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**Ethnicity, Gender, and the Theory of Planned Behavior:
The Case of Playing the Lottery**

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Abstract

This study uses the theory of planned behavior (TPB) to explain why some people play the lottery, and it examines how the TPB's variables and variable relationships differ due to ethnicity, or gender, or their interaction. A telephone interview conducted in English, Cantonese, and Mandarin resulted in data on the lottery play intentions of 208 Chinese/Canadians (97 males, 111 females) and 220 British/Canadians (112 males, 108 females). When intention to play the lottery was regressed on six TPB variables, it was found that: (a) affective attitude was an important predictor for all four groups, while instrumental attitude was only important for British/Canadian males; (b) injunctive norm was an important predictor only for Chinese/Canadian males, while descriptive norm was an important predictor only for British/Canadian males; (c) controllability was an important predictor only for Chinese/Canadian females, with a negative coefficient suggesting secondary control; and (d) self-efficacy was not an important predictor for any of the groups. A follow-up mail questionnaire provided additional data on the self-reported lottery play behavior of 100 Chinese/Canadians (51 males, 49 females) and 115 British/Canadians (57 males, 58 females) 30 days after the initial telephone interview was conducted. When lottery play behavior was regressed on self-efficacy, controllability, and intention, intention was found to be an important predictor for all four groups. These findings are discussed in light of recent research on the TPB, leisure and gambling, and ethnicity and gender. **KEYWORDS:** ethnicity, gambling, gender, leisure, theory of planned behavior

Ethnicity, Gender, and the Theory of Planned Behavior: The Case of Playing the Lottery

Researchers have long been interested in why some people participate in certain leisure activities while others do not. Typically, studies use either proximal (e.g., attitudes, norms, motivations) or distal (e.g., race, ethnicity, gender) variables to explain similarities and differences in participation. As Mannell and Kleiber (1997) recognize, however, the former's explanatory ability is hampered by the lack of a "comprehensive social psychology of gender or cultural differences in leisure" (p. 27). Likewise, Hutchison (2000) holds that the latter's explanatory ability—at least in terms of ethnic and racial variation in leisure engagement—has been hindered by a lack of attention to intervening variables. As it happens, a theoretical framework does exist that's proximal variables have explained leisure participation in the past while, in other domains, the inclusion of distal variables has recently proven both possible and insightful; the theory of planned behavior (TPB; Ajzen, 1991).

According to the theory of planned behavior (Ajzen, 1991), an individual's behavior is largely dependent on his or her intention to perform that behavior which, in turn, is determined by: (a) the person's attitudes toward the behavior, both affective (e.g., is it enjoyable or unenjoyable?) and instrumental (e.g., is it wise or unwise?); (b) the subjective norms he or she believes significant others have concerning the behavior, both injunctive (e.g., do they approve or disapprove?) and descriptive (e.g., do they actually do it or not?); and (c) his or her perception of whether the behavior can be performed (i.e., perceived behavioral control or PBC), both in terms of self-efficacy (e.g., is it easy or difficult?) and controllability (e.g., do I have a little control or a lot?). The TPB's proximal variables have been used to explain people's participation in hunting (Hrubes, Ajzen, Daigle, 2001; Rossi & Armstrong, 1999), boating, biking, climbing, jogging, and beach activities (Ajzen & Driver, 1991, 1992), casino gambling (Oh & Hsu, 2001), drinking alcohol (Trafimow, 1996), attending dance classes (Pierro, Mannetti, Livi, 2003), engaging in physical activity (Courneya, 1995), and playing basketball (Arnscheid & Schomers, 1996). Multiple regression results generally support the TPB with, for example: (a) Hrubes' et al. study finding that attitude, subjective norm, and PBC all predicted intention to hunt, and intention (but not PBC) predicted hunting behavior; (b) Oh and Hsu's study finding that attitude, subjective norm, and three types of PBC all predicted casino gambling intention, and intention (but not the PBC variables) predicted casino gambling behavior; and (c) Courneya's study finding that attitude, subjective norm, and PBC all predicted physical activity intention. It should be noted, however, that neither these three studies nor the other studies cited, took into account the effect distal variables, such as race, ethnicity, and gender, might have.

Until relatively recently this omission was also not uncommon in social psychological research. Though rare, these contemporary studies do seem to support the theory of planned behavior's applicability across ethnic and cultural groups—while recognizing that important differences do exist. For example, Malhotra and McCort (2001) examined how Chinese and American students selected a pair of athletic shoes using the TPB's precursor, the theory of reasoned action (TRA; Fishbein & Ajzen, 1975). Multiple regression results supported the use of the TRA cross-culturally although, as the authors expected, affective concerns were more important for the U.S. students while cognitive concerns were more important for the Hong Kong students. In another study, Blanchard et al. (2004) investigated whether ethnicity moderated the association between the TPB and physical activity. They found that while subjective norm and self-efficacy made significant and unique contributions to intention for both

African-Americans and Caucasian Americans, the attitude/intention relationship was significantly stronger for African-Americans. Similarly, Godin et al. (1996) used the TPB to look at condom usage among Latin American, South Asian, and English-speaking Caribbean immigrants to Canada. The researchers found that while attitude, subjective norm, and perceived behavioral control were significant predictors for Latin American and English-speaking Caribbean study participants, only attitude and PBC were significant for South Asian participants. Additionally, gender differences were also evident, with attitude not being significant for Latin American men and English-speaking Caribbean women. Finally, in a study of exercise intention, Blanchard et al. (2003) found that affective attitudes had a stronger effect for Caucasian females (vs. Caucasian males) and African-American males (vs. African-American females). On the other hand, they discovered that instrumental attitudes had a stronger effect for Caucasian males (vs. Caucasian females) and African-American females (vs. African-American males).

In conclusion, although the theory of planned behavior has often been used to explain participation in leisure activities and, while the theory has exhibited cross-cultural applicability *overall*, to date leisure researchers have not examined how the TPB may or may not vary due to ethnicity, either alone or in conjunction with gender. In order to begin to address this research issue, seven TPB-based hypotheses are put forth to investigate why some British/Canadian and Chinese/Canadian males and females play the lottery while others do not. The decision to focus on these two ethnic groups is based on the fact that, in Canada, while Canadians and British Islanders (i.e., English, Irish, Scottish, or Welsh) remain the majority, the largest and fastest growing visible minority group is Chinese (Statistics Canada, 2003a).¹ The decision to focus on this leisure activity is based on the prevalence of playing the lottery among British/Canadian and Chinese/Canadian males and females, a finding discussed in further detail immediately below.

Literature Review

There is little doubt that gambling generally and playing the lottery particularly are extremely popular leisure activities in North America. In the United States, for example, Welte, Barnes, Wieczorek, Tidwell, and Parker (2002) found that 82% of Americans reported having gambled in the past 12 months, with the most prevalent activity being playing the lottery (66%). Similarly, Azmier (2001) found that 72% of Canadians had gambled in the previous year, with the most popular activity once again being playing the lottery (50%). In Alberta, where this study was conducted, gambling prevalence was even higher with 83% of Albertans reporting having gambled in the past year (Smith & Wynne, 2002). Smith and Wynne found, however, that this percentage varied by gender and ethnicity. Specifically, males were significantly ($p < .01$) more likely than females to have gambled in the past year (84% vs. 80%) while, of the four European and one Aboriginal groups identified, British Islanders were significantly ($p < .05$) less likely than Ukrainians to have gambled (84% vs. 96%, respectively). Finally, of all of the gambling activities available to Albertans, playing the lottery was the most popular (62%).

Unfortunately there has been relatively little in-depth research on how ethnicity may affect gambling prevalence. In the case of Chinese, for example, only two studies have been conducted in the United States or Canada. In the first study, after selecting "Chinese-sounding names" from the Greater Toronto telephone book, Kwan (1997) found that 80% of his participants reported having gambled in their lifetime, with males having a higher prevalence rate than females. In the second study, a non-random sample of Chinese conducted in Montreal,

Sin (1997) reported that only 32% of participants indicated that they had gambled in the previous year. For comparative purposes, these prevalence figures can be measured against two non-Canadian studies, the first conducted with Chinese living in Victoria, Australia, and the second conducted with Chinese living in Hong Kong. In the case of the former, the Cultural Partners Australia Consortium (2000) conducted a random sample telephone survey and found that 62% of Chinese had gambled in the past 12 months. Playing the lottery was the most common gambling activity, with 46% of study participants having done so. In the case of the latter, the Centre for Social Policy Studies (2002) also conducted a random sample telephone survey and found that 78% of Hong Kong Chinese had gambled in the past year. Once again, playing the lottery was the most common gambling activity (64%). It is important to add that while Hong Kong has a long gambling history (Centre for Social Policy Studies), mainland China—now the leading country of birth for immigrants to Canada (Statistics Canada, 2003b)—has only recently legalized some forms of gambling (China Daily, 2000), with playing the lottery being the most widespread and popular activity.²

Despite the lottery's popularity, only one other study has looked at this leisure activity using the theory of planned behavior. Based on a series of surveys conducted in Britain, Sheeran and Orbell (1999) found that, when multiple regression analyses were conducted, while attitudes (affective and instrumental combined) and descriptive norms predicted a person's intention to play the lottery, the self-efficacy dimension of perceived behavioral control did not, with mixed results being found for injunctive norms. According to the authors these findings are consistent with past research in that: (a) attitudes have been found to be a better predictor than injunctive norms, with the latter only being a significant predictor on occasion, and then typically explaining only a small portion of variance (p. 2111); (b) descriptive norms are important because they "motivate the person by showing him or her what is the typical or *normal* thing to do, and what is likely to be an effective and adaptive decision" (p. 2112); and (c) the self-efficacy dimension of PBC does not generally help predict more easily controllable intentions such as, for example, playing the lottery (p. 2122). Finally, of the original TPB variables examined in their study, only intention predicted behavior, explaining approximately 30% of the variance.

As noted earlier, the theory of planned behavior differentiates between an attitude's affective and instrumental aspects. Although usually combined, recent research (Blanchard et al., 2003; Rhodes & Courneya, 2003) suggests that these two evaluative dimensions should, in fact, be treated as separate variables. In the current study this separation makes sense as we expect that, while British/Canadians and Chinese/Canadians will think differently about the value of playing the lottery (i.e., instrumental attitude), British/Canadian and Chinese/Canadian males and females will feel similarly about the experience of playing the lottery (i.e., affective attitude).

Our rationale for these two propositions is based on previous work in leisure and gambling studies, and cognitive and cross-cultural psychology. For example, in a study conducted in Georgia, Miyazaki, Langenderfer, and Sprott (1999) found that the top two reasons non-players gave for not purchasing lottery tickets were "belief against the lottery" (40.2%) and "bad value" (35.1%). The former instrumental evaluation is likely pertinent for British/Canadians because, for instance, the Anglican Church of Canada believes that large scale lotteries are contrary to Christian beliefs (Mandal & Vander Doelen, 1999), while, on the other hand, it is likely less pertinent for Chinese/Canadians since gambling is generally perceived as being an acceptable activity that facilitates social interactions and provides fun and excitement (Centre for Social Policy Studies, 2002; Price, 1971). Similarly, the instrumental evaluation of

lotteries as being a poor investment may be more relevant for British/Canadians because they place greater emphasis on the concept of “chance” and less relevant for Chinese/Canadians because they place greater emphasis on the concept of “luck.” According to Friedland (1998), chance-oriented persons “concentrate on properties of the decision problem and look for information that might help them identify possible results, and, especially, their probability of occurrence. Luck-oriented persons look, instead, for ‘signs’ that would tell them how lucky they are or how far they can trust their luck to make the right decision” (p. 162). Probabilistic thinking has been found to vary across cultures, with Wright and Phillips (1980) finding that Asian study participants were more likely to think nonprobabilistically compared with British participants, and Lau and Ranyard (1999) finding a similar result with Chinese and British participants. In contrast with British people’s greater focus on probability and therefore chance, Chinese people appear more focused on luck. As well as corroborating anecdotal evidence (e.g., British Broadcasting Company, 2004; Nepstad, 2000; Shanghai Star, 2003), empirical support for this proposition exists. A study conducted in Australia found that the most popular reason given by Chinese for why members of their community liked to gamble was “to test their luck” (45.3%). Finally, Chinese/Canadians may not only be more likely to think in terms of luck, but they may also be less concerned with the instrumental aspect of taking monetary risks (such as playing the lottery) because Chinese are generally collectivistic (Triandis, 1995), and collectivism acts as an implicit insurance policy against catastrophic financial loss because significant others will “cushion” you if you “fall” (Weber, Hsee, & Sokolowska, 1998, p. 174).

In contrast with our contention that, for British/Canadians but not Chinese/Canadians, instrumental attitude will be an important predictor of lottery play, we contend that affective attitude will be equally predictive for British/Canadian and Chinese/Canadian males and females. Our rationale for this is based on two pieces of evidence. First, Miyazaki et al. (1999) found that “low involvement” (e.g., not being interested or “into it”) as a motivation for not purchasing lottery tickets was reported more frequently by light players (i.e., fewer than five tickets per week) compared with heavy players (9.7% vs. 26.2%, respectively). Although Miyazaki et al. did not examine ethnicity, we have uncovered no research that suggests this would not also apply to Chinese/Canadians. Second, because Chinese are more luck-oriented and luck-oriented people may view gambling activities in terms of skill and challenge (Friedland, 1998), and because skill and challenge are important factors that affect flow experiences and flow is usually enjoyable (Csikszentmihalyi, 1990), then it follows that Chinese/Canadians will also likely report positive affect when they play the lottery. Csikszentmihalyi’s discussion of flow experiences also supports this argument in that he specifically mentions flow in terms of *aleatory* games (i.e., gambling; Caillois, 1958), as well as remarking that: “it is not skills we actually have that determine how we feel, but the ones we think we have” (p. 75).

Based on the above, therefore, two hypotheses are put forth:

H1: Affective attitude will be an important predictor of intention to play the lottery regardless of ethnicity or gender.

H2: Instrumental attitude will be an important predictor of intention to play the lottery for British/Canadians.

The theory of planned behavior also differentiates between a subjective norm’s injunctive and descriptive aspects, with, as mentioned earlier, Sheeran and Orbell (1999) finding that the latter did significantly affect people’s intention to play the lottery. In contrast, Sheeran and Orbell found only “mixed support” for the role of injunctive norm on these same intentions, which led them to speculate that this type of norm might only be important for people who are

knowledgeable about the lottery and therefore cognizant of how significant others feel about them playing it.

Sheeran and Orbell (1999) note that others have also found inconclusive results when using injunctive norms, although a meta-analysis conducted by Armitage and Conner (2001) contends that this finding may, at least in part, be a consequence of poor measurement practices. This inconclusiveness may also be due to interpersonal differences, with Trafimow and Finlay (1996, 2001) arguing that some individuals are more attitudinally controlled while others are more injunctive normatively controlled. One macro-level factor that could potentially affect the importance a person places on an injunctive norm is ethnicity. According to Triandis (1995), injunctive norms are more influential for people in or from collectivistic cultures (e.g., China, Korea) while personal attitudes are more influential for people in or from individualistic cultures (e.g., Canada, United States). Although empirical support for this proposition exists (Chan & Lau, 2001; Park & Levine, 1999; Park, Levine, & Sharkey, 1998), it is possible that the role significant others have on a collectivist's intentions may also differ depending upon the type of intended behavior. In the case of playing the lottery, for example, because some aspects of this activity can occur independent of significant others (e.g., buying the ticket; day-dreaming about what one might do with the winnings), we anticipate that injunctive norms will still affect Chinese/Canadians' lottery intentions, but to a lesser degree than it does other, more interdependent, types of behaviors.

The importance of injunctive norms in collectivistic cultures may also vary by gender. As Kim, Laroche, and Tomiuk (2004) state, in Chinese culture males are at the top of the gender hierarchy and strong patriarchal family norms "provide the Chinese father and husband with enormous power over the mother and wife" (p. 10). Consequently, while Kim et al. found that acculturation did affect Chinese-Canadian wives' gender-role attitudes, it did not affect Chinese-Canadian husbands' attitudes—leading them to "speculate that [Chinese-Canadian] men benefit greatly more than [Chinese-Canadian] women from the inequities in traditional gender-role systems and may be reluctant to relinquish the traditional gender-role privileges in favour of a more egalitarian arrangement of household roles" (p. 24). Based on the above, we believe that because Chinese/Canadian males are more likely than Chinese/Canadian females to benefit from adherence to injunctive norms generally, they are also more likely to report that this type of norm affected their own intention to play the lottery.

Research suggests that gender may affect not only injunctive norms but descriptive norms as well. For example, Schwalbe and Staples (1991, p. 164) discovered that U.S. men placed higher importance on social comparisons than U.S. women, noting that: "this may simply be one consequence of socialization into a competitive masculine world" (cf., Pleck, 1981; Walker, Hinch, & Weighill, 2005). Similarly, Browne and Brown (1994) found that "having friends who gamble had a stronger effect for men than for women," adding that this "finding is consistent with behavioral patterns expected of men and women in American culture because men experience fewer constraints regarding gambling than women do" (p. 345). Based on the above, two additional hypotheses are put forth:

H3: Injunctive norm will be an important predictor of intention to play the lottery for Chinese/Canadian males.

H4: Descriptive norm will be an important predictor of intention to play the lottery for British/Canadians males.

Finally, because playing the lottery is generally seen as an acceptable activity in Chinese culture, and because certain aspects of playing the lottery can occur independent of significant others, a fifth hypothesis is put forth:

H5: Affective attitude will be a more explanatory predictor of intention to play the lottery than injunctive norm for Chinese/Canadian males and females.

As mentioned earlier, the TPB also distinguishes between two aspects of perceived behavioral control: self-efficacy and controllability. Self-efficacy involves how easy or difficult a person believes engaging in an activity will be, and based on Sheeran and Orbell's (1999) finding that this variable did not have a significant effect on playing the lottery, we anticipate a similar result in this study. Controllability, on the other hand, may have a significant effect on lottery play, particularly when ethnicity and gender are taken into account. For example, Weisz, Rothbaum, and Blackburn (1984) propose that there are two distinct types of controllability: (a) primary control, where "individuals enhance their rewards by influencing existing realities (e.g., other people, circumstances, symptoms, or behavior problems)" (p. 955); and (b) secondary control, where "individuals enhance their rewards by accommodating to existing realities and maximizing satisfaction or goodness of fit with things as they are" (p. 955). Empirical research (Chang, Chua, & Toh, 1997; Cheng, 2000; Morling, 2000) suggests that, while collectivists do use both, they are more likely than individualists to use secondary control. In the case of Chinese, this outcome is likely because "underlying secondary control is a belief that the self can be changed. This belief is consistent with Asian values of self-reflection and self-cultivation" (Chang, Chua, & Toh, 1997, p. 114). Research in Hong Kong also suggests that secondary control may be more relevant for Chinese women than Chinese men due to different sex role expectations. For example, Hong and Chiu's (1987) study results led them to state that: "whereas the inability to control his environment is threatening to a [Chinese] man's masculine image, behaving in a non-active or even passive way can be easily integrated into the culturally approved feminine image" (p.671).

Based on the above, therefore, a sixth hypothesis has been developed:

H6: Controllability—in terms of secondary control—will be an important predictor of intention not to play the lottery for Chinese/Canadian females.

As noted previously, Sheeran and Orbell (1999) discovered that approximately 30% of the variance in a person's lottery play behavior could be explained by his or her intention to play. This figure compares favorably with an overall R^2 of .27 found in a recent meta-analysis of the theory of planned behaviour (Armitage & Conner, 2001). Although it is possible that gender, or ethnicity, or both could moderate this relationship (e.g., because women generally have lower earning power, Shaw, 1994; or because recent immigrants sometimes have poor English language proficiency, Yu & Berryman, 1996), it is also possible that once someone intends to play the lottery, he or she is determined to do so, or there are only minor, if any, constraints on him or her doing so, or both. Miyazaki et al. (1999) identify two reasons why lottery players may be so dogged, even when they know that the odds of winning are long. First, based on their finding that past or current losing has little effect on purchasing lottery tickets, Miyazaki et al. contend that this may be due to players believing that they actually have some control over what is really a random event, possibly due to their ability to choose their own ticket numbers (see also Langer, 1975). Second, playing the lottery provides the possibility of escape, both real (i.e., if one actually does win) and imaginary (i.e., "If I won, I would..."). The last rationale is consistent with research in leisure studies, including Iso-Ahola's (1982) contention that escaping is one of two basic motivational dimensions, and Mannell's concept of self-as-entertainment,

specifically the mind-play mode which “refers to a person’s capacity to fill their free time by turning inward and using imagination and fantasy” (Mannell & Kleiber, 1997, p. 165). It also appears that once a person in Alberta intends to play the lottery there are relatively few constraints on him or her doing so. Lottery tickets are relatively cheap (\$2 and up) and readily accessible (approximately one retailer per 1,100 adults, and available from kiosks, gas stations, supermarkets, and drug and convenience stores across the province; Alberta Gaming and Liquor Commission, 2001).

Based on the above, a seventh and final hypothesis is put forth:

H7: Intention to play the lottery will be an important predictor of self-reported lottery play behavior regardless of ethnicity or gender.

Method

A quota of approximately 450 study participants was chosen *a priori*, consisting of near equal numbers of British/Canadian and Chinese/Canadian male and female participants. This decision was based on Cohen's (1992) work, specifically his calculation that with $\alpha = .05$, power = .80, and six independent variables, a multiple regression with $N = 97$ will reliably detect a medium size effect. Potential British/Canadian participants were selected using a computer-generated sample and a random digit dialing approach. Potential Chinese/Canadian participants were selected based on Yida's research on the 100 most common surnames in China (Yan, 2002), and the various alternate spellings that exist (e.g., Zhang, the third most common surname in China, can also be spelled Chang, Cheong, Cheung, Chiang, Cheung, or Teoh depending upon the dialect; Chinese Roots, 2003). A list of 881 Chinese surnames was subsequently developed, and a random sample of 4,000 listed telephone numbers having one of these surnames was obtained from a telecommunications company.

In order to assign potential study participants to one of the two groups, interviewees were asked: “Which ethnic group do you most closely identify with? Would you say English, English-Canadian, Chinese, Chinese-Canadian, Irish, Irish-Canadian, Scottish, Scottish-Canadian, Welsh, Welsh-Canadian, Canadian, none of the above?” Respondents who selected “None of the above,” chose not to answer, or didn't know their ethnicity were not eligible to participate. Respondents who selected either Chinese or Chinese-Canadian were assigned to the Chinese/Canadian quota while the remaining respondents were assigned to the British/Canadian quota. The decision to describe these participants as British/Canadian was based on Statistics Canada's (1998) British Islander ethnicity category, as well as the agency's contention (Statistics Canada, 2003a) that much of the increase in the reporting of “Canadian” in the 2001 census was done by individuals who had reported English in previous censuses. Finally, in order to ensure gender equity each ethnic group included near equal numbers of males and females.

Data were collected by the University of Alberta Population Research Lab (PRL) from its centralized Computer-Assisted Telephone Interviewing (CATI) facilities. A pre-test with 22 respondents was conducted between March 6 and March 9, 2003 to determine if there were any wording, organization, or language issues, with the main data collection phase being conducted between March 8, 2003 and April 8, 2003. Along with the English-speaking interviewers, a Cantonese-speaking interviewer and a Mandarin-speaking interviewer were typically scheduled for each shift. Respondents were offered a small monetary token for participating in the study, with 77% of British/Canadians and 67% of Chinese/Canadians accepting.

To obtain the desired number of British/Canadian study participants, 1,005 telephone numbers were called, with many of these numbers subsequently being excluded for various reasons including being ineligible (e.g., out of service, business/fax, quota full, $n = 430$), screened (e.g., refusal, incomplete, $n = 191$), unscreened (e.g., busy, no answer, answering machine, $n = 141$), or undetermined (e.g., call back, $n = 16$). In order to obtain the desired number of Chinese/Canadian study participants, 996 telephone numbers were called, with many of these numbers also being excluded for various reasons, including being ineligible (e.g., out of service, business/fax, quota full, $n = 134$), screened (e.g., refusal, incomplete, $n = 283$), unscreened (e.g., busy, no answer, answering machine, $n = 318$), or undetermined (e.g., call back, $n = 35$). Thus, the overall response rates (i.e., completed interviews divided by completed interviews and screened numbers) were 54.3% for British/Canadians and 44.4% for Chinese/Canadians. Reasons given for refusing to participate included a lack of time and/or interest, and with the Chinese/Canadian quota, various language-related issues as well (e.g., interviewee spoke Vietnamese.)

In addition to the ethnicity measure described above, gambling-related variables, theory of planned behavior variables, and background information variables were also measured. First, based on Smith and Wynne's (2002) research, participants were asked whether or not they had gambled in the last 12 months and, if they had done so, to indicate from a list of 16 gambling activity categories which games they had played, how frequently they had played each game, and how much money they had spent on each game during an average month. Second, attitudes toward, subjective norms regarding, perceived behavioral control over, and intention to play the lottery were each measured following recommended TPB protocol (e.g., Ajzen, 2002). For example, in response to the question stem "For you, would spending money on lottery tickets in the next 30 days be....?", participants reported their affective attitude in terms of three items (i.e., enjoyment, excitement, and pleasure), and their instrumental attitude in terms of three items (i.e., usefulness, wisdom, and goodness). Similar stems and items were used for injunctive norm (i.e., approval, support), descriptive norm (i.e., likelihood), and self-efficacy (i.e., easiness). All of the predictor variables were measured using a seven-point, two-step branching scale format (Krosnick & Berent, 1993). The only exception was the controllability variable, which was measured using a single four-point unipolar scale. Finally, as with other stems, intention to play the lottery was measured following Ajzen's (2002) recommendations, with participants responding to the open-ended question "In the next 30 days, how often do you intend to spend money on....?" in terms of: (a) weekly and bi-weekly lottery tickets (e.g., 6/49), (b) daily lottery tickets (e.g., Pick 3), and (c) instant-win or scratch-tickets. And third, socio-demographic (e.g., age group, income and education level), origin and residency (e.g., country of birth, year permanently moved to Canada), and language preference information was collected.

Before the telephone interview concluded, participants were asked if they would be willing to complete a one-page questionnaire that would be mailed out approximately four weeks after the interview. The follow-up questionnaire included a similar open-ended stem and the same three lottery ticket categories used on the original questionnaire, thus allowing a person's intention to play the lottery over the next 30 days and his or her self-reported lottery play behavior during the same period to be compared. A cover letter and stamped self-addressed envelope accompanied the follow-up questionnaire.

Finally, all of the measures were translated from English into simplified Chinese by one individual and then a second individual—who had not seen the original English-language questionnaire—translated it from simplified Chinese back into English. The original English-

language questionnaire and the translated English-language questionnaire were compared and revisions were made as necessary (i.e., back-translation; Marin & Marin, 1990). The English and simplified Chinese versions were then used to develop a traditional Chinese version of the questionnaire. The same process was used to translate the cover and information letters, the informed consent form, and the follow-up questionnaire.

In order to test the seven hypotheses two sets of multiple regressions were conducted. With the first set of multiple regressions, intention was regressed on the six TPB predictor variables for British/Canadian males, British/Canadian females, Chinese/Canadian males, and Chinese/Canadian females. The regressors were not entered hierarchically (i.e., attitude first, subjective norm second, PBC third; Ajzen, 1991) because, as noted in the literature review, some studies have found that the importance of these variables can differ by ethnicity and gender. With the second set of multiple regressions, behavior was regressed on intention, self-efficacy, and controllability for British/Canadian males, British/Canadian females, Chinese/Canadian males, and Chinese/Canadian females.³ For both sets of multiple regressions, the importance of a predictor variable was determined using a stepwise process, as this method deletes an already-entered regressor if its significance level exceeds the selected limit (i.e., $p < .10$; based on SAS Institute Inc., 1988, p. 820). Additionally, if a regressor did remain entered, its squared semi-partial correlation coefficient had to be sufficiently large (i.e., an f^2 equal to or greater than .02, or a small effect size; Cohen, 1992), since a probability value alone does not necessarily indicate a regressor's importance (SAS Institute Inc., p. 13). Thus, to reiterate, the criteria for determining the importance of a TPB variable was that it remained significant after all of the variables had been entered into the multiple regression *and* that it maintained, at a minimum, a small effect size.

Finally, before the multiple regressions were conducted: (a) participants' socio-demographic and gambling prevalence information were examined to determine if there were any significant differences; (b) Cronbach coefficient alphas were calculated for the two attitude and two subjective norm scales in order to ensure their reliability; and (c) ANOVAs, or MANOVAs, or both (when statistically appropriate) were performed on the TPB variables' mean scores to determine if there were any statistical differences.

Results

British/Canadian participant's who reported that their preferred language was not English, and Chinese/Canadian participants who reported that their preferred language was not English, Chinese, Cantonese, or Mandarin were deleted from the study. Thus, of the 453 individuals who did participate, 208 Chinese/Canadians (97 males and 111 females) and 220 British/Canadians (112 males and 108 females) and 208 Chinese/Canadians (97 males and 111 females) remained. Although there was no significant difference, $\chi^2(4, N = 428) = 6.73, p = .15$, in terms of ethnicity and age group, there were significant differences in: (a) ethnicity and marital status, $\chi^2(2, N = 425) = 15.58, p = .0004$, due mostly to the higher number of divorced/widowed British/Canadians compared with Chinese/Canadians; (b) ethnicity and income level, $\chi^2(3, N = 367) = 30.80, p < .0001$, due largely to the higher number of Chinese/Canadians earning under \$25,000 and the higher number of British/Canadians earning more than \$75,000; and (c) ethnicity and education level, $\chi^2(2, N = 425) = 9.34, p = .0094$, due primarily to the higher number of Chinese/Canadians who had obtained post-bachelor degrees. The majority of British/Canadians participants were born in Canada (88%) followed by Britain (5%), while the

majority of Chinese/Canadians participants were born in Mainland China (56%), followed by Hong Kong (20%) and then Canada (8%). Of the Chinese/Canadians who reported being born elsewhere, over 60% moved to Canada after 1989.

A significant difference, $\chi^2(1, N = 428) = 20.72, p < .0001$, was found for ethnicity and gambling prevalence overall, with 81% of British/Canadians reporting having gambled during the previous 12 months compared with 62% of Chinese/Canadians. There were no significant differences in overall gambling prevalence between British/Canadian males and females (82% and 81%, respectively), $\chi^2(1, N = 220) = 0.09, p = .76$, or between Chinese/Canadian males and females (61% and 62%, respectively), $\chi^2(1, N = 208) = 0.04, p = .84$. There was also no significant difference, $\chi^2(1, N = 307) = 0.68, p = .41$, in the percent of British/Canadian gamblers (77%) and Chinese/Canadian gamblers (81%) who reported playing the lottery during the previous 12 months.

After the follow-up questionnaires were returned and participant identification numbers were matched, 100 Chinese/Canadians' (51 males and 49 females) and 115 British/Canadians' (57 males and 58 females) lottery play intentions and behaviors could be compared.

As reported in Table 1, the affective attitude, instrumental attitude, and injunctive norm scales' Cronbach coefficient alphas were acceptable for British/Canadian and Chinese/Canadian males and females (Nunnally, 1967). Means and standard deviations for these scales, as well as for descriptive norms, self-efficacy, and controllability are also shown in this table, as are the means and standard deviations for intention. In the case of the last variable, it should be noted that: (a) the number of lottery tickets a person said that they intended to purchase over the next 30 days represents the sum total of weekly and bi-weekly tickets, daily tickets, and instant-win and scratch-and-win tickets; and (b) participants who reported that they intended to purchase five lottery tickets and those who reported that they intended to purchase more than five tickets were collapsed into a single group, in order to ensure a sufficient cell size. An ANOVA conducted on intention to purchase lottery tickets was not significant [$F(3, 380) = 2.59, p > .05$], indicating that all four groups intended to purchase a comparable number of tickets. A MANOVA performed on the six TPB predictor variables was significant [Wilk's $\Lambda = .88, F(18, 1061.1) = 2.74, p < .0001$], however only one of the follow-up ANOVAs was significant [$F(3, 380) = 7.53, p < .0001$], with the Tukey tests indicating that British/Canadian males were higher on controllability than Chinese/Canadian males and females, while British/Canadian females were higher on controllability than Chinese/Canadian males.

As Table 2 illustrates, the two overall multiple regression equations for intention to play the lottery were significant for British/Canadians males and females ($p < .0001$ and $p < .001$, respectively), although only the affective attitude predictor met the importance criteria (i.e., $p < .10$ and an f^2 equal to or greater than .02) for both. In contrast, for British/Canadian males, the instrumental attitude and descriptive norm regressors both met the criteria.

Similarly, the two overall multiple regression equations for intention to play the lottery (Table 3) were significant for Chinese/Canadians males and females ($p < .001$ and $p < .0001$, respectively), although once again only the affective attitude predictor met the importance criteria for both. In addition, the injunctive norm regressor met the importance criteria for Chinese/Canadian males while the controllability regressor met the importance criteria for females—and it is worth noting that, unlike all of the other predictor variable regression coefficients, the last variable's coefficient was negative.

Table 4 reports the means, standard deviations, and intercorrelations for intention, self-efficacy, controllability, and behavior for British/Canadian males and females, while Table 5

reports the same information for Chinese/Canadian males and females. As with intentions, the number of lottery tickets a person reported they purchased over the previous 30 days represents the sum total of weekly and bi-weekly tickets, daily tickets, and instant-win and scratch-and-win tickets. Similarly, in order to ensure a sufficient cell size, participants who reported that they had purchased five lottery tickets and those who reported that they had purchase more than five tickets were collapsed into a single group. An ANOVA conducted on the four groups' self-reported lottery play behavior was not significant [$F(3, 211) = 0.91, p = .44$], nor were the ANOVAs performed on intention and self-efficacy [$F(3, 221) = 1.25, p = .29$; $F(3, 221) = 0.75, p = .52$, respectively]. An ANOVA conducted on controllability among the four groups was, however, significant [$F(3, 221) = 5.2, p < .01$], with the Tukey tests indicating that British/Canadian males and females were both higher on controllability than were Chinese/Canadian females. ANOVAs were also performed within each group comparing lottery play intention and behavior. None of these ANOVAs were significant, however (British/Canadian males, $F(1, 112) = 1.32, p = .25$; British/Canadian females, $F(1, 114) = 1.10, p = .30$; Chinese/Canadian males, $F(1, 100) = 0.13, p = .72$; Chinese/Canadian females, $F(1, 96) = 2.04, p = .16$).

Finally, as Table 6 shows, the overall multiple regression equations for self-reported lottery play behavior were significant ($p < .0001$) for British/Canadian and Chinese/Canadian males and females, however only the intention predictor met the importance criteria for all four groups. (The controllability regressor's f^2 only appears to meet the small effect size cut-off for British/Canadian males because of rounding.)

Discussion

In this section, each hypothesis is restated and then discussed based on the results of the multiple regression analyses.

H1: Affective attitude will be an important predictor of intention to play the lottery regardless of ethnicity or gender.

H2: Instrumental attitude will be an important predictor of intention to play the lottery for British/Canadians.

According to the regression results, affective attitude was an important predictor (i.e., $p < .10$ and an f^2 equal to or greater than $.02$) of intention to play the lottery for all four ethnic by gender groups, thus H1 is supported. On the other hand, instrumental attitude was an important predictor for British/Canadian males but not for British/Canadian females, so H2 is only partly supported. In the case of the first hypothesis, this finding was expected as playing the lottery like participating in many types of leisure activities can be seen in terms of positive affect, both for Anglo-North Americans (e.g., Mannell & Kleiber, 1997) and Chinese living in North America (e.g., Walker & Deng, 2003/2004; Walker, Deng, & Dieser, 2001). In the case of the second hypothesis, although we expected that instrumental attitude would not be an important predictor for Chinese/Canadians (since gambling is a culturally accepted activity and luck is more relevant than chance), unexpectedly, it was not important for British/Canadian females as well. In order to explain this result, we returned to the literature and uncovered a study (Yamaguchi, 1997; cited in Nisbett, 2003) that found that American women behaved like Japanese men and women (and differently from American men) when asked whether they were more likely to escape an unpleasant experience if they chose a lottery ticket either alone or as part of larger group. This outcome suggests that gender may affect how chance and probability are construed by Euro-

North Americans; possibly, in this case, due to American and Canadian females being more collectivistic than American and Canadian males, albeit still not to the same degree as Asian males and females (e.g., Triandis, 1995; Markus & Kitayama, 1991).

H3: Injunctive norm will be an important predictor of intention to play the lottery for Chinese/Canadian males.

H4: Descriptive norm will be an important predictor of intention to play the lottery for British/Canadians males.

As expected, the multiple regression analyses' results indicated that injunctive norm was an important predictor of intention to play the lottery for Chinese/Canadian males, while descriptive norm was an important predictor of intention to play the lottery for British/Canadian males. Thus, both H3 and H4 are supported. Our rationale for the third hypothesis was based not only on research (e.g., Chan & Lau, 2001) that suggests that significant other's approval can be a critical regulator of people's—*especially* collectivists'—intentions, but also on research (Kim, Laroche, & Tomiuk, 2004) that indicates that gender roles, power differences, and negotiation strategies must be taken into account when examining the effect of injunctive norms on people's intentions—*especially* collectivists' intentions, since hierarchy is often correlated with this type of self (Triandis, 1995). Although our fourth hypothesis was supported by the regression results and our findings are consistent with Browne and Brown's (1994) discovery that having friends who gambled had a stronger influence on American men's gambling behavior than American women's behavior, there may be another reason for this finding besides the researchers' belief that males experience fewer gambling constraints than females. For example, British/Canadian males' may be more likely to play the lottery if significant others do so because of peer competitiveness (e.g., wanting to win more money than their friends), itself a function of either the type of individualism they hold (what Triandis, 1995, calls vertical individualism), or their need to prove their masculinity (Beneke, 1997) through gambling (Walker, Hinch, & Weighill, 2005), or both.

H5: Affective attitude will be a more explanatory predictor of intention to play the lottery than injunctive norm for Chinese/Canadian males and females.

The fifth hypothesis was also supported, based on examination of the two TPB variables' effect sizes. Specifically, for Chinese/Canadian males, affective attitude had an f^2 of .20 and injunctive norm had an f^2 of .03 (medium and small effects, respectively; Cohen, 1992), while for Chinese/Canadian females, affective attitude had an f^2 of .27 (a medium effect; Cohen), and injunctive norm's probability level was not significant. It should be noted that although Triandis (1995) and others (Chan & Lau, 2001; Park & Levine, 1999; Park, Levine, & Sharkey, 1998) have found that injunctive norm is often more important than affective attitude for collectivists, we felt that because gambling is generally seen as an acceptable activity in Chinese culture, and because aspects of playing the lottery can be done independent of significant others, the opposite outcome would be found. As this outcome did occur, it appears that in some domains and during certain circumstances—such as solitary leisure—collectivists may be able to emphasize the individualistic dimension of their selves and, therefore, their personal attributes. This possibility has been put forth elsewhere (Walker, Deng, & Dieser, 2005), however it appears worth restating based on the above results, as well Tafarodi, Lo, Yamaguchi, Lee, and Katsura's (2004) recent finding that Chinese university students “reported spending more free time by themselves and engaged in solitary hobbies than did Canadians, suggesting that the former enjoy more opportunity for self-expression in these specific contexts.... [than] in the company of parents, siblings, and extended family” (p. 114).

H6: Controllability—in terms of secondary control—will be an important predictor of intention not to play the lottery for Chinese/Canadian females.

Based on the results of the multiple regression analyses, controllability was an important predictor of intention for Chinese/Canadian women, and the negative coefficient indicates that the more control these women felt they had, the less likely they intended playing the lottery. Thus, H6 is supported. This finding suggests that Chinese/Canadian women are trying to control themselves rather than controlling the environment that encompasses them, and therefore they are employing secondary rather than primary control (Weisz, Rothbaum, & Blackburn, 1984). This outcome is consistent with other research that has found that secondary control is common among Chinese people (Chang, Chua, & Toh, 1997), especially Chinese women because of the sex-role expectations placed upon them (Hong & Chiu, 1987). Moreover, because Chinese/Canadian women appear to be using secondary control in order to inhibit, or possibly even prohibit, preference for this leisure activity, this type of control could be conceived of as a type of intrapersonal constraint (i.e., individual attributes that inhibit or prohibit the development of leisure preferences; Crawford & Godbey, 1987). We are not aware of any other studies that have put forth this proposition before, although, based on Scherl's (1989) work, Walker and Virden (2005) have postulated that secondary control could be a way some people negotiate structural constraints (i.e., constraining factors that intervene between preference for, and participation in, an activity; Crawford & Godbey).

H7: Intention to play the lottery will be an important predictor of self-reported lottery play behavior regardless of ethnicity or gender.

The multiple regression analyses results clearly demonstrate that intention was an important predictor of self-reported lottery play behavior, with all four groups' f^2 being large effects (Cohen, 1992). H7 is, therefore, also supported. In fact, all four groups' effects are substantially greater than those found in Sheeran and Orbell's (1999) study of lottery play in Britain, or in Armitage and Conner's (2001) recent meta-analysis of the theory of planned behavior. Although this finding could just be an artefact of who participated in the follow-up study (see below), it also appears possible that if someone in Alberta intends to play the lottery, he or she is determined to do so, or there are only minor, if any, constraints on him or her doing so, or both. This proposition is also supported by the finding that, for all four groups, the mean number of lottery tickets participants reported purchasing was actually higher—albeit not significantly—than the mean number of tickets participants reported intending to buy.

Conclusion

In conclusion, this study found that when intention to play the lottery was regressed on the six theory of planned behavior variables: (a) affective attitude was an important predictor regardless of ethnicity or gender (H1, supported); (b) instrumental attitude was an important predictor for British/Canadian males but not females (H2, partially supported); (c) injunctive norm was an important predictor for Chinese/Canadian males (H3, supported); (d) descriptive norm was an important predictor for British/Canadian males (H4, supported); (e) affective attitude was a more explanatory variable than injunctive norm for Chinese/Canadians (H5, supported); and (f) controllability was an important predictor for Chinese/Canadian females, with a negative coefficient suggesting secondary control (H6, supported). In addition, this study also found that intention to play the lottery was an important predictor of self-reported lottery play behavior regardless of ethnicity or gender (H7, supported).

These findings provide additional evidence for the use of the TPB as a theoretical framework for explaining participation in leisure activities. By taking into account ethnicity, gender, and their interaction, however, this study goes beyond previous leisure research by not only providing credence to the contention that the TPB has cross-cultural applicability *overall*, but also that the variables in this theory may—and in some cases may not—vary in importance among different ethnic and socio-demographic groups. By doing so, this study addresses one of the criticisms levelled at social psychological leisure research (Mannell & Kleiber, 1997), that is this approach's relative inattentiveness to the important roles distal variables, such as ethnicity and gender, may have on leisure participation (see also Caldwell, 2005; Mannell, 2005; Walker, Deng, & Dieser, 2005; Walker, Dieser, & Deng, 2005). Additionally, it addresses one of the criticisms levelled at race/ethnicity leisure research (Hutchison, 2000), that is this area's relative inattentiveness to the important roles intervening variables, such as attitudes, subjective norms, and perceived control, may have on leisure participation.

These results also have practical implications. For instance, concerns have been raised about children and adolescents playing the lottery, with one study (Gupta & Derevensky, 1998) of 12 to 17 year olds finding that 56% of females and 49% of males had purchased lottery tickets in the previous year. Thus, different intervention strategies may be necessary with, for example, appeals aimed at British/Canadian teenage males telling them to stop "being a sheep and following the crowd" (in order to counterbalance the effect of descriptive norms), while appeals aimed at Chinese/Canadian teenage males would tell them to heed the advice of their parents and teachers (in order to reinforce the effect of injunctive norms). Similarly, the discovery that secondary control influenced Chinese/Canadian women's intentions to play the lottery may mean that they also use this kind of controllability in other leisure activities—and, therefore, those who organize, implement, and evaluate these activities may have to do so differently depending upon their participants. Morling's (2000) discussion of Americans "taking" and Japanese "entering" an aerobics class helps illustrate how an instructor might have to alter his or her teaching, or a practitioner his or her programming, depending upon the type of control that predominates:

Americans were more likely to report that they choose classes based on convenience and that they change moves in the class that are too difficult, a pattern that suggests primary control. Japanese were more likely to report that they choose classes based on their ability level, work harder when moves are too difficult, and attribute mistakes to a lack of fit between their own ability and the level of the class, a pattern that suggests more secondary control. (p. 73).

Finally, there are limitations to this study and, consequently, future research is necessary. One sampling problem we were not able to overcome, for example, was the exclusion of Chinese/Canadians who had non-Chinese surnames (due, for example, to an inter-ethnic relationship).⁴ Second, as a reviewer noted, the decision to group participants who self-reported "Canadian" into the British/Canadian" group could, potentially, affect study findings. Third, because only about half of our participants either chose to participate in the follow-up study, or failed to return their questionnaire if they did, there is the possibility that the relationship between these people's intentions and behaviors is different from those that did participate and respond. Fourth, although we did measure acculturation in a separate part of our questionnaire, we did not include this variable in the current study because of sample size limitations. This omission could be easily overcome in a future research study however, and therefore, we recommend the potential effect of acculturation on the TPB be examined. In addition, because similarities and differences in the TPB can occur when other leisure behaviors are studied (Ajzen, 1991; Ajzen & Driver, 1991, 1992), and we fully expect when other ethnic groups are

included, replication is necessary. Moreover, future research involving ethnic groups must not only be cognizant that the meaning and structure of the theory of planned behavior variables, as well as their relationships, may vary, but because culture-specific and self-construal-related variables may also play an important role (e.g., secondary control, belief in luck), they too should be identified and incorporated into any study that uses the TPB. Ajzen (1991) has, in fact, sanctioned this type of theoretical development, which is another reason why the TPB remains a popular framework for explaining a number of different behaviors—including, and of particular interest to this journal's readers, why some people participate in certain leisure activities while others do not.

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¹For comparison purposes, although the largest percent of immigrants to the United States are from Mexico (27%), the second largest percentage (5%) is Chinese—specifically immigrants from Taiwan, Hong Kong, and mainland China (Camarota, 1999).

²The lottery is not an entirely new leisure activity in mainland China, however; it was played 3,000 years old to help fund construction of the Great Wall (China Contact, 2002). Interestingly, lotteries also “enjoy an honoured place in American history as a device for raising funds for public projects, including a prominent role in financing the establishment of the first English colonies. In 1776, lotteries operated in all 13 colonies” (Alberta Gaming and Liquor Commission, 2001, p. 25).

³Although we did not expect either self-efficacy or controllability to differ due to ethnicity or gender, because the TPB holds that these two PBC variables can affect behavior, both were included in the regressions.

⁴Milan and Hamm (2004) have found, however, that only 16% of all Chinese unions are inter-ethnic, the second lowest percentage of any visible minority group in Canada. Moreover, Chang and Scrogin Chang (2001) state that, at least in mainland China, Chinese women often retain their maiden names for both social and legal purposes.

Table 1
Means, Standard Deviations, and Coefficient Alphas for Intention and Predictor Variables

Variable	British/Canadians				Chinese/Canadians			
	Males		Females		Males		Females	
	<i>M</i> (<i>SD</i>)	α						
Intention	1.50 (2.08)	--	1.24 (1.84)	--	1.36 (1.99)	--	0.80 (1.46)	--
Predictor Variable								
Affective attitude	4.06 (0.95)	.78	4.05 (0.85)	.75	4.01 (0.83)	.81	3.95 (0.93)	.83
Instrumental attitude	3.50 (1.19)	.84	3.93 (1.02)	.82	3.58 (0.94)	.73	3.44 (0.99)	.77
Injunctive norm	4.28 (1.04)	.67	4.30 (1.18)	.83	3.92 (0.98)	.71	4.26 (1.12)	.84
Descriptive norm	4.29 (1.86)	--	4.40 (2.01)	--	4.10 (2.24)	--	4.12 (1.87)	--
Self-efficacy	5.75 (1.59)	--	5.33 (1.68)	--	5.66 (1.52)	--	5.25 (1.58)	--
Controllability	3.93 (0.32)	--	3.87 (0.51)	--	3.58 (0.82)	--	3.66 (0.65)	--

Note: British/Canadian males $n = 103$, females $n = 100$; Chinese/Canadian males $n = 86$, females $n = 95$.

Table 2
Multiple Regression Analyses Summary for Variables Predicting Intention – British/Canadians

Variable	Males				Females			
	<i>B</i>	<i>SEB</i>	β	f^2	<i>B</i>	<i>SEB</i>	β	f^2
Affective attitude	0.48	0.26	0.22*	.16	0.67	0.26	0.31**	.23
Instrumental attitude	0.47	0.21	0.27**	.10	0.17	0.24	0.09	.01
Injunctive norm	0.00	0.22	0.00	.01	0.11	0.19	0.07	.01
Descriptive norm	0.28	0.12	0.25**	.04	-0.00	0.09	-0.00	.00
Self-efficacy	-0.20	0.13	-0.15	.02	0.17	0.11	0.16	.02
Controllability	0.41	0.66	0.06	.00	0.18	0.35	0.05	.00

Note: Males, $f^2 = .40$ ($N = 103$, $F = 6.57$, $p < .0001$). Females, $f^2 = .30$ ($N = 100$, $F = 4.75$, $p < .001$).

* $p < .10$. ** $p < .05$.

Table 3
Multiple Regression Analyses Summary for Variables Predicting Intention – Chinese/Canadians

Variable	Males				Females			
	<i>B</i>	<i>SEB</i>	β	f^2	<i>B</i>	<i>SEB</i>	β	f^2
Affective attitude	0.84	0.34	0.35**	.20	0.51	0.20	0.32**	.27
Instrumental attitude	-0.09	0.29	-0.04	.00	0.19	0.19	0.13	.03
Injunctive norm	0.44	0.25	0.21*	.03	-0.01	0.15	-0.01	.00
Descriptive norm	-0.00	0.10	-0.00	.00	0.00	0.08	0.03	.00
Self-efficacy	-0.11	0.14	-0.08	.01	0.14	0.08	0.16	.02
Controllability	-0.15	0.25	-0.06	.00	-0.54	0.22	-0.24**	.04

Note: Males, $f^2 = .27$ ($N = 86$, $F = 3.59$, $p < .001$). Females, $f^2 = .43$ ($N = 95$, $F = 6.38$, $p < .0001$).

* $p < .10$. ** $p < .05$.

Table 4
Means, Standard Deviations, and Intercorrelations for Behavior and Predictor Variables – British/Canadians

Variable	Males			Females				
	<i>M (SD)</i>	1	2	3	<i>M (SD)</i>	1	2	3
Behavior	1.86 (2.17)	.87**	.01	-.27*	1.81 (2.07)	.79**	.23	-.05
Predictor Variable								
1. Intention	1.40 (2.07)	--	-.02	-.15	1.41 (2.00)	--	.29*	-.15
2. Self-efficacy	5.67 (1.75)		--	.35**	5.50 (1.33)		--	.10
3. Controllability	3.91 (0.39)			--	3.91 (0.34)			--

Note: Males $n = 57$, females $n = 58$.

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

Table 5
Means, Standard Deviations, and Intercorrelations for Behavior and Predictor Variables – Chinese/Canadians

Variable	Males			Females				
	<i>M (SD)</i>	1	2	3	<i>M (SD)</i>	1	2	3
Behavior	1.53 (2.20)	.77**	.15	-.10*	1.27 (1.90)	.68**	.04	-.26
Predictor Variable								
1. Intention	1.37 (2.14)	--	-.07	-.02	0.80 (1.29)	--	.02	-.47**
2. Self-efficacy	5.73 (1.43)		--	-.04	5.31 (1.66)		--	.18
3. Controllability	3.71 (0.67)			--	3.55 (0.77)			--

Note: Males $n = 51$, females $n = 49$.

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

Table 6
Multiple Regression Analyses Summary for Variables Predicting Behavior

Variable	Males				Females			
	<i>B</i>	<i>SEB</i>	β	f^2	<i>B</i>	<i>SEB</i>	β	f^2
British/Canadians								
Intention	0.89	0.07	0.85**	3.17	0.83	0.09	0.80**	1.63
Self-efficacy	0.10	0.08	0.08	.01	-0.01	0.14	-0.01	.00
Controllability	-0.92	0.38	-0.17*	.02	0.45	0.52	0.07	.01
Chinese/Canadians								
Intention	0.78	0.10	0.76**	1.44	1.05	0.18	0.71**	.85
Self-efficacy	0.14	0.14	0.09	.01	0.01	0.13	0.01	.00
Controllability	-0.25	0.30	-0.08	.01	0.19	0.32	0.08	.01

Note: British/Canadian males, $f^2 = 3.76$ ($N = 57$, $F = 65.21$, $p < .0001$). British/Canadian females, $f^2 = 1.63$ ($N = 58$, $F = 29.58$, $p < .0001$). Chinese/Canadian males, $f^2 = 1.5$ ($N = 51$, $F = 23.48$, $p < .0001$). Chinese/Canadian females, $f^2 = .85$ ($N = 49$, $F = 12.89$, $p < .0001$).

* $p < .05$. ** $p < .0001$.