ORIGINAL PAPER

Problem Gambling of Chinese College Students: Application of the Theory of Planned Behavior

Anise M. S. Wu · Catherine So-kum Tang

Abstract The present study, using the theory of planned behavior (TPB), investigated psychological correlates of intention to gamble and problem gambling among Chinese college students. Nine hundred and thirty two Chinese college students (aged from 18 to 25 years) in Hong Kong and Macao were surveyed. The findings generally support the efficacy of the TPB in explaining gambling intention and problems among Chinese college students. Specifically, the results of the path analysis indicate gambling intention and perceived control over gambling as the most proximal predictors of problem gambling, whereas attitudes, subjective norms, and perceived control, which are TPB components, influence gambling intention. Thus, these three TPB components should make up the core contents of the prevention and intervention efforts against problem gambling for Chinese college students.

Keywords Theory of planned behavior · Problem gambling · Attitudes · Norms · Perceived control · Intention · College students · Chinese

Introduction

Empirical evidence suggests that gambling is found in most cultures, but some cultural groups, including the Chinese, have higher rates of gambling (Raylu and Oei 2004a). The prevalence rates of problem gambling among Chinese communities are also constantly as high as 2.5–4% of the population (Blaszczynski et al. 1998; Fong and Ozorio 2005; Wong and So 2003). Gambling is generally regarded as a form of social activity and entertainment in Chinese culture (Loo et al. 2008; Scull and Woolcock 2005). Such high social acceptance, together with availability of gambling opportunities in Chinese communities like Hong Kong and Macao, may heighten people's vulnerability to problem gambling, and

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cause the underreport of the problem (Blaszczynski et al. 1998). Some meta-analytic studies have indicated that problem gambling is more prevalent among college students than adolescent or adult populations (Blinn-Pike et al. 2007; Shaffer and Hall 2001). The present study took the reasoned action approach (Ajzen and Albarracin 2007; Fishbein and Ajzen 2010) and examined the applicability of the theory of planned behavior (TPB; Ajzen and Fishbein 1980) in explaining problem gambling among Chinese college students.

The TPB suggests that how people evaluate a particular behavior (attitude), perceive their significant others' evaluation of it (subjective norm), and appraise their own control over it (perceived behavioral control) will determine their intention to engage in that behavior (Ajzen 1991; Ajzen and Fishbein 1980). It is presumed that people will have the intention to perform a behavior that is under their volitional control if they possess favorable attitudes, positive norms, and a sense of strong behavioral control. Given a sufficient extent of actual behavioral control, people are very likely to carry out their intention. Since perceived behavioral control reflects actual control over the behavior, it would also exert direct impact on behavior (Ajzen and Albarracin 2007).

Problem gambling can be defined as a persistent, maladaptive pattern of gambling behaviors, and problem gamblers tend to engage in excessive gambling behaviors with a subjective sense of impaired control (Blaszczynski and Nower 2002). As anticipated, problem gambling has been observed to have positive association with gambling behaviors such as gambling frequency and expenditure (e.g. Kessler et al. 2008). Previous research findings from non-Chinese populations, including Americans and Australians, provide support to the explanatory value of the TPB components on both gambling behaviors and problem gambling (e.g. Martin et al. 2010; Moore and Ohtsuka 1999; Neighbors et al. 2002, 2007). For example, Martin et al. (2010) tested the applicability of the TPB on gambling behaviors among American college students and found that attitudes, subjective norms regarding family/friends but not peers, and perceived control over gambling significantly explained intention to gamble, which in turn was associated with gambler status and gambling frequency among American college students. Intention to gamble, consistent with the TPB, also significantly accounted for problem gambling (Moore and Ohtsuka 1999). More favorable attitudes toward and more positive subjective norms of family and friends on gambling were also positively associated with gambling frequency and problem gambling (Moore and Ohtsuka 1999; Neighbors et al. 2002, 2007). One should note that in the context of gambling, perceived control over refusing gambling has attracted more research attention than that over engaging in gambling (Casey et al. 2008; May et al. 2003; Raylu and Oei 2004b). Previous studies suggested that a poor sense of competence over controlling or refusing gambling would be associated with a greater gambling intention, a higher frequency of gambling, as well as a higher level of problem gambling (Martin et al. 2010; Oei et al. 2008).

The applicability of the TPB on Chinese gambling was also examined by Walker et al. (2006) in a cross-ethnic research, which found that attitudes, subjective norms, and perceived behavioral control significantly explained Chinese gamblers' intention to play lottery, which in turn was a significant predictor of lottery playing behavior. Other researchers have also noted that positive attitudes toward gambling such as expectation of favorable gambling consequences were a significant correlate of problem gambling among Chinese adult gamblers in Macao (Tao et al. 2011), though the correlation between attitudes and problem gambling of Chinese casino employees was found to be non-significant (Wu and Wong 2008). A positive correlation was also observed between perceived incompetence to refuse or stop gambling and problem gambling in Chinese Australians (Oei et al. 2008). Nevertheless, to the best of our knowledge, the applicability of the TPB

in explaining general gambling intention and problem gambling among the college population in Chinese societies has not been empirically tested, even though the high susceptibility of Chinese college students to problem gambling is evident (Blinn-Pike et al. 2007; Shaffer and Hall 2001).

In this study, we investigated the relative power of the TPB components in explaining problem gambling among Chinese college students in Hong Kong. Particularly, we hypothesized that favorable gambling attitudes, positive subjective norms, and a poor sense of control over gambling refusal were associated with higher gambling intention and more behavioral symptoms of problem gambling. Based on the TPB, path analysis was used to examine (1) whether favorable attitudes, positive subjective norms, and low perceived control of gambling refusal accounted for a higher intention to gamble among gamblers; (2) whether this intention mediated the effect of these three TPB components on problem gambling among gamblers; and (3) whether perceived control and intention acted as proximal factors of problem gambling behaviors (see Fig. 1).

Method

Respondents and Procedures

We recruited 932 Chinese college students from universities in Hong Kong or Macao for the study (456 male, 464 female, and 12 genders unidentified). They aged from 18 to 25 years, and the mean age was 20.64 years (SD = 1.49). About 86% of the respondents ($n = 798$) had gambling experience in their lifetime (and were classified as "gamblers" in the present study), and they were involved in gambling activities like mahjong (68%), card games (56%), lottery (47%), slot machine (30%), soccer betting (22%), and horse race betting (8%). Among these gamblers, about 50% of them were male ($n = 400$), whereas there was a slightly smaller percentage of males ($n = 56$, 43%) than females ($n = 73$) in the non-gambler group. However, the gender difference on gambler status was not statistically significant (Pearson $\chi^2(1) = .13, P < .05$). A statistically significant age difference was found between gamblers and non-gamblers ($t(929) = -4.14, P < .01$), whose mean ages were 20.72 and 20.14 years
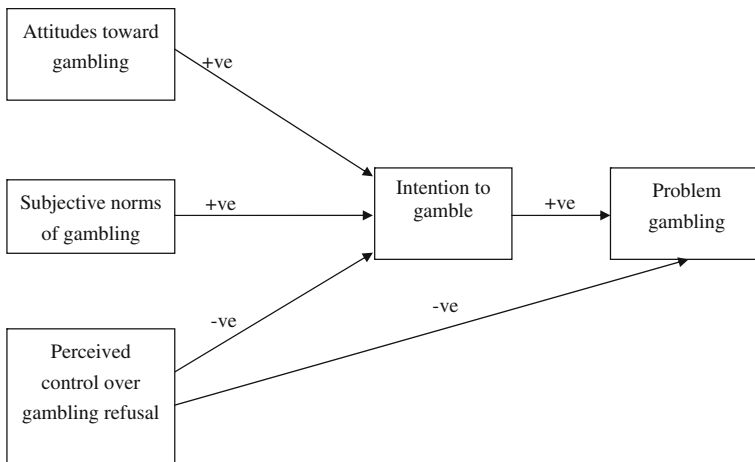
Fig. 1 The proposed path model

respectively, but this age difference was practically small. About 54% of the gamblers ($n = 432$) scored zero point in C-SOGS and about 39% ($n = 309$) had 1–4 C-SOGS scores. There were about 6% of the gamblers ($n = 44$) with 5–7 C-SOGS scores. Only 13 gamblers had C-SOGS scores over 8, which is a cut-off score suggested by Tang et al. (2010) for pathological/problem gambling screening in Chinese samples.

Approval to conduct the present study was first obtained from the ethics review committee of the Chinese University of Hong Kong. College students from various universities in the two Special Administrative Regions of the People's Republic of China (i.e. Hong Kong and Macao) were invited to voluntarily participate in the research project through class announcement, direct invitation from trained interviewers on university campuses, and posters in libraries and dormitories. Consenting respondents were distributed with a questionnaire. Anonymity and confidentiality of their responses were assured and they were allowed to withdraw from the study anytime if they so wished. About 1,500 questionnaires were distributed and 932 valid questionnaires were collected in the present study. The response rate was 62%.

Instrument

Previous Gambling Involvement and Intention to Gamble

Respondents were asked to indicate whether they had engaged in any kind of gambling, including betting on soccer games or horse races, buying lottery, and playing mahjong, cards, and slot machines (i.e. gambler status). In the present study, those who had gambling experience would be classified as "gamblers" whereas those without would be classified as "non-gamblers". Respondents' gambling intention was evaluated by two items: (1) how much they want to gamble, and (2) how likely they would gamble in the near future. These two questions assess desire to and self-prediction of gambling respectively (Armitage and Conner 2001) and are recommended for measuring the intention component of the TPB by Francis et al. (2004). Respondents responded to these two items on a seven-point Likert scale, and a high average score represented a greater intention to gamble.

Problem Gambling

The Chinese version of the 20-item South Oaks Gambling Screen (Lesieur and Blume 1987) was used to assess the behavioral symptoms of problem gambling. A sample item is "Did you ever gamble more than you intend to?" This Chinese version (C-SOGS) was empirically tested among Chinese adult gamblers and found to be a valid and reliable instrument to assess lifetime problem gambling in Chinese samples (Tang et al. 2010). In the present study, the internal consistency of C-SOGS was satisfactorily high (Cronbach's alpha = .75). Those participants who had ever engaged in any gambling activities (i.e. gamblers) were asked to respond to the C-SOGS items with "yes" or "no", and affirmative responses were summed to form a total score. A high average score represents more symptoms of problem gambling.

Attitudes

A four-item "Gambling Expectancies" subscale of the Gambling Related Cognitions Scale (Raylu and Oei 2004b) was used to assess the extent to which respondents positively

evaluated gambling and its consequences. The respondents were asked to state their endorsement level to each of the item on a seven-point Likert Scale (*Strongly disagree* = 1 and *Strongly agree* = 7). Sample items of this subscale include "Gambling makes me happier" and "Gambling makes things seem better". A high average score represents more favorable attitudes toward gambling. The internal consistency is satisfactorily high (Cronbach α = .83).

Subjective Norms

A 12-item measure was used to assess perceived family and friend norms with respect to gambling (Moore and Ohtsuka 1999) with a five-point Likert scale (*Strongly disagree* = 1 and *Strongly agree* = 5). Sample items include "My family approves of gambling" and "my friends would disapprove of me playing mahjong". After recoding of the items, a higher average score represents a perception of more positive social norms toward gambling. The internal consistency of the scale is satisfactorily high in the present study (Cronbach α = .80).

Perceived Control over Gambling Refusal

Respondents were asked to evaluate their own behavioral control over resisting gambling with 10 items modified from the Generalized Self-Efficacy Scale (GSES; Schwarzer and Jerusalem 1993). The GSES, whose psychometric properties such as reliability were shown to be satisfactory in Chinese samples (Zhang and Schwarzer 1995), originally assesses one's perceived competence to respond to novel or difficult situations and to deal with any associated obstacles or setbacks. For the present study, the Chinese version of the GSES was modified by two psychologists such that it measured respondents' perceived ability to refuse to engage in gambling in different situations. A sample item is "No matter what happens to me, I can usually say no to gambling" (see "Appendix" for all items translated in English). Participants rated each item with a 4-point scale ("*Strongly disagree*" = 1, "*Strongly agree*" = 4). A high average score represents a good sense of self-control over gambling refusal. The internal consistency of the scale is high (Cronbach α = .92).

Results

The SPSS for Windows 16.0 was used in the descriptive and inferential statistical analyses (except path analysis). Regarding gambling intention, bivariate correlation results showed it was significantly correlated with the three TPB components (i.e. attitudes, subjective norm, and perceived control over refusing gambling) in the expected directions ($P < .01$; see Table 1). Gamblers reported a higher intention to gamble than non-gamblers ($P < .01$), while male and older respondents reported a higher intention to gamble than their counterparts ($P < .01$).

The results of a multiple regression analysis showed that after the effect of demographics (including gender, age, and gambler status) were controlled in the first block (R^2 change = .08; F change (3, 907) = 27.21, $P < .001$), the three TPB components explained the variances of intention to gamble for an additional 49% (F change (3, 904) = 345.66, $P < .001$). In the final regression model, the demographic effects were not statistically significant (P value ranged from .15 to .36), whereas more favorable attitudes (Beta = .67, $P < .001$), more positive subjective norm (Beta = .13, $P < .001$), and poorer

Table 1 Correlation matrix of the major variables ($n = 932$)

	Mean	SD	Range	1	2	3	4	5	6	7
1. C-SOGS[a]	1.16	1.87	.00–12.00	–						
2. Intention	2.72	1.57	1.00–7.00	.35**	–					
3. Attitudes	2.47	1.27	1.00–6.50	.34**	.75**	–				
4. Subjective norms	2.85	.61	1.00–4.67	.19**	.40**	.38**	–			
5. Perceived control over refusal	3.30	.54	1.00–4.00	−.32**	−.23**	−.24**	−.18**	–		
6. Gender	–	–	1.00–2.00	−.14**	−.21**	−.23**	−.16**	.07*	–	
7. Age	20.64	1.49	18–25	.03	.13**	.11**	.16**	.01	−.16**	–
8. Gambler status	–	–	.00–1.00	–	.20**	.18**	.25**	−.09**	−.05	.13**

Gender (Male = 1, Female = 2) and Gambler status (Non-gambler = 0; Gambler = 1)

[a] Only gambler respondents ($n = 798$) were considered in the statistical analysis of C-SOGS

** Significant at the .01 level (2-tailed); * Significant at the .05 level (2-tailed)

perceived control over resisting gambling (Beta = −.04, $P = .07$) predicted a higher intention to gamble.

Consistent with the hypothesis, the results of bivariate correlation analysis showed that problem gambling was significantly associated with intention to gamble and the three TPB components in the expected directions among the gambler respondents ($n = 798$). A path analysis using the maximum likelihood method under EQS 6.1 for Windows was conducted to evaluate the significance of the direct and indirect effects of the TPB components on intention to gamble as well as problem gambling in this sub-sample. Path analysis is a widely used technique for analyzing structural models with observed variables (Kline 2005). It was used to test how well the proposed model (Fig. 1) accounts for the data, and to estimate the presumed relations among the psychological factors. The goodness-of-fit of this proposed model with the actual data from the sample was evaluated with χ^2 test, as well as five fit indices, namely the Bentler-Bonett Normed Fit Index (NFI), the Comparative Fit Index (CFI), the GFI Fit Index, Bollen's Fit Index (IFI), McDonald's Fit Index (MFI), and the Root Mean Squared of Approximation (RMSEA). As a rule of thumb, values larger than .90 for the first four indices and smaller than .10 for the RMSEA are indicative of a good fit.

The findings show that the goodness-of-fit of the proposed model in Fig. 1 is satisfactory. Though chi-square test result was statistically significant ($\chi^2(2) = 9.94$; $P = .007$), the fit indices met the level of a good fit (NFI = .99, CFI = .99, IFI = .99, MFI = .99, as well as RMSEA = .07). Attitudes, subjective norms, and perceived control, with descending order of influence, exert significant direct effect on intention ($P < .05$). In addition, the indirect effects of both attitudes and subjective norms, via intention, were significant (unstandardized value = .30 and .12 respectively, $P < .05$). The direct effects of both intention and perceived control on problem gambling were also significant ($P < .05$). Figure 2 shows the standardized coefficients of the proposed paths, which were all significantly supported ($P < .05$). In sum, the findings of path analysis generally demonstrated that TPB components significantly accounted for problem gambling. Both
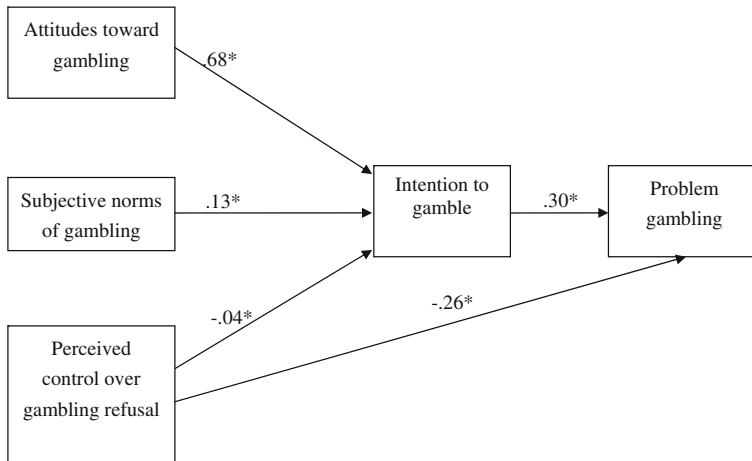
Fig. 2 The path model with standardized coefficients ($n = 798$). *Significant at the .05 level (2-tailed)

intention and perceived control were the proximal factors and had direct effect on problem gambling. Furthermore, intention fully mediated the positive effect of attitudes and subjective norms on problem gambling. The model explained the total of 56 and 19% of the variances in intention to gamble and problem gambling, respectively.

Discussion

The present study examined the efficacy of the TPB in explaining gambling intention and problem gambling behaviors among Chinese students who were studying at the universities in Hong Kong and Macao. The sample mainly consists of local residents and a small proportion of the respondents were from the Mainland China and Taiwan. At the time of survey, they had reached the legal age for engaging the commonest forms of gambling in both Hong Kong and Macao, including lottery, casino gambling, horse/dog racing, and sport game betting. The findings generally provided further support to the utility of the TPB and showed that positive attitudes toward gambling, positive family/friends norms, and a poor sense of control over gambling refusal would promote intention to gamble, which was a salient promoting factor of problem gambling among Chinese college students. Consistent with the claim of Ajzen and Albarracin (2007), perceived control also exerted a direct effect on problem gambling of college gamblers. Thus, gambling intention and problem gambling of Chinese college students may be discouraged by counteracting favorable attitudes and norms, as well as promoting the sense of control over resisting gambling.

The present findings suggest that Chinese college students who favorably appraise gambling report higher intention to gamble and more problem gambling symptoms. As people are inclined toward behaviors with largely desirable consequences (Ajzen 1991), educating them with the adverse consequences of gambling would be an effective strategy to alter their attitudes which in turn reduces their gambling intention and problem gambling. In addition, the present study showed that gambling intention, as well as problem

gambling, increased with positive subjective norms of family and friends among Chinese college students. Chinese people are more likely to report social reasons as a primary gambling motivation than their Caucasian counterparts (Oei and Raylu 2010), and young Chinese adults commonly gamble with families and friends, particularly during festivals (Loo et al. 2008). Therefore, local governments should allocate more resources to heighten public awareness of the addictive feature of gambling and to dispel its "functional" image of serving socialization and entertainment purposes, since social gambling may escalate to problem gambling.

Those college students who had less perceived control over resisting gambling were more likely to commit the act and to report problem gambling. Empowering young Chinese gamblers' perceived control over their refusal of gambling in various situations may also lower their intention to gamble and vulnerability to problem gambling. Training of social and coping skills against peer pressure and negative affects, which were associated with gambling participation, can be incorporated in gambling prevention campaigns for college students (Takushi et al. 2004).

Some limitations of the present study should be noted and the findings should be interpreted with cautions. First, the present findings were generated from a convenience sample of college students, so they may not be generalized to other Chinese populations such as problem gamblers and older gamblers. Validating the utility of the TPB model with a cross-sample design could be an avenue for future research (e.g. problem vs. non-problem gamblers). Second, the findings were also susceptible to social desirability biases due to the self-report nature of the research design although respondents were assured of anonymity and encouraged to provide honest answers before they started completing the survey. Third, the measurement tool of perceived control over gambling refusal was adopted from an inventory of generalized sense of perceived control, and thus its psychometric properties had not been fully examined. Further study should be conducted for developing and validating a specific inventory for perceived control over gambling among Chinese people. Fourth, the cross-sectional design limited the investigation of causality among the variables. Longitudinal design is recommended in future research in order to examine the actual casual relationship among variables.

In the present study, the TPB model satisfactorily explained the variances in gambling intention (56%) but accounted for only 19% of the variances in symptoms of problem gambling, respectively. The TPB highlights the cognitive determinants of a behavior, while some gambling researchers note that maladaptive pattern of gambling behaviors may involve not only cognitive but also personality and affective vulnerability (e.g. Blaszczynski and Nower 2002; Griffiths and Delfabbro 2001; Raylu and Oei 2002). It is very probable that other psychological factors such as biological arousal, impulsive personality and negative affects are at work in shaping Chinese people's problem gambling style. In addition, the present study did not compare the applicability of the TPB with other models on explaining Chinese college students' gambling intention and problem gambling and thus whether the TPB is superior to other models remains unclear. Future research should evaluate the efficacy of various models with emphasis on different kinds of psychological factors and the findings may provide a more comprehensive view of Chinese problem gambling.

There are many legal forms of gambling such as Mark Six lottery, horse/dog racing, casino gambling, as well as mahjong in both Hong Kong and Macao, and thus gambling activities are highly accessible to young adults including college students, who are regarded as a high-risk group of problem gambling in the West (Blinn-Pike et al. 2007; Shaffer and Hall 2001). The present findings provide evidence for the efficacy of the TPB

in explaining gambling intention and problem gambling among Chinese college students, and thus campaigns for preventing problem gambling and promoting responsible gambling may use the TPB as a theoretical framework to guide the design of the campaigns and evaluation assessment of their effectiveness.

Appendix: Items of the Scale of Perceived Control over Gambling Refusal

1. I can control myself not to gamble if I try hard enough.
2. Even if someone opposes me, I can find ways to refuse to engage in gambling.
3. It is easy for me to stick to the goal of not gambling.
4. I am confident that I can efficiently handle unexpected events arisen from my refusal to engage in gambling.
5. My intelligence enables me to handle unforeseen situations related to gambling refusal.
6. I can solve most of the problems related to gambling refusal if I make enough efforts.
7. As I believe in my ability and skills, I can stay calm when facing the difficulties related to control over my gambling.
8. When I face a problem related to gambling refusal, I can usually think of several alternatives.
9. I can usually think of a way out even if I am in a difficult situation to refuse to engage in gambling.
10. No matter what happens to me, I can usually say no to gambling.

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