non-existing mobile phone innovations. As nobody could have really bought these non-existing innovations, we used their buying intention scores as dependent variable. Those who pretended to know (between 4.4% and 28.7%) or claimed to have bought (between 0.2% and 10.2%) one of these innovations were deleted from the analysis. The multiple regression with the buying intention of the four innovative mobile phones as dependent variables and the four MCI dimensions as independent variables provided predictive validity in three of the four cases (see Table 9). The only buying intention that was not predicted by its predetermined dimension is the hedonic innovation option.

Table 9 here.

We did identical regression analyses for the list of existing innovations. The dependent variables were the trial on awareness ratios (T/A) of the extreme functional (n=7), hedonic (n=6), social (n=2), and cognitive (n=1) innovations. This T/A measures – going from 0 to 100% – to what extent respondents bought the innovations they were aware of, and thus measuring a purer innovativeness, not biased by the awareness factor. Next to that, also the five innovations which scored highest as social innovation (n=5; SocPlus in Table 10) and cognitive (n=5; CogPlus in that table) innovation were taken into account in Table 10. We excluded the respondents still living with their parents (in general, they were not responsible for buying most of the innovations in the list) and those who were never responsible for buying fast moving consumer goods or durables. When taking the four MCI dimensions as

independent variables, Table 10 shows that two of the four innovative behavior variables (i.e., functional and social plus T/A) were predicted by the expected MCI dimension.

Table 10 here.

The cognitive innovations were only significantly predicted by fMCI and not by cMCI as we hypothesized. Because a lot of cognitive innovations had a high score on the functional motivation factor as well (cf., Table 8), this could explain the significant regression coefficient of fMCI with the cognitive innovations as dependent variable.

The results of an extra regression analysis with the mean intentions to buy the different innovation groups as dependent variables and the MCI dimensions as independent variables are presented as an extra row in Table 10. Those respondents who had already bought the innovation did get the maximum buying intention score of 10, as their intention to buy the new product had already reached the maximum before participating in the survey. Generally, three of the four regression analyses with buying intention as dependent variable, gave results as expected. First, buying intention for extreme functional products was only predicted by fMCI when only taking the MCI dimensions into account. Secondly, buying intentions for extreme hedonic products was predicted by hMCI, but also by fMCI. Thirdly, the extreme social product buying intention was only significantly explained by the social MCI dimension. When taking less extreme socially motivated products (SocPlus) into account as well, sMCI was not the only dimension predicting this buying intention: also fMCI and hMCI were of importance in predicting this intention. This is not surprising as the innovations incorporated in this SocPlus category scored also high on these hedonic and functional motivations (see Table 8). Finally, as expected, the purest cognitive innovation was only predicted significantly by cMCI, and not by the other three dimensions. When adding extra

innovations which score also relatively high on the cognitive dimension (but also often on other dimensions), the only dimension explaining this buying intention is fMCI. Again, this is not unexpected, as the innovations in this product group also score high on functional motivations (even higher than on cognitive motivations; cf., Table 8).

Other interesting results

The conclusions on differences linked to socio-demographic data from Vandecasteele and Geuens (2008) were confirmed in this study: There was only a significant difference according to age for sMCI en hMCI. This was not the case for fMCI and, to a lesser (marginal significant) degree for cMCI: Older people are as functionally and cognitively innovative as younger people.

The previous nomological validity results (cf., Table 5) confirmed nomological validity for three out of four MCI dimensions. Only the cognitive MCI was not associated with a specific existing trait, as H2 was rejected. So, in addition to the nomological validity results earlier in the paper, we added the Need for Cognition scale (Ncog) as used in the paper of Epstein et al. (1996) to check the hypothesis that Ncog is significantly more positively associated with cMCI than with the other MCI dimensions. Despite a low Cronbach's Alpha (alpha=.65), we found that Ncog was only positively associated with cMCI (r=.25, p<.001). The correlations between Ncog and fMCI and hMCI respectively were not significant. The correlation with sMCI was significant, but was negatively correlated with Ncog (r=-.08, p=.031). This extra analysis proved further nomological validity for the MCI scale, and especially for cMCI.

The filler items of the survey consisted of several questions on the media usage of the respondents. When linking these questions with MCI and its dimensions as independent variables, we could confirm the conclusions of Summers (1972) that, in general, innovative

consumers still read more magazines but do not read more books or watch more television. In addition to Summers (1972), innovative consumers read also more newspapers and spend more time on the internet. However, when taking the four MCI dimensions into account, we can conclude that respondents, who were differently motivated to buy innovations, had a different media usage as well. Respondents who were cognitively motivated to buy innovations read magazines and books more often, and went more often to the movies, but watched less television. Socially motivated innovative consumers read fewer books. Respondents with a higher hMCI spent more time on the internet. Finally, functionally motivated innovative consumers watched more television. Table 11 summarizes the statistical results of this.

Table 11 here.

MCIs INTERNAL CONSISTENCY

So far, we carried out nine studies with in total 3285 respondents (of which some of them participated in different retest studies). In five of these studies, we assessed several measures of internal consistency and structural model fit yet. The Motivated Consumer Innovativeness scale performed well on nearly all of them. Now that we have a final 20-items MCI scale, we could test the internal consistency of the final scale on all available samples in order to confirm the final scale validity and to have an overview of internal consistency and factor analyses measurements across all studies. This summary can be found in Table 12.

Table 12 here.

Table 12 gives an overview of the mean, standard deviation, Cronbach's alpha, lowest corrected item-total correlation and average interitem correlation of the MCI scale and its dimensions. These results proved that the internal consistency of the dimensions of MCI was satisfying. Next, CFA models were created for each sample with SAS. Nearly all fit statistics, composite reliability and average variance extracted exceeded the recommended criteria (as expressed in Table 12) well, especially the last large sample with adult consumers and the only one with an instructional manipulation check in order to filter out those respondents who did not read the items properly.

We also checked the same dataset with all respondents (i.e., 1,101). The results can be found in Table 13.

Table 13 here.

Next to the striking differences between both samples (e.g., CFA fit statistics, AVEs, etc.), the factor analysis with factors with Eigenvalue larger than 1, resulted in only three dimensions. When fixing the number of factors to four, the different factors were not that straightforward anymore as with the cleaned dataset. Therefore, we also strongly advise (as Oppenheimer et al., 2007 do) to use an instructional manipulation check when using this or other scales. Next to that, the results of the first predictive validity study could be not that satisfying because of not using such a question in that survey. If we would not have used such an instructional manipulation check in the survey of the second predictive validity study, and using all respondents in our analyses, the predictive validity results would not be satisfying as well. The comparison of these regression analyses can be found in Table 14.

Table 14 here.

DISCUSSION

The primary contribution of this research is validating a new Consumer Innovativeness (CI) scale which takes all motivations to buy innovations into account. This leads us to a multi-dimensional CI scale with four dimensions which stand for the four main motivation sources responsible for buying innovations. There are several reasons why this new CI scale is useful. To begin with, the nine studies from this and previous working paper show repeatedly and in great detail that the dimensionality, reliability, convergence, discriminant and predictive validity of MCI prove satisfactory and indicate that the statistical standards are met. The predictive validity is proven at least once for every MCI dimension. Particularly the predictive validity of the functional dimension is impressive, taking into mind that, to the best of our knowledge, this dimension was never incorporated as a motivation for innovativeness before.

Secondly, this study allows us to conclude that MCI measures more than the existing CI scales: (1) 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 hedonic and social matters, it is straightforward that they are not innovative according to these scales. However, the results of the current studies indicate that older consumers are as innovative as younger consumers when the innovation meets a functional or cognitive motivation. (2) The correlations between Roehrich's (1994) H-SCI and the social and hedonic dimension of MCI (as analyzed in Vandecasteele and Geuens, 2008) is larger than the correlation with the functional and cognitive MCI dimensions. Moreover, the nomological network of each dimension is substantially different. (3) The regression analyses with Schwartz's (1992)

typology of values on the one hand and the MCI scale on the other hand, demonstrate extra nomological validity, because the different dimensions of MCI are related to different values such as self-direction, security, stimulation, universalism or even no values at all (i.e., for fMCI), while for a general innovative consumer (measured by MCI) only the value Power is of more importance compared to a less innovative individual. We interpret all this as a proof that particularly the functional and cognitive motivation sources for being innovative are less or even not represented in other innovativeness scales.

An overview of the characteristics of the four differently motivated innovative consumers are summarized in Table 15.

Table 15 here.

Research limitations and further research

First, using an online survey may show higher innovativeness scores than we would expect from the general population (Vandecasteele & Geuens, 2008) as those who do not use the internet, did not have the opportunity to fill in the survey. Therefore, it is advised not to generalize the means of the MCI scale. However, the difference in innovativeness between internet users and internet non-users becomes less important as the medium is constantly democratizing and more and more people use the internet. The internet population converges towards the general population (Goldsmith, 2001). Secondly, mostly Dutch speaking Belgians completed the surveys and participated in the interviews, except for the second predictive validity study where French speaking Belgians were recruited as well. As Lynn and Gelb (1996) show that nationality, even within Europe, can have its influences on innovativeness scores, and that Belgians belong to the more innovative people in Europe, this may have its effects on the average MCI score. However, these two limitations do not constitute a major obstacle because the aim of this research was the construction of a multi-dimensional scale

and comparing different motivations for being innovative and not determining a general and worldwide standard for Motivated Consumer Innovativeness. This can be subject of future research.

In the second predictive validity study, we prove a satisfactory predictive validity. However, there are two issues that need more research. First, innovations that mainly satisfy the cognitive motivations of people are very hard to find. In the list of 96 innovations, there was only one innovation of which the ability to cognitively motivate to buy was higher than the other three motivation sources. We used four other innovations that loaded relatively high on the cognitive condition, but, as cognitive products often show a high functional ability to motivate, the predictive validity for cMCI was not significant for the list of existing products. This seems in contrast with the discriminant validity of cMCI according to the other three dimensions. However, the reader has to keep in mind that the MCI scale is a personality scale and that the products used in the second predictive validity study could be bought for other (personal) reasons (cf., Gatignon and Robertson, 1985; Venkatraman and Price, 1990) than stated in Table 8, which present average motivations that can be satisfied by these products. Extremely put, all existing products, including the most functional, hedonic and social innovations can be bought out of curiosity (i.e., cognitive motivation). An interesting future predictability research challenge can be to rate the specific reasons or motivations of each respondent for each product questioned. Nevertheless, the non-existing mobile phone innovations buying intention prove that the predictive validity of cMCI really exists (cf., Table 9). Secondly, hMCI does not predict real-life hedonic innovativeness in two of the three cases. According to the non-existing innovation, the described mobile phone option can also be very appealing to socially motivated innovative consumers as the colors of the mobile phone change according to the mood of the user, which is visible for others as well. In contrast with that, the pretest proved that this option was indeed hedonic: 84% did assign the

hedonic option correctly. According to the trial/awareness ratio, hMCI does not predict trial of known hedonic products. When analyzing the hedonic products separately, some of these products were tried significantly more often by older respondents in comparison with younger respondents (i.e., After, Douwe Egberts Black and new scratch cards). This is in contrast with hMCI as a personality scale, where younger people have a higher score than older people. These hedonic products probably fit into product categories (i.e., liqueurs, coffee and lottery products) that are bought less by the younger generation and do not relate to consumer innovativeness. Probably, the interest and involvement with these categories have more influence on the buying behavior than consumer innovativeness. This leads us to stress the importance of product characteristics as possible mediators of the CI-behavior link, as others did before (Midgley and Dowling, 1978; Ostlund, 1974). "Every study measuring awareness and trial on the basis of a list of products suffers from the specificity of these products. A selection of a different list of products can lead to different results." (Vandecasteele and Geuens, 2009, p.142). This product influence on the relationship between MCI and innovative behavior will be subject of (our) future research.

Future research can also focus on the consequences for marketing communications towards these differently motivated innovative consumers. As different values of Schwartz are of importance to them and the nomological network is very different according to which motivation is of importance to these innovative consumers, the odds are that these consumers prefer different kinds of marketing communication of these innovations and that some communication - in form and content - works better than other communication for the four different groups of consumers. We already gave a first proof with the results of media usage of the differently motivated innovative consumers (cf., Table 15). It is likely that the selection of which medium to use in order to reach the right innovative consumer depends on what motivation the innovation can satisfy.

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Table 1

Summary of current scale development studies

MCIs SCALE REFINEMENT			
Confirmation study (December 2007)			
Participants: 349	Sample: University students	Recruitment: Website European university	Items n = 30
Goal: Item reduction, exploratory and confirmatory factor analysis			
Test-retest (January 2008)			
Participants: 111 (32%)	Sample: Previous study	Recruitment: Personal mailing	Items n = 23
Goal: Test-retest validity and social desirability test			
MCIs NOMOLOGICAL NETWORK			
Evaluating MCI validity (February 2008)			
Participants: 716	Sample: Business school students	Recruitment: Institution website	Items n = 23
Goal: Further evaluation of MCI validity in network of expected relationships			
Predictive validity 1 (March 2008)			
Participants: 225 (44%)	Sample: Previous study	Recruitment: Personal mailing	Items n = 20
Goal: Predictive validity with fictitious innovations and further validation with Schwartz's typology of values			
Predictive validity 2 (May 2008)			
Participants: 1101	Sample: Citizens	Recruitment: Free newspaper, personal mailing, internet forums	Items n = 20
Goal: Predictive validity with fictitious and existing innovations			
MCIs INTERNAL CONSISTENCY			
Internal consistency across all samples			
Participants: n/a	Sample: Previous studies	Recruitment: n/a	Items n = 20
Goal: Confirmation of scale validity			

Table 2

MCI 30-item pool statistics (mean, standard deviation, loadings with promax rotation and item-total correlations)

Factor	Item	Mean	Std. Dev.	Loading	Item-total corr.
Motivated Consumer Innovativeness scale (alpha=.921)					
Socially Motivated Consumer Innovativeness (alpha=.894)					
S 6	I love to use innovations that impress others.	2.15	.985	.793	.717
S 10	I like to own a new product that distinguishes me from others who do not own this new product.	2.36	1.123	.771	.700
S 11	I prefer to try new products of which I can present myself to my friends and neighbors.	2.04	.939	.813	.734
S 16	I deliberately buy novelties which are visible to others and which command respect from others.	1.95	.858	.847	.740
S 14	I like to outdo others and I prefer to do this by buying new products which my friends do not have.	1.77	.827	.882	.770
S 8	In general, I am among the first of my friends to buy a new product and I make sure this is visible to them.	1.87	.952	(.515)	.546
S 18	I buy relatively many innovations which are visible to my acquaintances.	2.09	.876	(.629)	.642
Functionally Motivated Consumer Innovativeness (alpha=.825)					
F 2	If a new product gives me more comfort than my current product, I would not hesitate to buy it.	2.82	.977	.803	.627
F 1	If a new time-saving product is launched, I will buy it right away.	2.75	.940	.673	.592
F 9	If a new product makes my work easier, then this new product is a must for me.	2.98	.971	.730	.649
F 4	If an innovation is more functional, then I usually buy it.	3.09	.965	.656	.557
F 16	I hurry to the shop when I know of new products which are easier to use than their predecessors.	2.11	.847	(.619)	.525
F 17	I usually buy those innovations that make me work faster.	3.15	.906	(.604)	(.468)
F 5	If I discover a new product in a more convenient size, I am very inclined to buy this.	2.80	1.054	.769	.567
Hedonicly Motivated Consumer Innovativeness (alpha=.856)					
H 4	It gives me a good feeling to acquire new products.	3.57	.928	.738	.608
H 2	Using novelties gives me a sense of personal enjoyment.	3.19	1.005	.824	.711
H 13	The discovery of novelties makes me playful and cheerful.	3.35	.991	.683	.597
H 17	I like the excitement of using innovations.	3.07	.993	.691	.525
H 8	I desire novelties in my life.	3.47	1.001	(.513)	(.490)
H 16	I often buy novelties because they offer a certain amount of amusement and entertaining value.	3.21	1.061	(.537)	.546
H 7	Innovations make my life exciting and stimulating.	3.09	1.013	.700	.574
H 10	Acquiring an innovation makes me happier.	2.89	1.047	.710	.603
H 6	I like to treat myself to a new product just for the fun of it.	2.99	1.095	(.540)	.552
Cognitive Consumer Innovativeness (alpha=.889)					
C 13	I find innovations which need a lot of thinking intellectually challenging and therefore I buy them instantly.	2.26	.783	.802	.704
C 20	I am an intellectual thinker who buys new products because they set my brain to work.	2.32	.807	.862	.742
C 15	I often buy innovative products which challenge the strengths and weaknesses of my intellectual skills.	2.48	.870	.812	.738
C 19	If I find out that a new product has been launched which might stimulate me intellectually, I will be the first to buy it.	2.17	.803	.642	.592
C 1	I mostly buy those innovations that satisfy my analytical mind.	2.55	.845	.801	.681
C 9	I often buy novelties which expand my knowledge.	2.84	.926	(.552)	.600
C 14	I often buy new products which make me think logically.	2.53	.842	.788	.716

Table 3

Confirmatory factor analysis model fit comparisons 30-items MCI

Model	χ^2	df	χ^2 diff.	TLI	CFI	RMSEA
Null	4,999.1	435				
1-factor	2,398.5	405	2,600.6**	.531	.563	.119
4-factor uncorr.	1,018.0	405	1,380.5**	.856	.866	.066
1-factor 2nd order	752.0	401	265.9**	.917	.923	.050
4-factor corr.	724.1	399	27.9**	.922	.929	.048

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 4

20-items Motivated Consumer Innovativeness (MCI) scale

Factor		Item
Social	S6	I love to use innovations that impress others.
	S10	I like to own a new product that distinguishes me from others who do not own this new product.
	S11	I prefer to try new products of which I can present myself to my friends and neighbors.
	S14	I like to outdo others and I prefer to do this by buying new products which my friends do not have.
	S16	I deliberately buy novelties which are visible to others and which command respect from others.
Functional	F1	If a new time-saving product is launched, I will buy it right away.
	F2	If a new product gives me more comfort than my current product, I would not hesitate to buy it.
	F4	If an innovation is more functional, then I usually buy it.
	F5	If I discover a new product in a more convenient size, I am very inclined to buy this.
	F9	If a new product makes my work easier, then this new product is a must for me.
Hedonic	H2	Using novelties gives me a sense of personal enjoyment.
	H4	It gives me a good feeling to acquire new products.
	H7	Innovations make my life exciting and stimulating.
	H10	Acquiring an innovation makes me happier.
	H13	The discovery of novelties makes me playful and cheerful.
Cognitive	C1	I mostly buy those innovations that satisfy my analytical mind.
	C13	I find innovations which need a lot of thinking intellectually challenging and therefore I buy them instantly.
	C14	I often buy new products which make me think logically.
	C15	I often buy innovative products which challenge the strengths and weaknesses of my intellectual skills.
	C20	I am an intellectual thinker who buys new products because they set my brain to work.

Table 5

Correlations nomological validity test

	MCI	cMCI	sMCI	hMCI	fMCI	Hypothesis
EAP	.14***	.21***	.08*	.**14*****	NS	**H1** Partially confirmed
EIS	.28***	**.15*****	.22***	.30***	.22***	**H2** Rejected
DUCP	.49***	.37***	**.45*****	.44***	.26***	**H3** Partially confirmed
HED	.47***	.28***	.40***	**.50*****	.22***	**H4** Confirmed
UT	NS	NS	-.16***	NS	**.14****	**H5** Confirmed
REL	.27***	.22***	.16***	.27***	**.22*****	**H6** Partially confirmed
PL	.44***	.26***	.31***	**.59*****	.22***	**H7** Confirmed
SIGN	.43***	26***	**.46*****	.38***	.22***	**H8** Confirmed

NS=not significant, *p<.05, **p<.01, ***p<.001; EAP = Exploratory Acquisition of Products, EIS = Exploratory Information Seeking, DUCP = Desire for Unique Consumer Products, HED = Hedonic dimension of consumer attitude, UT = Utilitarian dimension of consumer attitude, REL = Relevance dimension of NIP (New Involvement Profile), PL = Pleasure dimension of NIP, SIGN = Sign dimension of NIP

Table 6

Unstandardized coefficients of regression analyses (standardized between brackets) with the buying intention score of (first line) or attitude towards (second line) the mobile phone innovations as dependent variable and the four MCI dimensions as independent variables (predictive validity 1)

	fMCI	hMCI	sMCI	cMCI
Func. mobile intention	**7.238 (.206)***	NS	NS	NS
Func. mobile attitude	**.326 (.244)****	NS	NS	NS
Hed. mobile intention	NS	**NS**	NS	NS
Hed. mobile attitude	NS	**NS**	NS	NS
Soc. mobile intention	NS	6.560 (.182)*	**NS**	NS
Soc. mobile attitude	NS	.395 (.196)*	**NS**	NS
Cog. mobile intention	NS	NS	NS	**NS**
Cog. mobile attitude	NS	NS	NS	**NS**

NS=not significant, p<.05, **p<.01, ***p<.001; figures in bold are the expected significant coefficients

Table 7

Unstandardized coefficients of regression analyses (standardized between brackets) with Schwartz's (1992) values as independent variables and MCI (and its dimensions) as dependent variable.

	Universalism	Benevolence	Conformity	Tradition	Security	Power	Achievement	Hedonism	Stimulation	Self-direction
MCI (R^2=.13)	NS	NS	NS	NS	NS	.110 (.285)***	NS	NS	NS	NS
- cMCI (R^2=.07)	.092 (.166)*	NS	NS	NS	NS	NS	NS	NS	.107 (.186)*	NS
- sMCI (R^2=.17)	NS	NS	NS	NS	.134 (.187)**	.196 (.358)***	NS	NS	NS	NS
- hMCI (R^2=.10)	NS	NS	NS	NS	NS	.139 (.282)**	NS	NS	NS	.144 (.171)*
- fMCI (R^2=.03)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

NS=not significant, *p<.05, **p<.01, ***p<.001

Table 8

Innovations used in predictive validity study 2 with their score on the four motivation dimensions and an average dimension score

Innovations	Func.	Hed.	Soc.	Cog.
Func. motivated innovation	6.44	4.07	3.20	2.91
Dreft Ultra Dry	**6.54**	3.38	3.23	1.92
Park with mobile phone	**6.62**	3.77	2.77	2.69
Wireless network	**6.62**	4.15	3.77	3.92
WLAN from power sockets	**6.54**	4.38	3.54	*4.23*
Dynamic gps	**6.38**	5.00	4.92	*4.38*
Express rice	**6.38**	4.69	2.23	1.54
Electronic swapper	**6.00**	3.15	1.92	1.69
Hed. motivated innovation	2.46	6.08	4.31	2.36
After	1.73	**6.45**	4.73	2.09
Innovative beer	1.69	**6.38**	4.62	1.85
Oraia (chocolates)	1.92	**6.31**	4.23	1.69
Douwe Egberts Black	1.91	**6.18**	4.18	2.18
Cracottes crisps	3.54	**6.08**	3.92	2.31
New scratch card (lottery)	2.00	**5.92**	2.92	3.08
Soc. motivated innovation	4.40	5.23	5.59	3.30
Light-emitting cloths/shoes	3.09	5.00	**6.36**	1.73
Social Networking sites	4.92	4.77	**6.15**	5.00
LED belt	2.62	5.62	*5.69*	2.23
Nike + iPod	5.15	5.92	*5.54*	4.00
Digital picture frame	4.09	5.18	*5.45*	3.00
Segway	5.27	4.91	*5.45*	2.45
Cog. motivated innovation	5.66	5.22	4.46	4.70
Satellite images internet	3.69	5.15	3.85	*5.77*
Video on Demand	6.23	5.85	4.54	*4.77*
Digital tv	5.45	5.73	5.45	*4.36*
Dynamic gps	**6.38**	5.00	4.92	*4.38*
WLAN from power sockets	**6.54**	4.38	3.54	*4.23*

Figures in bold are signifantly higher than the other figures.

Table 9

Unstandardized coefficients of regression analyses (standardized between brackets) with the buying intention score of the mobile phone innovations as dependent variable and the four MCI dimensions as independent variables

	fMCI	hMCI	sMCI	cMCI
Func. mobile intention	**.686 (.160)*** **	NS	NS	NS
Hed. mobile intention	NS	**NS**	.375 (.163)***	NS
Soc. mobile intention	NS	NS	**.447 (.132)** **	NS
Cog. mobile intention	NS	NS	NS	**.571 (.158)** **

NS=not significant, *p<.05, **p<.01, ***p<.001; figures in bold are the expected significant coefficients

Table 10
Unstandardized coefficients of regression analyses (standardized between brackets) with the trial/awareness ratio (first row) and buying intentions (second row) for the existing innovations as dependent variable and the four MCI dimensions as independent variables

	fMCI	hMCI	sMCI	cMCI
Func. T/A	**3.727 (.126)***	NS	NS	NS
Func. intention	**.419 (.142)*****	NS	NS	NS
Hed. T/A	NS	**NS**	NS	NS
Hed. intention	.267 (.110)**	**.228 (.099)***	NS	NS
Soc. T/A	NS	NS	**6.530 (.116)***	NS
Soc. intention	NS	NS	**NS**	NS
SocPlus T/A	NS	NS	**3.763 (.140)****	NS
SocPlus intention	.237 (.118)**	.191 (.101)*	**.298 (.152)*****	NS
Cog. T/A	.086 (.146)**	NS	NS	**NS**
Cog. intention	NS	NS	NS	**.534 (.110)***
CogPlus T/A	4.817 (.147)**	NS	NS	**NS**
CogPlus intention	.469 (.170)**	NS	NS	**NS**

NS=not significant, *p<.05, **p<.01, ***p<.001; SocPlus and CogPlus = the five highest scoring innovations on social or cognitive motivations (but not necessarily significantly different from mean scores on other motivations); figures in bold are the expected significant coefficients

Table 11

Standardized coefficients of regression analyses with media usage as dependent variable and MCI on the one hand and the four MCI dimensions on the other as independent variables

	MCI	cMCI	sMCI	hMCI	fMCI
# Newspapers	.122***	NS	NS	NS	.074°
# Magazines	.097**	.120*	NS	NS	NS
# Books	NS	.139**	-.167***	NS	NS
# Cinema	.150***	.112*	NS	NS	NS
Time Tv	NS	-.208***	.081°	NS	.090*
Time Internet	.153***	NS	.080°	.115*	NS

NS=not significant, °p<.10, *p<.05, **p<.01, ***p<.001

Table 12

Performance of 20-items Motivated Consumer Innovativeness scale across six samples

Participants	**Citizens**	**University students**	**University students**	**Business school students**	**Citizens**
Sample size	**452**	**349**	**111**	**716**	**826**
Number of items	**90**	**30**	**23**	**23**	**20**
Scale mean MCI	**2.54**	**2.65**	**2.63**	**2.86**	**2.66**
- cMCI	2.47	2.43	2.43	2.61	2.54
- sMCI	1.96	2.05	2.01	2.36	1.98
- hMCI	2.74	3.22	3.19	3.30	2.86
- fMCI	3.01	2.89	2.89	3.18	3.25
Standard deviation MCI	**.63**	**.53**	**.54**	**.55**	**.66**
- cMCI	.76	.68	.72	.65	.77
- sMCI	.84	.79	.74	.83	.84
- hMCI	.86	.75	.73	.71	.87
- fMCI	.77	.73	.76	.71	.82
Internal consistency					
- Cronbach's alpha MCI (>.80)	**.92**	**.89**	**.91**	**.91**	**.93**
- cMCI	.87	.88	.90	.85	.88
- sMCI	.90	.89	.85	.89	.91
- hMCI	.87	.81	.87	.82	.87
- fMCI	.85	.80	.86	.81	.84
- Lowest corrected item-total correlation MCI (>.50)	**.45**	**.41**	**.39**	**.45**	**.48**
- cMCI	.65	.68	.69	.65	.68
- sMCI	.58	.69	.61	.68	.75
- hMCI	.67	.54	.57	.58	.67
- fMCI	.61	.54	.65	.56	.62
- Average interitem correlation MCI (>.3)	**.37**	**.29**	**.33**	**.33**	**.40**
- cMCI	.58	.59	.63	.54	.59
- sMCI	.65	.63	.52	.61	.67
- hMCI	.58	.46	.61	.48	.58
- fMCI	.52	.44	.55	.45	.51
Factor Analyses					
- Percentage of total variance explained with four factors (>60)	**68.1**	**63.4**	**67.2**	**62.4**	**67.4**
- Minimal explanation of each factor (>6)	**7.2**	**7.9**	**7.7**	**6.9**	**6.2**
- CFA fit TLI (>.90)	**.972**	**.977**	**.934**	**.964**	**.980**
- CFA fit CFI (>.95)	**.976**	**.980**	**.943**	**.969**	**.983**
- CFA fit RMSEA (<.06)	**.041**	**.033**	**.059**	**.040**	**.034**
- CFA lowest standardized loading MCI (>.60)	**.70**	**.61**	**.66**	**.66**	**.68**
- Composite reliability (>.80)					
- cMCI	.88	.88	.90	.84	.88
- sMCI	.91	.89	.85	.89	.91
- hMCI	.87	.81	.88	.83	.87
- fMCI	.85	.80	.86	.80	.84
- Average variance extracted (>.50)					
- cMCI	.60	.59	.63	.51	.59
- sMCI	.67	.63	.52	.61	.67
- hMCI	.58	.47	.60	.49	.58
- fMCI	.54	.44	.55	.45	.51

Table 13

Difference between full sample and cleaned sample of predictive validity study 2

Participants	All respondents	Respondents who read items carefully
Sample size	**1,101**	**826**
Number of items	**20**	**20**
Scale mean MCI	**2.66**	**2.66**
- cMCI	2.53	2.54
- sMCI	2.35	1.98
- hMCI	2.83	2.86
- fMCI	2.92	3.25
Standard deviation MCI	**.69**	**.66**
- cMCI	.76	.77
- sMCI	.91	.84
- hMCI	.82	.87
- fMCI	.84	.82
Internal consistency		
- Cronbach's alpha MCI (>.80)	**.92**	**.93**
- cMCI	.83	.88
- sMCI	.87	.91
- hMCI	.78	.87
- fMCI	.80	.84
- Lowest corrected item-total correlation MCI (>.50)	**.50**	**.48**
- cMCI	.51	.68
- sMCI	.63	.75
- hMCI	.49	.67
- fMCI	.50	.62
- Average interitem correlation MCI (>.3)	**.37**	**.40**
- cMCI	.49	.59
- sMCI	.57	.67
- hMCI	.41	.58
- fMCI	.45	.51
Factor Analyses		
- Percentage of total variance explained with four factors (>60)	**62.9**	**67.4**
- Minimal explanation of each factor (>6)	**4.9**	**6.2**
- CFA fit TLI (.90)	**.775**	**.980**
- CFA fit CFI (>.95)	**.806**	**.983**
- CFA fit RMSEA (<.06)	**.109**	**.034**
- CFA lowest standardized loading MCI (>.60)	**.61**	**.68**
- Composite reliability (>.80)		
- cMCI	.83	.88
- sMCI	.87	.91
- hMCI	.78	.87
- fMCI	.80	.84
- Average variance extracted (>.50)		
- cMCI	.49	.59
- sMCI	.57	.67
- hMCI	.42	.58
- fMCI	.45	.51

Table 14

Unstandardized coefficients of regression analyses (standardized between brackets) with the buying intention score of the mobile phone innovations as dependent variable and the four MCI dimensions as independent variables with the respondents of the cleaned dataset (first row) and the full dataset with all respondents (second row)

	fMCI	**hMCI**	**sMCI**	**cMCI**
N full	880	1044	885	824
N cleaned	676	790	665	627
Func. mobile full	**NS**	NS	NS	NS
Func. mobile cleaned	**.686 (.160)*** **	NS	NS	NS
Hed. mobile full	NS	**NS**	.394 (.173)***	NS
Hed. mobile cleaned	NS	**NS**	.375 (.163)***	NS
Soc. mobile full	.329 (.099)*	.377 (.113)*	**.281 (.092)***	NS
Soc. mobile cleaned	NS	NS	**.447 (.132)****	NS
Cog. mobile full	NS	NS	.507 (.165)***	**NS**
Cog mobile cleaned	NS	NS	NS	**.571 (.158)****

NS=not significant, *p<.05, **p<.01, ***p<.001; figures in bold are the expected significant coefficients

Table 15

Motivated innovative consumer characteristics

Dimension	Motivation items	Socio-demo	Nomologic	Values	Media usage
fMCI	Time-saving More comfort More functional More convenient Easier	NS	Higher UT	None	More tv
hMCI	Enjoyment Good feeling Exciting & stimulating Makes happier Playful & cheerful	Lower age (2x)	Higher HCI Higher DUCP Higher HED Higher pleasure NIP	Power Self-direction	More internet
sMCI	Impress others Distinguish from others Present myself To outdo others Command respect	Lower age (2x)	Higher SCI Higher DUCP Higher sign NIP Lower UT Lower Ncog	Power Security	Less books
cMCI	Satisfy analytical mind Thinking intellectually Think logically Intellectual skills Intellectual thinker	Lower age (1x)	Higher Ncog	Stimulation Universalism	More magazines More books More cinema Less tv

NS=none significant; HED = Hedonic dimension of consumer attitude, UT = Utilitarian dimension of consumer attitude, HCI = Hedonic Consumer Innovativeness, SCI = Social Consumer Innovativeness, DUCP = Desire for Unique Consumer Products, NIP = New Involvement Profile, Ncog = Need for Cognition