Report on Visit to Support the Research Project: “Understanding Cybercafé Users’ Willingness to Pay in China” as Part of the Amy Mahan Research Fellowship Program

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Executive Summary

This report outlines the data analysis and activities conducted as part of a research consultancy visit to China for the project entitled “Understanding Cybercafé Users’ Willingness to Pay in China” as Part of the Amy Mahan research fellowship program. The purpose of the visit was to conduct in-depth analysis of data conducted on cybercafé users in China and, specifically, to establish the psychological factors related to internet café usage using an integrated theoretical model. During the visit I presented two research colloquiaums outlining the integrated model and also some research on self-regulation and self-control which formed a backdrop and a precursor to the analyses. The data were then analysed according to the integrated model incorporating hypotheses from self-determination theory (Deci & Ryan, 2000) and the theory of planned behaviour (Ajzen, 1991). The aim was to predict cybercafé use and willingness to pay for future cybercafé use among a sample of users. The model also included a number of control variables including cybercafé experience, internet experience, types of activities typically done in internet cafes, educational level, gender, age, and location (urban vs. rural).

We identified a means of analysing the self-determination data by constructing variables representing the extent to which certain salient autonomous, competence, and relatedness goals were satisfied by the users internet use. Data were analysed using structural equation modelling and provided some support for the hypothesized model, with satisfaction of psychological need for autonomy predicting intentions and willingness to pay via the mediation of attitudes and intentions. The research has implications for interventions which have been elaborated upon in the report. Recommendations for future research include incorporating an objective measure of behaviour and using the present results to design interventions to change internet behaviour, particularly among those who tend to overuse or misuse the internet and cybercafés.
Keywords: theory of planned behaviour, self-determination theory, psychological need satisfaction, autonomy, competence, relatedness, intentions, motivation, willingness to pay, cybercafé, internet
Introduction

This report documents my visit to China in November 2010 to provide theoretical and data analysis advice to the China research team working on the “Understanding Cybercafé Users’ Willingness to Pay in China” as Part of the Amy Mahan Research Fellowship Program. The global aim of the project is to evaluate the impact of internet cafes (Cybercafés) in China with comparisons between home and Cybercafé usage, urban and rural communities, and user and non-user group perceptions as specific sub-aims of the project. I will initially provide a brief overview of the project and its theoretical basis and background. This will provide substantial grounding in the perspectives taken in the project and how they will be brought to bear on the data collected. Next, I will outline the specific activities undertaken during the course of my visit and the findings of the data analyses conducted. This will be divided into two parts. The first part is the major analysis focusing on an integrated theoretical model adopting social cognitive (the Theory of Planned Behaviour, Ajzen, 1985, 1991) and motivational (Self-Determination Theory, Deci & Ryan, 1985, 2000) theories to predict key outcome variables relating to internet café use in China: intention to use Cybercafés. The second part focuses on additional analyses conducted during the course of the visit and outlines some possible implications for the research in terms of advice to promote ‘healthy’ internet usage and possible designs for interventions to promote adaptive internet usage and reduce maladaptive use (e.g., over-use of games and chat rooms).

Part 1: An Integrated Model of Cybercafé Use in China

Background

Globally, China has the largest number of internet users and also harbours the largest number of internet public-access venues (e.g., cybercafés). As a result of the massive popularity of internet use, a reasonably large minority of users regularly access the internet (35%) through privately-owned public-access internet venues, known as cybercafés. These cafés offer relatively easy, inexpensive access to the internet for those who do not have access
at home and, particularly, for those who wish to use the internet away from home, such as young people whose parents may restrict access at home or who want an environment in which to access the internet in an environment more conducive to their needs. However, cybercafés have assumed a general reputation in the Chinese media and culture as venues where individuals, particularly young people, indulge in computer gaming and other online pursuits that are considered not to be constructive or appropriate in excess such as access to chat rooms. The media reports that many young people are becoming ‘addicted’ to these pursuits distracting them from other activities deemed essential for their education and development, although there is little ‘hard evidence’ for the numbers and definition of the addiction. Nevertheless, this has been viewed as a serious social problem, particularly among young people, and this has led to attempts to regulate the cybercafé industry by the Chinese government.

The response of the Chinese government has been to increase the regulation of cybercafés by using incentives and penalties to encourage small privately-owned cybercafés to become members of one of the 10 large-chain cybercafé operators. However, while there may have been a general shift in the membership of smaller cybercafés to the large-chain operators, there is little evidence that the operators have effectively become the dominate force in the cybercafé market and there is anecdotal evidence to suggest that the industry still remains dominated by smaller individual operators. The preponderance of smaller operators in the cybercafé industry suggests that the regulation efforts have not led to a majority of users who access the internet through cybercafés to gain access the large chains and their choice of venues and activities remain largely unregulated. In addition to the potential problems, perceived or real, highlighted by the media such as internet ‘addiction’ and maladaptive use of the internet at the expense of important educational activities, there is also a lack of knowledge of the demographic, environmental, social, and psychological factors that lead individuals, particularly young people, to use cybercafés and the motives and incentives that drive them to
access the internet at these values. The global aim of the current project is, therefore, to examine the personal objectives that individuals’ achieve through public access to the internet through cybercafé usage. The project is driven by a general research framework (Proenza, 2010). The aim was to examine the factors influencing internet use among individuals in China and, importantly, intentions to engage in internet use in the future and willingness to pay to use the internet in the future. There is also an aim to examine whether these influences differ across those classified as ‘overusers’ and those classified as normal users.

This report will outline the main approaches to addressing these questions and identify the theories and models used to evaluate the personal motives and needs that users achieve through their use of cybercafés. These approaches will adopt perspectives from social psychology and, in particular, research on motivation and psychological needs. Two theoretical approaches have been adopted to examine the personal motives and needs that internet cybercafé users seek to fulfil through their internet use and how that relates to their plans or intentions to visit cybercafés in the future: the TPB and SDT. These perspectives will be outlined in the next section and their relevance to personal goals for cybercafé users and individuals who overuse, misuse, or become ‘addicted’ to internet use. In addition to identifying the personal goals and motives, the project also aims to identify how these factors relate to intentions to use the internet in cybercafés and willingness to pay to use the internet.

Theoretical Approach

Background. Research into the antecedent factors and processes that underpin people’s motivation to engage in intentional, social behaviours like internet usage has been conducted from an array of different theoretical perspectives (Conner & Norman, 2005; Johnston, 2005; Orbell, 2004). A number of these perspectives have their roots in the social cognitive tradition and aim to identify the processes by which belief-based perceptions such as attitudes, expectancies, beliefs, judgements, norms, and expectations lead to intentional behaviour. Prominent among these theories is the planned behaviour (TPB, Ajzen, 1985), which was
developed as a systematic explanation of volitional behavioural engagement based on a set of belief-based perceptions, the deliberative formation of intentions, and their enactment. This approach has been shown to account for substantial variance in behaviour in a number of contexts (Armitage & Conner, 2001; Conner & Armitage, 1998). In contrast, *organismic* approaches to motivation have focused on the contextual contingencies and dispositional orientations that give rise to motivational states and subsequent behaviour. One such approach is self-determination theory (SDT, Deci & Ryan, 1985, 2000), a leading theory of human motivation that has been shown to be efficacious in identifying the contingencies that affect motivation and behaviour in numerous domains (Deci & Ryan, 1985, 2000). Both of these perspectives are likely to have something to offer in terms of identifying the motives that individuals tend to pursue in their internet use and the factors that influence or predict internet use in future.

**Proposing an Integrated Model.** While both theories have been shown to be effective in accounting for variation in social behaviour (e.g., Chatzisarantis, Hagger, Biddle, Smith, & Wang, 2003; Hagger, Chatzisarantis, & Biddle, 2002b; Sheeran & Orbell, 1998), they have shortcomings in terms of their predictive utility. SDT does not chart the exact process by which motivational orientations are converted into intentions and behaviour and the TPB has provided an adequate basis for the explanation of variance in intentions and social behaviours without identifying the origins of the antecedents of the behaviours (Chatzisarantis, Hagger, & Smith, 2007). For the current project on internet and cybercafé use, we have adopted an integrated approach. Specifically, we propose that both theories can serve to assist in overcoming these shortcomings by integrating constructs from these two prominent social psychological theories in a unified model of motivation to explain behaviour. The basis for integration is offered by Deci and Ryan (1985) and Vallerand (1997) who state that motivational theories can offer explanations for the origins of social cognitive beliefs and expectations outlined in models of intention. Specifically, the role of self-determined
motivation in influencing intentions to use cybercafés and a behavioural indicator, in this case, willingness to pay for cybercafé use, will be proposed our an integrated model.

Component Theories of the Integrated Model. Prior to outlining the rationale behind the theoretical integration, a brief explanation of the hypotheses of each component theory is warranted. The TPB posits that an individual’s intention, a motivational construct, is the most proximal influence on social behaviour and mediates the effect of three sets of belief-based perceptions on behaviour: attitudes, subjective norm, and PBC (PBC). Attitudes are a person’s overall positive or negative evaluation of the target behaviour. Subjective norms summarise a person’s expectation that significant others want them to engage in the target behaviour. PBC comprises a person’s overall judgment whether they have the ability and resources available to engage in the target behaviour. Meta-analyses conducted on the substantial body of research applying the TPB to social behaviour have supported the hypothesized effects (e.g., Armitage & Conner, 2001; Hagger et al., 2002b).

SDT (SDT) takes a different approach to understanding social behaviour. While the TPB identifies the immediate belief-based constructs thought to determine engagement in social behaviours, SDT focuses on the quality of an individual’s motivation in a given context and the environmental factors that affect motivation in that context (Deci & Ryan, 1985; Ryan & Connell, 1989). Central to the theory is the distinction between self-determined versus controlled types of motivation (Deci & Ryan, 2000). Individuals whose motivation is self-determined experience a sense of personal choice when behaving and feel their chosen actions represent their true self. Those whose motivation is not self-determined feel controlled, pressured, or coerced into behaving by external forces. SDT research has shown that self-determined motives positively affect behavioural engagement (Chatzisarantis et al., 2003) and that self-determined motivation can be supported or thwarted by environmental contingencies, such as the support offered by salient others, often evaluated by perceived autonomy support (Hagger et al., 2007; Reeve, Bolt, & Cai, 1999).
In addition to the distinction between self-determined and controlled forms of motivation, SDT proposes that motivational states arise from individuals’ propensity to pursue behaviours and activities that satisfy psychological needs. According to the theory, individuals strive to satisfy three basic psychological needs: autonomy, competence, and relatedness. The need for autonomy reflects an individual’s desire to be a causal agent in their world, and if a behaviour satisfies the need for autonomy, the individual feels a sense of personal choice, free-will, and ‘ownership’ over their actions. The need for competence is satisfied through the pursuit of autonomously motivated behaviours that lead to perceptions of success and control over outcomes. The need for relatedness reflects innate desires to be supported by others and be supportive of others when engaging in behaviours. SDT states that these needs are complementary. For example, the need for autonomy does not reflect overarching desires to be independent, but rather interdependent through choice and cooperation as implied by the need for relatedness. Similarly, behaviours that provide a sense of personal control and efficacy are likely to satisfy the need for competence, but only if competence in that context is relevant to the individual’s sense of true self or autonomy. Thus for optimal psychological functioning and persistence in goal directed behaviours, the social context must support all three psychological needs, although the satisfaction of the need for autonomy takes precedence and is deemed most important (Deci & Ryan, 2000).

**Integrating the Theories.** Recently, researchers have sought to integrate SDT and the TPB because these approaches are deemed to provide complimentary explanations of the processes that underlie motivated behaviour. Several researchers have integrated these approaches in mediational models to illustrate the processes that lead to decisions to engage in social behaviour. For example, self-determined motives from SDT have been shown to predict intention, the most proximal influence on behaviour (e.g., Ntoumanis, 2001; Sarrazin, Vallerand, Guillet, Pelletier, & Cury, 2002; Standage, Duda, & Ntoumanis, 2003; Wilson & Rodgers, 2004). However, some researchers have tested a more complete model in which the
forms of self-determined motivation from SDT predict intentions via the mediation of the proximal antecedents of intentions and behaviour from the TPB, namely, attitudes and PBC. This ‘motivational sequence’ has been supported in a number of studies lending empirical support for the integration of the TPB and SDT (e.g., Hagger, Chatzisarantis, & Biddle, 2002a; Palmeira et al., 2007; Shen, McLaughtry, & Martin, 2007). These studies have tested the proposed motivational sequence and shown that the effects of self-determined motivation from SDT on behavioural intentions and social behaviour are fully or partially mediated by attitudes and PBC.

The proposition that SDT can augment social cognitive theories such as the TPB has been suggested previously, but has only recently received empirical support (Chatzisarantis, Biddle, & Meek, 1997). Numerous authors have proposed that organismic theories of motivation like SDT could potentially offer explanations for the origins of constructs in social cognitive theories. As Andersen, Chen, and Carter (2000) state, “most information processing [social cognitive] models are silent on matters central to SDT” (p. 272). Deci and Ryan (1985) have suggested that social cognitive theories identify the immediate antecedents of behaviour, but neglect the origins of the antecedents: “Cognitive theories begin their analysis with… a motive, which is a cognitive representation of some future desired state. What is missing, of course, is the consideration of the conditions of the organism that makes these future states desired” (p. 228). SDT may therefore provide an insight into the origins of the proximal antecedents of intentions and health-related behavioural engagement in theories like the TPB.

Ajzen (1985) proposed that attitudes and PBC comprise beliefs that a given social behaviour will result in certain outcomes and that the behaviour is under control of the individual. However, like many social cognitive theories, the TPB was not explicit in the reasons that these beliefs are pursued (Deci & Ryan, 1985). For example, the theory does not make the distinction between beliefs about outcomes that people choose to seek and are related to their true sense of self (self-determined outcomes) and beliefs about outcomes that people
feel compelled to engage in out of a sense of obligation or duty (controlled outcomes). Some beliefs about outcomes could be interpreted as either self-determined or controlled reasons for participating in the behaviour (e.g., “I access the internet because it is important to my identity”). For some individuals identification with those who are cybercafé users is important and may be self-determined they value being part of a group with shared interests and they view it as satisfying their need for autonomy because it is representative of their true self (self-determined). For others, identifying with other cybercafé users may something they feel they have to do for others, perhaps to ‘fit in’ and not be a ‘social outcast’ (controlling). SDT offers an interpretation of whether these beliefs about outcomes are interpreted as self-determined or controlling. SDT suggests that motivation to engage in internet activity for self-determined or controlling reasons predisposes individuals to form beliefs that are congruent or aligned with these motives. On this basis, self-determined motives are hypothesised to be a distal influence on attitudes and PBC. Attitudes and PBC are, in turn, proximal influences on the formation of intentions to engage in future health-related behaviour.

For example, young people who cite self-determined motives to participate in internet activities in cybercafés will tend to seek out situations and behaviours that are consistent with these motives. As a consequence, they are likely to form beliefs about outcomes for participating in the behaviour that are congruent with these self-determined motives. The motives from SDT should therefore be viewed as a bias that predisposes people to forming and interpreting beliefs about outcomes for participating in internet-related behaviours as self-determined or controlling. Self-determined motives are less like to be related to subjective norms, as the latter reflects beliefs that are largely controlling in nature. However, controlled motives are likely to be linked to subjective norms because they reflect pursuing the behaviour due to socially-defined pressures.

**Applying the Integrated Model.**
In the present project, the integrated model is advantageous as it will identify the important belief-based factors and psychological need-based factors that influence intentions to use cybercafés and willingness to pay for cybercafé use. The adoption of SDT is important in this regard because it will enable the research team to identify whether individuals fulfil important motives that satisfy their psychological needs and hence provide information as to whether these pursuits are congruent with their growth and fulfilment of optimal functioning.

In contrast, if cybercafé use is chronically related to pursuing controlled motives and reasons such as doing so because they feel they have no other options for self-expression, because they feel can’t help themselves because they have become obsessed with achieving high scores or certain status on online games or systems, or because they feel they must to ‘fit in’ or be part of a group, then these motives are likely to be related to internet addiction or maladaptive internet use. Relevant here is Vallerand and colleagues’ (2003) model of obsessive or harmonious passion. In this model, Vallerand et al. posit that individuals that pursue and become engrossed in activities do so in a ‘passionate’ manner. However, harmonious passion reflects the pursuit of activities for autonomous reasons and because the activities are fundamental to fulfilling psychological needs. In contrast, obsessive passion reflects activity pursuit because one feels that one must do so in order to ‘fit in’ or because the activity has become something they feel they should do in order to please others or quell feelings of guilt or shame. There reflect more controlled and non-self-determined reasons. The behavioural pursuit is also at the expense of other more adaptive and fulfilling activities. The essential distinction is that in harmonious passion the person controls the activity while in obsessive passion the activity controls the person. Obsessive passion is likely to be associated with addictive behaviours, such as internet addiction.

In the integrated model of cybercafé use, we proposed that satisfaction of psychological needs would lead to positive attitudes and perceptions of control with respect to internet use. This is related to the initial part of the integrated model offered by Hagger and co-workers’
(2006) in which the extent to which psychological needs are satisfied influence the immediate factors leading to intentional behaviour from the TPB. Specifically, we expected needs for self-determination or autonomy to lead to autonomous motivation which, in turn, leads to the formation of positive attitudes and perceptions of control toward the behaviour. We also hypothesized that needs for competence and relatedness will predict attitudes and PBC. In addition, in keeping with the integrated model, we expected that attitudes and perceptions of control would be the strongest contributors to intentions to engage in internet use in cybercafés in accordance with the TPB. We also expected social norms to predict intentions because these social pressures are likely to be important when it comes to making decisions to use public access internet venues, but we did not expect these to be related to psychological needs because the pressures reflect controlling and, therefore, not need satisfying, reasons for pursuing the behaviour. We also proposed that the effects of the psychological variables would be independent of the control variables that reflect the impact of environmental and demographic factors that may affect intentions to engage in internet behaviour, including past experience with cybercafés, internet experience, types of activities typically done in internet cafes, educational level, gender, age, and location (urban vs. rural). The hypothesized model is presented in Figure 1.

**Analysis and Results**

**Analytic Strategy.** Data were analysed using the factor analytic-structural equation modelling (FASEM) approach using the EQS program (Version 6.1, Bentler, 2004). This approach advocates initially estimating a confirmatory factor analytic (CFA) or measurement model that tests the hypothesis that each proposed latent factor can explain the covariances among its observed items. Pending the adequacy of the measurement model, a structural equation model (SEM) is estimated to test hypothesized structural relations among the latent variables. We applied the FASEM procedure to data from the exercise sample in the first instance and cross-validated the hypothesized models using data from the dieting sample.
Multiple criteria of overall goodness-of-fit of the estimated models with the covariance matrices were adopted (Hu & Bentler, 1999). The comparative fit index (CFI), the non-normed fit index (NNFI), and the root mean square error of approximation (RMSEA) were utilized as a means of evaluating model fit because these fit indices display restricted random variation under conditions of model misspecification and small sample size (Fan, Thompson, & Wang, 1999). Values approaching .95 for the CFI and NNFI and .05 for the RMSEA are considered indicative of adequate fit of the proposed model with the observed covariance matrix (Hu & Bentler, 1999), although caution must be exercised when using a hypothesis-testing approach with such fit indices to evaluate model adequacy (Marsh, Hau, & Wen, 2004). In addition to the evaluation of proposed models based on overall goodness-of-fit, model integrity was also assessed according to the solution estimates including the factor loadings, factor correlations, reliability coefficients, and average variance extracted.

Confirmatory Factor Analysis. Prior to commencing the FASEM analyses of the proposed models we conducted a preliminary analysis to identify the most appropriate variables to represent constructs from SDT and TPB. As the survey in China asked respondents to report the extent to which they felt that specific goals were satisfied, responses to these items were identified as candidate measures of the extent to which psychological needs were satisfied. We therefore engaged in a content analysis of the items representing participants’ perceived the fulfilment of goals through their use of internet in cybercafés. We identified candidate items (see survey for items) for autonomy, competence, and relatedness satisfaction. As the survey asked candidates to self-report whether they had achieved these needs and to omit them if they were irrelevant, there was a lot of missing data for these questions. We therefore adopted items to which most participants responded in order to minimize data loss in the analysis. We identified three items that were most frequently identified as candidate goals to be satisfied by the participants and best reflected autonomy, competence, and relatedness
needs. These items were used as manifest, non-latent independent variables representing psychological need satisfaction in the present study.

Focusing on the data from the users sample in the first instance, a confirmatory factor analytic (CFA) model was estimated to test the construct and discriminant validity of the latent variables in the proposed model. This measurement model comprised five factors representing the attitude (2 items), subjective norms (3 items), perceived behavioural control (1 item), intention (2 items), and willingness to pay (2 items) constructs. We also included the need satisfaction variables as non-latent factors. Since not all of the participants completed the need satisfaction variables, there was a considerable amount of missing data, particularly for the items representing competence and relatedness need satisfaction. We therefore estimated a full CFA model with all three need satisfaction variables as correlates of the latent variable based on a limited sample size (N = 374) and a larger model focusing only on correlations between the latent variables and the need satisfaction variable for which there was the most number of responses, need for autonomy (N = 775). For the latent variables, each factor was indicated by the constituent items that were made to load solely on their appropriate latent factor. The PBC factor was specified as a single-item latent factor with its variance set at unity. As with all CFA models, one indicator was arbitrarily set to unity to define the scale of the factor and all the factors and the non-latent variables were set to covary. It was assumed that the constructs would achieve discriminant validity in accordance with Bagozzi and Kimmel’s (1995) criterion.

The confirmatory factor analysis (measurement) model in the users sample for the model including all of the need satisfaction variables yielded satisfactory fit with the data ($\chi^2 = 92.764$, df = 40, $p < .001$, CFI = .967, NNFI = .935, RMSEA = .053). The fit statistics for the model including autonomy need satisfaction only were also acceptable ($\chi^2 = 102.182$, df = 30, $p < .001$, CFI = .964, NNFI = .933, RMSEA = .056). The fit indices indicated that the
hypothesized models adequately described the data. The standardized factor loadings of the indicators on their respective latent factors in the CFA model are given in Table 1. The loadings were significantly positive and exceeded the widely accepted minimum of .40 (Ford, MacCallum, & Tait, 1986). Overall, these results support proposed factor structure and construct validity of the psychological variables.

Correlations among the latent psychological variables for both models are given in Table 3. All of the variables achieved discriminant validity in that correlations were all significantly different from 1.00 (Bagozzi & Kimmel, 1995). For the full model including all of the psychological need satisfaction variables, intercorrelations among the psychological needs variables were significant. Similarly, the psychological need for autonomy, competence and relatedness variables correlated significantly with the attitude, intention, and willingness to pay variables. Attitude and subjective norms were also significantly correlated with intentions and willingness to pay, but PBC was not. For the model including the satisfaction of the need for autonomy only, the pattern of relations among the TPB variables was identical. However, attitudes and satisfaction of the need for autonomy were the only psychological variables that correlated significantly with intentions and willingness to pay.

**Structural Equation Model.** Given the robust fit of the measurement CFA model, the hypothesized relations among the psychological need satisfaction and the TPB constructs were tested in an SEM (see Figure 1). Again, two models were estimated, one with all of the psychological need satisfaction variables predicting the TPB variables in the proposed meditational model. A second was estimated on the larger sample with only the psychological need satisfaction for autonomy included. The demographic and environmental control variables were included as predictors of the antecedents of intention and willingness to pay in accordance with the project proposal. For the first model, goodness-of-fit statistics revealed a satisfactory model ($\chi^2 = 430.906, df = 37, p < .001, CFI = .933, NNFI = .900, RMSEA = .038$).
Standardized parameter estimates for the model are given in Figure 2. Need for satisfaction of needs for autonomy and competence significantly predicted attitudes and subjective norms respectively. Attitudes, subjective norms, and PBC all predicted intentions and intentions predicted willingness to pay. However, there were no significant indirect effects of the satisfaction of the psychological needs for autonomy and competence on intention or willingness to pay. For the second model, goodness-of-fit statistics also indicated a satisfactory model ($\chi^2 = 707.142$, df = 35, CFI = .940, NNFI = .908, RMSEA = .037). In this model satisfaction of the need for autonomy significantly predicted attitudes only. Only attitudes and PBC predicted intentions and intentions predicted willingness to pay. Importantly, there were significant indirect effects of satisfaction of psychological need for autonomy on intention ($\beta = -.12$, $p < .01$) and willingness to pay ($\beta = -.09$, $p < .05$). This supports the meditational model such that the extent to which psychological need for autonomy was satisfied by the participants meant that they were more likely to form positive attitudes toward engaging in cybercafé use and the more likely they were to report intentions to use cybercafés and willing to pay to do so.

Discussion

The present study aimed to test an integrated model of cybercafé usage and willingness to pay among a large sample of current users of cybercafés. Hypotheses from SDT (Deci & Ryan, 2000) and the TPB (Ajzen, 1991) provided a multi-theory framework to test a motivational sequence in which psychological need satisfaction affected belief-based variables, intentions and willingness to pay for cybercafé use. The model also included a number of control variables and two versions were estimated, one in which all three needs were included and a second in which on the psychological need for autonomy was included. In the model including all needs, psychological need satisfaction significantly predicted attitudes and subjective norms, but had no effect on intentions and willingness to pay. However, this model was based on a relatively small sample and possibly lacked predictive power. Furthermore, the
psychological need satisfaction variables for autonomy, competence, and relatedness were all strongly correlated suggesting that they may have attenuated their effects in the model. As a consequence, we estimated a more parsimonious model in which psychological need satisfaction for autonomy was the only variable in the model and was included as a predictor of the psychological antecedents of intentions and willingness to pay. The resulting model demonstrated that satisfaction of the need for autonomy significantly predicted attitudes which, in turn predicted intentions. Intention was the only predictor of willingness to pay. In support of our motivational sequence, psychological need satisfaction for autonomy significantly predicted intentions and willingness to pay via the mediation of attitudes. The integration of the theories provided a comprehensive explanation of the processes by which global psychological need satisfaction influenced decisions to engage in specific cybercafé use behaviours.

Findings from these integrated models indicate that satisfaction of the psychological need for autonomy is an important influence on intentions to use cybercafés in this cultural context and also had a significant influence on the behavioural indicator, willingness to pay. This means that the extent to which users believe their autonomous goals are satisfied motivates them to positively evaluate their behaviour and make plans (intentions) to repeat the behaviour in the future. The prediction of the extent to which users are willing to make a financial outlay to pursue internet usage in the future is also highly salient. Overall, these findings indicate that encouraging and promoting internet users to identify autonomous reasons for engaging in cybercafé use is important. Such reasons include learning new skills and increasing one’s self-identity.

The present research also indicates that attitudes are the most pervasive predictor of intentions to use cybercafés. These attitudes are based on autonomous goal satisfaction, and, therefore, reflect positive attitudes that individuals derive from satisfying their needs. PBC was also relevant to intentions but does not seem to be based on the satisfaction of the
psychological need for competence as we originally predicted. These perceptions reflect the degree to which people perceive engaging in cybercafé use is within their personal capacity and that they have the confidence and resources to engage in these behaviours. This is consistent with the needs approach in that demonstrating competence is also a psychological need. This has been shown in previous research. However, although we predicted this, it was not shown to be the case in current data. However, measurement limitations possibly meant that if there was a relationship between competence need satisfaction and PBC, there was insufficient power to find it. Interestingly, subjective norms had little effect on intentions. This is interesting as anecdotal evidence suggests that many cybercafé users use the internet for social reasons such as communicating with friends and identifying with their peer groups. However, the means to measure social effects in the present study through subjective norms meant that these reflected social pressures rather than social support (Hamilton & White, 2008; Rhodes, Jones, & Courneya, 2002; Saunders, Motl, Dowda, Dishman, & Pate, 2004). This has been acknowledged in a number of studies using the TPB (Hagger & Chatzisarantis, 2006; Trafimow & Finlay, 1996). Future research, therefore should focus on identifying the social factors likely to facilitate and support internet use rather than social pressures which are likely to be related to desistance and avoidance (Hagger et al., 2006).

Limitations and Future Directions

There are, of course, limitations of this model. First, the measures of psychological need satisfaction were sub-optimal. Our measures focused on ad hoc generated ‘life goals’ that were likely to be relevant to the sample. While the results demonstrated that, for the autonomous goals at least, that these were relevant to the sample. However, future studies need to elicit the outcomes specifically relevant from the sample itself by using open-ended questionnaires to generate an exhaustive list of the reasons people engage in cybercafé use before the development of the questionnaire. In addition, the means used to measure the
psychological needs variables also needs development. In the current study, participants were allowed to discount or omit responding to the need items that they deemed irrelevant to them rather than providing a response that reflected their low levels of interest. As a result, scaled ratings for the need satisfaction variables were not available for many of the respondents. This meant that the full model incorporating all of the psychological need variables was based on a relatively small sample. The main model including the satisfaction of the psychological need for autonomy only was effective and powerful because most of the respondents provided ratings for autonomous goals and the extent to which they were satisfied by cybercafé use. It is not surprising that it was this model that yielded the most interesting and substantive results given the statistical power associated with the model based on a large sample size. Future research needs to adopt more standardized measures of psychological need satisfaction in order to fully test the integrated model and understand the effects of psychological need satisfaction on intentions to use cybercafés.

An additional limitation is the lack of a comprehensive behavioural measure that represented cybercafé use and corresponded well with the measures of intention and other psychological measures. In the present analysis, the willingness to pay variable was used. This is useful as it provides some indication of a behavioural decision that cybercafé users have made with respect to the target behaviour. However, it is merely an indication of behaviour and reflects motivation and, as a consequence, is only a proxy for behaviour rather than an actual measure. Is it not surprising, therefore, that the willingness to pay variable correlated significantly with the intention variable. Furthermore, this variable was measured concurrently with intentions and therefore provided no indication of future behavioural engagement. As a consequence the study was unable to predict future behaviour and, concurrently measured willingness to pay is merely a ‘snapshot’ of an individual’s current decision making. Thus we were unable to assess whether the current psychological variables were able to account for
variance in behaviour change over time. This is important in order to fully confirm the predictive validity of the integrated model. Future research should, therefore, seek to measure cybercafé use behaviour in order to conduct a full analysis and evaluation of the proposed model. These behavioural measures could be self-reports, but, ideally they should be objective in nature and reflect the target variable of interest. A key variable would be time spent in cybercafés using the internet (as well as use when not using the internet – such as direct interaction with other users of the café), objectively measured. This could be done using unique login IDs or by observation. This would provide a clearer picture of the psychological and motivational factors that affect this behaviour.

Part 2: Additional Analyses, Implications for Intervention and Future Research

Additional Analyses

The data collected in China were very rich and also had considerable detail on different demographic groups, non-users, and the effects of increase in price on potential usage in the future. I am confident these data will yield some interesting adjunct analyses in addition to the main analysis offered in Part 1 of my report. In particular this will also give some assessment as to whether changes in the price structure will have and effect on cybercafé use. This is clearly relevant in the current economic climate whether wages of the majority of cybercafé users are relatively low but internet access is through public access venues is also comparatively inexpensive. However, one strategy that governments may use to reduce internet use is to increase prices by imposing a levy on the internet café providers which the latter would then have to pass on to customers. There are currently no plans for this, but the present research provides information as to whether such a strategy will be effective. It is also important to evaluate whether price is a major motive for cybercafé users for the duration of their internet use. We conducted a number of additional analyses of the data looking at the effects of changes in different financial plans on estimated use of the internet. These involved
regressing perceived increased or decreased estimated use on the relative increase in price. Results indicated that price increase resulted in a relatively modest change in estimated use. These were relatively preliminary analyses and further investigation is warranted pursuing the same line of analysis I suggested during the visit. Please see Wei Shang’s accompanying report for additional detail.

**Implications for Intervention and Practice**

The present research has a number of implications for practice. First, it seems that promoting and encouraging the satisfaction of autonomous goals and motives is key to facilitating adaptive internet use among users in China. This means that autonomy supportive interventions using persuasive communications (e.g., on the internet, using leaflets, through schools and teachers) will be effective in promoting intentions to use cybercafés and the internet. Strategies that promote autonomous engagement in behaviours through ‘autonomy support’ include providing choice, giving a rationale for the action, and acknowledging conflict. These three aspects are supposed to highlight the personal causation of behaviour. Researchers in the area of education have highlighted the kinds of behaviours exhibited by social agents (e.g., teachers, lecturers, parents) likely to promote autonomous motivation in young people (Reeve & Jang, 2006). For example, Reeve and Jang reported that a key set of behaviours account for significant unique variance in students’ perceived autonomy support and were categorised as “primary autonomy-supportive behaviours”. These were viewed as those behaviours most important in promoting autonomy in students. The primary behaviours included provision of a meaningful rationale, defined as providing students with a personally meaningful explanation for what they are doing, the amount of time students spent talking in class, and the frequency of encouragements offered to boost or sustain students’ engagement. Those that had only been established as significantly associated with students’ perceived autonomy support were classed as “secondary autonomy-supportive behaviours”. Examples of the secondary behaviours include avoidance of directives and commands in engaging students
Running head: UNDERSTANDING CYBERCAFÉ USERS’ WILLINGNESS TO PAY

in a task, acknowledgement of the students’ perspective through empathic statements, and the offeri ng of hints on how to make progress when students encountered difficulties. A full list of these behaviours, with details of their operationalisation, can be found elsewhere (McLachlan & Hagger, 2010; Reeve & Jang, 2006). Such interventions by salient others may be useful in promoting internet use on the whole, but their effectiveness on behaviours outside of the classroom may be comparative limited (Hagger, Chatzisarantis, Culverhouse, & Biddle, 2003).

Autonomy supportive interventions may also be useful in promoting adaptive internet use among young people prone to use the internet excessively for maladaptive behaviours such as gaming and chatting at the expense of other more productive uses. An autonomy supportive intervention could be used to promote more adaptive internet use by fostering autonomous motivation toward internet use for specific purposes such as educational and skill learning. The intervention could highlight the potential choice and rationale for using the internet for new and innovative purposes and for learning new skills rather than focusing on reinforcing these behaviours against the will of the user. This means that the focus is on encouragement and highlighting intrinsic benefits of internet use for educational and adaptive skill learning rather than using reinforcements to discourage uses deemed inappropriate or maladaptive such as gaming and chatting. It may take some skill in integrating these principles in communications that are accessible to young cybercafé users. For example, incorporating chatting and gaming into learning activities and communicating these to individuals in a manner that would ensure they were receptive to the message, rather than the message being a top-down imposition of the will of significant others that can lead to psychological reactance. However, the principles of autonomy support and promoting intrinsic motivation for specific uses among those who overuse the internet for certain maladaptive or non constructive purposes remain.

**Future Interventions and Research**

In some adjunct analyses we conducted in our test of the integrated model among internet users revealed little differences in the pattern of effects among ‘normal’ users and
those who tended to overuse or are ‘addicted’. This means that these sorts of cognitions and motivational constructs did not seem to differentiate between users and excessive users. One future research endeavour would be to examine the role of obsessive and harmonious passion, as we outlined in the introduction, on internet usage in this sample. Current data do not make the distinction between autonomous and controlled reasons, rather they just focus on need satisfaction, which is important but does not provide a full picture of the motivational factors that may influence internet usage among those who may be obsessive in their involvement. This should be an avenue for future research along with including behavioural measures and full measures of psychological need satisfaction (see Part 1).

An additional approach that may have value in reducing obsessive and over-use of internet and cybercafés stems from the strength model of self-control. Excessive internet use can be conceptualised as a compulsive behaviour which individuals have difficulty regulating because they have little or no self-control. As a consequence, they indulge in the purely hedonistic and pleasurable aspects of the internet and forgo any important, adaptive uses or engaging in adaptive alternative behaviours important for social and educational development. A recent approach to self-control and compulsion is offered by the strength model. I presented an overview of the strength model during my visit to China and the recent research I have conducted in the area. The strength model is a limited-resource account of self-control (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Baumeister, Vohs, & Tice, 2007). Engaging in actions that require self control such as suppressing impulses or dominant responses are hypothesized to lead to a state of depleted self-control resources, known as ego-depletion (Baumeister et al., 1998; Muraven, Tice, & Baumeister, 1998). Ego-depletion leads to short-term deficits in performance on self-control tasks until such time as sufficient recovery or recuperation leads to a restoration of self-control resources. Baumeister et al. (1998) likened self-control to a strength or energy, just as a muscle becomes tired after a period of exertion so self-control resources become exhausted when they are consumed through engagement in self-
control tasks. Tests of strength model hypotheses have typically been conducted using an experimental procedure known as the dual-task paradigm (Finkel et al., 2006). In the procedure, participants engage in two consecutive tasks. Experimental group participants engage in an initial task requiring self control while control group participants engage in a similar task that does not require self-control. Both groups then engage in a second task that requires self-control in a different domain to the first. The extent to which the second-task performance of participants’ assigned to the experimental group is impaired relative to participants allocated to the control group provides confirmation of the ego-depletion effect. Research adopting the strength model and the dual-task paradigm has provided considerable support for the ego-depletion effect across numerous domains of self-control including tasks that require impulse, emotion, attention, and thought control (Hagger, Wood, Stiff, & Chatzisarantis, 2010).

Based on this model it may be that excessive internet use or ‘overuse’ may be due to diminished self-control resources through fatigue or an overall lack of self-control from other tasks and demands in everyday life, particularly among younger people. Indeed there is research that suggests that younger people are more prone to the deleterious effects of self-control resource depletion (Hagger et al., 2010). An example would be a young person who has been involved in a lot of laborious cognitive work that involved them resisting the urge to quit throughout their day, such as a hard day at school, with little opportunity to rest and recover. As a consequence their self-control resources may become depleted and this leads to a lack of self-control when they visit a cybercafé after school. They may find themselves unable to control their use and may spend an excessive amount of time on games and other tasks that they enjoy without being able to exert sufficient self-control to desist these activities in favour of other adaptive and important tasks such as homework assignments.

A further hypothesis derived from the strength model is that self-control resources can be increased or bolstered through training on self-control tasks (Baumeister et al., 2007;
Evidence suggests that engaging in successive, discrete self-control tasks over time can lead to increases in self-control strength in laboratory (Gailliot, Plant, Butz, & Baumeister, 2007; Muraven et al., 1999) and field (Hui et al., 2009; Oaten & Cheng, 2006, 2007) tests. Researchers have demonstrated that self-control task performance was significantly improved in individuals provided with a period of self-control training compared to non-trained controls. The types of training task typically adopted include modification of speech (avoiding use of colloquial, slang, abbreviated, and shorthand terms), modification of posture, use of non-dominant hand for everyday tasks, controlling emotions, keeping a food diary, doing a computerised impulse-suppression task, and rinsing with a very strong mouthwash. All these tasks require participants to override a well-learned impulse or resist the urge to quit due to the arduousness or tediousness of the task, all responses that demand self-control. It may, therefore, be possible to use such strategies to increase self-control strength among individuals with chronic inhibitions, like compulsive internet users, to reduce their vulnerability to temptations in the face of reduced self-control resources.

Another important aspect to consider is the need to encourage individuals to get sufficient recovery after exerting self-control in order to replenish their self-control resources (Baumeister, Heatherton, & Tice, 1994; Muraven & Baumeister, 2000). The important role of rest and relaxation for the replenishment of self-control resources has been demonstrated empirically (Barber, Munz, Bagsby, & Powell, 2010; Tyler & Burns, 2008). People attempting to modify their behaviour are likely to have high demand on their self-control resources leading to the depletion of their reserves on a regular basis. Self-control theorists have suggested that sufficient sleep is one means by which self-control resources can be replenished (Barber et al., 2010; Baumeister et al., 1994). For example, smokers attempting to quit have been shown to be more likely to successfully resist cravings when they get sufficient sleep (Parrott, Garnham, Wesnes, & Pincock, 1996). It is therefore important that young people who may have
difficulties in exerting sufficient self-control when faced with the ‘temptation’ to overuse the
internet are provided with advice to ensure that they get sufficient sleep during periods when
they are likely to be frequently exerting self-control, such as when they are at school and have
high pressure tasks to do that require self-control.
References


Footnote

1One of the main hypotheses of the project was whether individuals identified as ‘overusers’ of cybercafé had different influences on their internet use relative to those who had lower levels of use. The sample was therefore segregated into users who reported excessive use of the internet (N = 159) versus those reporting comparatively normal use (N = 684). We then tested whether the pattern of effects found in the hypothesized integrated model (including the satisfaction of the psychological need for autonomy only) differed across the two samples. We tested the invariance of the measurement and structural parameters of the SEM across samples using multi-sample SEM using an invariance routine advocated by Byrne (1989). Such an analysis is important because it confirms whether the measurement elements of the model (factor loadings) are identical across the two samples and establishes whether the structural paths between the hypothesized factors vary across the two groups. While it was expected that the measurement elements would be the same, some structural variations across contexts was anticipated such that internet overusers were expected to have less of an impact of satisfaction of needs for autonomy on intentions and behaviour because, by definition, their behaviour is less likely to be need satisfying and more controlled, consistent with Vallerand et al.’s (2003) notion of obsessive passion. In the invariance analyses, an initial baseline model was estimated with no constraints on the hypothesized parameters to ensure that the factor pattern (i.e., same number of factors and parameters) was tenable across the overuser and normal user groups. Assuming satisfactory fit of the baseline model, equality constraints were subsequently added to the model that constrained factor loadings and the structural paths to be equal. This invariance routine systematically tested for the invariance of all the model parameters. A difference in the fit indexes of -.01 or less when comparing the baseline model with a constrained model was considered a robust indicator of multi-sample invariance (Cheung & Rensvold, 2002).
Goodness-of-fit statistics for the multi-sample SEMs are shown in Table 3. The baseline model fit the data adequately according to the criteria adopted which suggested that the factor pattern was equivalent in overuser and normal user samples. Changes in the fit indexes of the subsequent nested models in the invariance routine indicated that only the model in which the factor loadings were constrained to equality did not exceed the critical difference of -.01. This suggests that the number of factors and relationships between the factors and their indicators exhibited differences across these user groups that were largely unsubstantial (Cheung & Rensvold, 2002). Furthermore, introducing constraints on structural parameters across the overuser and normal user groups resulted in goodness-of-fit indexes that also did not fall outside of the acceptable range in relation to the baseline model. This suggests that there were no substantive differences in the baseline model and the model constraining relations among the variables for the integrated model to be equal across the overuser and normal user groups. In addition, examination of the LM-test that flagged any constraints that should be freed to improve model fit, indicated only parameters were non-invariant; one was a factor loading for the subjective norm variable and the other the effect of past experience on subjective norms. The non-invariance of these paths was of little consequence, hence the well-fitting constrained models. These results suggest that the pattern of effects for the integrated model was identical across overuser and normal user groups and led us to reject the hypothesis that satisfaction of autonomous psychological needs did not have a reduced effect in the overuser group.
Table 1

**Results of Confirmatory Factor Analysis of Integrated Model**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Item #</th>
<th>Factor loading</th>
<th>SE</th>
<th>R²</th>
</tr>
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<tbody>
<tr>
<td>Attitude</td>
<td>1</td>
<td>.813</td>
<td>.544</td>
<td>.661</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>.567</td>
<td>.414</td>
<td>.321</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>1</td>
<td>.524</td>
<td>.130</td>
<td>.274</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>.672</td>
<td>.141</td>
<td>.451</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>.812</td>
<td>.173</td>
<td>.660</td>
</tr>
<tr>
<td>PBC&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1</td>
<td>.541</td>
<td>.100</td>
<td>.293</td>
</tr>
<tr>
<td>Intention</td>
<td>1</td>
<td>.703</td>
<td>.351</td>
<td>.494</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>.766</td>
<td>.429</td>
<td>.586</td>
</tr>
<tr>
<td>Willingness to pay</td>
<td>1</td>
<td>.781</td>
<td>.413</td>
<td>.610</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>.850</td>
<td>.417</td>
<td>.722</td>
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</table>

*Note.* <sup>a</sup>Factor variance fixed at 1.00
### Table 2

**Intercorrelations Among Study Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Need for autonomy&lt;sup&gt;a&lt;/sup&gt;</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>-.20&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.00</td>
<td>-.02</td>
<td>-.15&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.18&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
<tr>
<td>2. Need for competence&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.56&lt;sup&gt;**&lt;/sup&gt;</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>3. Need for relatedness&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.68&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.61&lt;sup&gt;**&lt;/sup&gt;</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>4. Attitude</td>
<td>-.16&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.15&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.16&lt;sup&gt;**&lt;/sup&gt;</td>
<td>–</td>
<td>.26&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.07</td>
<td>.57&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.51&lt;sup&gt;**&lt;/sup&gt;</td>
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<tr>
<td>5. Subjective norm</td>
<td>-.01</td>
<td>-.04</td>
<td>.00</td>
<td>.30&lt;sup&gt;**&lt;/sup&gt;</td>
<td>–</td>
<td>-.56&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.07</td>
<td>.09</td>
</tr>
<tr>
<td>6. PBC</td>
<td>.02</td>
<td>-.01</td>
<td>.01</td>
<td>-.17&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.55&lt;sup&gt;**&lt;/sup&gt;</td>
<td>–</td>
<td>.08</td>
<td>.02</td>
</tr>
<tr>
<td>7. Intention</td>
<td>-.17&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.12&lt;sup&gt;*&lt;/sup&gt;</td>
<td>-.16&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.59&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.13&lt;sup&gt;*&lt;/sup&gt;</td>
<td>.05</td>
<td>–</td>
<td>.86&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
<tr>
<td>8. Willingness to pay</td>
<td>-.18&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.16&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.17&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.52&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.17&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.03</td>
<td>.84&lt;sup&gt;**&lt;/sup&gt;</td>
<td>–</td>
</tr>
</tbody>
</table>

*Note.*<sup>a</sup> Single-item non-latent variable. Correlations above the principal axis are for the CFA model with autonomy only (N = 775) and correlations below the diagonal are for the CFA model with all three psychological needs (N = 374).

<sup>*p < .05, **p < .01</sup>
### Table 3

*Goodness-of-Fit Statistics for Multi-Sample Structural Equation Models*

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>CFI</th>
<th>NNFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>236.467*</td>
<td>92</td>
<td>.958</td>
<td>.928</td>
<td>.064</td>
</tr>
<tr>
<td>Factor loadings invariant</td>
<td>241.889*</td>
<td>97</td>
<td>.958</td>
<td>.932</td>
<td>.062</td>
</tr>
<tr>
<td>Structural parameters invariant</td>
<td>268.747*</td>
<td>114</td>
<td>.955</td>
<td>.938</td>
<td>.052</td>
</tr>
</tbody>
</table>
Figure 1. Hypothesized integrative model predicting intentions to engage in internet use from psychological variables
Figure 2. Estimated integrative model predicting intentions to engage in internet use and willingness to pay from all psychological needs satisfaction, TPB, and demographic and environmental variables. Paths omitted from the diagram for clarity: Previous experience (years) $\rightarrow$ attitude = -.18 ($p < .01$); Previous experience (years) $\rightarrow$ subjective norm = .11 ($p < .01$); Previous experience (months) $\rightarrow$ subjective norm = .11 ($p < .01$).
Figure 3. Estimated integrative model predicting intentions to engage in internet use and willingness to pay from satisfaction of psychological need for autonomy, TPB, and demographic and environmental variables. Paths omitted from the diagram for clarity: Previous experience (years) \( \rightarrow \) attitude = -.22 \( (p < .01) \); Previous experience (months) \( \rightarrow \) PBC = .11 \( (p < .01) \).