Hot Gratifications Sought vs. Cold Expectancy Value Judgments in explaining and predicting mobile communication technology use.

Rinze Leenheer (s0010537)

Abstract

This study examined the nature of the relationship between expectancy-value judgments and gratifications sought within the context of mobile communication technology use. The results of this study support the notion by Babrow and Swanson (1988) that it is unlikely expectancy-value judgments and gratifications sought are simply alternative measures of exactly the same underlying construct. Results show that within the context of mobile communication technology, expectancy-value judgments and gratifications sought are highly related but distinctly different. Expectancy-value judgments have a stronger effect on attitude, but they have a far less strong effect on intention and usage compared to the effects of gratifications sought on attitude, intention and usage. This seems to confirm the notion that expectancy-value judgments represent only 'cold' cognitive beliefs whereas gratifications sought combine these with 'hot' affective responses.

Introduction

What motivates people to use media technology and what forces lie behind these motivations, has been a compelling research subject ever since the early 1940s. Researchers became interested in why audiences engaged in various forms of media behavior such as listening to the radio or reading the newspaper (e.g., Waples, Berelson & Bradshaw, 1940; Lazarsfeld & Stanton, 1944; Lazarsfeld, Berelson & Gaudet, 1948).

One of the first methods to focus on media use behavior from a user's perspective was the uses and gratifications approach. Uses and gratifications research is "concerned with the social and psychological origins of needs, which generate expectations of the mass media or other sources, which lead to differential patterns of media exposure (or engagement in other

activities), resulting in need gratifications and other consequences, perhaps mostly unintended ones" (Katz, Blumler and Gurevitch, 1974). The most central concept in the uses and gratifications research tradition is probably that of gratifications sought (Hendriks Vettehen, 1998; 2002). Despite its importance, a general accepted definition of the concept is not easy to find in the rich uses and gratifications literature. According to Ruggiero (2000) one of the continued flaws in the uses and gratifications paradigm is the lack of clarity concerning the central concepts and the different meanings uses and gratifications researchers attach to these concepts. Early uses and gratifications researchers would collect data on the consequences of media use people experienced. These experienced gratifications were then used to explain media use. Here lies one of the main criticisms of the uses and gratifications approach. Media use is explained by the consequences it has for the user. According to Hendriks Vettehen (1998) it seems that a circular argument is used: use leads to desired gratifications but the desire to receive these gratifications is also the reason for use. A number of media scholars stressed the need to distinguish between the motives for media consumption and the gratifications perceived from this experience (e.g., Katz, Blumler & Gurevitch, 1974; Greenberg, 1974; Rosengren, 1974). With the division of gratifications into two concepts there is no longer a circular argument. It should now be theoretical possible to explain the changes in media use by the discrepancy between gratifications sought (motives) and gratifications obtained (evaluation). The question is whether this theoretical difference between motives and evaluation is also empirically distinguishable. Hendriks Vettehen (1998; 2000) stated that the analytic difference uses and gratifications researchers make between media use motives and other relevant concepts are not yet empirically tenable.

To ground uses and gratifications more theoretically several authors (e.g., Galloway & Meek, 1981; Rayburn & Palmgreen, 1984) moved away from the origin of needs perspective and incorporated an expectancy-value perspective as used within social psychology (e.g., Fishbein & Ajzen, 1975) into uses and gratifications research. Although the various theories under the label expectancy-value differ somewhat in their emphases, according to Palmgreen (1984) all view behavior, behavioral intentions, or attitudes (or all three) as a function of (1) expectancy (or belief) – the perceived probability that an object possesses a particular attribute or that a behavior will have a particular consequence; and (2) evaluation – the degree of affect, positive or negative, toward an attribute or behavioral outcome. The expectancy-value perspective is a widely used theoretical approach in studying the adoption, usage and consumption of mass media and also new media technologies (e.g., Babrow, 1989, Leung & Wei, 1999, LeDoux Book & Barnett, 2006). The expectancy value approach offers an alternative to the measurement of motivations. In particular the application of the measurement $b_i e_i$ as determinant of media exposure (with b_i = belief that some object of exposure possesses attribute i and e_i = evaluation of attribute i) (Hendriks Vettehen, 2000).

Psychological research on the origins of goal-directed human behaviors, relies in general on expectancy-value models of attitudes and decision making, rooted in theories of rational choice (Aarts, Verplanken and Van Knippenberg, 1998). Fishbein and Ajzen's (1975) attitude-behavior model, known as the theory of reasoned action, probably constitutes the most influential and well-documented model. The theory of reasoned action postulates that attitudes (the desirability of the behavior, which is considered to be a function of the sum of the perceived values of the expected consequences of the behavior), together with subjective norms (representing the experienced social pressure), are the antecedents of behavioral intentions,

which in turn are supposed to precede behavior. Infante, Rancer and Womack (1997) stated that there are two major explanations to the expectancy-value mechanism: affective-cognitive consistency (Rosenberg, 1956) and learning theory (Chronkhite, 1969). According to affective-cognitive consistency people have affect and cognitions regarding a topic or object and try to make the two consistent. Affect involves attitude – how favorably people evaluate an object. Cognitions are beliefs about what is related to the object. Affective-cognitive consistency proposes a law of cognitive behavior: if you change a person's belief about a topic, object or proposal, the attitude will "automatically" change in the same direction and to the same degree as the belief changes (Infante, Rancer & Womack, 1997). According to learning theory, the idea is that we learn to associate consequences with proposals, characteristics with people, and attributes with objects (Chronkhite, 1969). The expectancy-value proposition that behavior is guided by users' perceptions of the probability and value of potential consequences has been incorporated in several gratifications models (e.g., Galloway & Meek, 1981; Van Leuven, 1981; Palmgreen & Rayburn, 1985). According to Palmgreen (1984) the expectancy-value model of uses and gratifications is a process model which states that the products of beliefs (expectations) and evaluations (values) influence the seeking of gratifications, which in turn influence media consumption. Such consumption results in the perception of certain gratifications obtained, which then feed back to reinforce or alter an individual's perceptions of the gratifications-related attributes of a particular medium. From an expectancy-value perspective (based on Fishbein & Ajzen, 1975) gratifications sought (GS) are expressed as a function of both beliefs (b_i) and evaluations (e_i): GSi = $b_i e_i$ where GS$_i$ is the i^{th} gratification sought from some media object, X (some medium, program, content type, or the like); b_i is the belief (subjective probability) that X

possesses some attribute or that a behavior related to X will have a particular outcome; and e_i is the affective evaluation of the particular attribute or outcome.

Babrow and Swanson's (1988) study of student exposure to television news extended previous applications of expectancy-value theory to uses and gratifications research. Babrow and Swanson replicated Palmgreen et al.'s (1980) finding that self-reports of expectancy-value judgments and gratifications sought are empirically related. The findings suggested that expectancy-value and gratification-seeking orientations are highly related but distinctly different judgments. However, the findings of Babrow and Swanson's study were limited by qualities of the data; therefore the data were unsuited to simultaneous modeling of expectancy-value judgments and gratifications sought.

It would however be interesting to see how exactly expectancy-value judgments and gratifications sought relate to each other. By knowing how they differ it will be possible to use them more effectively in predicting and or explaining media usage. By integrating them in the 'correct' way in attitude behavior models like the Theory of Reasoned Action.

This current research will try and answer this question by determining the possible differences between gratifications sought and expectancy-value judgments and then incorporating them into Fishbein and Ajzen's (1975) attitude-behavior model in various 'setups'. For explaining existing media use mobile phone usage is utilized. The Netherlands (91%) together with Finland (93%) and Sweden (93%) are according to a survey commissioned by the European Commission (2006) the countries with the highest penetration rate of mobile phones in Europe. The average rate of mobile phone penetration in Europe is 80 percent. The high penetration rate of mobile phones in The Netherlands is ideal to examine the added value of

incorporating gratifications sought versus expectancy-value judgments into Fishbein and Ajzen's (1975) attitude-behavior model to explain existing media usage behavior.

For predicting new media adoption, the mobile video phone technology is utilized. With mobile video phone people can not only talk to each other, but they also can see each other. This new added feature of mobile video communication technology is now available on mobile phones in the Netherlands and mobile phone operators are starting to promote this new service which requires wireless broadband access. The intention of mobile phone users to start using this new technology of mobile video phone to communicate with other people is an ideal opportunity to examine the added value of incorporating gratifications sought versus expectancy-value judgments into Fishbein and Ajzen's attitude-behavior model with regard to predicting new media adoption.

The distinction between gratifications sought and expectancy-value judgments can be found in the very nature of the two constructs. Babrow and Swanson (1988) posed that as motives for action, gratifications sought are expected, positively valued exposure outcomes (avoidances are expected, negatively valued outcomes). Exposure motives, wants, or desires, integrate 'cold' cognitive and 'hot' affective responses to the object of exposure whereas expectancy-value judgments only represents 'cold' cognitive beliefs and evaluations. Babrow and Swanson suggested that measures of gratifications sought tap affective response at a level sufficient to render a separate measure of attitude a relatively unimportant predictor of intention. Oddly enough no follow up studies were performed to look into the possible 'hot/cold' differences between gratifications sought and expectancy-value judgments.

To investigate these differences, first we have to determine that expectancy-value judgments and gratifications sought are not the same thing. If this were true, separate fitting of expectancy-value judgments and gratifications sought data would yield identical models. Babrow and Swanson's data showed however major, substantively meaningful discrepancies in the two models. Notably, like the findings of Palmgreen, Wenner, and Rayburn (1980), Babrow and Swanson found that only for the gratifications sought data direct paths to intention and behavior were significant. Moreover, the attitude-intention path became non-significant when the gratifications sought-intention and gratifications sought-behavior paths were freed. Hence, it is according to Babrow and Swanson unlikely that expectancy-value judgments and gratifications sought are simply alternative measures of exactly the same underlying construct. The first hypothesis predicts that separate fitting of expectancy-value judgments and gratifications sought do not yield identical models:

H1: Expectancy-value judgments and gratifications sought are not alternative measures of exactly the same underlying construct.

From this the second hypothesis follows: if expectancy-value judgments and gratifications sought are indeed different constructs, and expectancy value represents only 'cold' cognitive beliefs whereas gratifications sought combine this with 'hot' affective responses, the path between attitude and intention should be significant in the expectancy-value judgments model and non-significant in the gratifications sought model.

H2: Expectancy-value judgments represent only 'cold' cognitive beliefs whereas gratifications sought combine this with 'hot' affective responses.

When expectancy-value judgments and gratifications sought do indeed measure different things, it is possible that combining them in a single model yields improved predicting and explaining capabilities. A possibility suggested by Palmgreen and Rayburn (1982; 1985) is that expectancy-value judgments determine gratifications sought, and that the latter determine exposure levels (perhaps through intention – see Palmgreen & Rayburn, 1982). A different view of causation has been posited by McLeod and Becker (1981). They asserted that motives – conceived somewhat more generally as "expressed desire for gratification in a given class of situations" – drive expectancies (p. 74) and that motives and expectancy-value judgments may be reciprocally related. However, Babrow and Swanson's findings are more consistent with the view that gratifications sought mediate the effect of expectancy-value judgments. If expectancy value judgments mediated the effects of gratifications sought, one would not expect the findings of non-significant relationships between expectancy-value judgments and both intention and exposure, and significant gratifications sought-intention and gratifications sought-exposure paths. Gratifications sought appeared to affect intentions and exposure levels directly apart from any indirect influence they might have through expectancy-value judgments. However, as Babrow and Swanson (1988) posed this conclusion should be tentative, because these associations may vary with domain. The third hypothesis predicts that gratifications sought mediate the effect of expectancy-value judgments:

H3: Gratifications sought mediate the effect of expectancy-value judgments on media intention and usage.

And last, it is possible according to Babrow and Swanson that expectancy-value judgments and gratifications sought are reciprocally influential and that gratifications sought alone exert direct influences on intention and exposure. The fourth hypothesis predicts a reciprocal relationship between expectancy-value judgments and gratifications sought judgments:

H4: Expectancy-value judgments and gratifications sought are reciprocally influential.

Methods

Sample and Procedures

Subscribers of a national panel (N = 865) which represents the Dutch population administrated by a profit research and consultancy company were invited via email to voluntary participate in the online survey. The 630 mobile phone users who responded to the invitation (72.83% response rate) were divided into two groups using a stratified random sampling method, considering demographics, mobile phone use, and mobile phone experience as strata (see Table 1). Respondents of group one (n = 310) were surveyed on existing mobile phone use, respondents of group two (n = 320) were surveyed on the intention to adopt mobile video phone. Pearson's chi-square test and independent samples t-test were used to test for differences between the two samples. No significant differences between the two samples were found (see Table 1). At the beginning of the mobile video phone survey, a detailed picture of a mobile video

phone device with a description of its functionalities was used to introduce the technology of mobile video phone.

Measures

Mobile phone behavior. Participants were asked to estimate the number of times they used a mobile phone to make a phone call on an average day. Similarly, participants were asked to estimate the number of times they used a mobile phone to send SMS messages on an average day.

Mobile phone intention, subjective norm, and attitude. Three intention measures asked the participants to rate their intention to use a mobile phone in the next week on a seven-point bipolar scale ranging from 'extremely unlikely' to 'extremely likely'. The three intention measures were: 'I intend to use a mobile phone in the next week', 'I predict I would use a mobile phone in the next week', and 'I plan to use a mobile phone in the next week'. To assess subjective norm, participants rated whether people important to them thought they should use a mobile phone. A single seven-point scale ranging from 'should' to 'should not' provided the score. As measure of attitude, participants rated the use of a mobile phone on three seven-point bipolar scales. The scale endpoints were defined as 'extremely unpleasant/pleasant', 'extremely unimportant/important', and 'extremely harmful/beneficial'.

Gratifications sought and expectancy-value judgments. Previous research on uses and gratifications of the mobile phone (Leung & Wei, 2000) identified four gratification factors: mobility, affection/sociability, instrumentality, and immediate access. Twelve core items were bases for measures of gratifications sought and expectancy-value judgments (see Table 2). Gratifications sought were measured by estimates of how often each gratification was a reason for using a mobile phone. Estimates were recorded on seven-point scales ranging from 'never

applies to me' to 'always applies to me'. To measure expectancy-value judgments, participants evaluated each of the 12 items on seven-point bipolar scales ranging from 'extremely bad feature' to 'extremely good feature'. The probability that the use of a mobile phone provides each of the 12 gratifications was recorded on seven-point scales ranging from 'very likely does not have this feature' to 'very likely to have this feature'. The expectancy-value judgments scores were formed from the product of the two seven-point scales.

Mobile video phone intention, subjective norm, and attitude. Three intention measures asked the participants to rate their intention to use mobile video phone in the next three months on a seven-point bipolar scale ranging from 'extremely unlikely' to 'extremely likely'. The three intention measures were: 'I intend to use mobile video phone in the next three months', 'I predict I would use mobile video phone in the next three months', and 'I plan to use mobile video phone in the next three months'. To assess subjective norm, participants rated whether they thought people important to them were going to use mobile video phone. A single seven-point scale ranging from 'they will not' to 'they will' provided the score. As measure of attitude, participants rated the expected use of mobile video phone on three seven-point bipolar scales. The scale endpoints were defined as 'extremely unpleasant/pleasant', 'extremely unimportant/important', and 'extremely harmful/beneficial'.

Gratifications sought and expectancy-value judgments. Inspired by previous research on uses and gratifications of the mobile phone (Leung & Wei, 2000) four gratification factors were developed: novelty, fashion/status, affection/sociability, and relaxation. Twelve core items were bases for measures of gratifications sought and expectancy-value judgments (see Table 3). Gratifications sought were measured by estimates of how often each gratification would be a reason for using mobile video phone. Estimates were recorded on seven-point scales ranging

from ‘never applies to me’ to ‘always applies to me’. To measure the expectancy-value judgments, participants evaluated each of the 12 items on seven-point bipolar scales ranging from ‘extremely bad feature’ to ‘extremely good feature’. The probability that the use of mobile video phone provides each of the 12 gratifications was recorded on seven-point scales ranging from ‘very likely does not have this feature’ to ‘very likely to have this feature’. The expectancy value judgments scores were formed from the product of the two seven-point scales.

A pre test was performed to test the aforementioned items on legibility and internal consistency. Under-graduate students ($N = 62$) from both the departments of communication studies and psychology at the University of Twente in The Netherlands participated in the pre-test and received research experience points for participating. The internal consistency of the attitude measures was below aspiration level (Cronbach’s $\alpha < .70$). Participants had an ambiguity problem with regard to the scale with the endpoints ‘extremely harmful/beneficial’. The use of a mobile phone or mobile video phone can be beneficial in terms of instrumental use, but also not very beneficial in terms of costs. Therefore the endpoints of the attitude scale were replaced with the endpoints ‘valuable/worthless’. All other measurements performed well above aspiration level.

Data analysis

Structural equation analysis with maximum likelihood estimation was used to test the hypothesized models. In this study, as suggested by Holbert and Stephensen (2002) the following model fit indices were used: the χ^2 estimate with degrees of freedom given that it is still the best means by which to make comparisons across models (Hoyle & Panter, 1995). Additionally, the standardized root mean squared residual (SRMR) as a second absolute fit statistic (Hu & Bentler, 1999) in combination with the Tucker-Lewis index (TLI) as incremental index and the root mean

squared error of approximation (RMSEA) (Browne & Cudeck, 1993) are reported. Hu and entler (1999) recommend using a cutoff value close to .95 for TLI in combination with a cutoff value close to .09 for SRMR to evaluate model fit and the RMSEA close to .06 or less. The Fornell and Larcker (1981) discriminant validity criterion was used to test discriminant validity. The Fornell and Larcker criterion is satisfied when a construct is more closely related to its own indicators than to other constructs.

Results

To test the four hypotheses, first the measurement and structural model of both the gratification sought model and the expectancy-value judgments model were developed to successively explain mobile phone use and to predict the intention to adopt mobile video phone. Using a first-order confirmatory factor analysis, the measurement models estimated the extent to which the observed items loaded onto their respective latent variables. Because subjective norm was measured with a single observed item, it was not included in the measurement models. All latent constructs but no observed error variances were allowed to co-vary with one another.

Explaining mobile phone use

Prior to the analyses, data were checked for normality. Because of skewness to the upper end of the distribution of the measures mobile phone usage and SMS usage, a square-root transformation was performed to correct skew (Garson, 2006).

Gratifications sought model. The measurement model of the gratifications sought model generated a good fit, $\chi^2(149) = 250.22$, $\chi^2/df = 1.68$, SRMR = .033, TLI = .975, RMSEA = .047 (90% confidence interval [CI]: .037, .057). The internal consistency of the measures to explain mobile phone use was above aspiration level ($\alpha > .70$). The correlation matrix of the observed variables, mobile phone usage, and SMS usage is shown in Table 4. The results obtained from

testing the validity of a causal structure of the hypothesized gratifications sought model showed a good fit, $\chi^2(180) = 388.63$, $\chi^2/df = 2.16$, SRMR = .068, TLI = .952, RMSEA = .061 (CI: .053, .070). Table 5 summarizes the mean and standard deviation, Cronbach's α, the factor loading (β), and the squared multiple correlation (R^2) of the observed indicators to explain mobile phone use. The path model with standardized path coefficients is featured in Figure 1. There were significant total effects of gratifications sought on attitude (β = .70), intention (β = .71), and mobile phone use (β = .82). Squared multiple correlations provide information about the variance accounted for by the complete set of variables and showed that attitude was accounted for 48% intention was accounted for 51%, and mobile phone usage was accounted for 76%, (see Table 5).

Expectancy-value judgments model. The measurement model of the expectancy-value judgments model generated a good fit, $\chi^2(149) = 280.58$, $\chi^2/df = 1.88$, SRMR = .048, TLI = .961, RMSEA = .053 (CI: .044, .063). The internal consistency of the measures to explain mobile phone use was above aspiration level (α > .70). The correlation matrix of the observed variables, mobile phone usage, and SMS usage is shown in Table 6. The results obtained from testing the validity of a causal structure of the hypothesized expectancy-value judgments-model showed an acceptable fit, $\chi^2(180) = 416.17$, $\chi^2/df = 2.31$, SRMR = .076, TLI = .937, RMSEA = .065 (CI: .057, .073). Table 5 summarizes the mean and standard deviation, Cronbach's α, the factor loading (β), and the squared multiple correlation (R^2) of the observed indicators to explain mobile phone use. The path model with standardized path coefficients is featured in Figure 2. There were significant total effects of expectancy-value judgments on attitude (β = .75), intention (β = .55), and mobile phone use (β = .64). Squared multiple correlations showed that attitude was accounted for 57%, intention was accounted for 31%, and mobile phone usage was accounted for 69% (see Table 6).

Predicting mobile video phone adoption

Prior to the analyses, data were checked for normality. Because of skewness to the lower end of the distribution of the measure mobile video phone intention, an inverse (reciprocal) transformation was performed to correct skew (Garson, 2006).

Gratifications sought model. The measurement model of gratifications sought generated a poor fit, $\chi^2(137) = 413.55$, $\chi^2/df = 3.02$, SRMR = .042, TLI = .948, RMSEA = .080 (CI: .071, .088). The internal consistency of the measures to predict mobile video phone adoption was above aspiration level ($\alpha > .70$). The results obtained from testing the validity of a causal structure of the hypothesized gratifications sought model also showed a poor fit, $\chi^2(163) = 516.95$, $\chi^2/df = 3.17$, SRMR = .100, TLI = .939, RMSEA = .083 (CI: .075, .091).

Expectancy-value judgments model. The measurement model of the expectancy-value judgments model generated a moderate fit, $\chi^2(137) = 337.27$, $\chi^2/df = 2.46$, SRMR = .048, TLI = .952, RMSEA = .068 (CI: .059, .077). The correlation matrix of the observed variables and mobile video intention is shown in Table 7. The correlation matrix shows that the indicators of novelty are also closely related to the indicators of affection/sociability and the indicators of relaxation. The internal consistency of the measures to explain mobile phone use was above aspiration level ($\alpha > .70$). The results obtained from testing the validity of a causal structure of the hypothesized expectancy-value judgments model showed a moderate fit, $\chi^2(163) = 419.72$, $\chi^2/df = 2.58$, SRMR = .086, TLI = .943, RMSEA = .070 (CI: .062, .079). Table 8 summarizes the mean and standard deviation, Cronbach's α, the factor loading (β), and the squared multiple correlation (R^2) of the observed indicators to predict mobile video phone use. The path model with standardized path coefficients is featured in Figure 3. The standardized path coefficients in Figure 3 show significant direct effects of expectancy-value judgments on attitude and intention.

Also, Figure 3 shows a significant direct effect of social norm on intention. Squared multiple correlations showed that attitude was accounted for 30% and mobile video phone intention was accounted for 22% (see Table 8).

Alternative measures (H1)

H1 predicted that expectancy-value judgments and gratifications sought are not alternative measures of exactly the same underlying construct. This hypothesis was supported. Both in explaining mobile phone use and predicting mobile video phone adoption, separate fitting of the expectancy-value judgments model and gratifications sought model showed major discrepancies in the two models. With regard to mobile phone use, the gratifications sought model has larger explanatory power to determine both mobile phone intention and mobile phone usage compared to the expectancy-value judgments model. The expectancy-value judgments model has larger explanatory power to determine attitude towards mobile phone intention compared to the gratifications sought model. Also, in contrast to the expectancy-value judgments model the attitude-intention path became non-significant in the gratifications sought model. With regard to mobile video phone adoption, the measurement of the gratifications sought model showed a poor fit. Notably, the path between attitude and intention was non-significant in the expectancy-value judgments model to predict mobile video phone use

Hot vs. Cold (H2)

H2 predicted that expectancy-value judgments represent only 'cold' cognitive beliefs whereas gratifications sought combine this with 'hot' affective responses. If this was the case measurement for gratifications sought would elicit affective response thereby making a separate measurement of attitude an unimportant predictor for intention. As was already stated when looking at the differences between the models fitted with either expectancy-value judgments or

gratifications sought, the models to explain mobile phone use indeed showed a significant effect of attitude on intention in the case of expectancy-value judgments ($p < .05$) whereas in the case of gratifications sought the path was not significant (see figures 1 and 2). Looking ahead at the models that combine gratifications sought and expectancy-value judgments both the mediated and combined model show no significant path from attitude to intention (see figures 4 and 5). Again leading to the conclusion that attitude measurements become redundant when gratifications sought is present in the model.

Mediation (H3)

H3 posited that gratifications sought mediate the effect of expectancy-value judgments on media intention and usage. To test this hypothesis both the gratifications sought constructs and the expectancy-value judgments constructs were simultaneously incorporated into one measurement model to successively explain mobile phone use and to predict mobile video adoption. To test for mediation, a path was added from expectancy-value judgments to gratifications sought. The results obtained from testing the validity of the causal structure of the mediated model to explain mobile phone use showed a moderate fit, $\chi^2(477) = 1078.25$, $\chi^2/df = 2.26$, SRMR = .073, TLI = .924, RMSEA = .064 (CI: .059, .069). The path model with standardized path coefficients is featured in Figure 4. There were significant total effects of expectancy-value judgments mediated by gratifications sought on attitude ($\beta = .63$), intention ($\beta = .64$), and mobile phone use ($\beta = .70$). Squared multiple correlations showed that gratifications sought was account for 76% by expectancy-value judgments. Attitude was accounted for 52%, intention was accounted for 51%, and mobile phone usage was accounted for 74%. The results supported the third hypothesis. Expectancy-value judgments determined gratifications sought, however the gratifications sought model without the integration of expectancy-value judgments

(see Figure 1.) has slight larger explanatory power to determine mobile phone usage, but moreover a better model fit compared to the combined gratifications sought and expectancy-value judgments model. Therefore the gratifications sought model is preferred above the combined model to explain mobile phone usage. The results obtained from testing the validity of the causal structure of the mediated model to predict mobile video phone adoption showed a poor fit, $\chi^2(479) = 1490.44$, $\chi^2/df = 3.11$, SRMR = .097, TLI = .901, RMSEA = .081 (CI: .077, .086).

Reciprocally influential (H4)

H4 predicted that expectancy-value judgments and gratifications are reciprocally influential. Both the gratifications sought constructs and the expectancy-value judgments constructs were simultaneously incorporated into one measurement model to successively explain mobile phone use and to predict mobile video adoption. To test the hypothesis, the error terms between gratifications sought and expectancy-value judgments were correlated. Paths were added from gratifications sought to attitude, intention, and usage. Likewise paths were added from expectancy-value judgments to attitude, intention, and usage. The results obtained from testing the validity of the causal structure of the combined gratifications sought and expectancy-value judgments model to explain mobile phone use showed an acceptable fit, $\chi^2(474) = 1040.81$, $\chi^2/df = 2.20$, SRMR = .069, TLI = .928, RMSEA = .062 (CI: .057, .067). The path model with standardized path coefficients is featured in Figure 5. Squared multiple correlations showed that both attitude and intention was accounted for 57%, and mobile phone usage was accounted for 75%. The standardized path coefficients show a significant correlation between gratifications sought and expectancy-value judgments. The significant covariance path between gratification sought and expectancy-value judgments give support to the fourth hypothesis insofar that the

results showed that gratifications sought and expectancy-value judgments are highly correlated. This signals a reciprocal relationship between gratifications sought and expectancy-value judgments. Comparing the combined model with both the gratifications sought model (Figure 1) and the expectancy-value model (Figure 2) shows that the amount of explained variance of attitude has not increased when gratifications sought was also incorporated into the expectancy-value judgments model. Notably, the path between gratifications sought and attitude, and also the path between attitude and intention have become non-significant in the combined model. The amount of explained variance of intention did increased when both gratifications sought and expectancy-value judgments are incorporated into one model, however the standardized regression weight of the path between gratifications sought and intention is greater than 1, which might indicate multicollinearity in the measurement of intention. When there is a multicollinearity problem, a weight close to 1 indicates that two variables are close to being identical. When these two nearly identical latent variables are then used as causes of a third latent variable, the structural equation modeling method will have difficulty computing separate regression weights for the two paths from the nearly-equal variables and the third variable. Removing the covariance path between gratification sought and expectancy-value judgments solves the multicollinearity problem, but also results in a poor model fit. The amount of explained variance of mobile phone usage stays almost the same when gratifications sought and expectancy-value judgments are incorporated into one model, yet the path between expectancy-value judgments and mobile phone usage becomes non-significant. The results supported both the first and fourth hypothesis; gratifications sought and expectancy-value judgments are highly related but distinctly different judgments. Although gratifications sought and expectancy-value judgments are reciprocally influential, the results indicated that the magnitude of this

reciprocally influence has not much weight. The results indicated that gratifications sought affect intensions and exposure levels directly apart from any direct influence they might have through expectancy-value judgments. On the opposite, the results show that expectancy-value judgments affect attitude levels more directly apart from any direct influence they might have through gratifications sought. Apparently, in the context of explaining mobile phone behavior both gratifications sought as well as expectancy-value judgments are each responsible for a particular part of the explained variance of mobile phone behavior.

Results obtained from testing the validity of the causal structure of the combined gratifications sought and expectancy-value judgments model to predict mobile video phone use showed a poor fit, $\chi^2(477) = 1452.16$, $\chi^2/df = 3.04$, SRMR = .085, TLI = .904, RMSEA = .080 (CI: .075, .085).

Conclusion and Discussion

This study examined the nature of the relationship between expectancy-value judgments and gratifications sought within the context of mobile communication technology use. The results of this study support the notion by Babrow and Swanson (1988) that it is unlikely that expectancy-value judgments and gratifications sought are simply alternative measures of exactly the same underlying construct. They therefore do not support the assumption by Hendriks Vettehen (2002) that an elaborated alternative to the measurement of motivations may be found in the expectancy-value approach. Results show that within the context of mobile communication technology, expectancy-value judgments and gratifications sought are highly related but distinctly different measurements. Gratifications sought seem to be a better predictor for both intention and usage. Furthermore gratifications sought seem to tap affective response at a level

sufficient to render a separate measure of attitude a relatively unimportant predictor of intention. Gratifications sought appear to measure both hot affective and cold cognitive components whereas expectancy value judgments measure only cold cognitive beliefs and evaluations. Even though evidence of their differences is convincing, combining both constructs in the same model (TRA) does not seem to increase the predicting capability of the model.

Affection vs. cognition

The distinction between gratifications sought and expectancy-value judgments primarily lies in the different levels of affect they seem to measure. Babrow and Swanson (1988) already posed that as motives for action, gratifications sought are expected, positively valued exposure outcomes (avoidances are expected, negatively valued outcomes). Exposure motives, wants, or desires, integrate 'cold' cognitive and 'hot' affective responses to the object of exposure whereas expectancy-value judgments only represents 'cold' cognitive beliefs and evaluations. Barbrow and Swanson added the comment that this phenomenon might be domain specific. In their study they looked at TV-news 'usage' among student. The results of this study however support this notion as the path between attitude and intention is significant in the expectancy-value judgments model and non-significant in the gratifications sought model. And the current research looked at mobile telephone usage which is a very different form of media which gives a good indication that this difference between expectancy-value judgments and gratifications sought might be present in most situations. Apparently, expectancy-value calculations represent the 'cold' cognitive assessment and evaluation of long-term behavioral consequences; whereas gratifications sought also represent the affective 'hot' evaluation of consequences associated directly with the performance of the behavior (see also Triandis, 1980). Looking back at the research on television news by Palmgreen and Rayburn (1985), they suggested that gratifications

sought arise from expectancy value judgments. Almost all their results supported this notion except for the non significant association between attitude and exposure. With results from the current study in mind, the non significance of this relation can be easily explained by the presence of gratifications sought in the model. The hot components in the gratifications sought measurements already accounted for all the variance attitude explained. This also warrants a second look at LaRose Mastro and Eastin (2001) remark that: "attempts to distinguish gratifications from formulations involving outcome expectations were to no avail and failed to produce more robust explanations of media exposure". Although the constructs are clearly related, knowing that they differ in respects to the level of affect they measure could be very useful in explanations of media exposure.

Explaining vs. predicting mobile phone behavior

The results of this study show that both the gratifications sought model and expectancy-value judgments model are capable of explaining mobile phone behavior to a high degree in terms of usage, but are less successful in predicting new media adoption behavior. In the context of adoption other mechanisms or forces apparently drive people to adopt or not adopt a new media technology or service. In determining people's intention to use mobile phone normative expectations did not play a role whereas it seemed important in determining people's intentions to use mobile video phone. According to Aarts et. al (1998), besides social norm, past behavior assists in predicting future behavior. The individual creates "simplified decision rules" based on rationalizing the behavior the first time around. Thus, less mental effort is exerted when processing whether or not to engage in the behavior again. According to Ajzen (2002), prior experiences may play a major role in predicting future behavior. Even complex behaviors that are initially guided by explicit intentions and self regulation can, with sufficient repetition and

practice, habituate and become more or less automatic in the sense that they are performed quickly, outside of awareness, with minimal intention, and in parallel with other activities (Ajzen, 2002). Related to prior experience is the role of habit in predicting new media adoption behavior. Triandis (1980) suggested that apart from intention and behavioral control (which he conceptualized as the presence of facilitating objective conditions), the construct habit is to be considered as an additional predictor of behavior. Triandis defined habit as "situation-behavior sequences that are or have become automatic, so that they occur without self instruction. Both prior experience and habit are not considered as additional predictors of behavior within the expectancy-value judgments models and the gratifications sought model. A promising alternative model to determine new media adoption which incorporates both prior experience and habit strength might be the model of media attendance (LaRose & Eastin, 2004). A study by Peters (2007) showed that the model of media attendance was able to account mobile video phone intention for 40 percent with a significant direct effect of habit strength on mobile video intention and a significant indirect effect of experience on mobile video intention mediated by self-efficacy and expected outcomes.

Limitations of the study

Some limitations of this study should be acknowledged. First, the measures mobile phone usage and SMS usage were skewed to the upper end of the distribution. Additionally, the measure mobile video phone intention was skewed to the lower end of the distribution. The transformations applied to correct skew could have caused an over-interpretation of the difference between the characteristics of the variables. Furthermore, the mobile video phone intention correlation matrix (Table 7) showed that the indicators of novelty are also closely

related to the indicators of affection/sociability and the indicators of relaxation. This reflects lesser discriminant validity of the construct novelty.

Conclusions and further research

The results contribute to our understanding of the added value of incorporating gratifications sought versus expectancy-value judgments into Fishbein and Ajzen's (1975) attitude-behavior model to explain and predict new media technology use. Both the gratifications sought model and the expectancy-value judgments model are well suited to study the determinants of the level of a particular activity such as the amount of mobile phone usage. Therefore, both the gratifications sought model and the expectancy- value judgments model might clarify reasons for a particular part of current levels of mobile phone usage. The various combined models did not perform better in explaining mobile phone usage. Maybe the TRA model is not suited for this and other attitude behavior models might benefit from combined fitting of gratifications sought and expectancy-value judgments. Perhaps gratifications sought and expectancy value judgments do not combine well despite their apparent differences. Looking at their distinction in the measurement of affect, it might depend on the situation which of the two will make the better predictor. Future research should delve deeper into the distinction between gratifications sought and expectancy value judgments. Implementing them in different models and different situations to see where and how they fit best. Research has also indicated that people's reasons for usage are not always subjectively certain and highly consistent over time. According to Peters and Ben Allouch (2005) people are initially influenced more strongly by perceptions about expected use, but over time, due to the quick habituation of new media technology, initial expectations become latent. Therefore, in future research on mobile phone

behavior other predictors such as habit strength and prior experience should be considered as additional predictors of mobile phone behavior (Peters et al., 2006; Peters, 2007).

References

Aarts, H., Verplanken, B., & Van Knippenberg, A. (1998). Predicting Behavior From Actions inthe Past: Repeated Decision Making or a Matter of Habit? *Journal of Applied SocialPsychology, 28*(15), 1355-1374.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211.

Ajzen, I. (2002). Perceived Behavioral Control, Self-Efficacy, Locus of Control, and the Theory of Planned Behavior. *Journal of Applied Social Psychology, 32*(4), 665-683.

Babrow, A. S., & Swanson, D.L. (1988). Disentangling antecedents of audience exposure levels: Extending expectancy-value analyses of gratifications sought from television news. *Communication Monographs, 55*, 1-21.

Babrow, A. S. (1989). An Expectancy-Value Analysis of Student Soap Opera Audience. *Communication Research, 16*, 155-178.

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp.136-162). Thousand Oaks, CA: Sage.

Chronkhite, G. (1969). *Persuasion: Speech and behavioral change*. Indianapolis: Bobbs-Merrill.

European Commission (2006). *Special Eurobarometer: E-communications Household Survey*.

Retrieved October 9, 2006, from http://ec.europa.eu/information_society/policy/ecomm/doc/info_centre/studies_ext_consult/ecomm_household_study/eb_jul06_main_report_en.pdf

Fishbein, M., & Ajzen, I. (1975). *Beliefs, attitude, intention and behavior: An introduction to theory and research.* Reading, MA: Addison-Wesley.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 28*, 39-50.

Galloway, J. J., & Meek, F. L. (1981). Audience users and gratifications: An expectancy model. *Communication Research, 8*, 435-450.

Garson, G. D. (2006). *Statnotes: Topics in Multivariate Analysis.* Retrieved October 9, 2006, from http://www2.chass.ncsu.edu/garson/pa765/structur.htm

Greenberg, B. S. (1974). Gratifications of television viewing and their correlations for British children. In J. G. Blumler & E. Katz (Eds.), *The uses of mass communication: Current perspectives on gratifications research* (pp. 71-92). Beverly Hills, CA: Sage.

Hendriks Vettehen, P. (1998). Conceptualisering en operationalisering van het begrip 'motief' in Uses & Gratifications onderzoek. [Conceptualization and measurement of the motivation concept in Uses & Gratifications research]. Doctoral dissertation, University of Nijmegen, Nijmegen: ITS.

Hendriks Vettehen, P. G., & Van Snippenburg, L. B. (2002). Measuring Motivations for Media Exposure: A Thesis. *Quality and Quantity, 36*(3), 259-276.

Holbert, R. L., & Stephensen, M. T. (2002), Structural Equation Modeling in the Communication Sciences, 1995-2000. *Human Communication Research*, *28*(4), pp. 531-551.

Hoyle, R. H., & Panter, A. T. (1995). Writing about structural equation models. In R. H. Hoyle (Ed.), *Structural equation modeling: Comments, issues, and applications* (pp. 158-176). Thousand Oaks, CA: Sage.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1-55.

Infante, D. A., Rancer, A. S., & Womack D. F. (1997). Building communication theory (3rd ed.). Prospect Heights, IL: Waveland Press.

Katz, E., Blumler, J. G., & Gurevitch M. (1974). Utilization of mass communication by the individual. In J. G. Blumler & E. Katz (Eds.), *The uses of mass communications: Current perspectives on gratifications research* (pp. 19-34). Beverly Hills, CA: Sage.

LaRose, R., Mastro, D., Eastin, M.S., (2001). Understanding Internet Usage: A Social-Cognitive Approach to Uses and Gratifications. *Social Science Computer Review, 19*; 395-413.

LaRose, R, & Eastin, M. S. (2004). A social cognitive theory of Internet uses and gratifications: Toward a new model of media attendance. *Journal of Broadcasting and Electronic Media, 48*(3), 358- 377.

Lazarsfeld, P., & Stanton, F.N. (1944). *Radio Research, 1942-43*. New York: Duell, Sloan, and Pearce.

Lazarsfield, P. F., Berelson, B. and Gaudet, H. (1948). *The people's choice* (2nd ed.). New York: Columbia University Press.

Leung, L., & Wei, R. (1999). Seeking News from the Pager: A Value-Expectancy Study, *Journal of Broadcasting & Electronic Media, 43*(3), 299-315.

Leung, L., & Wei, R. (2000). More than just talk on the move: Uses and gratifications of the cellular phone. *Journalism and Mass Communication Quarterly*, *77*(2), 308-320.

LeDoux Book, C., & Barnett, B. (2006). PCTV: Consumers, Expectancy-Value and Likely Adoption. *Convergence: The International Journal of Research into New Media Technologies 12*(3), 325-339.

McLeod, J. & Becker, L. (1981). The uses and gratifications approach. In D. Nimmo & K. Sanders (Eds.), Handbook of political communication (pp. 67-99). Beverly Hills: Sage.
Palmgreen, P., Wenner, L.A., & Rayburn, J. D. (1980). Relations between gratifications sought and obtained: a study of television news. *Communication Research, 7*, 161-192.

Palmgreen, P., & Rayburn, J.D. (1982). Gratifications sought and media exposure: an expectancy-value model. *Communication Research, 9*, 561-580.

Palmgreen, P. (1984). Uses and gratifications: A theoretical perspective. In R. N. Bostrom (Ed.), *Communication Yearbook 8* (pp. 20-55). Beverly Hills, CA: Sage.

Palmgreen, P., & Rayburn, J.D. (1985). An expectency-value approach to media gratifications. In K.E. Rosengren, L. A. Wenner, & P. Palmgreen (eds.), *Media Gratifications Research* (pp. 61-72). London: Sage Publications.

Peters, O., & Ben Allouch, S. (2005). Always connected: A longitudinal field study of mobile communication. *Telematics and Informatics, 22*(3), 239-256.

Peters, O., Rickes, M., Jöckel, S. Von Criegern, C., & Van Deursen, A. (2006). Explaining and analyzing audiences: A social cognitive approach to selectivity and media use. *Communications 31*, 279-308.

Peters, O. (2007). *When Outcome Expectations Become Habitual: Explaining vs. Predicting New Media Technology Use from a Social Cognitive Perspective*. Manuscript submitted for publication.

Rayburn, J.D., & Palmgreen, P. (1984). Merging uses and gratifications and expectancy-value theory. *Communication Research, 11*, 537-562.

Rosegren, K. E. (1974). Uses and gratifications: a paradigm outlined. In J. G. Blumler and E. Katz (eds.). *The Uses of Mass Communication* (pp. 269-286). Beverly Hills: Sage.

Rosenberg, M. J. (1956). Cognitie structure and attitudinal effects. *Journal of Abnormal and Social Psychology, 53*, 367-372.

Ruggiero, T. E. (2000). Uses and Gratifications Theory in the 21st Century. Mass Communication & Society, 3(1), 3-37.

Triandis, H. C. (1980). Values, attitudes, and interpersonal behavior. In H. Howe & M. Page (Eds.), *Nebraska symposium on motivation 1979: Beliefs, attitudes, and values* (pp. 195-259). Lincoln, NE: University of Nebraska Press.

Van Leuven, J. (1981). Expectancy theory in media and message selection. *Communication Research, 8*, 425-434.

Waples, D., Berelson, B., & Bradshaw, E. R. (1940). *What reading does to people*. Chicago: The University of Chicago Press.

Table 1

Summary of Demographics, Mobile Phone Experience, and Mobile Phone Use

	Group I (n = 310) Mobile phone use	Group II (n = 320) Mobile video phone adoption
Gender : Male	44%	44%
Female	56%	56%
Age[a]: < 20	2%	2%
20 – 40	37%	38%
40 – 60	49%	49%
60 >	12%	11%
Education[b]: High school or less	34%	30%
Vocational education	26%	29%
Bachelor degree	31%	31%
Master degree	9%	10%
Mobile phone experience (years)[b]	M = 6.60, SD = 2.89	M = 6.80, SD = 3.15
Mobile phone use (times a day)[d]	M = 2.88, SD = 3.97	M = 3.42, SD = 4.76

Note. [a]$\chi^2(3, N = 630) = .11, p > .05$. [b]$\chi^2(3, N = 630) = 1.56, p > .05$. [c]$t(644) = -.86, p > .05$.

[d]$t(644) = -1.54, p > .05$.

Table 2

Core Expectancy-Value and Gratification Sought Items to Explain Mobile Phone Use

Mobility
Because I can use it whenever it suits me (MOB1)
Because it allows me to instantly call someone wherever I am (MOB2)
Because I can use it everywhere (MOB3)
Because I can take it with me anywhere (MOB4)
Affection/Sociability
To strengthen my relationship with family and friends (AS1)
To maintain contact with family and friends (AS2)
To keep my family and friends informed (AS3)
Permanent Access
To be accessible to others whenever and wherever I am (PA1)
To be instantly accessible wherever I am (PA2)
Instrumentality
To make appointments (INS1)
To organize matters (INS2)
To arrange affairs (INS3)

Table 3

Core Expectancy-Value and Gratification Sought Items to Predict Mobile Video Phone Use

Novelty
To try out something new (NOV1)
Because it's something new (NOV2)
To communicate in a new way (NOV3)
Because it adds something new (NOV4)
Fashion/Status
To have it as a status symbol (FS1)
To look stylish (FS2)
To distinguish myself from others (FS3)
Affection/Sociability
To strengthen my relationship with family and friends (AS1)
To maintain contact with family and friends (AS2)
To keep my family and friends informed (AS3)
Relaxation
To have fun (RLX1)
To enjoy (RLX2)
To have a pleasant conversation (RLX3)

Table 4

Correlation matrix of the observed gratifications sought variables, subjective norm, mobile phone usage, and SMS usage

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	MOB1	-	.68**	.70**	.56**	.38*	.37**	.37**	.43**	.50**	.47**	.46**	.45**	.41**	.39**	.34**	.44*	.48**	.45**	.15**	.21**	.26**
2	MOB2		-	.74**	.69**	.41**	.41**	.46**	.57**	.62**	.47**	.46**	.46**	.42**	.38*	.33**	.51**	.50**	.50**	.09	.25**	.23**
3	MOB3			-	.71**	.41**	.36**	.40**	.49**	.57**	.44**	.46**	.47**	.43**	.39**	.36**	.43**	.46**	.43**	.10	.20**	.21**
4	MOB4				-	.38**	.33**	.39**	.46**	.52**	.38**	.42**	.41**	.38**	32**	.31**	.47**	.47**	.45**	.15**	.19**	.14*
5	SOC1					-	.87**	.76**	.47**	.46**	.66**	.67**	.70**	.36**	.32**	.40*	.39**	.40**	.40**	.20**	.23**	.27**
6	SOC2						-	.82**	.45**	.48**	.63**	.67**	.68**	.39**	.32*	.36	.43**	.44**	.42**	.21**	.19**	.30**
7	SOC3							-	.46**	.48**	.61**	.61**	.64**	.42**	.35**	.38**	.42**	.41**	.43**	.21**	.17**	.33**
8	PA1								-	.86**	.43**	.48**	.46**	.41**	.38**	.32*	.50**	.48**	.50**	.18**	.22**	.17**
9	PA2									-	.47**	.52**	.50**	.44**	.38**	.36**	.50**	.47**	.51**	.17**	.21**	.21**
10	INS1										-	.84**	.80**	.39**	.28**	.38**	.51**	.51**	.52**	.12*	.40**	.31**
11	INS2											-	.88**	.40**	.34*	.38**	.53**	.55**	.55**	.18**	.38**	.31**
12	INS3												-	.38**	.31**	.39**	.47**	.49**	.48**	.17**	.38**	.29**
13	ATT1													-	.56**	.58**	.39**	.39**	.43**	.11	.22**	.19**
14	ATT2														-	.44**	.30**	.32**	.31**	.24**	.12*	.14*
15	ATT3															-	.25**	.29**	.30**	.07	.06	.32**
16	INT1																-	.86**	.88**	.13*	.31**	.28**
17	INT2																	-	.89**	.09	.31**	.29**
18	INT3																		-	.14*	.33**	.30**
19	SN																			-	.09	.07
20	TELE																				-	.22**
21	SMS																					-

Note. * $p < .05$. ** $p < .01$.

Table 5

Descriptive Statistics, Factor Loadings, Squared Multiple Correlations and Cronbach's Alpha of the Observed Indicators to Explain Mobile Phone Use

	Gratifications Sought				Expectancy-Value Judgments			
	M^a	*SD*	β	R^{2c}	M^b	*SD*	β	R^{2c}
Usage				.76				.69
Mobile phone (*typical weekday)*	2.88	3.97	.61	.37	2.88	3.97	.60	.35
SMS (typical weekday)	1.64	2.33	.50	.25	1.64	2.33	.51	.26
Intention (α = .95)				.51				.31
INT1	2.03	1.80	.93	.86	2.03	1.80	.92	.85
INT2	2.11	1.88	.93	.87	2.11	1.88	.93	.86
INT3	2.12	1.87	.95	.91	2.12	1.87	.95	.91
Attitude (α = .77)				.48				.57
ATT1	4.70	1.40	.83	.69	4.70	1.40	.83	.69
ATT2	4.62	1.40	.67	.44	4.62	1.40	.67	.45
ATT3	4.16	1.47	.70	.48	4.16	1.47	.69	.47
Mobility (α = .89/.87)				.58				.82
MOB1	5.49	1.73	.78	.61	11.80	5.37	.78	.61
MOB2	5.38	1.79	.86	.74	9.08	7.03	.81	.65
MOB3	5.63	1.48	.87	.76	10.52	6.38	.78	.61
MOB4	5.83	1.36	.79	.62	8.66	7.34	.81	.66
Affection/Sociability (α = .93/.91)				.60				.52

AS1	3.19	1.88	.91	.83	5.30	6.41	.84	.70
AS2	3.49	1.94	.95	.90	1.82	5.09	.92	.85
AS3	3.75	1.94	.86	.74	2.37	5.70	.73	.54
Permanent Access (α = .93/.89)				.55				.59
PA1	4.93	2.01	.90	.81	7.45	7.97	.93	.86
PA2	5.06	1.92	.96	.92	6.30	7.77	.87	.75
Instrumentality (α = .94/.91)				.71				.62
INS1	4.10	1.93	.88	.77	4.38	6.68	.83	.69
INS2	4.00	1.93	.95	.91	4.72	6.45	.94	.89
INS3	3.75	1.93	.92	.84	3.46	6.09	.88	.78

Note. [a]The means and standard deviations of gratifications sought are for 7 point scales ranging from 1 = "never applies to me" to 7 = "always applies to me".

[b]The means and standard deviations of expectancy-value judgments are for 37 point scales (-18 to +18) formed from the product of two seven point scales: evaluations ranging from -3 = "extremely bad feature" to +3 = "extremely good feature", and beliefs ranging from 0 = "definitely does not have feature" to 6 = "definitely does have feature".

[c]The R^2 of a latent dependent predictor is the percent of the variance in the latent dependent variable accounted for by the latent independent variable. The R^2 of an observed indicator is the estimated percent variance explained in that variable. In other words, the error variance of a variable is approximately 1 minus the percent of the variance of the variable itself.

Table 6

Correlation matrix of the observed expectancy-value judgments variables, subjective norm, mobile phone usage, and SMS usage

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	MOB1	-	.58**	.66**	.63**	.40*	.34**	.37**	.50**	.54**	.46**	.48**	.40**	.49**	.44**	.39*	.41**	.45**	.43**	.11	.19**	.17**
2	MOB2		-	.61**	.63**	.55**	.42**	.45**	.54**	.55**	.54**	.54**	.48**	.44**	.37**	.35**	.45**	.46**	.48**	.13*	.19**	.24**
3	MOB3			-	.66**	.38**	.38**	.39**	.55**	.57**	.46**	.49**	.43**	.48**	.40**	.41**	.42**	.39**	.42**	.18**	.15**	.18**
4	MOB4				-	.43**	.38**	.44**	.52**	.56**	.49**	.54**	.44**	.41**	.39**	.34**	.38**	.38**	.38**	.16**	.15**	.17**
5	SOC1					-	.57**	.67**	.44**	.41**	.59**	.51**	.47**	.43**	.39**	.38**	.32**	.32**	.32**	.23**	.18*	.30**
6	SOC2						-	.78**	.41**	.42**	.52**	.51**	.56**	.34**	.33**	.36**	.20**	.22**	.22**	.18*	.06	.27**
7	SOC3							-	.35**	.40**	.59**	.62**	.58**	.36**	.35**	.37**	.20**	.22**	.23**	.23**	.10	.32**
8	PA1								-	.80**	.43**	.41**	.38**	.43**	.41**	.34**	.32**	.35**	.35**	.23**	.13*	.13*
9	PA2									-	.53**	.48**	.46**	.42**	.35**	.32**	.35**	.37**	.36**	.23**	.15**	.14
10	INS1										-	.77**	.72**	.44**	.36**	.39**	.33**	.36**	.35**	.15**	.33**	.30**
11	INS2											-	.84**	.42**	.34**	.40**	.32**	.34**	.34**	.15*	.33**	.26**
12	INS3												-	.39**	.31**	.36**	.25**	.27**	.26**	.17**	.31*	.25**
13	ATT1													-	.56**	.58**	.39**	.39**	.43**	.11	.22**	.19**
14	ATT2														-	.44**	.30**	.32**	.31**	.24**	.12*	.14*
15	ATT3															-	.25**	.29**	.30**	.07	.06	.32**
16	INT1																-	.86**	.88**	.13*	.31**	.28**
17	INT2																	-	.89**	.09	.31**	.29**
18	INT3																		-	.14*	.33**	.30**
19	SN																			-	.09	.07
20	TELE																				-	.22**
21	SMS																					-

Note. * $p < .05$. ** $p < .01$.

Table 7

Correlation matrix of the observed expectancy-value judgments variables, subjective norm, and mobile video phone intention

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	NOV1	-	.68**	.49**	.62**	.31*	.39**	.41**	.44**	.47**	.49**	.55**	.62**	.59**	.31**	.21**	.31**	.29**	.45**	.44**	.44**
2	NOV2		-	.53**	.67**	.31**	.42**	.41**	.53**	.61**	.64**	.64**	.70**	.66**	.32*	.26**	.37**	.35**	.49**	.49**	.49**
3	NOV3			-	.45**	.23**	.36**	.33**	.49**	.59**	.53**	.71**	.62**	.55**	.28**	.18**	.31**	.21**	.52**	.49**	.51**
4	NOV4				-	.26**	.41**	.45**	.44**	.45**	.50**	.55**	.58**	.59*	30**	.27**	.33**	.24**	.40**	.40**	.39**
5	FS1					-	.60**	.65**	.42**	.29**	.34**	.25**	.35**	.40**	.12**	.19**	.17**	.21**	.17**	.18**	.17**
6	FS2						-	.64**	.56**	.47**	.47**	.36**	.49**	.52**	.18**	.22**	.26**	.17**	.26**	.29**	.30**
7	FS3							-	.50**	.46**	.45**	.33**	.42**	.49**	.18**	.25**	.21**	.17**	.21**	.19**	.18**
8	AS1								-	.67**	.72**	.52**	.63**	.64**	.23**	.23**	.26**	.28**	.35**	.35**	.37**
9	AS2									-	.80**	.59**	.61**	.57**	.23**	.20**	.29**	.25**	.42**	.38**	.38**
10	AS3										-	.57**	.68**	.63**	.29**	.25**	.36**	.32**	.46**	.44**	.44**
11	RLX1											-	.76**	.69**	.38**	.28**	.41**	.21**	.51**	.48**	.50**
12	RLX2												-	.75**	.38**	.28**	.41**	.26**	.50**	.51**	.54**
13	RLX3													-	.39**	.34**	.46**	.24**	.42**	.42**	.45**
14	ATT1														-	.55**	.59**	.10	.23**	.24**	.24**
15	ATT2															-	.37**	.08	.18**	.17**	.18**
16	ATT3																-	.10	.22**	.21**	.22**
17	SN																	-	.49**	.48**	.45**
18	INT1																		-	.94**	.92**
19	INT2																			-	.95**
20	INT3																				-

Note. * $p < .05$. ** $p < .01$.

Table 8

Descriptive Statistics, Factor Loadings, Squared Multiple Correlations and Cronbach's Alpha of the Observed Indicators to Predict Mobile Video Phone Intention

	Expectancy-Value Judgments			
	M[a]	*SD*	β	R^{2b}
Intention (α = .98)				.22
INT1	1.71	1.40	.93	.86
INT2	1.69	1.33	.99	.99
INT3	1.64	1.32	.98	.97
Attitude (α = .75)				.30
ATT1	3.32	1.26	.85	.72
ATT2	3.36	1.29	.62	.39
ATT3	3.67	1.37	.70	.48
Novelty (α = .84)				.89
NOV1	3.87	5.98	.76	.58
NOV2	3.39	5.74	.86	.74
NOV3	2.04	6.16	.69	.47
NOV4	3.47	5.39	.75	.56
Fashion/Status (α = .83)				.40
FS1	.67	2.87	.76	.57
FS2	.73	3.27	.79	.63
FS3	.64	3.13	.83	.69
Affection/Sociability (α = .89)				.70

AS1	1.13	4.57	.79	.63
AS2	1.99	5.27	.87	.75
AS3	2.03	5.07	.92	.84
Relaxation (α = .89)				.96
RLX1	3.46	5.71	.83	.69
RLX2	2.78	5.26	.90	.81
RLX3	2.24	5.18	.84	.71

Note. [a]The means and standard deviations of expectancy-value judgments are for 37 point scales (-18 to +18) formed from the product of two seven point scales: evaluations ranging from -3 = "extremely bad feature" to +3 = "extremely good feature", and beliefs ranging from 0 = "definitely does not have feature" to 6 = "definitely does have feature".

[b]The R^2 of a latent dependent predictor is the percent of the variance in the latent dependent variable accounted for by the latent independent variable. The R^2 of an observed indicator is the estimated percent variance explained in that variable. In other words, the error variance of a variable is approximately 1 minus the percent of the variance of the variable itself.

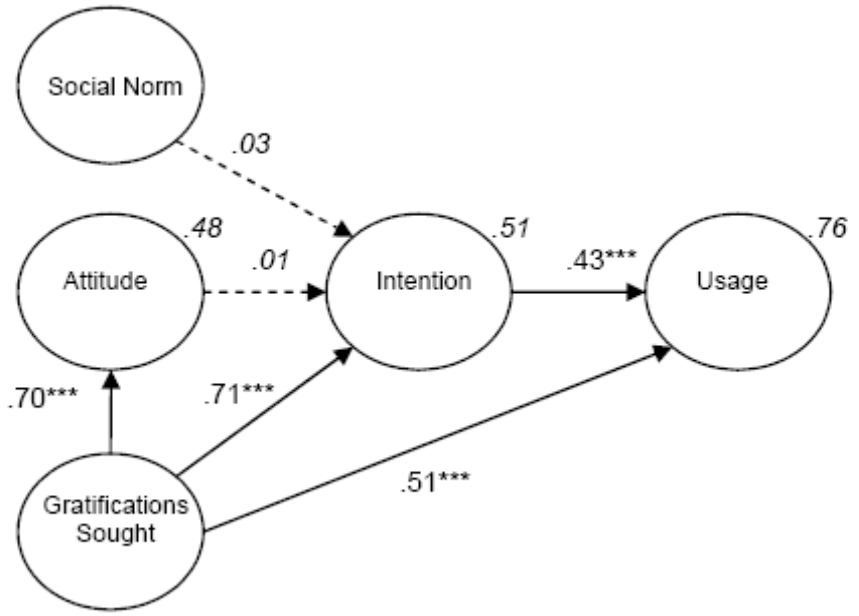

Figure 1. Standardized path coefficients Gratifications Sought Model to explain mobile phone usage.
Note. *** $p < .001$

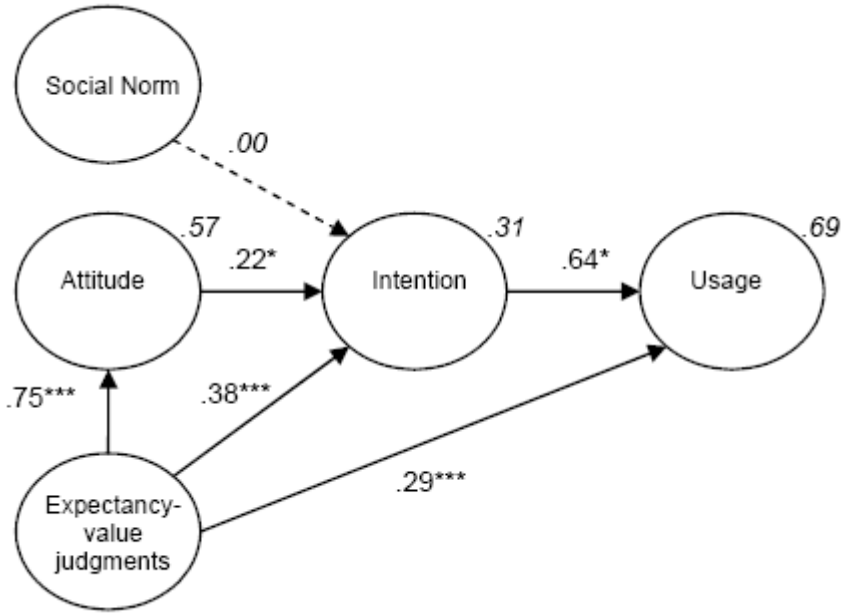

Figure 2. Standardized path coefficients Expectancy-value judgments Model to explain mobile phone usage.
Note. * $p < .05$, *** $p < .001$

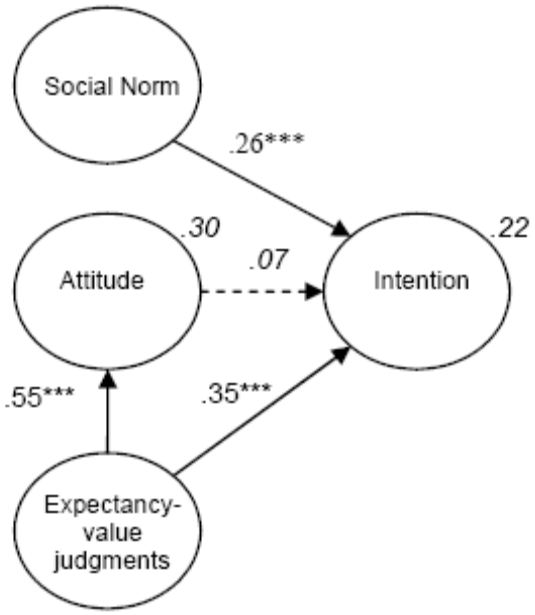

Figure 3. Standardized path coefficients Expectancy-value judgments Model to predict mobile video phone intention.
Note. *** $p < .001$

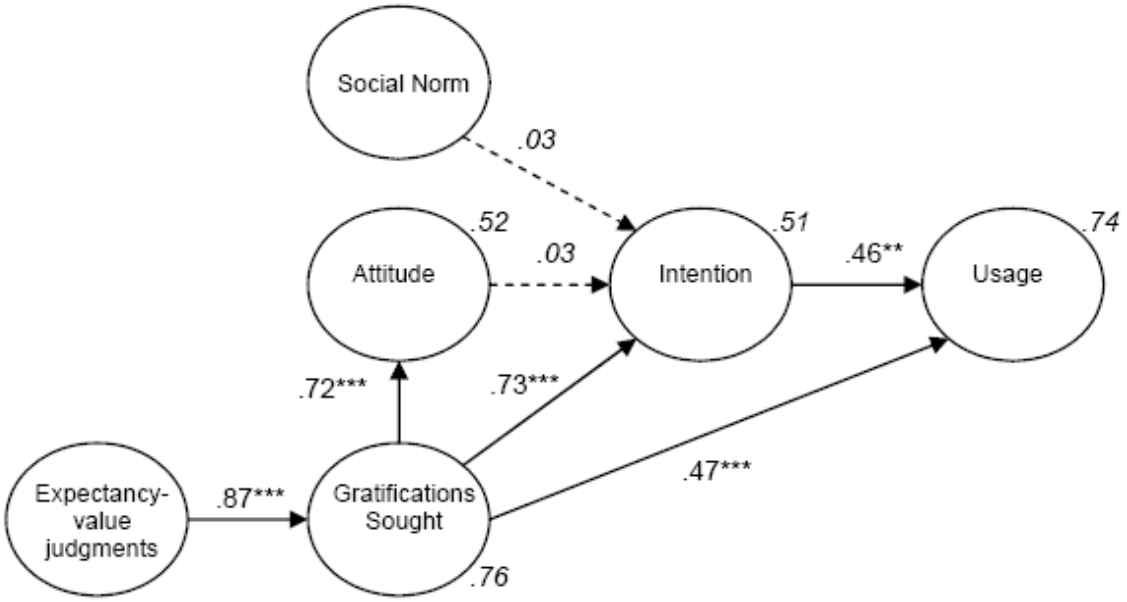

Figure 4. Standardized path coefficients Mediated Model to explain mobile phone usage.
Note. ** p < .01, *** p < .001

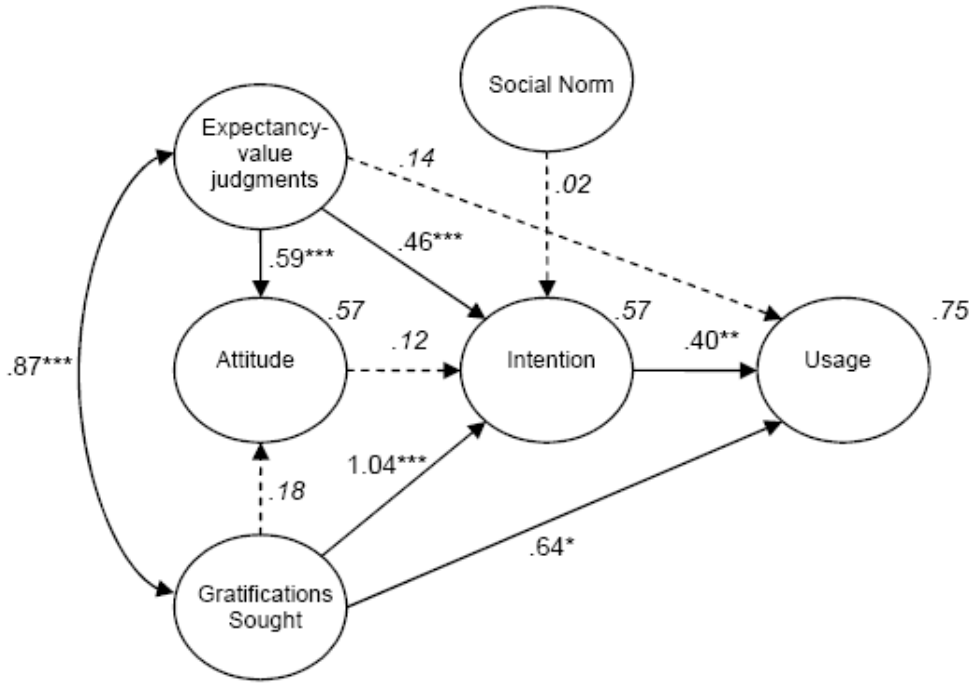

Figure 5. Standardized path coefficients Combined Model to explain mobile phone usage.
Note. * p < .05, ** p < .01, *** p < .001