

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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1 **Executive Summary**

2 This report outlines the data analysis and activities conducted as part of a research consultancy
3 visit to China for the project entitled "Understanding Cybercafé Users' Willingness to Pay in
4 China" as Part of the Amy Mahan research fellowship program. The purpose of the visit was to
5 conduct in-depth analysis of data conducted on cybercafé users in China and, specifically, to
6 establish the psychological factors related to internet café usage using an integrated theoretical
7 model. During the visit I presented two research colloquiums outlining the integrated model
8 and also some research on self-regulation and self-control which formed a backdrop and a
9 precursor to the analyses. The data were then analysed according to the integrated model
10 incorporating hypotheses from self-determination theory (Deci & Ryan, 2000) and the theory
11 of planned behaviour (Ajzen, 1991). The aim was to predict cybercafé use and willingness to
12 pay for future cybercafé use among a sample of users. The model also included a number of
13 control variables including cybercafé experience, internet experience, types of activities
14 typically done in internet cafes, educational level, gender, age, and location (urban vs. rural).
15 We identified a means of analysing the self-determination data by constructing variables
16 representing the extent to which certain salient autonomous, competence, and relatedness goals
17 were satisfied by the users internet use. Data were analysed using structural equation modelling
18 and provided some support for the hypothesized model, with satisfaction of psychological need
19 for autonomy predicting intentions and willingness to pay via the mediation of attitudes and
20 intentions. The research has implications for interventions which have been elaborated upon in
21 the report. Recommendations for future research include incorporating an objective measure of
22 behaviour and using the present results to design interventions to change internet behaviour,
23 particularly among those who tend to overuse or misuse the internet and cybercafés.

- 1 *Keywords:* theory of planned behaviour, self-determination theory, psychological need
- 2 satisfaction, autonomy, competence, relatedness, intentions, motivation, willingness to pay,
- 3 cybercafé, internet

1 **Introduction**

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

20 **Part 1: An Integrated Model of Cybercafé Use in China**

21 **Background**

22 Globally, China has the largest number of internet users and also harbours the largest
23 number of internet public-access venues (e.g., cybercafés). As a result of the massive
24 popularity of internet use, a reasonably large minority of users regularly access the internet
25 (35%) through privately-owned public-access internet venues, known as cybercafés. These
26 cafés offer relatively easy, inexpensive access to the internet for those who do not have access

1 at home and, particularly, for those who wish to use the internet away from home, such as
2 young people whose parents may restrict access at home or who want an environment in which
3 to access the internet in an environment more conducive to their needs. However, cybercafés
4 have assumed a general reputation in the Chinese media and culture as venues where
5 individuals, particularly young people, indulge in computer gaming and other online pursuits
6 that are considered not to be constructive or appropriate in excess such as access to chat rooms.
7 The media reports that many young people are becoming 'addicted' to these pursuits
8 distracting them from other activities deemed essential for their education and development,
9 although there is little 'hard evidence' for the numbers and definition of the addiction.
10 Nevertheless, this has been viewed as a serious social problem, particularly among young
11 people, and this has led to attempts to regulate the cybercafé industry by the Chinese
12 government.

13 The response of the Chinese government has been to increase the regulation of
14 cybercafés by using incentives and penalties to encourage small privately-owned cybercafés to
15 become members of one of the 10 large-chain cybercafé operators. However, while there may
16 have been a general shift in the membership of smaller cybercafés to the large-chain operators,
17 there is little evidence that the operators have effectively become the dominate force in the
18 cybercafé market and there is anecdotal evidence to suggest that the industry still remains
19 dominated by smaller individual operators. The preponderance of smaller operators in the
20 cybercafé industry suggests that the regulation efforts have not led to a majority of users who
21 access the internet through cybercafés to gain access the large chains and their choice of
22 venues and activities remain largely unregulated. In addition to the potential problems,
23 perceived or real, highlighted by the media such as internet 'addiction' and maladaptive use of
24 the internet at the expense of important educational activities, there is also a lack of knowledge
25 of the demographic, environmental, social, and psychological factors that lead individuals,
26 particularly young people, to use cybercafés and the motives and incentives that drive them to

1 access the internet at these values. The global aim of the current project is, therefore, to
2 examine the personal objectives that individuals' achieve through public access to the internet
3 through cybercafé usage. The project is driven by a general research framework (Proenza,
4 2010). The aim was to examine the factors influencing internet use among individuals in China
5 and, importantly, intentions to engage in internet use in the future and willingness to pay to use
6 the internet in the future. There is also an aim to examine whether these influences differ across
7 those classified as 'overusers' and those classified as normal users.

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

19 **Theoretical Approach**

20 **Background.** Research into the antecedent factors and processes that underpin people's
21 motivation to engage in intentional, social behaviours like internet usage has been conducted
22 from an array of different theoretical perspectives (Conner & Norman, 2005; Johnston, 2005;
23 Orbell, 2004). A number of these perspectives have their roots in the social cognitive tradition
24 and aim to identify the processes by which belief-based perceptions such as attitudes,
25 expectancies, beliefs, judgements, norms, and expectations lead to intentional behaviour.
26 Prominent among these theories is the planned behaviour (TPB, Ajzen, 1985), which was

1 developed as a systematic explanation of volitional behavioural engagement based on a set of
2 belief-based perceptions, the deliberative formation of intentions, and their enactment. This
3 approach has been shown to account for substantial variance in behaviour in a number of
4 contexts (Armitage & Conner, 2001; Conner & Armitage, 1998). In contrast, *organismic*
5 approaches to motivation have focused on the contextual contingencies and dispositional
6 orientations that give rise to motivational states and subsequent behaviour. One such approach
7 is self-determination theory (SDT, Deci & Ryan, 1985, 2000), a leading theory of human
8 motivation that has been shown to be efficacious in identifying the contingencies that affect
9 motivation and behaviour in numerous domains (Deci & Ryan, 1985, 2000). Both of these
10 perspectives are likely to have something to offer in terms of identifying the motives that
11 individuals tend to pursue in their internet use and the factors that influence or predict internet
12 use in future.

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

1 motivation in influencing intentions to use cybercafés and a behavioural indicator, in this case,
2 willingness to pay for cybercafé use, will be proposed our an integrated model.

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

14 SDT (SDT) takes a different approach to understanding social behaviour. While the TPB
15 identifies the immediate belief-based constructs thought to determine engagement in social
16 behaviours, SDT focuses on the *quality* of an individual's motivation in a given context and the
17 environmental factors that affect motivation in that context (Deci & Ryan, 1985; Ryan &
18 Connell, 1989). Central to the theory is the distinction between self-determined versus
19 controlled types of motivation (Deci & Ryan, 2000). Individuals whose motivation is self-
20 determined experience a sense of personal choice when behaving and feel their chosen actions
21 represent their true self. Those whose motivation is not self-determined feel controlled,
22 pressured, or coerced into behaving by external forces. SDT research has shown that self-
23 determined motives positively affect behavioural engagement (Chatzisarantis et al., 2003) and
24 that self-determined motivation can be supported or thwarted by environmental contingencies,
25 such as the support offered by salient others, often evaluated by perceived autonomy support
26 (Hagger et al., 2007; Reeve, Bolt, & Cai, 1999).

1 In addition to the distinction between self-determined and controlled forms of
2 motivation, SDT proposes that motivational states arise from individuals' propensity to pursue
3 behaviours and activities that satisfy psychological needs. According to the theory, individuals
4 strive to satisfy three basic psychological needs: autonomy, competence, and relatedness. The
5 need for autonomy reflects an individual's desire to be a causal agent in their world, and if a
6 behaviour satisfies the need for autonomy, the individual feels a sense of personal choice, free-
7 will, and 'ownership' over their actions. The need for competence is satisfied through the
8 pursuit of autonomously motivated behaviours that lead to perceptions of success and control
9 over outcomes. The need for relatedness reflects innate desires to be supported by others and
10 be supportive of others when engaging in behaviours. SDT states that these needs are
11 complementary. For example, the need for autonomy does not reflect overarching desires to be
12 independent, but rather interdependent through choice and cooperation as implied by the need
13 for relatedness. Similarly, behaviours that provide a sense of personal control and efficacy are
14 likely to satisfy the need for competence, but only if competence in that context is relevant to
15 the individual's sense of true self or autonomy. Thus for optimal psychological functioning and
16 persistence in goal directed behaviours, the social context must support all three psychological
17 needs, although the satisfaction of the need for autonomy takes precedence and is deemed most
18 important (Deci & Ryan, 2000).

19 **Integrating the Theories.** Recently, researchers have sought to integrate SDT and the
20 TPB because these approaches are deemed to provide complimentary explanations of the
21 processes that underlie motivated behaviour. Several researchers have integrated these
22 approaches in mediational models to illustrate the processes that lead to decisions to engage in
23 social behaviour. For example, self-determined motives from SDT have been shown to predict
24 intention, the most proximal influence on behaviour (e.g., Ntoumanis, 2001; Sarrazin,
25 Vallerand, Guillet, Pelletier, & Cury, 2002; Standage, Duda, & Ntoumanis, 2003; Wilson &
26 Rodgers, 2004). However, some researchers have tested a more complete model in which the

1 forms of self-determined motivation from SDT predict intentions via the mediation of the
2 proximal antecedents of intentions and behaviour from the TPB, namely, attitudes and PBC.
3 This 'motivational sequence' has been supported in a number of studies lending empirical
4 support for the integration of the TPB and SDT (e.g., Hagger, Chatzisarantis, & Biddle, 2002a;
5 Palmeira et al., 2007; Shen, McCaughtry, & Martin, 2007). These studies have tested the
6 proposed motivational sequence and shown that the effects of self-determined motivation from
7 SDT on behavioural intentions and social behaviour are fully or partially mediated by attitudes
8 and PBC.

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

21 Ajzen (1985) proposed that attitudes and PBC comprise beliefs that a given social
22 behaviour will result in certain outcomes and that the behaviour is under control of the
23 individual. However, like many social cognitive theories, the TPB was not explicit in the
24 reasons that these beliefs are pursued (Deci & Ryan, 1985). For example, the theory does not
25 make the distinction between beliefs about outcomes that people *choose* to seek and are related
26 to their true sense of self (self-determined outcomes) and beliefs about outcomes that people

1 feel compelled to engage in out of a sense of *obligation* or duty (controlled outcomes). Some
2 beliefs about outcomes could be interpreted as either self-determined or controlled reasons for
3 participating in the behaviour (e.g., "I access the internet because it is important to my
4 identity"). For some individuals identification with those who are cybercafé users is important
5 and may be self-determined they value being part of a group with shared interests and they
6 view it as satisfying their need for autonomy because it is representative of their true self (self-
7 determined). For others, identifying with other cybercafé users may something they feel they
8 have to do for others, perhaps to 'fit in' and not be a 'social outcast' (controlling). SDT offers
9 an interpretation of whether these beliefs about outcomes are interpreted as self-determined or
10 controlling. SDT suggests that motivation to engage in internet activity for self-determined or
11 controlling reasons predisposes individuals to form beliefs that are congruent or aligned with
12 these motives. On this basis, self-determined motives are hypothesised to be a distal influence
13 on attitudes and PBC. Attitudes and PBC are, in turn, proximal influences on the formation of
14 intentions to engage in future health-related behaviour.

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

25 **Applying the Integrated Model.**

1 In the present project, the integrated model is advantageous as it will identify the
2 important belief-based factors and psychological need-based factors that influence intentions to
3 use cybercafés and willingness to pay for cybercafé use. The adoption of SDT is important in
4 this regard because it will enable the research team to identify whether individuals fulfil
5 important motives that satisfy their psychological needs and hence provide information as to
6 whether these pursuits are congruent with their growth and fulfilment of optimal functioning.
7 In contrast, if cybercafé use is chronically related to pursuing controlled motives and reasons
8 such as doing so because they feel they have no other options for self-expression, because they
9 feel can't help themselves because they have become obsessed with achieving high scores or
10 certain status on online games or systems, or because they feel they must to 'fit in' or be part of
11 a group, then these motives are likely to be related to internet addiction or maladaptive internet
12 use. Relevant here is Vallerand and colleagues' (2003) model of obsessive or harmonious
13 passion. In this model, Vallerand et al. posit that individuals that pursue and become engrossed
14 in activities do so in a 'passionate' manner. However, harmonious passion reflects the pursuit
15 of activities for autonomous reasons and because the activities are fundamental to fulfilling
16 psychological needs. In contrast, obsessive passion reflects activity pursuit because one feels
17 that one must do so in order to 'fit in' or because the activity has become something they feel
18 they should do in order to please others or quell feelings of guilt or shame. These reflect more
19 controlled and non-self-determined reasons. The behavioural pursuit is also at the expense of
20 other more adaptive and fulfilling activities. The essential distinction is that in harmonious
21 passion the person controls the activity while in obsessive passion the activity controls the
22 person. Obsessive passion is likely to be associated with addictive behaviours, such as internet
23 addiction.

24 In the integrated model of cybercafé use, we proposed that satisfaction of psychological
25 needs would lead to positive attitudes and perceptions of control with respect to internet use.
26 This is related to the initial part of the integrated model offered by Hagger and co-workers'

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

18 **Analysis and Results**

19 **Analytic Strategy.** Data were analysed using the factor analytic-structural equation
20 modelling (FASEM) approach using the EQS program (Version 6.1, Bentler, 2004). This
21 approach advocates initially estimating a confirmatory factor analytic (CFA) or measurement
22 model that tests the hypothesis that each proposed latent factor can explain the covariances
23 among its observed items. Pending the adequacy of the measurement model, a structural
24 equation model (SEM) is estimated to test hypothesized structural relations among the latent
25 variables. We applied the FASEM procedure to data from the exercise sample in the first
26 instance and cross-validated the hypothesized models using data from the dieting sample.

1 Multiple criteria of overall goodness-of-fit of the estimated models with the covariance
2 matrices were adopted (Hu & Bentler, 1999). The comparative fit index (CFI), the non-normed
3 fit index (NNFI), and the root mean square error of approximation (RMSEA) were utilized as a
4 means of evaluating model fit because these fit indices display restricted random variation
5 under conditions of model misspecification and small sample size (Fan, Thompson, & Wang,
6 1999). Values approaching .95 for the CFI and NNFI and .05 for the RMSEA are considered
7 indicative of adequate fit of the proposed model with the observed covariance matrix (Hu &
8 Bentler, 1999), although caution must be exercised when using a hypothesis-testing approach
9 with such fit indices to evaluate model adequacy (Marsh, Hau, & Wen, 2004). In addition to
10 the evaluation of proposed models based on overall goodness-of-fit, model integrity was also
11 assessed according to the solution estimates including the factor loadings, factor correlations,
12 reliability coefficients, and average variance extracted.

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

1 needs. These items were used as manifest, non-latent independent variables representing
2 psychological need satisfaction in the present study.

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

21 The confirmatory factor analysis (measurement) model in the users sample for the
22 model including all of the need satisfaction variables yielded satisfactory fit with the data ($\chi^2 =$
23 92.764 , $df = 40$, $p < .001$, $CFI = .967$, $NNFI = .935$, $RMSEA = .053$). The fit statistics for the
24 model including autonomy need satisfaction only were also acceptable ($\chi^2 = 102.182$, $df = 30$,
25 $p < .001$, $CFI = .964$, $NNFI = .933$, $RMSEA = .056$). The fit indices indicated that the

1 hypothesized models adequately described the data. The standardized factor loadings of the
2 indicators on their respective latent factors in the CFA model are given in Table 1. The
3 loadings were significantly positive and exceeded the widely accepted minimum of .40 (Ford,
4 MacCallum, & Tait, 1986). Overall, these results support proposed factor structure and
5 construct validity of the psychological variables.

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

17 **Structural Equation Model.** Given the robust fit of the measurement CFA model, the
18 hypothesized relations among the psychological need satisfaction and the TPB constructs were
19 tested in an SEM (see Figure 1). Again, two models were estimated, one with all of the
20 psychological need satisfaction variables predicting the TPB variables in the proposed
21 meditational model. A second was estimated on the larger sample with only the psychological
22 need satisfaction for autonomy included. The demographic and environmental control variables
23 were included as predictors of the antecedents of intention and willingness to pay in
24 accordance with the project proposal. For the first model, goodness-of-fit statistics revealed a
25 satisfactory model ($\chi^2 = 430.906$, $df = 37$, $p < .001$, $CFI = .933$, $NNFI = .900$, $RMSEA = .038$).

1 Standardized parameter estimates for the model are given in Figure 2. Need for satisfaction of
2 needs for autonomy and competence significantly predicted attitudes and subjective norms
3 respectively. Attitudes, subjective norms, and PBC all predicted intentions and intentions
4 predicted willingness to pay. However, there were no significant indirect effects of the
5 satisfaction of the psychological needs for autonomy and competence on intention or
6 willingness to pay. For the second model, goodness-of-fit statistics also indicated a satisfactory
7 model ($\chi^2 = 707.142$, $df = 35$, $CFI = .940$, $NNFI = .908$, $RMSEA = .037$). In this model
8 satisfaction of the need for autonomy significantly predicted attitudes only. Only attitudes and
9 PBC predicted intentions and intentions predicted willingness to pay. Importantly, there were
10 significant indirect effects of satisfaction of psychological need for autonomy on intention ($\beta =$
11 $-.12$, $p < .01$) and willingness to pay ($\beta = -.09$, $p < .05$). This supports the meditational model
12 such that the extent to which psychological need for autonomy was satisfied by the participants
13 meant that they were more likely to form positive attitudes toward engaging in cybercafé use
14 and the more likely they were to report intentions to use cybercafés and willing to pay to do so.

15 **Discussion**

16 The present study aimed to test an integrated model of cybercafé usage and willingness
17 to pay among a large sample of current users of cybercafés. Hypotheses from SDT (Deci &
18 Ryan, 2000) and the TPB (Ajzen, 1991) provided a multi-theory framework to test a
19 motivational sequence in which psychological need satisfaction affected belief-based variables,
20 intentions and willingness to pay for cybercafé use. The model also included a number of
21 control variables and two versions were estimated, one in which all three needs were included
22 and a second in which on the psychological need for autonomy was included. In the model
23 including all needs, psychological need satisfaction significantly predicted attitudes and
24 subjective norms, but had no effect on intentions and willingness to pay. However, this model
25 was based on a relatively small sample and possibly lacked predictive power. Furthermore, the

1 psychological need satisfaction variables for autonomy, competence, and relatedness were all
2 strongly correlated suggesting that they may have attenuated their effects in the model. As a
3 consequence, we estimated a more parsimonious model in which psychological need
4 satisfaction for autonomy was the only variable in the model and was included as a predictor of
5 the psychological antecedents of intentions and willingness to pay. The resulting model
6 demonstrated that satisfaction of the need for autonomy significantly predicted attitudes which,
7 in turn predicted intentions. Intention was the only predictor of willingness to pay. In support
8 of our motivational sequence, psychological need satisfaction for autonomy significantly
9 predicted intentions and willingness to pay via the mediation of attitudes. The integration of the
10 theories provided a comprehensive explanation of the processes by which global psychological
11 need satisfaction influenced decisions to engage in specific cybercafé use behaviours.

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

22 The present research also indicates that attitudes are the most pervasive predictor of
23 intentions to use cybercafés. These attitudes are based on autonomous goal satisfaction, and,
24 therefore, reflect positive attitudes that individuals derive from satisfying their needs. PBC was
25 also relevant to intentions but does not seem to be based on the satisfaction of the

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

18 **Limitations and Future Directions**

19 There are, of course, limitations of this model. First, the measures of psychological
20 need satisfaction were sub-optimal. Our measures focused on ad hoc generated 'life goals' that
21 were likely to be relevant to the sample. While the results demonstrated that, for the
22 autonomous goals at least, that these were relevant to the sample. However, future studies need
23 to elicit the outcomes specifically relevant from the sample itself by using open-ended
24 questionnaires to generate an exhaustive list of the reasons people engage in cybercafé use
25 before the development of the questionnaire. In addition, the means used to measure the

1 psychological needs variables also needs development. In the current study, participants were
2 allowed to discount or omit responding to the need items that they deemed irrelevant to them
3 rather than providing a response that reflected their low levels of interest. As a result, scaled
4 ratings for the need satisfaction variables were not available for many of the respondents. This
5 meant that the full model incorporating all of the psychological need variables was based on a
6 relatively small sample. The main model including the satisfaction of the psychological need
7 for autonomy only was effective and powerful because most of the respondents provided
8 ratings for autonomous goals and the extent to which they were satisfied by cybercafé use. It is
9 not surprising that it was this model that yielded the most interesting and substantive results
10 given the statistical power associated with the model based on a large sample size. Future
11 research needs to adopt more standardized measures of psychological need satisfaction in order
12 to fully test the integrated model and understand the effects of psychological need satisfaction
13 on intentions to use cybercafés.

14 An additional limitation is the lack of a comprehensive behavioural measure that
15 represented cybercafé use and corresponded well with the measures of intention and other
16 psychological measures. In the present analysis, the willingness to pay variable was used. This
17 is useful as it provides some indication of a behavioural decision that cybercafé users have
18 made with respect to the target behaviour. However, it is merely an indication of behaviour and
19 reflects motivation and, as a consequence, is only a proxy for behaviour rather than an actual
20 measure. Is it not surprising, therefore, that the willingness to pay variable correlated
21 significantly with the intention variable. Furthermore, this variable was measured concurrently
22 with intentions and therefore provided no indication of future behavioural engagement. As a
23 consequence the study was unable to predict future behaviour and, concurrently measured
24 willingness to pay is merely a 'snapshot' of an individual's current decision making. Thus we
25 were unable to assess whether the current psychological variables were able to account for

1 variance in behaviour change over time. This is important in order to fully confirm the
2 predictive validity of the integrated model. Future research should, therefore, seek to measure
3 cybercafé use behaviour in order to conduct a full analysis and evaluation of the proposed
4 model. These behavioural measures could be self-reports, but, ideally they should be objective
5 in nature and reflect the target variable of interest. A key variable would be time spent in
6 cybercafés using the internet (as well as use when not using the internet – such as direct
7 interaction with other users of the café), objectively measured. This could be done using unique
8 login IDs or by observation. This would provide a clearer picture of the psychological and
9 motivational factors that affect this behaviour.

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

11 **Additional Analyses**

12 The data collected in China were very rich and also had considerable detail on
13 different demographic groups, non-users, and the effects of increase in price on potential usage
14 in the future. I am confident these data will yield some interesting adjunct analyses in addition
15 to the main analysis offered in Part 1 of my report. In particular this will also give some
16 assessment as to whether changes in the price structure will have an effect on cybercafé use.
17 This is clearly relevant in the current economic climate whether wages of the majority of
18 cybercafé users are relatively low but internet access is through public access venues is also
19 comparatively inexpensive. However, one strategy that governments may use to reduce internet
20 use is to increase prices by imposing a levy on the internet café providers which the latter
21 would then have to pass on to customers. There are currently no plans for this, but the present
22 research provides information as to whether such a strategy will be effective. It is also
23 important to evaluate whether price is a major motive for cybercafé users for the duration of
24 their internet use. We conducted a number of additional analyses of the data looking at the
25 effects of changes in different financial plans on estimated use of the internet. These involved

1 regressing perceived increased or decreased estimated use on the relative increase in price.
2 Results indicated that price increase resulted in a relatively modest change in estimated use.
3 These were relatively preliminary analyses and further investigation is warranted pursuing the
4 same line of analysis I suggested during the visit. Please see Wei Shang's accompanying report
5 for additional detail.

6 **Implications for Intervention and Practice**

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

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

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

24 **Future Interventions and Research**

25 In some adjunct analyses we conducted in our test of the integrated model among
26 internet users revealed little differences in the pattern of effects among 'normal' users and

1 those who tended to overuse or are 'addicted'¹. This means that these sorts of cognitions and
2 motivational constructs did not seem to differentiate between users and excessive users. One
3 future research endeavour would be to examine the role of obsessive and harmonious passion,
4 as we outlined in the introduction, on internet usage in this sample. Current data do not make
5 the distinction between autonomous and controlled reasons, rather they just focus on need
6 satisfaction, which is important but does not provide a full picture of the motivational factors
7 that may influence internet usage among those who may be obsessive in their involvement.
8 This should be an avenue for future research along with including behavioural measures and
9 full measures of psychological need satisfaction (see Part 1).

10 An additional approach that may have value in reducing obsessive and over-use of
11 internet and cybercafés stems from the strength model of self-control. Excessive internet use
12 can be conceptualised as a compulsive behaviour which individuals have difficulty regulating
13 because they have little or no self-control. As a consequence, they indulge in the purely
14 hedonistic and pleasurable aspects of the internet and forgo any important, adaptive uses or
15 engaging in adaptive alternative behaviours important for social and educational development.
16 A recent approach to self-control and compulsion is offered by the strength model. I presented
17 an overview of the strength model during my visit to China and the recent research I have
18 conducted in the area. The strength model is a limited-resource account of self-control
19 (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Baumeister, Vohs, & Tice, 2007)².
20 Engaging in actions that require self control such as suppressing impulses or dominant
21 responses are hypothesized to lead to a state of depleted self-control resources, known as ego-
22 depletion (Baumeister et al., 1998; Muraven, Tice, & Baumeister, 1998). Ego-depletion leads
23 to short-term deficits in performance on self-control tasks until such time as sufficient recovery
24 or recuperation leads to a restoration of self-control resources. Baumeister et al. (1998) likened
25 self-control to a strength or energy, just as a muscle becomes tired after a period of exertion so
26 self-control resources become exhausted when they are consumed through engagement in self-

1 control tasks. Tests of strength model hypotheses have typically been conducted using an
2 experimental procedure known as the dual-task paradigm (Finkel et al., 2006). In the
3 procedure, participants engage in two consecutive tasks. Experimental group participants
4 engage in an initial task requiring self control while control group participants engage in a
5 similar task that does not require self-control. Both groups then engage in a second task that
6 requires self-control in a different domain to the first. The extent to which the second-task
7 performance of participants' assigned to the experimental group is impaired relative to
8 participants allocated to the control group provides confirmation of the ego-depletion effect.
9 Research adopting the strength model and the dual-task paradigm has provided considerable
10 support for the ego-depletion effect across numerous domains of self-control including tasks
11 that require impulse, emotion, attention, and thought control (Hagger, Wood, Stiff, &
12 Chatzisarantis, 2010).

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

25 A further hypothesis derived from the strength model is that self-control resources can
26 be increased or bolstered through training on self-control tasks (Baumeister et al., 2007;

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

15 Another important aspect to consider is the need to encourage individuals to get
16 sufficient recovery after exerting self-control in order to replenish their self-control resources
17 (Baumeister, Heatherton, & Tice, 1994; Muraven & Baumeister, 2000). The important role of
18 rest and relaxation for the replenishment of self-control resources has been demonstrated
19 empirically (Barber, Munz, Bagsby, & Powell, 2010; Tyler & Burns, 2008). People attempting
20 to modify their behaviour are likely to have high demand on their self-control resources leading
21 to the depletion of their reserves on a regular basis. Self-control theorists have suggested that
22 sufficient sleep is one means by which self-control resources can be replenished (Barber et al.,
23 2010; Baumeister et al., 1994). For example, smokers attempting to quit have been shown to be
24 more likely to successfully resist cravings when they get sufficient sleep (Parrott, Garnham,
25 Wesnes, & Pincock, 1996). It is therefore important that young people who may have

1 difficulties in exerting sufficient self-control when faced with the 'temptation' to overuse the
2 internet are provided with advice to ensure that they get sufficient sleep during periods when
3 they are likely to be frequently exerting self-control, such as when they are at school and have
4 high pressure tasks to do that require self-control.

5

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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 suggests 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

Factor	Item #	Factor loading	SE	R ²
Attitude	1	.813	.544	.661
	2	.567	.414	.321
Subjective norm	1	.524	.130	.274
	2	.672	.141	.451
	3	.812	.173	.660
PBC ^a	1	.541	.100	.293
Intention	1	.703	.351	.494
	2	.766	.429	.586
Willingness to pay	1	.781	.413	.610
	2	.850	.417	.722

Note. ^aFactor variance fixed at 1.00

Table 2

Intercorrelations Among Study Variables

Variable	1	2	3	4	5	6	7	8
1. Need for autonomy ^a	–	–	–	-.20**	.00	-.02	-.15**	-.18**
2. Need for competence ^a	.56**	–	–	–	–	–	–	–
3. Need for relatedness ^a	.68**	.61**	–	–	–	–	–	–
4. Attitude	-.16**	-.15**	-.16**	–	.26**	-.07	.57**	.51**
5. Subjective norm	-.01	-.04	.00	.30**	–	-.56**	.07	.09
6. PBC	.02	-.01	.01	-.17**	-.55**	–	.08	.02
7. Intention	-.17**	-.12*	-.16**	-.59**	.13*	.05	–	.86**
8. Willingness to pay	-.18**	-.16**	-.17**	-.52**	.17**	-.03	.84**	–

Note. ^aSingle-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).

* $p < .05$, ** $p < .01$

Table 3

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

Model	^a SB- χ^2	df	CFI	NNFI	RMSEA
Baseline	236.467**	92	.958	.928	.064
Factor loadings invariant	241.889**	97	.958	.932	.062
Structural parameters invariant	268.747**	114	.955	.938	.052

Figure 1. Hypothesized integrative model predicting intentions to engage in internet use from psychological variables

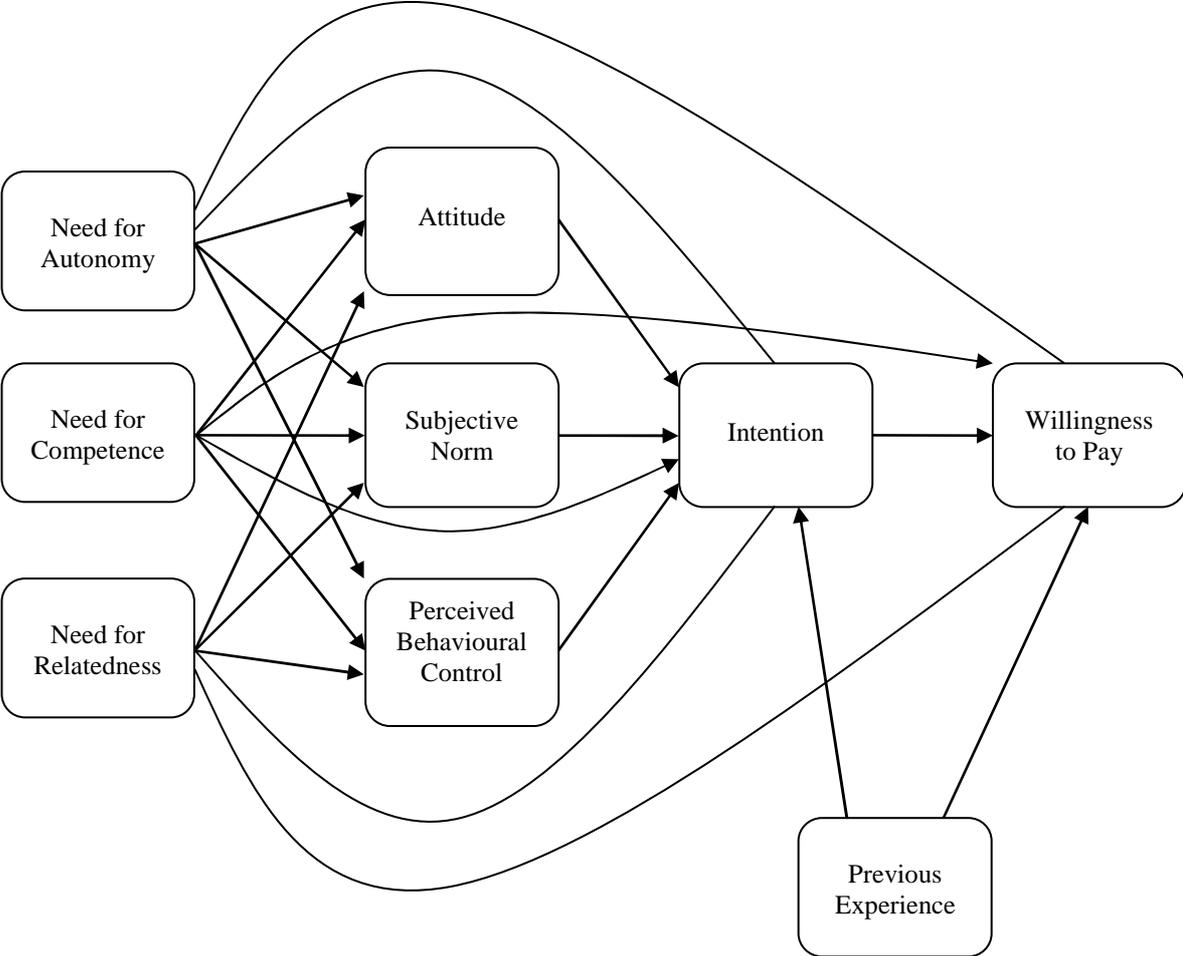


Figure 2. Estimated integrative model predicting intentions to engage in internet use and willingness to pay from all psychological needs satisfaction, TPB, and demographic and environmental variables. Paths omitted from the diagram for clarity: Previous experience (years)→attitude = $-.18$ ($p < .01$); Previous experience (years)→subjective norm = $.11$ ($p < .01$); Previous experience (months)→subjective norm = $.11$ ($p < .01$).

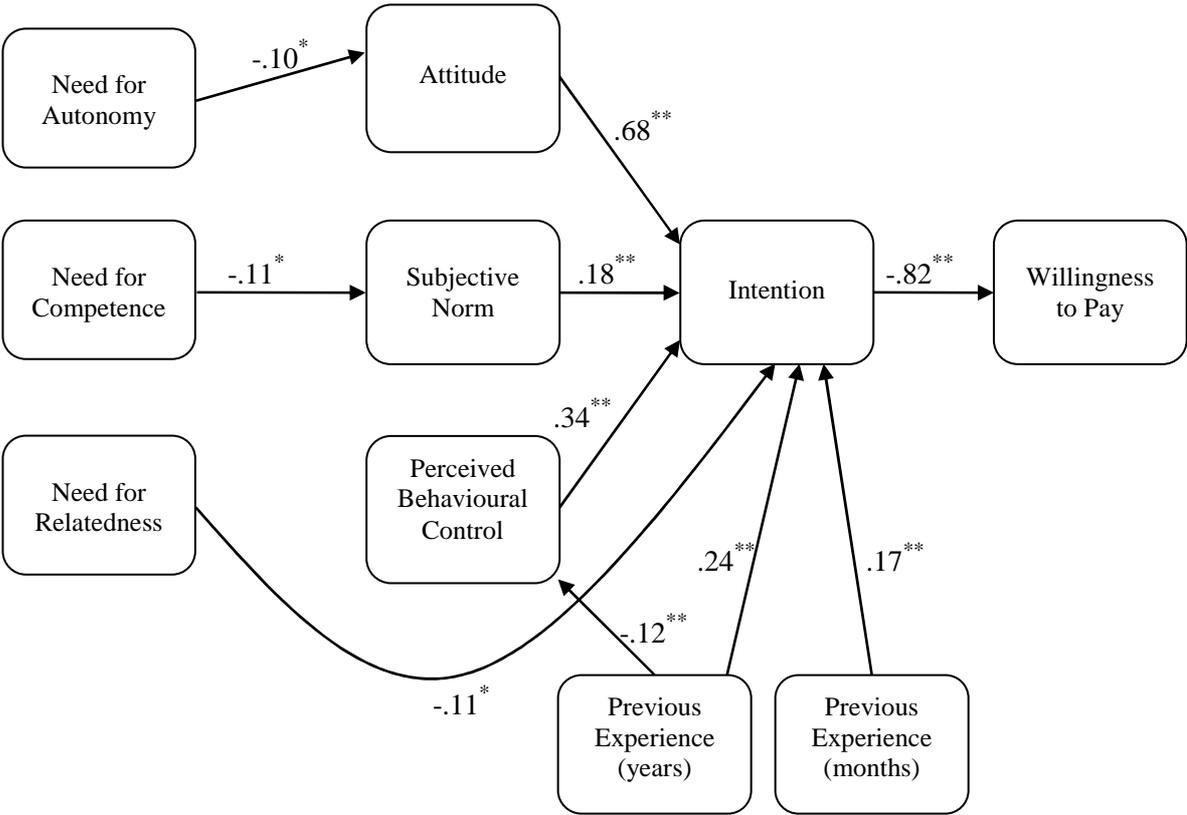


Figure 3. Estimated integrative model predicting intentions to engage in internet use and willingness to pay from satisfaction of psychological need for autonomy, TPB, and demographic and environmental variables. Paths omitted from the diagram for clarity: Previous experience (years)→attitude = -0.22 ($p < .01$); Previous experience (months)→PBC = 0.11 ($p < .01$).

