

# *Gambling and Problem Gambling among the Chinese*



Tian Po Oei, PhD, FAPS  
Namrata Raylu, PhD, MAPS

# **GAMBLING AND PROBLEM GAMBLING AMONG THE CHINESE**

By

**Tian Po Oei Ph.D. and Namrata Raylu Ph.D.**

School of Psychology, The University of Queensland,  
Brisbane, Qld, Australia, 4072.

Email: [oei@psy.uq.edu.au](mailto:oei@psy.uq.edu.au), Tel: 07-3365-6449.

This is a report submitted to the Research and Community Engagement Division, Queensland Office of Gaming Regulation, Queensland Treasury for the fulfilment of a research grant no.: 2002001746 awarded to Professor Tian Po Oei.

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Behavioural Research and Therapy Centre

School of Psychology

The University of Queensland

Brisbane QLD 4072 Australia

Correspondence should be addressed to the authors:

Professor Tian P.S. Oei & Dr. Namrata Raylu

School of Psychology

The University of Queensland

Brisbane QLD 4072 Australia

Telephone: +617 3365 6230

Fax: +617 3365 4466

E-mail: [oei@psy.uq.edu.au](mailto:oei@psy.uq.edu.au)

***ISBN 0-9775520-0-4***

## **AUTHORS' BIOGRAPHY**

### **Tian Po Oei:**

Professor Oei was born of Chinese parentage and raised in Indonesia. He was educated in the Western world, graduated with a BA (Hons) from Queens' University in Canada, a Master of Clinical Psychology degree from the University of New South Wales and finally a Doctor of Philosophy degree from Newcastle University. Since his graduation, he has worked at LaTrobe and Otago Universities. At present he holds a personal Chair in Clinical Psychology at the University of Queensland. He is also the Director of CBT Unit at Toowong Private Hospital. Professor Oei has published more than 220 scientific papers in National and International high impact Journals in the areas of substance use and abuse disorders, anxiety and mood disorders and processes of change in psychotherapy, in particular Cognitive Behaviour Therapy in Asian cultures. Professor Oei is a Fellow of the Australian Psychological Society and a Founder and Co-Organiser of the First Asian Cognitive Behaviour Therapy Conference held Hong Kong in 2006.

### **Namrata Raylu:**

Dr. Raylu was raised in Fiji and educated in New Zealand and Australia. She graduated with a BSc degree and a MSc degree majoring in Psychology from the University of Auckland and a Ph.D degree in Clinical Psychology from the University of Queensland in 2005. Dr. Raylu is a clinical psychologist in the Northern Sydney Central Coast Health Service. She is a member of the Australian Psychological Society. Her research interest is in the area of Addictive Behaviours and she is involved in a number of research activities in this area at the University of Queensland in Brisbane and Hornsby Ku-Ring-Gai Hospital in Sydney. She has published in high impact International Journals, mainly in the area of gambling.

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## **ACKNOWLEDGEMENTS**

The completion of this project, on schedule, would not have been possible without the help and contribution of the following people. We would like to thank the following for their contributions:

1. The Head and all administrative staff at The School of Psychology, University of Queensland (UQ) for providing facilities and support.
2. The Postgraduate Clinical Psychology interns at UQ who acted as therapists for both the individual and group cognitive behaviour therapy (CBT) treatments.
3. Dr. Leanne Casey who acted as a Post Doctoral fellow and a Clinical Supervisor for the treatment project.
4. Queensland Treasury for providing a grant for this project.
5. The Patients and Participants for their time and effort in support of this project.

Note: The views expressed in this report are those of the authors and not the University of Queensland, or the Treasury Department of Queensland Government.

## **ABBREVIATIONS**

AA – Alcoholics Anonymous  
AVS – Asian Values Scale  
ANOVA – Analysis of Variance  
APA – American Psychiatric Association  
AUDIT – Alcohol Use Disorders Identification Tool  
CB – Cognitive Behavioural  
CBT – Cognitive Behavioural Therapy  
CFA – Confirmatory Factor Analysis  
DASS – Depression Anxiety and Stress Scale  
DSM – Diagnostic Statistical Manual  
EFA – Exploratory Factor Analysis  
GA – Gamblers Anonymous  
GE – Gambling Expectancies  
GRC - Gambling Related Cognitions  
GRCS – Gambling Related Cognitions Scale  
GU – Gambling Urges  
GUS – Gambling Urges Scale  
IB – Interpretative Bias  
IC – Illusion of Control  
ID - Imaginal Desensitisation  
IS – Perceived Inability to stop/control gambling  
MANOVA – Multiple Analysis of Variance  
MTGS – Motivation towards Gambling Scale  
NFI – Bentler Bonnet Normed Fit Index  
NNI – Bentler Bonnet Non-normed Fit Index  
NS – Non Significant  
PC – Predictive Control  
PCR – Productivity Commission Report

RMR – Root Mean Square Residual

RMSEA – Root Mean Square of Approximation

SOGS – South Oaks Gambling Screen

SPSS – Statistical Package for Social Sciences

VCGA - Victorian Casino and Gaming Authority

## **PAPERS PUBLISHED AND PRESENTED**

The list below contains papers published and conferences presented. The work below is supported by a grant from the Research and Community Engagement Division, Queensland Office of Gaming Regulation, Queensland Treasury to Professor Tian Po Oei. The grant contract number is 2002001746.

### **PAPERS PUBLISHED IN NATIONAL AND INTERNATIONAL JOURNALS:**

Raylu, N., & Oei, T. P. S. (2002). Pathological gambling: A comprehensive review. *Clinical Psychology Review*, 22(7), 1009-1061.

Oei, T. P. S., & Raylu, N. (2003). Parental influences on offspring gambling cognitions and behavior: Preliminary findings: *Gambling Research - Journal of the National Association for Gambling Studies*, 15(2), 8-15.

Oei, T. P. S., & Raylu, N. (2004). Familial influence on offspring gambling: A cognitive mechanism for transmission of gambling behavior in families. *Psychological Medicine*, 34(7), 1279-1288.

Raylu, N., & Oei, T. P.S. (2004). Role of culture in gambling and problem gambling. *Clinical Psychology Review*, 23(8), 1087-1114.

Raylu, N., & Oei, T. P. S. (2004). The Gambling Related Cognitions Scale (GRCS): Development, confirmatory factor validation and psychometric properties. *Addiction*, 99(6), 757-769.

Raylu, N., & Oei, T. P. S. (2004). The Gambling Urge Scale (GUS): Development, confirmatory factor validation, and psychometric properties. *Psychology of Addictive Behaviors*, 18(2), 100-105.

Oei, T. P. S. Lin, J. & Raylu, N. (2007). Relationship between gambling cognitions, psychological states and gambling: A cross-cultural study of Chinese and Caucasians in Australia. *Journal of Cross Cultural Psychology, In Press.*

Oei, T. P. S., Lin, J. & Raylu, N. (2007). Validation of the Chinese version of the Gambling Related Cognitions Scale (GRCS-C). *Journal of Gambling Studies, In Press.*

Oei, T. P. S. Lin, J. & Raylu, N. (2007). Validation of the Chinese version of the Gambling Urges Scale (GUS-C). *International Gambling Studies, In Press.*

Raylu, N., & Oei, T.P.S. (2007). Factors that predict outcomes in a community treatment agency for problem gamblers in Australia. *International Journal of Mental Health and Addiction, In Press.*

## **PAPERS PRESENTED:**

Raylu, N., & Oei, T.P.S. (2002) National Association for Gambling Studies 12th Annual Conference (Nov, 2002; Melbourne, Australia).

**Title: Familial influence on gambling related cognitive errors and problem gambling.**

Oei, T.P.S., & Raylu, N. (2004) International Council of Psychologists 62nd Annual Conference (Aug, 2004; Jinan, China)

**Title: Relationship between gambling cognitions, psychological states and gambling among Chinese.**

Oei, T.P.S., Lin, J., & Raylu, N. (2005) The First Asian Psychological Association Congress (Nov, 2005; Jakarta, Indonesia)

**Title: Chinese gambling behaviour.**

## EXECUTIVE SUMMARY

There has been a significant gap in the gambling literature regarding the role of culture in gambling and problem gambling. The studies contained in this report intend to reduce this gap by focussing on gambling amongst the Chinese. These investigations offer a unique contribution to both the Australian and international research and thus contribute substantially to this growing field of research. Understanding the contribution of cultural variables will allow us to devise better prevention and treatment options for problem gambling, especially amongst the Chinese.

Chapter 1 presents a systematic review of the cultural variations in gambling and problem gambling, as well as a discussion of the role that cultural variables can play in the initiation and maintenance of gambling. It shows that although studies investigating prevalence rates of gambling and problem gambling in different cultures are not solid and do have methodological problems, evidence does suggest high rates of gambling among some cultural groups (e.g. Chinese), ethnic minorities and indigenous groups (e.g. the Maoris in New Zealand and Native Americans in the United States) across several countries. There is currently a significant lack of information on gambling behaviours and motivations towards gambling among certain cultural groups. Furthermore, in Western literature, problem gambling has been attributed to several significant factors including familial/genetic, sociological and individual. However, since most of these studies have used predominantly Caucasian samples, generalising the current literature to all cultural groups is inappropriate. It is also possible that the insufficient assessment of gambling behaviours and gambling related variables (e.g. gambling cognitions and urges) among various cultural groups can be partially attributed to the lack of validated instruments. The variables identified in the gambling literature as playing important roles in the development and maintenance of problem gambling do not account for these cultural variations in gambling and problem gambling. Consequently, cultural variables such as cultural values and beliefs, the process of acculturation, and the influence of culturally determined help-seeking behaviours need also to be examined in relation to the role they could play in the initiation and maintenance of gambling.

There are a number of reasons why it is important to assess gambling and problem gambling patterns among the Chinese. Chinese individuals can be found throughout the world and account for about a quarter of the world's population. There are a large number of historical accounts of

gambling among the Chinese especially among males (Clark, King & Laylim, 1990). There are also many anecdotal reports suggesting high levels of gambling and problem gambling among the Chinese. Although empirical studies are limited, those that have explored gambling patterns among the Chinese also show high rates of gambling/problem gambling. Despite such evidence, culture and its impact upon gambling participation and problem gambling among the Chinese have not received enough attention in the published research. The main aim of this report is to close this lack of knowledge about the cultural gap by studying the role of culture on gambling behaviours amongst the Chinese.

Chapter 2 presents a study that examines and validates the Gambling Urge Scale (GUS-Chinese version), which was based on the 6-item Gambling Urge Scale (Raylu & Oei, 2004b). Confirmatory Factor Analysis using a sample of 422 Chinese community based participants (221 living in Australia and 201 living in Taiwan) confirmed that a one-factor model was the best fit for the data. Both the reliability (Cronbach's alpha coefficient was .95) and concurrent, criterion, and predictive validities of the GUS (Chinese version) were good, indicating that the GUS (Chinese version) was a valid and reliable instrument for assessing gambling urges among non-clinical Chinese samples.

Chapter 3 presents a study that examines and validates Gambling Related Cognitions Scale - Chinese version, which is based on the 23-item Gambling Related Cognitions Scale (GRCS; Raylu & Oei, 2004b). Confirmatory Factor Analysis using 422 Chinese from the general community (221 living in Australia and 201 living in Taiwan) confirmed that a five-factor model was a good fit for the data. The Cronbach's alpha coefficient for the overall scale is .95, and ranges from .83 to .89 for the five factors. Concurrent, criterion, and predictive validities of the GRCS (Chinese version) were also good, suggesting that GRCS (Chinese version) is a valid and reliable instrument for assessing gambling cognitions among non-clinical Chinese samples.

Chapter 4 presents a study that investigates the role of gambling cognitions and psychological states on problem gambling behavior among 501 participants (306 Caucasians and 195 Chinese living in Australia). Participants completed several questionnaires including the South Oaks Gambling Screen (SOGS), the Depression, Anxiety and Stress Scale (DASS) and the Gambling GRCS. A significant positive relationship between GRCS and DASS on problem gambling behaviour was found for both the Chinese and the Caucasians. However, some differences in gambling cognitions (e.g. superstitious thoughts in relation to controlling gambling outcomes) were observed between the two groups.

Chapter 5 presents a study that compares gambling behaviours and motivations towards gambling between community based Chinese ( $N = 199$ ) and Caucasians ( $N = 306$ ) living in Australia. Results show that Caucasians were more likely than Australian Chinese to bet on animals and sports, play lotteries and bingo, engage in casino gambling, participate in games of skill for money, and play gaming machines. Chinese who participated in gambling spent larger amounts of money per week than Caucasians. Differences in parental gambling and problem gambling behaviours were also found. Amotivation could significantly predict problem gambling. Although intrinsic motivation toward knowledge could also predict problem gambling, it had a significant negative contribution to problem gambling only for females. Extrinsic motivation – introjected had a significant negative contribution to problem gambling for Chinese participants only. Although intrinsic motivation toward accomplishment did not significantly contribute to problem gambling for either of the ethnic groups, the motivation was more strongly positively correlated with problem gambling for the Chinese group compared to the Caucasian group. Intrinsic motivation toward stimulation and extrinsic motivation – identification could also predict problem gambling in this study. Intrinsic motivation toward stimulation was higher among the Caucasians, whereas extrinsic motivation – identification was higher among the Chinese. Additional comparison of gambling behaviours between a community based Chinese sample residing in Australia ( $N = 84$ ) and those residing in Taiwan ( $N = 201$ ) also found differences in participation in various types of gambling and problem gambling behaviours.

Chapter 6 presents a study that explores the role of cultural values and beliefs among both Chinese gamblers residing in Australia ( $N = 284$ ) and in Taiwan ( $N = 201$ ). Furthermore, it also reports on the effect of attitudes towards professional help and acculturation on gambling among Australian Chinese ( $N = 258$ ). Several questionnaires were used in the study including the SOGS, the Asian Values Scale (AVS), Attitudes towards Seeking Professional Help Scale (ATSPPHS) and the modified version of the Cultural Lifestyle Inventory (CLSI). Individual's personal adherence to Asian values predicted problem gambling amongst Australian Chinese, but not amongst Taiwanese Chinese. Only one subscale of the APSPPHS (i.e. interpersonal openness regarding personal problems) could significantly predict problem gambling. The overall AVS scale score could also significantly predict problem gambling. Those displaying cultural resistance towards Australian cultural norms and customs had significantly higher SOGS scores than those displaying cultural

shift. There were also significant correlations between acculturation and attitude towards seeking professional help.

Chapter 7 presents a study that tested the effectiveness of group and individual cognitive behavioural therapy (CBT). The dependent variables assessed included gambling behaviours and gambling correlates (negative mood states, gambling urges, satisfaction with life, gambling cognitions and hazardous drinking). At post-test, there were significant improvements in the dependent variables for both of the treatment conditions, but not for the 6-week wait list control group. Therapeutic gains were maintained at 3- and 6-month follow ups. Results showed that group and individual CBT produced similar outcomes.

Suggestions for improving the prevention and treatment of problem gambling and for further research:

- The report described the validation of Chinese versions of two instruments to assess important gambling variables (i.e. gambling cognitions and urges). Other instruments used to assess gambling related variables (e.g. gambling motivations, severity of gambling, etc.) that currently exist in the gambling literature could also be validated with the Chinese population. It would also be beneficial to devise and validate a new measuring instrument to assess the extent of problem gambling among the Chinese community, as there are limitations in the tools that currently exist.
- There were significant relationships between cultural variables (Chinese cultural beliefs and values, acculturation and help seeking attitudes) and problem gambling. There appears to be a need to incorporate cultural variables in the conceptualisation of problem gambling among the Chinese. Furthermore, it would be improper to use current theoretical models of problem gambling with the Chinese community due to differences in a number of gambling related variables (including gambling behaviours, forms of gambling chosen, gambling cognitions, etc.) found between Chinese and Caucasian samples. Using model testing, it could be useful to assess how these cultural variables fit into theoretical problem gambling models and interact with other important variables relevant to problem gamblers such as depression, gambling urges, stress, gambling cognitions, etc.
- Cognitive behavioural treatment (CBT) offers the benefit of significantly improving problem gambling behaviours, as well as a number of gambling correlates (e.g. mood, alcohol intake, satisfaction with life, gambling cognitions and gambling urges). Furthermore, these changes

appear to be maintained for at least a 6-month period. Importantly, CBT applied in a group or individual format has the potential to significantly improve problem gambling behaviours, as well as gambling correlates. Several researchers have reported the effectiveness of CBT in counselling Chinese with other mental health problems. The success of CBT among the Chinese might be related to the similarity in the characteristics of CBT and the Chinese cultural beliefs, values, and worldviews. However, CBT first needs to be modified to better fit the Chinese cultural context and to be more compatible with Chinese beliefs, values and expectations of counselling.

- Programs may need to be designed and implemented to address the barriers which problem gamblers encounter in seeking help. There also appears to be a great need for culturally relevant, community based and supported sources of help, rather than clinic or hospital based programs. Self help groups and/or telephone counselling might be more beneficial to the Chinese community, as they tend to view professional psychological help as foreign and uncomfortable. A family systems approach may be required for treatment, given the collective nature of the Chinese culture. Information and support for the relatives of problem gamblers are considered especially important. Since Chinese families expect more practical types of assistance from the mental health system, programs may be most effective when they focus on providing factual information about the illness. Intervention programs need to be adapted to fit the idiosyncratic beliefs and immigrant experiences of many Chinese families. Equally, language and/or job skills training could also be beneficial.
- Changing processes beyond the specific treatment program would encourage and support culturally and linguistically diverse access. This could include producing treatment program materials (e.g. treatment program brochures, client handouts, etc.) in various languages and employing clinicians with skills in various languages. Programs that provide Chinese gamblers with access to Chinese lawyers and debt managers are also considered to be useful.
- Leaving brochures of treatment programs translated into Chinese at various sites such as libraries, doctors' surgeries and senior citizens clubs may attract Chinese problem gamblers to a gambling treatment facility. Indeed, targeting media of all types may prove most successful (e.g. Chinese newspapers, ethnic radio and public speaking). Brochures advertising treatment programs may be more effective if they heavily emphasise the confidential nature of the services, in order to address Chinese clients' fear of personal or family stigma and fear of contact with the legal system. Furthermore, emphasising the availability of Chinese professional workers and/or translators may be beneficial.

- Retention of Chinese participants in treatment would be improved if therapists took the time to learn about the client's culture and its history, including the circumstances that brought them to Australia. This may be important as trust can be built by demonstrating openness and interest, as well as by recognising cultural rituals.
- The findings of this project suggest that if more resources could be allocated to provide prevention programs for Chinese individuals, it may help breakthrough the denial of problem gambling amongst Chinese communities. There is currently a need to increase awareness and knowledge of problem gambling (and its impact) amongst the Chinese. Further, there also appears to be a need to increase awareness about the availability of problem gambling support and treatment services, especially amongst Chinese immigrants/refugees. Preventive programs may also become more effective by targeting the superstitious cognitions related to gambling. For programs to be effective, they need to be culturally appropriate and target the issues that are most relevant to Chinese individuals. For example, rather than discussing gambling in a generic sense, it may be most relevant to address the issues associated with specific types of gambling; those which are most common among Chinese communities (e.g. dice and card games in casinos, rather than sports betting at the TAB). Also, it is considered important to be careful in not assuming that all individuals from a similar cultural background will have the same attitudes, beliefs and values, or the same risk and protective factors and behaviours. Levels of acculturation are likely to differ from one Chinese individual to another (i.e. depending on birth country and the length of time in Australia). Prevention programs may be most successful when they acknowledge such individual differences.
- A number of future research possibilities are discussed and suggested throughout this report. Since most of the studies contained in this report are based on community samples, there is a need to replicate these studies, with clinical samples, to strengthen the findings regarding problem gamblers. More research is also required to assess gender differences in gambling behaviours and correlates, levels of risk and protective factors of gambling and the impact of family factors on early gambling initiation among the Chinese.

# CHAPTER 1

## Literature review and the rationale/aim of the studies

### 1.1 Introduction

Gambling appears to be an ancient human activity found in almost all cultures and in most parts of the world (Custer & Milt, 1985). The extent to which gambling is considered a socially acceptable activity varies from culture to culture. However in most countries, gambling is openly accepted and extensively practiced. Just as gambling exists in almost every culture, so to does problem gambling (Raylu & Oei, 2002). With over 90 countries having legalised gambling (Lesieur & Rosenthal, 1991), problem gambling is as much a national problem as it is an international one (Lamberton & Oei, 1997).

Problem gambling occurs when an individual's gambling is out of control and begins to cause them social, personal and interpersonal problems. A number of terms are used in the gambling literature to denote problem gambling. This review will use problem gambling in a broad sense; as gambling behaviour that meets the Diagnostic Statistical Manual (DSM) IV diagnostic criteria (American Psychiatric Association, (APA), 1994), as well including those individuals who experience gambling problems, but who do not strictly meet the diagnostic criteria. The DSM IV requires an individual to have (a) five or more (of the ten) specified problem gambling behaviours and (b) the gambling behaviours not better accounted for by a manic episode in order to provide a diagnosis.

Problem gamblers are heterogeneous in their characteristics. However, several groups have been reported more likely to gamble and/or develop problem gambling. Our recent review (Raylu & Oei, 2002) highlighted that although some studies suggest that certain demographic characteristics such as gender, socioeconomic status, employment status, marital status and age may be linked to problem gambling, not all studies are in agreement. However, the rates of gambling and problem gambling have been found to vary greatly from country to country, as well as across different locations within a country. There are also many anecdotal accounts and media reports of significantly high rates of gambling and problem gambling among certain cultural groups (Raylu & Oei, 2002; Murray, 1993; Productivity Commission Report (PCR), 1999). For example, there have been several media reports of Asians gambling in casinos and committing crimes associated with their gambling (e.g. drug dealing and leaving children unattended in casino car parks and homes) (Legge, 1992; Jarrett, 1995; Courtenay, 1996; Kim, 1996). Despite these reports, currently there are

no systematic reviews to verify this anecdotal evidence. As problem gambling prevalence studies have mainly been conducted with Western samples, only a few studies have considered gambling and problem gambling amongst ethnic minority groups (Blaszczynski, Huynh, Dumalo & Farrell, 1998; Victorian Casino and Gambling Authority (VCGA), 2000; GAMECS project, 1999; Volberg & Abbott, 1997). To date, there have been no systematic reviews of these studies to evaluate the cultural variations in gambling/problem gambling rates.

Variance in the rates of gambling and problem gambling can be at least partially attributed to the number of ways in which gambling is available and marketed in different locations. Cultural differences could also influence variations in gambling behaviours between different cultural groups. These include variations in the functions/objectives of the games, gender differences and forms of gambling chosen (Raylu & Oei, 2002; Zimmer, 1986; Goodale, 1987; GAMECS Project, 1999; Sexton, 1987; Heine, 1991). Thus, given the cultural variations in gambling behaviours, it would be important also to explore cultural factors that could play a role in the initiation and maintenance of gambling. The cultural variables that have been constantly identified in the gambling literature as playing a role in initiating and maintaining mental health problems (e.g. substance related problems) include beliefs and values of a cultural group, culturally determined help seeking behaviours and the process of acculturation (De La Rosa Vega & Radisch, 2000; Escobar, Nervi & Gara, 2000; Loue, 1998; Westermeyer, 1999).

Exploring cultural variables related to the initiation and maintenance of gambling is important for two main reasons. First, a major limitation in prevalence studies is that they do not consider culture in their investigations (Betancourt & Lopez, 1993). Betancourt and Lopez (1993) provided an evaluation of cultural research in the psychological literature and reported those studies that have attempted cross-cultural research have not attempted to explore the cultural factors that may influence relevant behaviours. That is, cultural factors are assumed to be a significant part of the ethnic group under investigation, without directly evaluating possible cultural factors that may be involved (Betancourt & Lopez, 1993). This can also be said for the gambling literature. Second, the gambling literature has already implicated several factors (e.g. cognitions, personality, biological aspects, psychological states and familial factors) as playing a role in the development and maintenance of gambling (Raylu & Oei, 2002). These factors, however, cannot sufficiently explain the cultural differences in relation to gambling found among different cultural groups. Thus, it is possible that certain cultural variables also play a role in an individual's decision to take up gambling and continue gambling.

Given the above limitations in the gambling literature, this review aimed to (a) systematically examine the cultural variations in gambling and problem gambling behaviours, and

(b) discuss the possible cultural variables that may play a role in the initiation and maintenance of gambling. The review also sought to highlight significant gaps in the existing literature and to present the rationale and objectives for the empirical studies conducted here (described in subsequent chapters) which aim to reduce some of these gaps.

It must be noted that due to the lack of research in this area, discussion on the possible cultural variables which influence the initiation and maintenance of gambling are based on the cultural variables that have been identified as playing important roles in the development and maintenance of other mental health disorders, such as substance related disorders. Furthermore, a systematic framework that is data driven could not be provided in the review due to a current lack of empirical data. Thus, the exact nature of the influences of culture on gambling must await empirical data. Betancourt and Lopez's (1993) research supports this approach, suggesting that a general approach is required to identify and measure directly the cultural variables that influence a particular behaviour (e.g. gambling). They suggest that such hypothesised relations between cultural variables and gambling need to be first explored prior to being incorporated within a theoretical framework. Such an approach would "enhance our understanding of both group-specific and group-general (universal) processes as well as contribute to the integration of culture in theory development and practice of psychology" (Betancourt & Lopez, 1993, p. 630). Thus, the review that is provided is the first step towards achieving this.

The terms 'culture', 'race' and 'ethnicity' have often been used interchangeably in the mental health literature. For the purposes of this review, culture encompasses traditions, social practices, customs and laws of a group of people. It refers to an intentional world composed of conceptions, evaluations, judgments, goals and other mental representations already embodied in socially inherited institutions, practices, ritual, myths, artifacts, technologies, art forms, texts and modes of discourse (Shweder, 1991). It is these inherited conceptions, evaluations, judgments, and goals that influence members thinking. In turn, this thinking shapes the lives of individuals within the culture, directs their daily actions and influences how they choose to leave a legacy through their will. Consequently, culture can affect an individual's intelligence, cognitive development, personality, sex roles, values, beliefs, identity and attitudes (Shweder, 1991).

In order to complete this review, relevant databases were searched using terms such as: addiction, gambling, culture, ethnicity and prevalence. All articles discussing gambling prevalence rates, cultural variations in gambling and the cultural variables associated with the development and maintenance of mental health problems, such as substance abuse problems, were considered. The databases included PsychINFO (1900-2006), Social Science Abstracts (1985-in press), Sociological Abstracts (1963-in press), Social Work Abstracts (1977-in press), Humanities Index (1984-2006),

Health and Society Index (1980-in press) and the Australian database Austrom (which includes information related to public affairs, family and society and multicultural issues in Australia – 1978-in press). These databases provided a broad and comprehensive base for this review.

## **1.2 Cultural variations in gambling and problem gambling behaviours**

Studies which have attempted to explore prevalence rates of gambling among different cultural groups have either looked at gambling patterns among indigenous groups, or ethnic minorities. In most studies, these rates are compared to those of the dominant cultural group (usually Caucasians) or the general population in the country.

Those studies that have explored gambling among Indigenous cultural groups report a higher rate of these activities in such populations compared to the general population, or the dominant cultural group. Zitzow (1996a) compared the gambling behaviours of 115 Native American adolescents with 161 non- Native American adolescents. Native American adolescents showed more involvement in gambling; began gambling at an early age; and showed more problem gambling behaviours than non-Native American students. Using a cut-off score of 5 on the South Oaks Gambling Screen (SOGS, Lesieur & Blume, 1987), the most frequently used instrument to assess problem gambling in the gambling literature, 9.6% of adolescent Native Americans were identified as problem gamblers compared to 5.6% of non-Native Americans. This disparity was not only attributed to non-cultural factors such as low socio-economic status, increased exposure to gambling, and gambling availability among Indians, but also to cultural issues. For example, the Native American cultural acceptance of magical thinking allows such beliefs to be generalised to gambling to try “one’s luck or belief in fate” (Zitzow, 1996a, p.24). Zitzow (1996b) compared the gambling behaviours of 119 Native American adults, living on, or near, a reservation, with those of 102 non-Native American adults adjacent to, or within, the reservation. Using the SOGS, they identified 4.6% of non-Native American as problem gamblers, compared to 9.1% of Native Americans. They suggested that variables such as low socio-economic status, unemployment, increased alcohol use, depression, historical trauma, and lack of social alternatives may predispose Native American adults to develop gambling problems. Other similar studies have supported high rates of problem gambling among Native Americans (Cozzetto & Larocque, 1996; Peacock, Day & Peacock, 1999).

Wardman, el-Guebaly and Hodgins (2001) provided a literature review of empirical studies focusing on gambling in the Aboriginal population. They reported that the Aboriginal population in Canada has a problem gambling rate 2.2-15.69 times higher than the non-Aboriginal population. Dickerson, Baron, Hong and Cottrell (1996) reported a survey that found that the rate for problem

gambling for indigenous, urban, and Aboriginal and Torres Straits Islanders in Australia was 15 times higher than the general population.

Volberg and Abbott (1997) compared the results of gambling studies among indigenous groups from New Zealand (Maoris) and North Dakota (Native Americans). Analyses showed that gambling involvement, gambling expenditures, and gambling-related problems were higher among indigenous participants than among Caucasian participants in both New Zealand and North Dakota. The lifetime problem gambling rate among Caucasians in New Zealand was 3% compared to 8.7% among the indigenous group. The lifetime problem gambling rates among Caucasians and indigenous participants in North Dakota were 2.5% and 7.1%, respectively. It is reported that the current rate of problem gambling amongst Caucasians in New Zealand is 1.4%, compared to 4.6% amongst Maoris. Volberg and Abbott (1997) reported that similar differences in current problem gambling rates were found in North Dakota for the Caucasian and the indigenous groups (1.3% and 5.8% respectively). The gambling differences between indigenous individuals and Caucasians could be related to variables distinct from culture or milieu (e.g. poor economic status, lower incomes or even genetic differences) and/or those specific to culture (e.g. cultural norms, beliefs or values).

Some studies have looked at gambling rates among ethnic minority groups in a particular country. Wallisch (1996) reported that two studies of gambling among Texan youths found problem gamblers were more likely to be from a minority ethnic group. They also found that Hispanics were more likely to gamble weekly and had higher rates of problem gambling than Caucasians. Stinchfield (2000) explored the prevalence of gambling among 78,582 male and female Minnesota public school 9th and 12th graders. Approximately 10% of Native Americans, Mexican/Latin Americans, African Americans and mixed raced students gambled daily, compared to only 5% of Asian Americans and Caucasian Americans. However, since this study utilised a questionnaire that had just 7 items and only 2 of these items assessed problem gambling, prevalence rates of gambling and problem gambling within these groups cannot be determined. In a similar study, Lesieur et al. (1991) explored gambling patterns among 1,771 university students. Results indicated that Asians had a significantly higher rate of gambling (12.5%) compared to African Americans, Caucasians, and Native Americans (rates of 4-5%).

Studies investigating gambling and problem gambling prevalence rates among adults in the community also report higher rates among non-Caucasian/ethnic minorities than Caucasians. Volberg (1996) explored rates in 15 United States jurisdictions and reported 36% of problem gamblers were non-Caucasians, while non-Caucasians represented a much lower proportion (16%) of the non-problem gambling group. Abbott and Volberg's (1996) study of individuals in New

Zealand reported that 41% of lifetime problem gamblers were non-Caucasians (mostly migrants from the Pacific Islands and native Maoris). These same groups were found to represent only 15% of non-problem gamblers. Abbott and Volberg's (1994) paper suggested that certain ethnic groups (e.g. those that identified themselves as Maori or Chinese) were at a high risk of developing problem gambling.

In 2000, the Victoria Casino and Gambling Authority (VCGA), investigated the impact of gambling on four ethnic minority groups including those that spoke Arabic, Chinese, Greek and Vietnamese. Using the 30 most common surnames associated with each cultural group, telephone numbers were randomly chosen from the electronic (White Pages) telephone directory. Telephone interviews were conducted with 664 participants. The VCGA found that the rates of gambling amongst the participants from the four cultural groups surveyed in this study were lower than that found in the general community, as assessed in the VCGA Community Patterns Surveys (VCGA, 1999). These results indicate that previous evidence on prevalence data may be misleading. However, individuals from the four cultural groups that did participate in gambling (with the exception of the Arabic-speaking group) did spend larger amounts of money per week than the general community. Furthermore, the percentage of participants with SOGS scores of 5 or more was found to be significantly greater in all four cultural groups than that of the general community. The obtained rates ranged from five to seven times, the expected levels within the respective cultural groups.

Blaszczynski and colleagues (1998) explored problem gambling rates within a metropolitan Chinese community. Using a Chinese translation version of the SOGS and a cut-off score of 10, a prevalence estimate of 2.9% for problem gambling was reported. This study found males to show a higher rate (4.3%) of problem gambling, compared to females (1.6%). The rate of 2.9% amongst the Chinese was almost three times greater than the rate of 1.2% reported for the Australian population (Dickerson et al., 1996). However, 2.9% was a rate similar to that found in other studies which have looked at the prevalence of problem gambling amongst Chinese across several countries (e.g. Hong Kong – Chen, Wong, Lee, Chan-Ho, Lau & Fung, 1993; Canada - Chinese Family Services of Greater Montreal, 1997; Taiwan – Yeh, Hwe & Lin, 1995). This high rate of problem gambling behaviour has also been reported for other cultural groups, including the Jewish community (Lorenz & Shuttlesworth, 1983; Lowenfeld, 1979).

Despite the high rate of gambling and problem gambling amongst certain and specific cultural groups, there is a current lack of treatment agencies for problem gambling in ethnic minorities (MacDonald & Steel, 1997; Minas, Silove & Kunst, 1993; Raylu & Oei, 2002; PCR, 1999). Ciarrocchi and Richardson (1989) reported on profiles of problem gamblers (172 males and

14 females) admitted for inpatient treatment in a private psychiatric hospital. They reported the sample consisted of 89% Caucasians, 8% African Americans, 2% Asians and 1% Hispanics. Cuadrado (1999) collected data on 209 Hispanic and 5311 Caucasian problem gamblers who called a problem gambling hotline for help throughout 1992-1998. They reported that only 3.8% of the callers were Hispanic compared to 96.2% of the callers being Caucasian. Volberg and Steadman (1992) reported a three-year evaluation of treatment programs for problem gamblers based on interviews with treatment professionals in several states of the United States and reviews of the demographic profiles of problem gamblers in treatment. Results from this investigation demonstrated that problem gamblers are heterogeneous in their characteristics.

There is some inconsistency in the evidence relating to whether the rate at which problem gamblers present for treatment reflects the prevalence rates of particular cultural groups in a given community. Breakeven is the main service provider for problem gambling in Victoria, Australia. VCGA (1999) reported that higher rates of problem gambling amongst certain ethnic minorities did not match the rate at which individuals from these cultural groups presented to problem gambling support services. However, this is in contrast to results from analyses of the Victorian Breakeven Data. Analysis of the 1996/97 data, presented in the Breakeven reports, showed that while 23.8% of Victorians were born overseas, 23.1% of those who sought help at Breakeven for their gambling problems were born overseas. The same trend was repeated in the 1997/98 data, with the proportion of overseas born Breakeven clients being 24.4%, indicating that population rates did indeed match the rates for presentations at problem gambling support services. For indigenous Aboriginal and Torres Strait Islanders, the presentation at Breakeven services was proportionally small (i.e. 0.5%). Nevertheless, this reflected the 1996 Census report that identified 0.52% of the Victorian population as being of Aboriginal or Torres Strait Islander origin. These trends indicate that the prevalence rate of ethnic and indigenous groups within the Victorian population profile do closely match the rates at which these groups present to Breakeven services.

Summary. Although studies investigating prevalence rates of gambling and problem gambling in different cultures are not solid and have methodological problems (e.g. SOGS false positive rate, lack of representation of all cultural groups, etc.), evidence does suggest that most cultures do appear to have both gambling and problem gambling. However, current research also suggests particularly high rates of gambling among some cultural groups (e.g. Chinese), ethnic minorities and indigenous groups (e.g. the Maoris in New Zealand and Native Americans in the United States) across several countries. Even prevalence studies (where there is an under-representation of non-Caucasians) report high rates of gambling and problem gambling among ethnic minorities/non-Caucasians (Volberg, 1996; Abbott & Volberg, 1996). Although this review

does suggest particular cultural groups have an increased likelihood of taking up gambling or developing gambling problems, there is currently a significant lack of information on gambling behaviours and motivations towards gambling among different cultural groups. Furthermore, significant factors including familial/genetic, sociological, and individual factors have been found in the Western gambling literature. However, since most of these studies have used predominantly Caucasian samples, generalising the current literature to all cultural groups is inappropriate. It is also possible that the lack of assessment of gambling behaviours and gambling related variables (e.g. gambling cognitions and urges) among various cultural groups can be partially attributed to the lack of validated instruments. More importantly, the variables identified in the gambling literature as playing an important role in the development and maintenance of problem gambling do not account for these cultural variations in gambling and problem gambling. Consequently, cultural variables such as cultural values and beliefs, the process of acculturation, and the influence of culturally determined help-seeking behaviours equally, need to be examined in relation to the role they may play in the initiation and maintenance of gambling.

### **1.3 Cultural variables that may play a role in initiating and maintaining gambling**

Three cultural variables have consistently been identified in the literature as playing a role in the development and maintenance of mental health problems such as substance abuse problems (De La Rosa et al., 2000; Escobar et al., 2000; Loue, 1998; Westermeyer, 1999). These variables include cultural values and beliefs, effects of acculturation, and attitudes towards seeking professional help when experiencing problems. Such variables may also be true for problem gambling. These variables interact with one another rather than working independently. Cultural beliefs and values influence not only gambling behaviours but also help seeking behaviours. Acculturation in turn can influence an individual's beliefs and values and consequently gambling behaviours and help seeking behaviours. Currently, there are no studies that have looked at the impact of these cultural variables on gambling behaviours. Thus, the goal of this chapter is to discuss how these three cultural variables may influence gambling and problem gambling. Each of these is discussed below.

#### **1.3.1 Cultural beliefs and values**

Humans encounter risk from birth. The meaning and awareness of these risks for individuals and social groups are related to how they are defined and managed through a cultural system of meaning (Abt & McGurrin, 1992). The values and belief systems that members of

various cultural groups learn (through elders, media, parents, teachers, etc.) provides a collective means by which members decide whether one should acknowledge the risk as primary, or secondary, as well as how to deal with the risk (Abt & McGurrin, 1992). The values and beliefs (moral principles and accepted standards of a person or group) therefore, can have an impact on individual decision making and personal evaluation of unpredictable, uncertain outcomes encountered during life situations. Gambling, similar to any social behaviour, receives meaning by reference to the contexts in which it occurs (Abt & McGurrin, 1992). It is possible that cultural history and the rationales dictated by the culture influences the meanings that are given to gambling behaviour, the motivations for gambling, the monetary costs and benefits of gambling, the advantages and disadvantages of gambling and the concept of problem gambling (Abt, McGurrin & Smith, 1985).

Cultural beliefs and values have been found to play a role in the development, maintenance and treatment of mental health problems such as substance abuse (Colon & Wuollet, 1994; Jerrell, 1989; McCormick, 2000). Wurzman, Rounsaville and Kleber (1982-1983) suggested that in order to make substance abuse treatment appealing to Hispanics, their cultural values need be recognised in the formulation of treatment goals and strategies (e.g. demonstrating that substance related problems are directly contradictory to culturally valued goals).

Cultural beliefs and values are passed to members in a number of ways. First, family members (e.g. parents, grandparents, siblings and other relatives) or other respected members from an individual's culture (e.g. elders, priests, etc.) can often pass values or beliefs regarding gambling to other family members directly through the modelling of certain behaviour. Social learning theory suggests that individuals learn, model, and maintain behaviours that are observable and are reinforced. Limited literature exists on the possible role of social members influencing an individual to begin, or continue, gambling. The existing literature concentrates on prevalence of parental gambling and problem gambling which appears to be higher amongst individuals whose parents gamble (Lesieur, et al., 1991; Wallisch, 1996; Gambino, Fitzgerald, Shaffer, Renner & Courtnage, 1993). There is evidence that children who gamble tend to gamble with friends and family members (Gupta & Derevensky, 1997; Daghestani, Elenz & Crayton, 1996) and are more likely to have begun gambling with parents (Griffiths, 1995). Wynne, Smith and Jacobs (1996) reported that problem gamblers were more likely to view gambling as part of their family norms.

Second, values or beliefs regarding gambling can also be passed to members indirectly (e.g. by showing their approval and tolerance of gambling, or by sharing historical texts, stories and myths with their members that show approval and acceptance of gambling). Positive parental attitudes or approval toward substance use has been associated with substance use amongst

offspring (Kandel, 1982; Newcomb & Bentler, 1986). On the other hand, negative parental attitudes or disapproval toward substance use has been linked to reduced substance use amongst their children (Catalano et al., 1992). Barnes and Welte (1986) found that adolescent abstainers from alcohol were more likely to have parents who disapprove of drinking.

There are several ways in which culture could affect family functioning to either support or discourage gambling behaviours. Different cultural groups have distinct family configurations. Traditional family configurations, especially the patriarchal family system and strong family authority can play a significant role in influencing a family member to take up gambling. In a patriarchal family system, processes such as identification often operate. Thus, if the head of the family gambles regularly, this can significantly increase the likelihood that other members, especially children, will gamble as well. Culture also influences other family characteristics such as family involvement and attachment (e.g. lack of closeness, lack of parental warmth and support, lack of involvement in activities with children, etc.). These characteristics have been related to initiation of substance abuse (Catalano et al., 1992). Currently, there are no cross-cultural studies exploring how family functioning may support or discourage gambling behaviours. This would be important to explore because there are significant differences in family characteristics among different cultural groups.

There are several ways in which the values and beliefs of a culture may influence the initiation of gambling and/or support the continuation of gambling despite losses. Two of these include influencing members' gambling patterns and/or the propensity to adopt help seeking behaviours when gambling problems arise.

Cultural values and beliefs can influence gambling patterns in a number of ways. First, they can encourage, or discourage, involvement in gambling. Different cultures have distinct attitudes about gambling and taking risk. Previous research has reported that positive attitudes toward gambling are related to the tendency to take risks (Kassinove, 1998; Kassinove, Tsytarev & Davidson, 1998). Patterns of gambling in the general population show that every society has its own ethics in relation to gambling. This varies from total abstinence (as in some Muslim groups), to qualified endorsement (as in American and European societies), to a relatively high level of participation (as occurs among the Chinese). It has been suggested that gambling by a large number of Chinese has resulted in the perception that gambling is a way of life for them (Clark, King & Laylim, 1990). A look through any history book will always reveal references to Chinese gambling, especially among males (Clark et al., 1990). It is possible that cultures like these perceive gambling to be part of their lifestyle, history and tradition. Accordingly, such cultures may integrate a set of values and beliefs that approve and encourage gambling and these beliefs are passed on to their

members (Raylu & Oei, 2004a). It is also possible that societal attitudes to gambling in collectivist cultures have a greater influence on individual gambling behaviours than is the case in individualistic cultures. Thus, it is individuals from collectivist cultures that may be more likely to initiate and continue to gamble (and subsequently develop problem gambling), when members of their cultural group (regardless of whether they are family members, or other members of their culture group) model positive values, beliefs and attitudes towards gambling (Rayu & Oei, 2004a). Equally, individuals from collectivist cultures may be less likely to initiate, continue and subsequently develop problem gambling, if members of their cultural group show disapproval towards gambling (Raylu & Oei, 2004). These hypotheses still need to be tested out.

Secondly, cultural beliefs and values can also determine the kinds of gambling that would be punished and the ones that would be reinforced (Walker, 1992b). Evidence suggests that there is a preference for different types of gambling across different cultural groups. The Gambling Among Members of Ethnic Communities in Sydney (GAMECS) Project (1999) was a study that examined gambling activities of regular gamblers in 9 ethnic groups in Sydney, Australia, including those that spoke Arabic, Chinese, Croatian, Greek, Italian, Korean, Macedonian, Spanish, and Vietnamese. A total of 976 individuals who participated in some form of gambling at least once a week were interviewed. The GAMECS Project (1999) found that casino gambling was most popular with Vietnamese, Chinese, Korean and Croatian participants. Cards were most popular with Greek, Italian and Arabic participants, and accounted for 15% of the total money spent gambling amongst this group. Macedonian, Korean and Spanish participants preferred club gaming machines. Horse race gambling was more prevalent among Croatian and Macedonian participants. The VCGA (2000) also found clear differences in preferences for modes of gambling and participation for different cultural groups. The percentages of participants who used gaming machines outside the casino were much lower amongst Arabic, Chinese, Vietnamese and Greek participants than for the general community. The percentages of participants who used gaming machines at the casino varied widely across the cultural groups. The Greek and Chinese community participation rates in this form of gambling matched those of the general community, whereas the Arabic and Vietnamese rates were much lower. Participation in scratch ticket purchase was found to be much lower within all sample groups than for the general community. These differences in preferred modes of gambling between cultures could be related to approval and familiarity of certain games within the culture. Approval and familiarity could be maintained within the culture by passing these values and beliefs about gambling from generation to generation. For example, the use of dice and cards may have been in the Chinese culture for centuries. This familiarity and approval of

such games in the Chinese culture could be one of the factors that attract Chinese individuals to the casino tables (Clark et al., 1990).

Cultural beliefs can affect not only an individual's gambling behaviours but also his/her utilisation of treatment and other health care services (New & Watson, 1983, cited in Cheung, 1990-91). The apparent reluctance of some cultural groups to seek help has been reported across a range of mental health problems, including alcohol and drug problems (Gloria & Peregoy, 1996; Kua, 1994; Natera-Rey, Mora-Rios & Tiburcio-Sainz, 1999; Cuadrado, 1999). It has already been found that substance abusers who are members of cultural minority groups, initiate and complete substance abuse treatment at a lower rate than those of the cultural majority groups (Finn, 1994). During or after treatment, they are also less likely to decrease or discontinue substance abuse (Finn, 1994). However, few studies in the literature have explored whether presentations to problem gambling support services may occur at different rates amongst problem gamblers from different cultural groups, as is the case with other mental health problems. Studies that have investigated presentation rates to problem gambling support services report individuals from some cultural groups (e.g. Arabic, Chinese, Korean and Vietnamese) as being less likely to seek professional help than other cultural groups, despite having higher amounts of unpaid debt, greater problems in clearing their gambling debts, spending more money than they could afford and/or thinking their gambling was indeed a problem (VCGA, 2000; GAMECS Project 1999).

A number of cultural factors could be attributed to such low presentation rates. VCGA (2000) found that shame was reported to be a major factor preventing ethnic minorities from accessing problem gambling support services. The way shame is interpreted among ethnic minorities differs according to cultural and religious beliefs (Ellias-Frankel, Oberman & Ward, 2000). For example, among the Arabic and Turkish individuals, shame appears to be related to religious principles, as gambling is prohibited in the Islamic religion (GAMECS Project, 1999). On the other hand, in cultures such as the Chinese, shame was associated with losing face and respect amongst members of the cultural group, as mental illness of a family member is a disgrace to the whole family. Maintaining harmony with others and the world around them, are the ultimate goals of human relationships from a Chinese perspective, and thus, Chinese try and avoid conflict as much as possible (Cheung, 1993a). Consequently, they feel that it is important to restrain oneself in behaviour and expression as collective needs take priority over individual needs. They believe that one should not burden others with one's own troubles and one should restrain from 'morbid thoughts' that may cause emotional upset (Cheung, 1993b). Thus, the gambler is likely to be concealed within the family. The head of the family would decide which treatment modality to adopt and the gambler would not be taken to professional help until the initial treatment modality

(usually involving traditional healing methods and herbal medicines) had been proven ineffective (Cheung, 1993a).

The GAMECS Project (1999) also found that different cultural groups place the responsibility of providing support for problem gamblers (and their families) in to distinct groups. While Arabic, Greek, Italian, Korean, Macedonian, Spanish and Vietnamese individuals generally felt it was the responsibility of the government or organisations that provide an opportunity for gambling (e.g. casinos) to offer support to problem gamblers and their families, the Chinese and Croatians felt it was an individual, family, or community responsibility. Thus, those who do not believe in outside assistance for dealing with gambling problems, (or indeed those cultural groups where the concept of counselling is unknown), would be less likely to seek professional assistance (GAMECS Project, 1999; Cheung, 1993a).

Perceptions, beliefs, and attributions related to mental health problems and treatment programs may also influence the degree of service utilisation. For cultures with cultural norms that are highly permissive towards gambling, it would be difficult to label certain gambling behaviours as problematic. Consequently, this can reduce the likelihood that members will seek help even when it is needed. Cuadrado (1999) suggested such an explanation for Hispanic males. She further suggested that systems of belief related to machismo (important among Hispanics), could play a role in the increased gambling and resistance to seek treatment. Similarly, with cultures where females are expected to be passive/submissive and pure (e.g. Hispanic females), one may expect a tendency for females to hide their gambling problems (Cuadrado, 1999). Thus, treatment approaches that do not recognise the influence of stereotypes (like machismo and marianismo), may be less attractive to members of cultures that support such systems (e.g. Hispanics).

It is also possible that gambling treatments which are based on Western models are not sensitive enough to address the needs of ethnic minorities and indigenous communities (Oei, 1998). Existing mainstream prevention and treatment services using accepted techniques do not generally take cultural variables into account (Goh & Oei, 1998). They fail to consider that certain cultures have a strong cultural identity. They also fail to represent this identity as being both separate and different from Westerners. Thus, certain cultures may interpret the nature, etiology and treatment of problem gambling somewhat differently from what Western models assume. Luk and Bond (1992) investigated Chinese lay beliefs about the causes and cures of psychological problems and found that Hong Kong Chinese hold an interactionist model for causality (i.e. believing that problems are caused by an interaction of external and internal factors), but hold internal attributions for cures. This belief is in contrast to Westerners, where the opposite is true. There was also a belief that different values produce different types of problems. The study also confirmed previous

studies by showing that the two most preferred coping strategies of the Chinese include high reliance on self help measures initially and then a turning to ones primary social network for help and support (Cheung, 1986).

Other possible reasons why Chinese problems gamblers may not seek treatment include different inclination to seek assistance, a limited knowledge of the availability of services, insufficient social and financial resources to support treatment entry and behaviour change, fear of admitting illegal behaviours (especially for illegal immigrants) and language problems (GAMECS Project, 1999; Varma & Siris, 1996).

### 1.3.2 Factors that influence beliefs and values.

There are several factors that can influence one's beliefs and values and consequently, gambling behaviours and help seeking attitudes. As discussed previously, gambling is available and is marketed differently in different locations. Studies from different countries and States have provided evidence that the legalisation of gambling and increased accessibility to gambling has led to an increase in the number of regular gamblers and problem gamblers (Raylu & Oei, 2002).

One of the most important factors that influences cultural beliefs and values discussed in the psychological literature includes the process of acculturation. This occurs when an individual attempts to gradually adopt the cultural values and beliefs of the dominant society.

Some immigrants adapt to the mainstream culture faster and to a greater degree than others do, depending on their language abilities, education levels, occupational skills, availability of a cohesive ethnic community, and social networks for emotional and social support (Cheung, 1990-1991; Hyman, Vu & Beiser, 2000). Thus, in relation to acculturation, increased gambling among particular cultural groups could be attributed to two processes. It is possible that increased gambling/problem gambling is either related to a successful acculturation process (i.e. successfully adapting to a culture that has high acceptance and practice of gambling), or related to problems in the acculturation process (i.e. difficulties in adapting to the mainstream culture). Both of these processes have been shown to play a role in the development and maintenance of many health/mental health problems. Difficulties in the acculturation process have been associated with greater substance use related problems and poorer health status in a range of cultural groups (Weber, 1996; Nemoto et al., 1999). Health problems (including mental health disorders such as substance abuse) have been attributed by many indigenous people, to the "deprivation and the erosion of their cultural integrity [acculturation] as a result of colonisation" (Brady, 1995, p.1489). However, it is also found that increased acculturation towards habits of the host country can increase a particular behaviour. Sabogal et al. (1998) interviewed 263 Hispanic and 150 White

smokers and found that increased acculturation among Hispanics led to higher levels of smoking (i.e. more like the smoking levels amongst Caucasians). Currently, there are no empirical studies that look at the effects of acculturation (successful or unsuccessful) on gambling habits. How the two processes of acculturation may affect gambling patterns within certain cultural groups are discussed in more detail next.

Problems with acculturation process (i.e. difficulties in adapting to the mainstream culture).

When an individual immigrates to a new country, the stress and circumstances related to the acculturation process (e.g. stressors encountered when trying to adapt to a new environment/country) could increase the risk of him/her taking up gambling. The number of changes that an immigrant or refugee undergoes is significant and includes environmental, biological, political, economic, cultural, social and psychological change (Symposium Paper, 1998). Immigrants with adaptation problems are likely to experience a state of isolation, boredom, loneliness, emotional stress and depression. These variables have been shown to be important motivators for gambling (Blaszczynski, 1995; Coman, Burrows & Evans, 1997; Trevorrow & Moore, 1998; Hallebone, 1999; Lesieur & Rosenthal, 1991).

The VCGA (2000) reported that the experience of loneliness and boredom were amongst the most common reasons immigrants gave for gambling. This finding is supported by research that shows problem gamblers tend to report boredom and loneliness as a major trigger to gambling and continued gambling (Grant & Kim, 2002; Trevorrow & Moore, 1998; Carroll & Huxley, 1994; Blaszczynski, McConaghy & Frankova, 1990). Ohtsuka, Bruton, Delca and Louisa (1997) explored gambling among machine problem gamblers and found that boredom, unhappiness and loneliness significantly predicted problem gambling. Furthermore, boredom is a common reason given by older problem gamblers for gambling (Grant, Kim & Brown, 2001; McNeilly & Burke, 2000).

Immigrants also often report gambling to block out life stress or negative moods (VCGA, 2000). Mood states such as anxiety and depression have frequently been linked to problem gambling (Griffiths, 1995; Blaszczynski, McConaghy & Frankova, 1991; Henry, 1996). People who are anxious or depressed may gamble to relieve these negative psychological states, which may be reinforcing in the short term, but which may also make problem gamblers more anxious and depressed in the long term (Raylu & Oei, 2002).

There are a limited number of researchers that have demonstrated that stress can play a role in the development and maintenance of gambling problems (Zuckerman, 1999; Coman, Burrows & Evans, 1997). Friedland, Keinan and Regev (1992) tested the hypothesis that stress, which undermines a person's sense of control, would engender illusory perceptions of controllability. Control might then be sought by undertaking acts of which the effect on the environment is illusory.

The results showed that highly stressed, compared to lowly stressed, subjects preferred gambling forms that heightened perceptions of control.

Gambling has been associated with the trauma of migration and the unrealistic expectations of newly arrived migrants of making money in the new country. Some immigrants experience conflicts about their place in society, particularly when linked to feelings of shame and self doubt regarding their ethnic identity, and this could result in anti-social behaviour, such as gambling (Kaplan, 1985). Feelings of discrimination and perceived racism are central themes affecting many minorities. Several other factors often associated with refugees, or immigrants, including low income, lack of employment and low socioeconomic status, have also been linked to problem gambling (Shepherd, Ghodse & London, 1998; Albers & Huebl, 1997; Buehringer & Konstanty, 1992; Hrabá & Lee, 1995; PCR, 1999).

Gambling behaviour can serve distinct functions for different cultural groups (Abt, McGurrin, & Smith, 1985). It is possible that gambling for some cultures provides an opportunity for people to relieve, or reduce, aversive stress states by escaping from life problems. For others, it may be a means to become successful, independent, or to obtain power and/or gain control. On the other hand, gambling can provide members of some cultural groups a means to conform to the behaviours of other members.

The GAMECS Project (1999) found different motivations towards gambling among different cultural groups. Both Korean and Arabic participants reported using gambling as a source of individual entertainment and an escape from daily life, although Arabic participants were ashamed of this. Chinese participants regarded gambling as a regular social activity, rather than using it to escape from daily life problems. Vietnamese participants took their gambling seriously, often regarding it as a fast way of making money. Italian participants reported mostly using gambling as an individual activity, while Spanish participants regarded gambling as a hobby and a social activity.

These motivations would also influence the modes of gambling chosen. Phong Nguyen, co-ordinator of Springvale Indo-Chinese Mutual Assistance Association, stated that there are several variables that encourage members of the Indo-Chinese community to go to the casino, rather than the TAB or pubs to gamble (Legge, 1992). It was suggested that coming from a highly populated country and a community orientated culture, Vietnamese and Chinese individuals may find casinos a pleasant and attractive environment because individuals from their own cultural background surrounded them. He suggested that

“they don’t go to clubs and pubs because they are scared of racism. They feel alienated from Australian sports, which they don’t understand. Many of them can not understand

English. They are unemployed and have low self-esteem. But they walk into the casino and they are treated like kings. They feel good. They know the rules of the game” (Legge, 1992).

However, there is no direct research that explores why particular modes of gambling are chosen by particular groups of individuals.

The above discussion suggests immigrants who have adapted easily to the host society would be less likely to gamble. Those that are experiencing difficulties in the acculturation process (i.e. problems adapting to the host culture) and are experiencing increased stress have increased chances to begin gambling and subsequently develop problem gambling. Yet there is no research published in the gambling literature that looks at the direct effect of stress as a result of a difficult acculturation process, on problem gambling among immigrants.

Successful acculturation process (i.e. successfully adapting to a culture that has high acceptance and practice of gambling). Problems and patterns tend to change when individuals with different backgrounds in normative gambling behaviour interact. Thus, when an individual from a culture with low acceptance and practice of gambling assimilates and identifies with a culture that has a high acceptance and practice of gambling, he/she may be encouraged to take up gambling or continue gambling despite continuous losses. For example, an individual from a cultural group where gambling is restricted (e.g. Muslim culture) but who also has no difficulties acculturating to the Australian lifestyle could take up gambling because it is more accepted, accessible and liberalised in Australia. Some migrants (e.g. those from Asian countries) are introduced to a wide number of legalised forms of gambling activities that they typically do not encounter in their country of origin, including electronic gaming machines, lotto tickets and sports betting (Wong & Samson, 2002). These may be especially attractive to migrants as new novel forms of entertainment (Wong and Samson, 2002).

Goodale (1987) reviewed several studies that looked at gambling among some Pacific Island tribes. She concluded the phenomenon of problem gambling, as found in Western societies, appeared to be absent in certain cultures, including villagers in the Pacific Islands (e.g. the Tiwi and Gende tribes). There are currently no systematic prevalence studies for these groups to support this conclusion. One explanation for the lack of problem gambling in these cultures may be that they engage in healthy gambling that is controlled by cultural mores and thus less likely to produce problem gamblers. It is possible that it is when a person is taken out of his/her cultural context that problem gambling begins. This has been shown for other mental health problems such as substance abuse disorders. For example, Abbott (1996) investigated the history of alcohol use among Native

Americans. Although there were numerous historical accounts of alcohol use among this group, alcohol was not used excessively and instead, it was controlled and supervised (often in highly ritualised contexts). However, after contact with White Americans, dramatic changes occurred in the use and function of alcohol in Native American and Alaska Native societies.

Acculturation can also lead to the deterioration of one's own cultural values and beliefs, which often results when an individual adopts the values and beliefs of the host country. Tata and Leong (1994) provided evidence of this for Asian Americans. Acculturation can also influence an individual's help seeking behaviours. Atkinson and Gim (1989) found that acculturation of cultural identity had a relationship with help seeking attitudes amongst Asian American University students. It is therefore likely that those more acculturated (i.e. similar to the host country), are more likely to have the help seeking attitudes of the host country than those from the country of origin (Tata & Leong, 1994). Consequently, if the host country has attitudes that support professional help seeking for problems, these individuals are more likely to seek assistance for their gambling problems at an earlier stage and reduce their chances of developing problem gambling.

#### **1.4 Discussion and rational of studies conducted for this project**

This review has demonstrated that research regarding gambling behaviours and prevalence rates (i.e. both community and treatment samples) for gambling and problem gambling among different cultural groups is far from complete. Gambling patterns for some cultural groups are yet to be investigated, in other cultures the existing studies are limited, have not been replicated, or have shown inconsistent results. Furthermore, the review highlighted that many of these studies are plagued with methodological problems (e.g. lack of representation of all cultural groups in a given community; obtaining high false positives in general population surveys when using the SOGS to identify problem gamblers; using global group comparisons such as Caucasians and non-Caucasians; and not using random sampling techniques).

Despite these limitations and gaps in the gambling literature, research does suggest high rates of gambling among some cultural groups (e.g. Chinese), ethnic minorities and indigenous groups (e.g. the Maoris in New Zealand and Native Americans in the United States) across several countries. One cultural group that has often been linked to high rates of gambling has been the Chinese.

There are a number of reasons why it is important to assess gambling and problem gambling patterns among the Chinese. Chinese individuals can be found throughout the world. They account for approximately one-quarter of the world's population (Lin, 2002). There are a large number of historical accounts of gambling among the Chinese, especially amongst Chinese males (Clark et al.,

1990). Consequently, the current perception is that gambling is way of life for Chinese and thus, they are heavy gamblers (Clark et al., 1990). As mentioned above, there are also many anecdotal reports suggesting high levels of gambling and problem gambling among the Chinese (e.g. Legge, 1992; Jarrett, 1995; Courtenay, 1996; Kim, 1996). Although empirical studies are limited, those that have explored gambling patterns among the Chinese (e.g. VCGA, 2000; GAMECS project, 1999; Wong & Ernest, 2003, Chen et al., 1993; Blaszczynski et al., 1998) also show high rates of gambling/problem gambling among the Chinese. Despite the existence of such differences, there is a significant gap in the gambling literature regarding Chinese gambling and problem gambling. Culture and its impact upon gambling participation and problem gambling among the Chinese have also, to date, not received enough attention in the published research.

This review has highlighted several important gaps in the gambling literature that require further research. These gaps, along with proposed studies to reduce some of these gaps are discussed below. The detailed description, implementation and results of the proposed studies are discussed in subsequent chapters. For the reasons discussed above, the studies have been conducted with the Chinese.

First, the limited research in this area may be attributed to the lack of validated measuring instruments to assess important gambling related variables (e.g. gambling cognitions) among various cultural groups, including the Chinese. Most of the instruments to assess gambling related variables are based predominantly on Western samples. Therefore, prior to assessing gambling related variables among the Chinese, there is a need to validate the existing measuring instruments assessing gambling correlates using Chinese samples. Thus, the study described in Chapter 2 aims to validate the Chinese version of the Gambling Urges Scale (GUS) and the study described in Chapter 3 aims to validate of the Chinese version of the Gambling Related Cognitions Scale (GRCS). This provides the first step in assessing these variables amongst the Chinese.

Second, although there are high rates of gambling and problem gambling in certain cultural groups, very little is known about the types of gambling behaviours in different cultural groups, including the Chinese (e.g. the function gambling behaviour has for a particular cultural group, motivations towards gambling, the mode of gambling chosen and gender differences in gambling behaviours). Cross-cultural studies are especially lacking. This is important, as such knowledge can help develop more sensitive preventative and treatment approaches for those that are experiencing gambling problems. Thus, the study described in Chapter 4 compared gambling patterns (e.g. gambling behaviours and motivations towards gambling) of the Chinese and Caucasians living in Australia. It also compared gambling behaviours of the Chinese living in Australia and those living in Taiwan.

Third, our previous review (Raylu & Oei, 2002) highlighted that several factors including familial/genetic, sociological and individual factors (e.g. an individual's personality, biochemistry, psychological states and cognitions) play an important role in the development and maintenance of problem gambling. However, most of the research in the gambling literature is based on western samples and yet the results are often generalised to other ethnic/cultural groups. Given that there are differences in gambling and problem gambling among individuals from different cultural groups (as discussed earlier in this review), generalising the current literature to all cultural groups is inappropriate. Lin (2002) suggested caution in applying western approaches to Chinese clients because these approaches are based on western psychology and a society which is distinct from that experienced by most Chinese. There are inconsistencies when applying western treatment theories and skills to Chinese populations. For example, Western individualistic ideals and future orientated approaches are inconsistent with the values of the Chinese, as they are more group/collective orientated (Lin, 2002).

Studies are therefore needed to test whether the variables that have been implicated in playing a role in the development and maintenance of problem gambling (findings come from studies with predominantly non-ethnic minority samples; see Raylu & Oei, 2002 for a comprehensive review), can also be applied to other cultural groups including the Chinese. Cross-cultural studies are especially needed. If we have more knowledge of gambling patterns among the Chinese, we can modify western approaches to best serve the Chinese population. Better knowledge of such relationships would help improve the conceptualisation of gambling among the Chinese. It would also help identify variables that need to be targeted in preventive and treatment programs.

Consequently, the study described in Chapter 5 is a cross-cultural study of Chinese and Caucasians in Australia, exploring the relationship between gambling cognitions, psychological states and gambling. These variables (i.e. gambling cognitions and psychological states) were chosen for two main reasons. First, numerous studies have postulated the importance of these variables in gambling problems (Raylu & Oei, 2002). Second, behavioural and cognitive behavioural therapies aim to reduce these variables and have currently been the most effective at treating gambling problems (Raylu & Oei, 2002).

Fourth, there is also an urgent need to research the role which cultural variables (e.g. cultural beliefs and values, attitudes towards help seeking behaviours and the process of acculturation) could play in the development and maintenance of gambling problems. Such information would assist in developing effective prevention and treatment programs for different cultural groups including the

Chinese. Consequently, the study described in Chapter 6 aims to assess whether cultural beliefs and values, acculturation and help seeking attitudes predict problem gambling among the Chinese.

Finally, very little is known about the treatment techniques that are useful for gambling problems among different cultural groups including the Chinese. Given the evidence that treatment samples/agencies are often under-represented with ethnic minorities, it is important to assess whether various treatment strategies recommended in the gambling literature are also effective for individuals in different cultural groups. This is important, as the problem gambling treatment literature has used predominately Western samples to assess the effectiveness of therapeutic interventions for problem gamblers.

Chen and Davenport (2005) have suggested that traditional Western therapy may be inappropriate for use with Asian populations because Western therapy represents individualistic, future-oriented approaches, whereas Chinese culture is collective/group orientated. Chinese individuals generally tends to have lower acceptance of ambiguity, and tend to prefer structured situations and practical, immediate solutions to problems (Leong, 1986). Researchers have also indicated that Chinese clients prefer therapists who apply a directive, rather than a non-directive, approach when addressing their concerns regarding emotional adjustments (Exum & Lau, 1988).

Directive therapy models, such as cognitive-behavioural therapy (CBT), have been indicated as more effective than non-directive approaches with Chinese clients (Lin, 2002; Miller, Yang & Chen, 1997). CBT has been used widely with Chinese clients (Lin, 2002). Empirical studies (e.g. Dai et al., 1999; Yang, 1992) have also demonstrated the effectiveness of CBT in treating depression and self-esteem issues among Chinese.

Lin (2002) suggested that the success of CBT among the Chinese might be related to the similarity in the characteristics of CBT and the Chinese cultural beliefs, values, and worldviews. First, due to the authoritarian nature of social relationships in the Chinese culture, they would prefer such qualities in their therapeutic relationships. CBT therapists demonstrate their expertise and authority by teaching clients problem solving strategies, thereby increasing Chinese clients perceptions of therapist effectiveness. Second, since Chinese individuals have been socialised with structured hierarchy and defined roles and responsibilities, they tend to prefer directive and structural counselling contexts that have clear role definitions and concrete therapeutic goals, plans and procedures, something which CBT provides. Third, similar to Chinese education that highlights the influence of external environment and the importance of social learning principles, reinforcement and punishment, CBT therapists teach clients practical, efficient and useful ways of dealing with their problems by improving their cognitive-behavioural functions. Fourth, since Chinese focus on groups rather than individuals, it is important to explore the role of cultural

factors, macro-structural factors and coping at higher levels of social organisation in order to understand the Chinese coping process further. CBT assessment incorporates individual, social, cultural, and environmental factors to assist in devising clinical formulations and treatment plans. Fifth, consistent with the Chinese image of a task, goal and action orientated therapist and therapeutic situation, CBT therapists take some responsibility for the therapeutic process and play an active role in providing concrete suggestions and facilitate client action via home exercises and skills practice. Finally, as the Chinese are socialised to adhere to social norms, rules and instructions from those they perceive as authoritative figures (e.g. teachers, elders, parents, etc), they accept most social norms and instructions without questioning them. This sometimes creates tension between individual values and the external family rules and social norms. CBT challenges irrational cognitions, which may benefit the Chinese by making them confront their cognitive dissonance.

There are a number of significant differences among Chinese individuals that could influence treatment outcomes (e.g. differences in the degrees of acculturation, birth country, level of spoken and written English, etc.). Individual therapy (compared to group therapy) could cater for these differences. Ng (1996) interviewed 18 Chinese American clients in order to explore the experience and perception of therapy by this group. They found that the Chinese clients preferred individual and family therapy to group therapy. However, currently there are no studies that have investigated whether individual CBT has better treatment outcomes than group CBT for problem gamblers. Prior to exploring this hypothesis for Chinese problem gamblers, it first needs to be assessed within the general population. Consequently, the study described in Chapter 7 aims to assess the effectiveness of group versus individual CBT programs for problem gamblers.

The review also highlighted two important methodological issues that need to be addressed in any future research in this area as well as the proposed studies above. The first methodological problem relates to the instruments used to assess gambling/problem gambling, gambling related variables (e.g. gambling cognitions and urges), as well as gambling correlates (e.g. psychological mood states). The SOGS and DSM IV have been frequently used to assess problem gambling. Although the SOGS has been employed in a variety of settings and in several languages, several studies have raised the issue of its susceptibility to high rates of false positives (Dickerson, 1993; Blaszczynski et al., 1998). Abbott and Volberg (1992) reported that individuals in New Zealand were more likely to respond positively to particular items than individuals in America. Such differences could be due to cultural differences across different countries (Lesieur, 1994). Duvarci, Varan, Coskunol and Ersoy (1997) investigated the effectiveness of the DSM-IV (APA, 1994) and the SOGS in identifying 59 Turkish gamblers. Four of the 10 DSM-IV criteria and 4 of the 20 items

of the SOGS were found to be problematic in the diagnosis of Turkish problem gamblers. Only when the 3 items that failed to discriminate problem gamblers from non-problem gamblers were replaced with 2 culturally relevant items, did the resulting 19 item Turkish form of the SOGS yield lower false negative and false positive percentages, as well as a significant difference between the problem and non-problem gamblers (Duvarci & Varan, 1997). Furthermore, as mentioned above, most of the instruments used to assess gambling related variables (e.g. gambling cognitions and urges) as well as gambling correlates (e.g. psychological mood states) have not been validated with other cultural groups. So prior to using any measuring instrument with a specific cultural group (e.g. the Chinese), they first need to be adequately translated and then assessed for adequate psychometric properties.

The second methodological issue relates to categorising individuals into global ethnic and racial categories. Most prevalence studies have used global group comparisons such as Caucasians and non-Caucasians (Volberg 1996; Abbott and Volberg 1996) and thus, do not acknowledge that such global categories contain a range of sub-groups with very different characteristics. For example, the Latino/Hispanic group includes numerous and quite diverse sub-groups represented in the Caribbean and from north-central and South America. Also, black Americans include African Americans, African Caribbeans, Africans from Central and South America and immigrants from Africa. The American Bureau of the Census has identified more than 20 Asian pacific groups. The diverse nature of these populations is evident on a number of demographic characteristics such as birthplace, family income, and educational attainment and achievement (Krestan, 2000).

Concomitant with this inter-group diversity are important intra-group differences in terms of acculturation level, ethnic identity, primary language dialect, and country of origin. The place of origin of immigrants, regardless of the culture they identify with, can produce differences in gambling and problem gambling rates. For example, in Taiwan gambling is illegal, while in Hong Kong it is not. Thus, it is likely that Taiwanese Chinese are less likely to take up gambling, or develop problem gambling when compared to Hong Kong Chinese. Blaszczynski et al. (1998) found Chinese participants who had reported a prior history of gambling in their country of origin were more likely to be classified as possible problem gamblers. Therefore, any future research in this area needs to control for such factors in order to investigate the true contribution of cultural factors to gambling/problem gambling. Considering this, the studies contained in this report attempt to reduce the cultural gap in the gambling literature by assessing gambling related cultural differences using only Australian and Taiwanese Chinese.

The studies contained in this project aimed to improve on the above-mentioned methodological issues to address a number of cultural gaps in the problem gambling literature for

the Chinese. They are unique investigations in the Australian and international research field and thus, will considerably add to this growing area of research.

- A significant portion of this review has been published in a peer reviewed journal. Reference: Raylu, N., & Oei, T. P. S. (2004a). Role of culture in gambling and problem gambling. *Clinical Psychology Review* 23, 1087-1114.

## CHAPTER 2

# Psychometric properties of the Chinese version of the Gambling Urges Scale (GUS-C)

### 2.1 INTRODUCTION

The review in Chapter 1 showed that despite the lack of studies assessing gambling problems among different cultures, a great deal of anecdotal evidence, and many reports and studies have suggested that some cultural groups (e.g. the Chinese) may have high rates of gambling and gambling problems (Chen et al., 1993; Chinese Family Service of Greater Montreal, 1997; VCGA, 2000). The gambling literature has implicated a vast number of factors in the development and maintenance of problem gambling. However, little is known about what factors contribute to the development and maintenance of problem gambling among the Chinese. All of the studies investigating gambling related variables such as gambling urges are based on Western cultures.

Gambling urges have often been associated with gambling and gambling lapses (Raylu & Oei, 2004c). The urge to gamble has also been seen as an important factor in maintaining gambling problems (Sharpe, 2002; Raylu & Oei, 2002). According to the biopsychosocial model of problem gambling (Sharpe, 2002), the arousal associated with gambling could be elicited either by internal states (e.g. negative moods) or external triggers (e.g. gambling cues). Gambling urges often result when the arousal interacts with gambling cognitions. Individuals with poor coping strategies (e.g. poor problem solving skills and alcohol consumption) are likely to fail to resist the urges and engage in gambling behaviours.

Potenza et al. (2003) used echoplanar functional magnetic resonance imaging to show that gambling urges were associated with specific changes in the brain (e.g. changes in the frontal, paralimbic and limbic structures) of problem gamblers, compared to controls. When responding to gambling cues, problem gamblers showed reduced activity in those areas of the brain associated with impulse regulation, compared to controls (Potenza et al., 2003).

Gambling urges have been assessed in a number of different forms in the gambling literature. Researchers have used several related states including gambling related cognitions, arousal, tension and excitement to discuss gambling urges (Blaszczynski, Winter & McConaghy,

1986; Coventry & Norman, 1997; Anderson & Brown, 1984; Sharpe, Tarrier, Schotte & Spence, 1995).

Raylu & Oei (2004c) described the different methods the various studies in the gambling literature have used to assess gambling urges and the limitations of these methods (e.g. using one, or only a few, item questionnaires, or asking participants to rate their gambling urges without first defining the term). They attributed the lack of validated tools to the limited amount of current research on the nature and mechanisms of gambling urges, or the role they might play in the development and maintenance of gambling problems and relapses (Raylu & Oei, 2004c). Consequently, using the 8-item Alcohol Urge Questionnaire (Bohn, Krahn & Staehler, 1995) and a community-based sample of 968 participants, Raylu and Oei (2004c) developed and validated the Gambling Urge Scale (GUS) as an instrument for assessing gambling urges among non-clinical samples. They found that the GUS significantly correlated with other gambling related measures and had the ability to discriminate between non-problem gamblers and problem gamblers and also to predict problem gambling. However, while this instrument has been validated with a Western sample, as yet it has not been validated with a Chinese sample.

Given that the Chinese may have higher rates of gambling and problem gambling than Caucasians, it is important to validate gambling related assessment tools such as the GUS (Chinese version) with Chinese samples. This is important because Western-based instruments may not be appropriate, or sensitive enough, to assess gambling problems and gambling related variables among non-Western samples, possibly because of cultural differences. Thus, the purpose of the present study was to examine and validate the psychometric properties of the Chinese version of the GUS.

## **2.2 METHOD**

### **Participants**

The study used 422 Chinese participants from the metropolitan area of Brisbane, Australia ( $N = 221$ ) and Taipei, Taiwan ( $N = 201$ ). The participants from Brisbane were students and volunteers from the Chinese community and the participants from Taipei were community volunteers. Chinese participants were those that had one, or both, parents that were Chinese. Australian Chinese were those Chinese who had been living in Australia for at least 6 months. Taiwan Chinese were those who lived in Taiwan and had not lived in an overseas country.

These individuals were recruited via advertisements in local newspapers, relevant community magazines and newsletters. The study was advertised in various Chinese clubs and society magazines, newsletters and noticeboards. Advertisement of the study and request for assistance with the study were also sent to several chosen employment organisations from the Brisbane business directory and acquaintance networks. Furthermore, the questionnaires were also distributed among university participants, both at a university in Taiwan and Brisbane.

There were no significant differences between the two groups in a number of assessed variables, including: gender  $\chi^2(N=422) = .43$ , *ns*, marital status  $\chi^2(N=422)=1.02$ , *ns*, the total South Oaks Gambling Screen scores  $F(1,421)=1.29$ , *ns*, the total Gambling Related Cognitions Scale scores  $F(1,421)=1.11$ , *ns*, the total Gambling Urge Scale scores  $F(1,421)=.01$ , *ns* and the total Depression Anxiety Stress Scale scores  $F(1,421)=.93$ , *ns*. Consequently, data for the two groups were combined for this study.

Of the participants, 39.3% were males and 60.7% were females. The mean age of the participants was 32.28 years ( $SD = 13.35$ ; range = 16 - 78 years). Most participants were single (51.4%), had full time jobs (39.6%) and were Buddhists (35.1%).

## **Measures**

All the questionnaires used in this study (as well as other studies described in subsequent chapters), along with introductory information was translated into Mandarin and back translated into the original language to check for consistency. Kinzie and Manson (1987) suggested that cross-cultural studies should ensure that instruments are back translated into the original language to establish semantic integrity. Therefore in this study, the questionnaire was translated from English to Chinese and back translated into English to check for consistency of words. A psychologist with degrees from Universities in both Australia and Taiwan completed the translation. Parts of the scales were also checked by another individual to ensure that the translation was consistent before they were distributed to the participants. Chinese participants who were not fluent in Mandarin characters and were comfortable with English completed the original English version of the scales.

The following measuring instruments were used in this study:

The South Oak Gambling Screen (SOGS; Lesieur & Blume, 1987). The SOGS is a 20-item questionnaire based on the DSM III (APA, 1980) criteria to screen for problem gambling. The SOGS is based on a ratio scale and forced-choice (yes/no) responses. The SOGS produces a score range from 0 to 20, with a score of 0 indicating no problem with gambling, 1-4 indicating possible problematic gambling, and a score of 5 or more indicating probable pathological gambling. It has

been used with patients in a therapeutic community (Lesieur & Heineman, 1988), psychiatric admissions (Lesieur & Blume, 1990) and numerous treatment settings as an aid in diagnostic and forensic screening (Rosenthal, 1989). It has shown to have high validity (by cross tabulating patients scores with counsellors independent assessment scoring;  $r = .86, p < .001$ ). A previous study by the current authors (Oei, Lin & Raylu, paper submitted for publication) showed that the Cronbach's alpha coefficient for the SOGS using a Caucasian sample was .86 and using a Chinese sample was .75. This scale has also been used widely with Chinese samples (e.g. Blaszczynski et al., 1998) and has been accepted as a good instrument to measure the extent of gambling behaviours for this population.

The Gambling Urge Scale (GUS; Raylu & Oei, 2004c). The GUS is a 6-item questionnaire based on Bohn et al. (1995) Alcohol Urge Questionnaire designed to screen for gambling urges (e.g. "All I want to do now is to gamble"). The participants were informed that the researchers were interested in how they were thinking or feeling as they were completing the GUS. They were asked to indicate how much they agreed or disagreed with each item using a 7 point semantic differential scale. The original scale has good reliability (Cronbach's alpha = .81) and good predictive, concurrent and criterion related validities.

The Gambling Related Cognitions Scale (GRCS; Raylu & Oei, 2004b). The GRCS is a five-factor, 23-item measure developed to identify gambling related cognitions, including interpretative control/bias (GRCS-IB), illusion of control (GRCS-IC), predictive control (GRCS-PC), gambling related expectancies (GRCS-GE), and beliefs about one's inability to stop gambling (GRCS-IS). Respondents rated how much they agreed with each statement on a 7-point scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). High scores reflected greater numbers of gambling related cognitions. Cronbach's alpha coefficients for the factors for the original scale ranged from .77 to .91, and .93 for the overall scale. The Cronbach's alpha coefficient for the overall scale (Chinese version) was .95, ranging from .83 to .89 for the factors. Concurrent, criterion, and predictive validity of the GRCS (Chinese version) were also good.

The Depression Anxiety Stress Scale-21 (DASS-21; Lovibond & Lovibond, 1995). The original DASS-21 was converted from a 42 item DASS questionnaire. Lovibond and Lovibond (1995) suggested that the scale scores of the DASS-21 (7 items per subscale) can be converted to full scale scores by multiplying by 2. Antony, Bieling, Cox, Enns and Swinson (1998) reported that DASS-21 showed good validity and high levels of internal consistency (Anxiety  $\alpha = .94$ , Depression  $\alpha = .87$ , Stress  $\alpha = .91$ ) and may be preferable to the full 42-item DASS. Therefore, all participants in the present study completed the DASS-21. The DASS (Chinese version) also has reasonably good psychometric properties. Cronbach's alpha for the three subscales were high

(DASS-Depression,  $\alpha = .85$ ; DASS-Anxiety,  $\alpha = .87$ ; DASS – Stress,  $\alpha = .82$ ). Criterion and predictive validities of the DASS-21 (Chinese version) were also good. Confirmatory factor analyses confirmed the structure, but due to double loadings of 6 items in the 3 scales, the use of the scale in a Chinese population should be taken with some caution.

Demographics. A short questionnaire gathering demographic information (e.g. gender, age, employment status, education level and ethnicity) was completed by the participants.

### **Procedures**

All the participants were asked to complete the above questionnaires. Responses were confidential and identifying codes, rather than names, were used. The overall response rate (i.e. percentage of questionnaires returned) was 80%. The average time taken to complete the series of questionnaire was 30 minutes.

## **2.3 RESULTS**

### **Data screening**

Prior to analyses, variables such as gender, age, GRCS-total, SOGS-total, DASS-total, GUS, GRCS-IS, GRCS-IB, GRCS-IC, GRCS-GE, GRCS-PC, DASS-depression, DASS-anxiety, DASS-stress, were examined using Statistical Package for Social Sciences (SPSS, Inc., 1988) for accuracy of data entry, missing values, fit between their distributions and the assumptions of multivariate analyses. All missing values were replaced by the mean of all cases. Using a  $p < .001$  criterion for Mahalanobis distance, no outliers among the cases were found. Collinearity was assessed using collinearity statistics/tolerance via a multiple regression analysis. No collinearity between variables was found ( $N = 422$ ).

### **Confirmatory Factor Analyses (CFA)**

Confirmatory Factor Analyses (CFA) were conducted to test the structure of the GUS (Chinese version) in the Chinese sample. The program EQS 5.7b was used for all confirmatory factor analyses. Maximum likelihood (ML) estimation, the most commonly used estimation method in CFA (Marsh, Hau, Balla & Grayson, 1988), was applied to covariance matrices.

A number of tests were used to assess the goodness-of-fit (i.e. how well a statistical model fits a set of observations). Chi-square ( $\chi^2$ ) is one of the most commonly used test to assess goodness-of-fit. A large  $\chi^2$  in relation to the degrees-of-freedom indicates a poor fit. Indication of a good fit is

a chi-square, to degrees-of-freedom ratio of up to 4. The Comparative Fit Index (CFI; Bentler, 1990) was one of the indices used to assess the goodness-of-fit. The CFI varies along a continuum from 0-1, with values greater than .9 generally accepted as indicating a good fit (Marsh, 1993). The Root Mean Square Residual (RMR; Bollen, 1989) reflects the proportion of discrepancy between elements in the sample and the hypothesised covariance matrix. If there is a good fit between the hypothesised model and the sample, the RMR will be close to .08 or lower. The Root Mean Square Error of Approximation was also used as a measure of goodness of fit (RMSEA; Steiger, 1990). The RMSEA, which is based on population error of approximation, measures “discrepancy per degree-of-freedom” (Joreskog & Sorbom, 1993; p. 124). A value of .05 or less is recognised as suggesting a close fit (values up to 0.08 are recognised as a reasonable error of approximation).

Raylu and Oei (2004c) reported that a one-factor model of the GUS was the best fit of their data. Therefore, a one-factor model was tested in the present study. As indicated in figure 2.1, the analyses showed that the one-factor solution was a good fit of the data. Furthermore, all indices were in the acceptable range  $\chi^2 (df = 8) = 26.01$ ;  $\chi^2:df = 3.25$ ; CFI = .99; RMR = .02; RMSEA = .07).

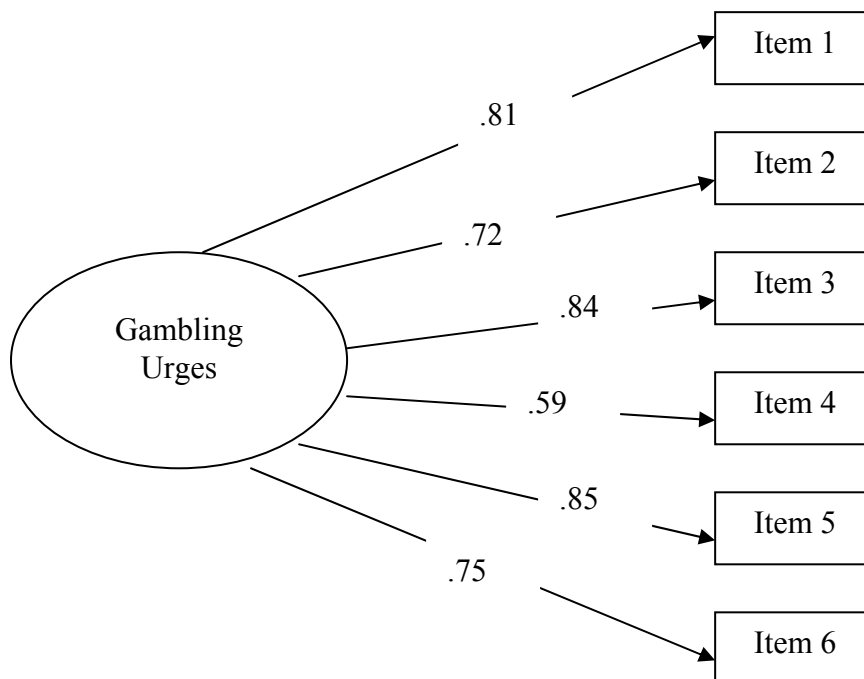


Figure 2.1. One-factor model of factorial structure of the GUS (Chinese Version).

## **Reliability and Validity of the GUS (Chinese Version)**

### Reliability.

Cronbach's alpha for the overall GUS scale was .87.

### Validity.

Concurrent validity. To investigate the concurrent validity of the GUS (Chinese version), a range of gambling related variables such as extent of gambling, gambling cognitions, depression, anxiety and stress, (which have previously shown to be positively correlated with problem gambling), were correlated with the GUS (Chinese version). A positive correlation between measures that assess these variables (i.e. SOGS, GRCS and DASS-21) and the total GUS (Chinese version) score was expected.

The results showed evidence of concurrent validity, with the total GUS score being significantly and positively related to the variables. Significant moderate positive correlations were established with the SOGS, the GRCS total score and the GRCS subscale scores, and low positive correlations were established with the DASS subscale scores (depression, anxiety and stress). All correlations were significant at .01 level (see Table 2.1).

Table 2.1.

Concurrent validity for GUS (Chinese version)

Measures	Correlations with GUS total score
SOGS - total score	.49**
GRCS - total score	.56**
GRCS-IS	.56**
GRCS-IB	.47**
GRCS-IC	.46**
GRCS-GE	.51**
GRCS-PC	.42**
DASS-Depression	.26**
DASS-Anxiety	.25**
DASS-Stress	.22**

\*\*  $p < .01$       $N = 422$

Criterion related validity. Discriminant analyses were performed to investigate whether the GUS could discriminate between the non-problem gamblers and probable problem gamblers. On the basis of SOGS scores, participants were divided into two groups: Group A (those with SOGS = 0) and Group B (those with SOGS = 1 or more). This division was chosen, as according to the SOGS, a score of 0 indicates non-problem gambling, 1-4 indicates possible problem gambling, or at risk of problem gambling, and 5 or more indicates problem gambling. The aim was to divide the sample into two groups: non problem gamblers (i.e. group A) and those that were either at risk of developing gambling problems, or were experiencing gambling problems (i.e. group B). This resulted in 236 participants in Group A and 186 participants in Group B.

A one-way ANOVA found that there was a significant difference in the GUS total scores between the two groups,  $F(1, 420) = 40.21, p < .001$ . The mean GUS total score for Group A, (non-problem gambling group;  $M = 7.03$ ;  $SD = 2.36$ ) was significantly lower than that for Group B (possible problematic gambling group;  $M = 9.91$ ;  $SD = 6.46$ ).

The ability of the GUS to classify participants into the prescribed groups was evaluated using a discriminant function analysis. The discriminant analysis revealed a significant discriminant function ( $A = .91, \chi^2 = 38.35, p < .001$ ). The univariate F ratio was also significant,  $F(1, 420) = 40.21, p < .001$ . The discriminant function correctly classified 63% of the participants, with 91.1% of Group A and 27.4% of Group B.

Predictive validity. A hierarchical multiple regression (HMR) analysis was conducted to investigate the extent to which GUS total scores could predict levels of problem gambling. Age and gender were controlled for in the analysis. A HMR analysis was completed with SOGS scores as the dependent variable, and age, gender (first step), and GUS total scores (second step), as the independent variables. The results indicated that that 26% (25.9% adjusted – 22.0% by GUS-TOT and 2.2% by gender) of the variance in SOGS scores was accounted for by the predictors ( $R = .51, p < .001$ ). Participants with a high SOGS score were more likely to have high GUS-TOT score. The results are displayed in Table 2.2.

Table 2.2

Results of the HMR analyses assessing the extent to which the GUS total score could predict problem gambling

Dependent Variable	Independent variables	<i>B</i>	$\beta$	<i>sr</i> <sup>2</sup>
SOGS score	1) Age	.00	.01	.00
	Gender	.69	.15	.02**
	2) GRCS-TOT	.21	.47	.22***
		R = .51***	F (3, 418) = 48.71	
		R <sup>2</sup> = .26	Adjusted R <sup>2</sup> = .26	
** <i>p</i> < .01	*** <i>p</i> < .001	<i>N</i> = 422		

### **Gender Differences**

There was a significant gender difference in the GUS total score, ( $F(1, 420) = 6.95, p < .01$ ). The results showed that males had higher GUS scores ( $M = 9.18; SD = 6.29$ ) than females ( $M = 7.84; SD = 4.10$ ).

## **2.4 DISCUSSION**

The purpose of the present study was to examine the psychometric properties of the GUS (Chinese version) in a Chinese sample. The results showed that the GUS (Chinese version) was a suitable tool for assessing gambling urges among non-clinical Chinese individuals.

Raylu and Oei (2004c) demonstrated that a one-factor model is the best fit for the original GUS. The results of the CFA confirmed the one-factor model to be a good fit for the Chinese data. In addition, there was a high level of internal consistency for the entire scale. Taken together, the results confirmed the soundness of the psychometric properties of the GUS (Chinese version) and suggested that computing the total score is appropriate for assessing gambling urges.

The results showed that similar to the original GUS, there were significant positive correlations between the GUS (Chinese version) and other instruments assessing gambling related variables supporting previous studies (Raylu & Oei, 2002, 2004c). Also, like the original GUS, the GUS (Chinese version) showed an ability to discriminate between non-problem gamblers and possible problematic gamblers. Mean differences in GUS scores between non-problem and possible

problematic gamblers were also significant. Moreover, the results of the multiple regression analyses showed that the GUS (Chinese version) significantly predicted gambling behaviour similar to the original GUS. The GUS (Chinese version) significantly accounted for 22% of the variance in SOGS scores. These results supported previous research which has suggested that gambling urges might be an important factor in relation to problem gambling (Raylu & Oei, 2002).

A significant gender difference was found for the GUS, with males reporting significantly higher GUS scores than females. This finding is in line with previous research that has reported Chinese males to have higher rates of problem gambling than Chinese females (Blaszczynski et al., 1998; Oei et al., submitted for publication). Thus, it is possible that the higher GUS scores for males (as opposed to the female scores) in the present study may be accounted for by the higher rates of problem gambling existent amongst males in Chinese samples. However, gender differences among the Chinese still require further investigation.

The strength of this study was that the Chinese participants were from two different countries and communities (i.e. Australia and Taiwan). This strengthened the generalisability of the GUS (Chinese version). Although the findings provided important support for the GUS (Chinese version) as a measure of gambling urges among the Chinese, further studies are still required to assess the psychometric properties in clinical Chinese samples.

There are several implications for the GUS (Chinese version). The GUS (Chinese version) would assist in screening for Chinese that are at high risk of, or currently experiencing, gambling problems. Consequently, it would enable one to identify at risk groups where preventive programs should be targeted. It would also assist researchers to understand the role played by gambling urges in the development and maintenance of problem gambling in Chinese individuals. Once it is validated with clinical samples, it could assist clinicians to assess and monitor treatment progress among clients.

In conclusion, the GUS (Chinese version) has good psychometric properties and is suitable for assessing gambling urges among non-clinical Chinese samples.

## CHAPTER 3

# **Psychometric properties of the Chinese version of the Gambling Related Cognitions Scale (GRCS-C)**

### **3.1 INTRODUCTION**

The role of gambling cognitions in the etiology and maintenance of problem gambling has recently received a lot of attention (e.g. Oei & Gordon, submitted for publication; Raylu & Oei, 2004b; Sharpe, 2002). Using a “thinking aloud” methodology, Gaboury and Ladouceur (1989) revealed that 70% of a gambler’s verbalisations were erroneous whilst participating in gambling behaviour. For example, problem gamblers often have the erroneous expectation known as the “gambler’s fallacy” that a win will follow after a long sequence of losses despite the gambling events being random and therefore unpredictable (Delfabbro, 2004). Similarly, research by Langer (1975) has suggested that gamblers develop an “illusion of control” whereby they believe that there is a greater possibility of obtaining a chance-determined outcome than would be dictated by random chance. Further, similar research has shown that frequent and problem gamblers were more likely to display such thoughts than non-gamblers (Griffiths, 1993; 1996; Raylu & Oei, 2002), and that such cognitions also seem to operate across a variety of forms of gambling including blackjack, gaming machines, roulette, lottery and sports betting (Walker, 1992a, Ladouceur, Gaboury, Bujold, Lachance & Tremblay, 1991; Gaboury & Ladouceur, 1989; Ladouceur, Toneatto, Blitz-Miller, Calderwood, Dragonetti & Tsanos, 1997; Toneatto, 1999).

To date, minimal research has assessed the role of these erroneous cognitions in non-Western societies, despite evidence that gambling related problems exist in ethnic communities. For example, several studies have shown that compared to Caucasians, the Chinese have higher rates of pathological gambling (Blaszczynski et al., 1998; Chen et al., 1993; Chinese Family Services of Greater Montreal, 1997; VCGA, 2000), which suggests that differing cultural perspectives may play a part in gambling behaviours. A number of recent studies have assessed pathological gambling in Chinese populations (e.g. Blaszczynski et al., 1998; Fong & Ozorio, 2005; Ozorio & Fong, 2004; Wong & So, 2003). However, most of these studies have focussed primarily on the gambling behaviours and have therefore ignored the cognitions that underlie the initiation and maintenance of problem gambling. As such, there remains a significant lack of information on the gambling

cognitions of certain cultural groups that may be at high risk of gambling problems (Raylu & Oei, 2004a). It is suggested that the dearth of information could at least be partially attributed to the lack of adequate measures for assessing gambling cognitions across cultures.

Raylu and Oei (2004b) recently developed and validated a five-factor tool (The Gambling Related Cognitions Scale - GRCS) to assess gambling cognitions in non-clinical samples. This instrument measured the beliefs that one could control gambling outcomes (e.g. believing that superstitious behaviours such as carrying a rabbits foot will influence gambling outcomes); belief that one could predict gambling outcomes based on salient cues (e.g. the weather or hunches), or past wins/losses; or reframing of gambling outcomes that would encourage continued gambling (e.g. attributing successes to one's own skill, and failures to other's influences or luck; Raylu & Oei, 2004b). These three categories were similar to those identified by Toneatto (1999) and Toneatto et al. (1997), whereas the other two categories (gambling related expectancies and perceived inability to stop/control gambling) were similar to the cognitions found in the development and maintenance of substance use problems (Baldwin, Oei & Young, 1993; Beck, Wright, Newman & Liese, 1993; Lee & Oei, 1993; Lee, Oei & Greeley, 1999; Oei & Burrow, 2000). Resembling substance abuse cognitions, gambling expectancies relate to how the behaviour will make the individual feel (e.g. gambling makes me more relaxed), whereas the perceived inability to stop the behaviour may lead to a sense of helplessness, thus becoming a self-fulfilling prophecy (Raylu & Oei, 2004b). Examples of the items for each of the five subscales included: illusion of control (e.g. "I have specific rituals and behaviours that increase my chances of winning"), predictive control (e.g. "Losses when gambling are bound to be followed by a series of wins"), interpretative bias (e.g. "Relating my winnings to my skill and ability makes me continue gambling"), gambling expectancies (e.g. "Having a gamble helps reduce tension and stress") and perceived inability to stop gambling (e.g. "My desire to gamble is so overpowering").

Recent research has indicated that given the role of these cognitive errors, cognitive therapy could significantly reduce not only the number of gambling cognitions, but also reduce monetary risk, the frequency of gambling, urges to gamble, and increase perceptions of control (Coulombe, Ladouceur, Desharnais & Jobin, 1992; Ladouceur, Sylvain, Duval, Gaboury & Dumont, 1989; Sylvain, Ladouceur & Boisvert, 1997). As such, it is argued that a Chinese version of the GRCS would not only help to identify the types of gambling cognitions in Chinese samples, but it might also assist our understanding of the development and maintenance of gambling problems, and hence the delivery of successful treatments within this population. In fact, a review by Papineau (2005) reveals that Chinese culture possesses unique beliefs pertaining to fate, chance, luck, probability, risk and control, which suggests that the Asian approach to pathological gambling might differ to

that of other cultures. As such, the purpose of the current study was to examine the psychometric properties of the Gambling Related Cognitions Scale (Chinese version) using a Chinese sample.

## **3.2 METHOD**

### **Participants**

The participants of this study are the same as described in study one. Thus, for more information on the characteristics of the participants and the procedures used to recruit these participants in this study, refer to the ‘Participants’ section of the study described in Chapter 2.

### **Measures**

The measures (i.e. SOGS, GUS, GRCS, DASS and demographics questionnaire) used in this study are the same as described in study one. Thus, for more information on the materials used, refer to the ‘Measures’ section of the study described in Chapter 2.

### **Procedures**

The procedures used in this study are the same as described in study one. Thus, for more information on the procedures, refer to the ‘Procedures’ section of the study described in Chapter 2.

## **3.3 RESULTS**

### **Data screening**

Data was screened prior to analyses using the same method as described in study one. All missing values were replaced by the mean of all cases. With the use of a  $p < .001$  criterion for Mahalanobis distance, no outliers among the cases were found. The scores were greater than .01 suggesting that collinearity was not a problem for the model.

### **Confirmatory Factor Analyses (CFA)**

A series of CFA were conducted to assess which model best fit the data. As in study one, the program EQS 5.7b was used for all confirmatory factor analyses. Maximum likelihood (ML) estimation, the most commonly used estimation method in CFA (Marsh, Hau, Balla, & Grayson, 1988), was applied to covariance matrices.

The first model that was examined was the 5-factor model where the factors were allowed to inter-correlate. The analyses revealed that the 5-factor solution provided a good fit for the data. Results showed that all of the indices assessed were in acceptable range  $\chi^2 (df = 215) = 800.30$ ;  $\chi^2$ :

$df = 3.72$ ; CFI = .91; RMR = .05; RMSEA = .08. The second model assessed was a higher order model where the high level of co-variation between the five factors was accounted for by the higher order factor of “gambling cognition”. Analyses revealed that the higher order model provided a good fit of the data. The results showed that all indices were in the acceptable range  $\chi^2$  (df=219)=834.84;  $\chi^2:df = 3.81$ ; CFI=.90; RMR=.05; RMSEA=.08. The third model to be examined was a 1-factor model where all the items were predicted to load on a single factor that reflected a general gambling cognition. The analyses showed that the single factor solution did not provide a good fit for the data and results indicated that most of the fit indices were less than acceptable  $\chi^2$  (df=229)=1407.97;  $\chi^2:df = 6.15$ ; CFI=.81; RMR=.06; RMSEA=.11. The second-order model factorial structure for the Gambling Related Cognitions Scale (Chinese Version) is shown in figure 3.1.

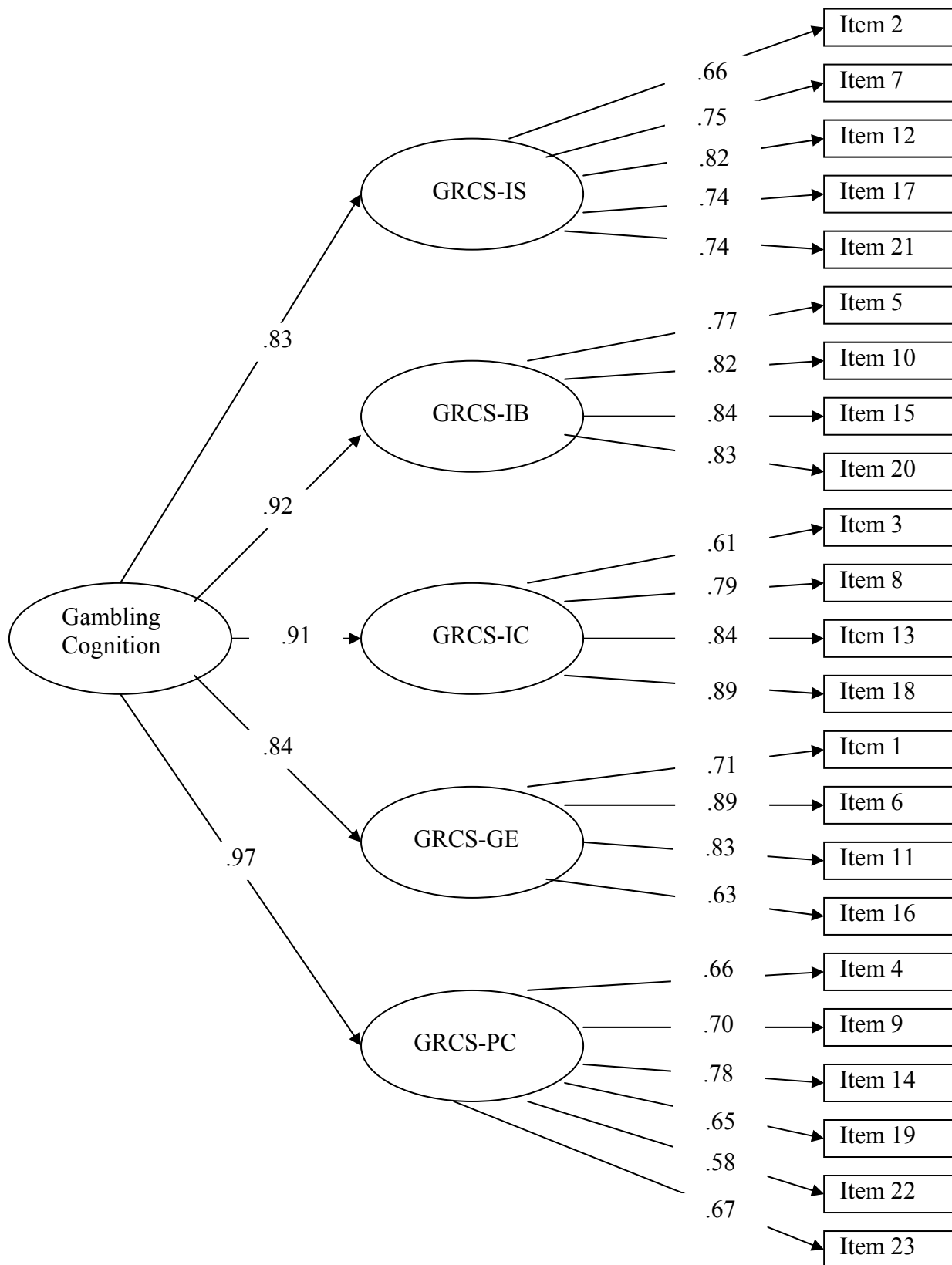


Figure 3.1.

Second-Order Model of Factorial Structure for the Gambling Related Cognitions Scale (Chinese Version).

## **Reliability and Validity of the GRCS (Chinese Version)**

### Reliability

Cronbach's alpha for the overall GRCS scale was high ( $\alpha = .95$ ). Cronbach alpha's for all of the five subscales were above .80: GRCS-IS ( $\alpha = .85$ ); GRCS-IB ( $\alpha = .89$ ); GRCS-IC ( $\alpha = .85$ ); GRCS-GE ( $\alpha = .84$ ); GRCS-PC ( $\alpha = .83$ ).

### Factor inter-correlations for the five-factor model

To explore the correlation between the factors, the factor scores were computed by adding the items from each subscale. The scores for each subscale correlated significantly ( $p < .001$ ) with other subscale scores, and with the total score (Table 3.1). The factors were found to be strongly inter-correlated, with all values exceeding .60.

Table 3.1.

Inter-correlations between factors and the total score

Factor	GRCS-TOT	GRCS-IS	GRCS-IB	GRCS-IC	GRCS-GE	GRCS-PC
TOT	1.00					
IS	.82	1.00				
IB	.89	.67	1.00			
IC	.87	.70	.72	1.00		
GE	.84	.64	.69	.66	1.00	
PC	.91	.62	.78	.76	.70	1.00

## Validity

Concurrent validity. To investigate the concurrent validity of the GRCS (Chinese version), a range of gambling related variables such as extent of gambling, gambling urges, depression, anxiety and stress (which have previously shown to be positively correlated with problem gambling) were correlated with the GRCS (Chinese version). A positive correlation between gambling behaviour, gambling urges, depression, anxiety and stress and the total score of the GRCS was expected. The total GRCS score significantly and positively correlated with all measured variables. Moderately significant positive correlations were established with the SOGS (.42) and the GUS (.55) scores. Small significant positive correlations were observed with the DASS subscales including the depression (.20), anxiety (.23) and stress (.19) subscales. All correlations were significant at .01 significance level.

Criterion related validity. Discriminant analyses were performed to investigate whether the GRCS could discriminate between the non-problem gamblers and problem gamblers. Based on the scores of the SOGS, participants were divided into two groups: non-problem gambling group – Group A (those with SOGS = 0) and possible problematic gambling group – Group B (those with SOGS = 1 or more). This resulted in 236 participants in Group A and 186 participants in Group B. A one-way ANOVA revealed a significant difference in GRCS total scores between the two groups,  $F(1, 420) = 55.22, p < .001$ .

The mean GRCS total score for Group A, non-problem gambling group, ( $M = 37.28$ ;  $SD = 19.51$ ) was significantly lower than that for the possible problematic gambling group (Group B;  $M = 53.28$ ;  $SD = 24.72$ ). Similar results were found for each subscale, GRCS-IS,  $F(1, 420) = 20.27, p < .001$ , GRCS-IB,  $F(1, 420) = 49.15, p < .001$ , GRCS-IC,  $F(1, 420) = 27.71, p < .001$ , GRCS-GE,  $F(1, 420) = 54.37, p < .001$ , and GRCS-PC,  $F(1, 420) = 54.26, p < .001$ . Means and standard deviations of the GRCS total and subscale scores for each of the groups are shown in Table 3.2.

Table 3.2.

Means (and standard deviations) of subscale and total GRCS scores for the two gambling groups.

Factor	GROUP A	GROUP B
	(Non-problem gambler)	(Possible problematic gambler)
GRCS-TOT***	37.28 (19.51)	53.28 (24.72)
GRCS-IS***	6.94 (4.11)	9.06 (5.60)
GRCS-IB***	6.33 (4.00)	9.62 (5.63)
GRCS-IC***	6.61 (4.14)	9.02 (5.29)
GRCS-GE***	6.81 (3.95)	10.18 (5.46)
GRCS-PC***	10.60 (6.04)	15.39 (7.31)

\*\*\*  $p < .001$

$N = 422$

The ability of the GRCS to classify participants into the two prescribed groups was evaluated using discriminant analyses. The first discriminant analysis (using GRCS total score) revealed a significant discriminant function ( $A = .88$ ,  $\chi^2 = 51.82$ ,  $p < .001$ ). The univariate  $F$  ratio was also significant,  $F(1, 420) = 55.22$ ,  $p < .001$ . The discriminant function correctly classified 66.4% of the participants, with 83.1% of Group A and 45.2% of Group B.

The second discriminant analysis (using GRCS subscales as predictors) also revealed a significant discriminant function ( $A = .86$ ,  $\chi^2 = 65.03$ ,  $p < .001$ ). The univariate  $F$  ratios were also significant for all subscales ( $p < .001$ ). Subscales GRCS-IS, GRCS-IB, GRCS-IC, GRCS-GE and GRCS-PC correlated highly with the discriminant function ( $r = .88, .88, .83, .63, .54$ , respectively). The discriminant function correctly classified 66.6% of the participants, with 80.5% of Group A and 48.9% of Group B.

Predictive Validity. HMR analyses were conducted to investigate the extent to which the GRCS total and GRCS subscales could predict the level of gambling problem. Age and gender were controlled in all multiple regression analyses. First, a HMR analysis was completed with SOGS as

the dependent variable and age, gender (first step), and the GRCS total (second step) as the independent variables. The results showed that 20% (19% adjusted -15% by GRCS-TOT and 4% by gender) of the variance in SOGS scores was accounted for by the predictors ( $R = .44, p < .001$ ). Participants scoring higher on SOGS score were more likely to score higher on GRCS-TOT.

The second HMR analysis was completed with SOGS as the dependent variable and age, gender (first step), the GRCS subscales (second step) as the independent variables. The results showed that 23% (22% adjusted-19% by GRCS subscales and 4% by gender) of the variance in SOGS scores was accounted for by the predictors ( $R = .48, p < .001$ ). The proportion of variance in SOGS scores accounted by GRCS-IS, GRCS-IB, and GRCS-IC significantly predicted SOGS scores. These three subscales accounted for 2%, 2% and 1% of unique variance respectively, and for 13% of the shared variance. The GRCS-GE and GRCS-PC did not significantly predict SOGS scores. Together, the five subscales accounted 19% of the variance in SOGS scores. The results of the two HMR analyses are displayed in Table 3.3.

Table 3.3.

Results of the HMR analyses

Dependent Variable	Independent variables	<i>B</i>	$\beta$	<i>sr</i> <sup>2</sup>
SOGS score	1) Age	-.005	-.026	.00
	Gender	.959	.208	.04***
	2) GRCS-TOT	.030	.400	.15***
SOGS score	1) Age	-.005	-.026	.00
	Gender	.959	.208	.04***
	2) GRCS-IS	.100	.220	.02**
	GRCS-IB	.10	.23	.02**
	GRCS-IC	-.09	-.19	.01**
	GRCS-GE	.04	.09	.00
	GRCS-PC	.04	.11	.00

\*\* $p < .01$     \*\*\* $p < .001$      $N = 422$

### **Gender Differences**

Results of an analysis of variance showed that there was a significant gender difference in the GRCS-C total score,  $F(1, 420) = 7.20, p < .01$ . Multivariate analyses of variance showed that there were significant gender differences on only four of the GRCS-C subscales including: GRCS-C-GE,  $F(1, 420) = 8.86, p < .01$ ; GRCS-C-IB,  $F(1, 420) = 7.82, p < .01$ ; GRCS-C-IC,  $F(1, 420) = 4.06, p < .05$  and GRCS-C-IS,  $F(1, 420) = 4.38, p < .05$ . Males had higher GRCS-C scores than females. The gender difference for GRCS-C-PC ( $F(1, 420) = 4.24, ns$ ) was not significant. The results are shown in Table 3.4.

Table 3.4.

Means and standard deviations of the subscale and total GRCS scores for females and males.

Factor	Female	Male
GRCS-TOT**	42.22 (22.29)	48.21 (25.88)
GRCS-IS*	7.46 (4.48)	8.49 (5.55)
GRCS-IB**	7.23 (4.65)	8.64 (5.55)
GRCS-IC*	7.31 (4.56)	8.28 (5.22)
GRCS-GE**	7.72 (4.46)	9.19 (5.59)
GRCS-PC	12.50 (9.12)	13.60 (7.70)

\* $p < .05$

\*\*  $p < .01$

### **3.4 DISCUSSION**

The present study examined the psychometric properties of the GRCS (Chinese version) in order to assess a range of gambling cognitions in a Chinese community sample. The results of this study clearly demonstrated that the GRCS (Chinese version) is a suitable tool for assessing gambling cognitions in this population. The findings further suggest that the adapted version of the

GRCS would assist in exploring the nature and mechanisms of gambling cognitions and the role they play in the development and maintenance of problem gambling in Chinese individuals. It would also be useful in screening for those Chinese individuals at risk of, or currently experiencing, gambling problems. This could also assist in designing and implementing appropriate preventive and treatment programs for this group.

Raylu and Oei (2004b) demonstrated that the GRCS reflects a five-factor model including the dimensions of perceived inability to stop gambling, interpretative bias/control, illusion of control, expectations of gambling and predictive control. Also, a high level of co-variation was found between the factors, which could be explained by the five cognitive subtypes loading on a factor of general cognition. CFA confirmed the five-factor model suggested by Raylu & Oei (2004b) was a good fit for the Chinese sample indicating the soundness of the psychometric properties of the GRCS (Chinese version). CFA also confirmed the higher-level factor, general cognition, as a good fit for the Chinese data. Moreover, there was a high level of internal consistency for the entire scale. Consistent with previous research, there were significant positive correlations between the GRCS (Chinese version) and the other gambling related variables such as gambling behaviour, gambling urges, depression, anxiety and stress (Raylu & Oei, 2002).

According to the results of the discriminant analyses, the GRCS total score and the GRCS subscales have the ability to discriminate between non-problem gambler and possible problematic gamblers. That is, the means of the GRCS total score and subscale scores between the two groups were significantly different, such that possible problem gamblers were more likely to possess superstitious beliefs, erroneous gambling predictions/probabilities, and attribution biases. They were also more likely to have positive gambling related expectancies and increased cognitive dysfunctions reflecting their inability to stop gambling. These results support previous research that has suggested that gambling related cognitions are important in the development and maintenance of problem gambling (Oei & Gordon, submitted for publication; Raylu & Oei, 2002).

The results also showed that the GRCS total score and the GRCS subscales were significant predictors of gambling behaviour. The overall GRCS score significantly accounted for 15% of the variance in SOGS scores, while the GRCS subscales accounted for 19% of the variance. However, only three GRCS subscales (i.e. GRCS-IS, GRCS-IB & GRCS-IC) accounted for significant variance in SOGS scores, whereas the additional subscales of gambling related expectancies (GRCS-GE) and predictive control (GRCS-PC) did not. However, this result needs to be taken into consideration when using the subscales to predict problem gambling and, as suggested by the authors of the original GRCS (Raylu & Oei, 2004b), it is advisable to use total GRCS scores to predict problem gambling.

Significant gender differences were found in four of the five factors as well as the total score, with males having significantly higher GRCS scores than females. This finding is in line with previous research that has found males have higher rates of problem gambling than females in Chinese communities (Blaszczynski et al., 1998; Fong & Ozorio, 2005; Oei, Lin & Raylu, submitted for publication; Wong & So, 2003).

The strength of the current study is that the Chinese participants were from two different communities (i.e. Australia and Taiwan), which highlighted the generalisability of the GRCS (Chinese version) in the Chinese sample. Although the findings provide important support for the GRCS (Chinese version) as a measure of gambling cognitions among Chinese gamblers, future studies need to assess the psychometric properties with other samples, such as clinical samples. Additionally, the data used in the current study were cross-sectional in nature and therefore did not assess the sensitivity of the GRCS across time. This is particularly relevant for clinical research so that therapy outcomes can be established successfully.

It should also be noted that Western cultures differ from Asian cultures in that they classify problem gambling in different ways (Papineau, 2005). For example, the term “pathological” generally refers to those gamblers whose behaviours meets the definition of persistent, recurrent maladaptive gambling behaviour, and five of the ten diagnostic criteria outlined in the DSM-IV (APA, 1994). However differing traditions and belief systems in Chinese culture, such as the distinctive notions of luck, fate, destiny and control, may preclude certain behaviours from being considered problematic in this population (Papineau, 2005). As such, future research into gambling behaviours in Chinese communities needs to ensure that a culturally sensitive approach is established to detect differences between non-gamblers and possible problematic gamblers.

In conclusion, the GRCS (Chinese version) has been shown to have good psychometric properties and has demonstrated sound validity and reliability. Therefore, it is suggested that the GRCS (Chinese version) is suitable for assessing gambling cognitions among non-clinical Chinese gamblers. This will assist researchers in identifying the types of gambling cognitions among Chinese problem gamblers and to understand the role of these cognitions in the development and maintenance of problem gambling.

## **CHAPTER 4**

# **Gambling behaviours and motivations towards gambling among the Chinese**

### **4.1 INTRODUCTION**

Although there are many anecdotal reports suggesting high levels of gambling and problem gambling among specific ethnic communities such as the Chinese (e.g. Courtenay, 1996; Kim, 1996), only a few studies have specifically assessed gambling among the Chinese (Raylu & Oei, 2004a). Some studies have found higher rates of gambling and problem gambling among the Chinese (especially among males) than that found among the general population (Blaszczynski et al., 1998; Chen et al., 1993; Chinese family Services of Greater Montreal, Yeh, Hwe & Lin, 1995). The VCGA found that the rates of gambling among the Chinese were lower than that found for the general community in the VCGA Community Patterns Surveys (VCGA, 2000). However, the Chinese who did participate in gambling spent larger amounts of money per week than the general community. Furthermore, the percentages of Chinese participants with the SOGS scores of 5 or more were found to be significantly greater in than that of the general community. Galletti (2002) reported that the gambling style of Chinese gamblers tends to be different from that of average North American gamblers. North American gamblers usually adjust their bets in table games gradually, whereas Chinese gamblers usually make large adjustments to their bets depending on the perception of their luck. There is generally a significant lack of studies reporting on gambling behaviours among the Chinese (especially in direct comparison to another cultural group).

The review in Chapter 1 reported findings from the VCGA (2000) and GAMECS (1999) studies that found clear differences in preferences for modes of gambling and participation in it for different cultural groups. The GAMECS Project (1999) reported on individuals (including a Chinese sample) who participated in some form of gambling of chance at least once a week. They found that casino gambling was most popular amongst the Chinese participants. They reported that the percentage of Chinese participants who used gaming machines outside the casino was much lower than for the general community. The Chinese community participation rates on gaming machines at the casino matched those of the general community. These are similar to overseas findings. For example, Paton-Simpson, Gruys and Hannifin (2002) reported that treatment seeking

Asian gamblers indicated casino table games as their main form of gambling, whilst a small proportion indicated non-casino gaming machines and track betting as their main form of gambling.

The cultural differences in the preferred mode of gambling could be related to approval and familiarity of various games within each culture. Approval and familiarity could be maintained within the culture by passing these values and beliefs about gambling from generation to generation. For example, the use of dice and cards may have been in the Chinese culture for centuries. This familiarity and approval could be one of the factors that attract Chinese individuals to the casino tables (Clark et al., 1990).

Even less research has been done on gambling motivations among the Chinese. The current gambling literature which is based on predominantly Western samples has suggested that no motive for gambling has been consistently identified among social gamblers and problem gamblers (Raylu & Oei, 2002). Several motivations are implicated including demonstrating one's worth, gaining approval and social acceptance from others, rebelling, relieving negative and painful events/emotions (e.g. anger, depression, frustration, and anxiety), hoping to win, participating due to social reasons, trying to beat the odds and participating to experience the excitement (e.g. to reduce boredom), passing time and having fun (PCR, 1999; Blaszczynski, 1995; Cotte, 1997; Dumont & Ladouceur, 1990).

Chantal, Vallerand and Vallières (1994) developed a scale with three categories of gambling motivations: These included:

1. intrinsic motivation (e.g. gambling for excitement/stimulation, a sense of accomplishment or an opportunity to broaden knowledge), and extrinsic motivation such as external regulation (e.g. gambling to gain external rewards such as to win money);
2. introjected regulation (gambling to release tension or guilt) and identified regulation (e.g. gambling for certain internal values such as wanting to be important in the eyes of others); and
3. amotivation (when one doesn't perceive relations between one's own actions and gambling outcomes) is often characteristic of gamblers' loss of control over their gambling.

Using the Gambling Motivations Scale (Chantal et al., 1994) on a predominantly Caucasian sample, Clarke (2004) found there were significant differences between non-problem gamblers and problem gamblers in intrinsic motivation towards stimulation, extrinsic motivation - introjected regulation, extrinsic motivation - identified regulation and amotivation, but not in the remaining subscales (i.e. intrinsic motivation towards gaining knowledge, or accomplishment and extrinsic motivation - external regulation). He also found that the subscales amotivation and the motivations for accomplishment and tension release (introjected regulation) could predict problem gambling. This

was supported by Ladouceur, Arsenault, Dubé, Freeston and Jacques's (1997) study that found problem gamblers were more likely to report amotivation and introjected motivations towards gambling than non problem gamblers.

Gambling behaviour can serve distinct functions for different cultural groups (Abt, McGurrin, & Smith, 1985). The GAMECS Project (1999) found different motivations towards gambling among different cultural groups. Both the Korean and Arabic participants reported gambling for entertainment and to escape from daily lives. Chinese participants regarded gambling as a regular social activity rather than using it to escape from daily life problems. The Italian participants reported mostly using gambling as an individual activity, while the Spanish participants regarded gambling as a hobby and a social activity. The Vietnamese participants viewed gambling as a fast way of making money.

Motivations towards gambling would also influence the modes of gambling chosen. Phong Nguyen, coordinator of Springvale Indo-Chinese Mutual Assistance Association stated that there are several important variables that encourage members of the Indo-Chinese community to go to the casino rather than the TAB or pubs to gamble (Legge, 1992). It was suggested that coming from a highly populated country and a community orientated culture, Vietnamese and Chinese individuals may find casinos a pleasant and attractive environment because individuals from their own cultural background surrounded them (Legge, 1992).

In summary, although a number of researchers have explored gambling among Chinese living in various countries, there is a significant lack of research on gambling behaviours (e.g. frequency and amount of gambling on various forms of gambling, problem gambling behaviours and motivations towards gambling) among the Chinese, especially in direct comparison with another cultural group. This is important, as understanding these variables among Chinese gamblers will assist us to design effective preventive and treatment based studies. Consequently, the main aim of this study was to reduce these gaps in the gambling literature by comparing gambling behaviours and motivations towards gambling between the Chinese and Caucasians residing in Australia. This paper also presented results of additional analyses comparing gambling behaviours between Australian Chinese and Taiwan Chinese.

## **4.2 METHOD**

### **Participants**

In order to assess the main aim of the study, gambling and problem gambling behaviours and motivations towards gambling and problem gambling were assessed among Chinese ( $N = 199$ ) and Caucasians ( $N = 306$ ) residing in Australia. Of the Caucasian sample, 35% were male and 65%

were female. The mean age of the Caucasian participants was 22.38 years ( $SD = 9.19$ ; range = 17-72 years). Of the Chinese sample, 36.4% were male and 63.6% female. The mean age of the Chinese participants was 30.22 years ( $SD = 14.14$ ; range = 16-78 years).

Supplementary analyses using a smaller sample size were also conducted to compare gambling behaviours between community-based Chinese residing in Australia ( $N = 84$ ) and those residing in Taiwan ( $N = 201$ ). Of the Taiwanese Chinese, 59.0% were females and 41.0% were males. Mean age was 34.03 ( $SD = 12.18$ ) and age range was 17-72 years. Of the Australian Chinese, 57.8% were females and 42.2% were males. Mean age was 27.56 ( $SD = 10.87$ ) and age range was 17-68 years.

## **Measures**

A number of instruments were used in this study. All the questionnaires, including the introduction sheet were translated into Mandarin and back translated into the original language. For more details on the translation procedures, refer to the 'Measures' section of the study described in Chapter 2.

South Oaks Gambling Screen (SOGS; Lesieur & Blume, 1987). For a detailed description of the SOGS, refer to the 'Material' section of the study described in Chapter 2.

The Motivation Towards Gambling Scale (MTGS; Chantal et al., 1994). This scale contains 28 items evaluating seven types of motivation. This includes intrinsic motivation towards knowledge, accomplishment and stimulation from the gambling activities, extrinsic motivation assessing external regulation (e.g. gambling to gain external rewards such as to win money), introjected external regulation (gambling to release tension or guilt), regulation through identification (e.g. gambling for certain internal values such as wanting to be important in the eyes of others) and amotivation when there are no perceived relations between actions and gambling outcomes. Individuals responded to each item using a 7-point scale, indicating the degree to which each statement corresponds to the reasons why they play their favourite game, ranging from 1 (does not correspond at all) to 7 (corresponds exactly). Chantal et al. (1994) reported good reliability and validity for this scale.

Frequency and amount gambled. Taiwanese Chinese also completed a questionnaire assessing their frequency of gambling (i.e. none, monthly or less, 2-4 times week, more than once a week) and the average amount gambled per day for a number of forms of gambling.

## **Procedure**

In the main part of the study, 306 Caucasian participants and 199 Chinese participants residing in Australia completed information on demographics, the SOGS and the MTGS. In the second part of the study, 84 Australian Chinese and 201 Taiwanese Chinese completed information on demographics, the part of the SOGS that assesses the extent of problem gambling and the questionnaire assessing the frequency of gambling.

The overall response rate (percentage of questionnaires returned) of the Australian sample was about 80%, whereas the overall completion rate (percentage of questionnaires that were completely answered) was 90%. The overall response rate of the Taiwanese sample was about 73%, whereas the overall completion rate was 90%.

## **Data Analyses**

Generally, Chi square analyses were used to assess differences in gambling frequency, amount gambled on various forms of gambling, SOGS scores, parental gambling and problem gambling behaviours between Australian Chinese and Australian Caucasians for a number of different forms of gambling. Similar analyses were also used to compare gambling behaviours between Australian Chinese and Taiwanese Chinese. HMR analyses were used to assess whether the various types of motivations towards gambling could predict problem gambling between both a Chinese and Caucasian sample residing in Australia.

## **4.3 RESULTS**

### **Differences in gambling/problem gambling behaviours between Chinese and Caucasians residing in Australia**

The differences in several gambling behaviours between the Chinese and Caucasians were assessed. This included the frequency of participation on various forms of gambling, the largest amount ever gambled with on any one day, problem gambling behaviours, extent of problem gambling (i.e. total SOGS score) and frequency of parental excessive gambling.

Frequency of gambling. There were significant differences between the Chinese ( $N = 199$ ) and Caucasian ( $N = 306$ ) individuals living in Australia in relation to the frequency of participation in a number of different forms of gambling. Caucasians were more likely than Australian Chinese to bet on animals and sports, play lotteries and bingo, engage in casino gambling, participate in games of skill for money, and play gaming machines. Results are shown in Table 4.1.

Table 4.1.

Frequency of participation in various forms of gambling for Chinese and Caucasians residing in Australia.

Form of gambling	None		Less than once a week		Once a week or more	
	Ch	Ca	Ch	Ca	Ch	Ca
Played cards for money	63.3	56.5	35.7	43.1	1.0	.03
Bet on animals***	86.4	42.5	11.6	53.9	2.0	3.6
Bet on sports***	86.4	68.5	12.1	29.5	1.5	2.0
Dice games for money	82.9	82.0	16.6	17.7	0.5	.03
Casino gambling***	52.0	30.1	46.0	68.0	2.0	2.0
Lotteries**	52.3	37.9	41.7	56.5	6.0	5.6
Bingo***	80.9	60.8	18.1	38.9	1.0	.03
Stock/commodities market	79.9	71.9	17.1	22.5	3.0	5.6
Machine games***	60.3	30.4	37.7	63.1	2.0	6.5
Game of skill for money***	88.3	68.0	9.6	28.4	2.0	3.6

Ch = Chinese residing in Australia (N=306)

Ca = Caucasians residing in Australia (N=199)

\*\*  $p < .01$       \*\*\* $p < .001$

Largest amount ever gambled on any one day. There was a significant difference in the largest amount ever gambled with on any one day between the two groups  $\{\chi^2(6) = 42.78, p < .001\}$ . Chinese were more likely than Caucasians to report to have never gambled. Caucasians were more likely than Chinese to report gambling \$100 or less. On the other hand, Chinese were more likely than Caucasians to report gambling greater than \$100. The results are shown in Table 4.2.

Table 4.2.

Percentage of individuals reporting gambling the various amounts as the largest amount ever gambled on any one day.

Amount gambled	Australian Chinese ( <i>N</i> =199)	Australian Caucasian ( <i>N</i> =306)
Never	17.6	4.2
\$1 or less	4.0	8.2
\$1-10	26.6	37.6
\$10-100	32.7	38.9
\$100-1000	11.1	9.2
\$1000-10000	5.0	1.6
>\$10000	3.0	.03

Problem gambling behaviours. Chinese were more likely than Caucasians to report chasing behaviour most of the time or every time they gambled, as well as claiming to win when they were not. On the other hand, Caucasians were more likely to have reported gambling more than they intended than the Chinese. These are shown in Table 4.3.

Extent of problem gambling. No significant differences between the SOGS scores were found between the two groups  $F(1,503) = 1.27, ns$ .

Parental gambling. There was a significant difference between the two groups in relation to the percentage reporting excessive parental gambling  $\chi^2(3) = 15.62, p < .001$ . This had been assessed by item 3 of the SOGS. Comparisons of the percentage of excessive parental gambling were as follows: in both parents (8.1% in Chinese, compared to 3.3% in Caucasians), in mothers only (3.0% in Chinese, compared to 1.0% in Caucasians), in fathers only (9.1% in Chinese, compared to 3.1% in Caucasians) and in neither parents (79.8% in Chinese, compared to 91.8% in Caucasians).

Table 4.3.

Percentage of individuals reporting various problem gambling behaviours.

Problem gambling behaviour	Australian Chinese ( <i>N</i> = 199)	Australian Caucasians ( <i>N</i> = 306)
Chasing behaviour most of the time or every time**	8.5	2.3
Claimed to win when they weren't**	19.1	8.5
Gambled more than intended to**	17.1	30.7
Criticised for their gambling	9.5	11.4
Guilty about their gambling	15.6	16.3
Couldn't stop gambling	7.0	3.6
Hidden their gambling	6.0	4.2
Arguments (centred on their gambling) over handling money	2.0	2.0
Borrowed money for gambling	1.5	2.0
Lost time from work/school due to gambling	4.5	2.6

\*\* $p < .01$

#### **Differences in gambling motivations between Chinese and Caucasians residing in Australia**

First, the mean difference in motivations towards gambling between Chinese and Caucasians residing in Australia were assessed using Analyses of variance. Significant differences were found between the two groups for only two types of motivations. Results showed that intrinsic motivation toward stimulation was higher among the Caucasians than the Chinese individuals residing in Australia. On the other hand, extrinsic motivation – identification was higher among the Chinese than Caucasian participants residing in Australia.

Both Chinese and Caucasian males were more likely than their female counterparts to report intrinsic motivation towards accomplishment, intrinsic motivation toward stimulation, and extrinsic motivation – introjected. In addition, Chinese males were also more likely to report intrinsic motivation toward knowledge and extrinsic motivation – identification than their female counterparts. These results are shown in Table 4.4.

Table 4.4.

Mean difference in motivations towards gambling between Chinese and Caucasians residing in Australia and their gender groups.

Type of motivation	Ch Mean ( <i>SD</i> ) ( <i>N</i> = 199)	Ca Mean ( <i>SD</i> ) ( <i>N</i> = 306)	Ch female Mean ( <i>SD</i> ) ( <i>N</i> = 127)	Ch male Mean ( <i>SD</i> ) ( <i>N</i> = 72)	Ca female Mean ( <i>SD</i> ) ( <i>N</i> = 199)	Ca male Mean ( <i>SD</i> ) ( <i>N</i> = 106)
IM toward knowledge	8.67 (5.37)	9.43 (5.69)	8.01 (4.94)	9.85 (5.90)*	9.05 (5.61)	10.12 (5.82)
IM toward accomplishment	8.18 (5.14)	8.07 (4.88)	7.32 (4.37)	9.69 (6.01)**	7.61 (4.78)	8.82 (4.91)*
IM toward stimulation	9.82 (5.79)	11.78 (6.16)***	8.83 (5.20)	11.56 (6.38)**	10.99 (6.04)	13.17 (6.11)**
EM – external regulation	10.09 (7.48)	11.35 (8.08)	9.72 (7.22)	10.74 (7.92)	10.90 (7.83)	12.04 (8.39)
EM – introjected	6.44 (3.96)	7.09 (4.65)	5.99 (3.37)	7.24 (4.76)*	6.66 (4.45)	7.78 (4.80)*
EM – identification	6.91 (4.26)	6.05 (3.54)*	6.38 (3.73)	7.85 (4.94)*	5.89 (3.78)	6.32 (3.03)
Amotivation	9.27 (6.36)	10.36 (5.83)	8.71 (6.09)	10.26 (6.74)	9.81 (5.68)	11.28 (5.95)

IM – Intrinsic motivation      EM – Extrinsic motivation

\* $p < .05$

\*\* $p < .01$

\*\*\* $p < .001$

In order to explore cultural differences in the relationship between gambling motivations and problem gambling, a HMR analysis was conducted with combined Caucasian and Chinese samples using the SOGS score as the dependent variable and ethnicity, gender (first step), the seven MTGS subscales (second step), 2-way interactions between gender and the predictors (third step), and 2-way interactions between ethnicity and the predictors (fourth step). Results are illustrated in Table 4.5.

Results showed that 32% ( $R^2 = 28.7\%$  adjusted) of the variance in SOGS scores was accounted for by the predictors ( $R = .57, p < .01$ ). Only intrinsic motivation toward knowledge, intrinsic motivation toward stimulation, extrinsic motivation – identification, amotivation, gender x intrinsic motivation toward knowledge interaction, ethnicity x intrinsic motivation toward accomplishment interaction, and ethnicity x extrinsic motivation – introjected interaction contributed significantly to the prediction of the SOGS scores. The proportion of variance in SOGS scores that were accounted for by these variables were 2.8%, 12.3%, 5.7%, 2.0%, 2.8%, 3.6% and 6.3%, respectively.

Table 4.5.

Results of the HMR analyses assessing whether the interactions between ethnicity, gender and the various gambling motivations predict problem gambling

Dependent Variables	Independent Variables	$\beta$
South Oaks Gambling Screen score	Gender	.06
	Ethnicity	.07
	Intrinsic motivation toward knowledge	-.17*
	Intrinsic motivation toward accomplishment	.03
	Intrinsic motivation toward stimulation	.35**
	Extrinsic motivation – identification	.24**
	Extrinsic motivation – introjected	-.11
	Extrinsic motivation – external regulation	.09
	Amotivation	.14*

Gender x Intrinsic motivation toward knowledge	.17*
Gender x Intrinsic motivation toward accomplishment	.01
Gender x Intrinsic motivation toward stimulation	-.12
Gender x Extrinsic motivation – identification	-.09
Gender x Extrinsic motivation – Introjected	.12
Gender x Extrinsic motivation – external regulation	.09
Gender x Amotivation	.04
Ethnicity x Intrinsic motivation toward knowledge	.04
Ethnicity x Intrinsic motivation toward accomplishment	.19*
Ethnicity x Intrinsic motivation toward stimulation	-.03
Ethnicity x Extrinsic motivation – identification	.03
Ethnicity x Extrinsic motivation – Introjected	-.25**
Ethnicity x Extrinsic motivation – external regulation	.02
Ethnicity x Amotivation	-.02

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\*  $p < .05$

\*\* $p < .01$

\*\*\* $p < .001$

HMR analyses for each ethnic group (after controlling for gender) showed that extrinsic motivation–introjected had a significant negative contribution to problem gambling (beta =  $-.39$ ,  $p < .001$ ) for Chinese participants. Although HMR analyses for each ethnic group (controlling for gender) did not show intrinsic motivation toward accomplishment to significantly contribute to problem gambling for either of the ethnic groups, the motivation had a strong positive correlation with problem gambling for the Chinese ( $R = .42$ ,  $p < .001$ ) compared to the Caucasians ( $R = .24$ ,  $p < .001$ ). HMR analyses for each gender group (controlling for ethnicity) showed that intrinsic motivation towards knowledge had a significant negative contribution to problem gambling (beta =  $-.31$ ,  $p < .001$ ) only for female participants.

**Differences in gambling/problem gambling behaviours between Australian Chinese ( $N = 84$ ) and Taiwanese Chinese ( $N = 201$ )**

The differences in several gambling behaviours between the Chinese residing in Taiwan and those residing in Australia were assessed. This included the frequency of participation on various forms of gambling, the average amount gambled per day, problem gambling behaviours, and extent of problem gambling (i.e. total SOGS score).

Frequency of gambling. There were significant differences between the Australian Chinese ( $N = 84$ ) and Taiwanese Chinese ( $N = 201$ ) groups in the frequency of participation in the four forms of gambling assessed (gaming machines, table games, betting on horses or dogs, and other forms). Taiwanese Chinese were more likely to participate in these types of gambling than Australian Chinese. Results are shown in Table 4.6.

Average amount gambled per day. No significant differences were found in the average amount gambled per day on any of the four types of gambling assessed.

Problem gambling behaviours. Significant differences were found for only two of the problem gambling behaviours. Australian Chinese were more likely to feel guilty about their gambling and hide their gambling than Taiwanese Chinese. Results are shown in Table 4.7.

Extent of problem gambling. No significant differences between the SOGS scores were found between the two groups  $F(1,284) = 1.04, ns$ .

Table 4.6.

Differences in the percentage of participation in various forms of gambling between Australian Chinese and Taiwanese Chinese.

Form of gambling	None		Monthly or less		2-4 times a month		> Once a week	
	AC	TC	AC	TC	AC	TC	AC	TC
Gaming machines***	47.6	0.0	38.1	77.1	9.5	21.9	4.8	1.0
Table games***	46.4	0.0	33.3	61.7	16.7	28.4	3.6	10.0
Betting on horses or dogs ***	65.5	0.5	33.3	96.0	1.2	3.0	0.0	0.5
Other forms***	42.9	0.5	47.6	58.7	4.8	28.9	5.8	12.0

AC = Australian Chinese ( $N = 84$ )

TC = Taiwanese Chinese ( $N = 201$ )

\*\*\*  $p < .001$

Table 4.7.

Percentage of individuals reporting various problem gambling behaviours.

Problem gambling behaviours	AC	TC
Chasing behaviour most of the time or every time	4.8	4.0
Claimed to win when they weren't	17.9	15.9
Gambled more than intended to	16.7	11.5
Criticised for their gambling	13.1	9.5
Guilty about their gambling**	20.2	7.5
Couldn't stop gambling	8.3	3.5
Hidden their gambling*	11.9	4.5
Arguments (centred on their gambling) over handling money	2.4	2.5
Borrowed money for gambling	1.2	3.0
Lost time from work/school due to gambling	1.2	5.5

AC = Chinese residing in Australia ( $N = 84$ )

TC = Chinese residing in Taiwan ( $N = 201$ )

\*\* $p < .01$       \* $p < .05$

#### 4.4 DISCUSSION

This study was predominantly aimed at comparing the gambling behaviours and motivations of Chinese and Caucasians residing in Australia. Results showed that Caucasians were more likely than Australian Chinese to bet on animals and sports, play lotteries and bingo, engage in casino gambling, participate in games of skill for money, and play gaming machines. Indeed, Western literature reports these games as common for Caucasians, compared to those games reported to be popular among Chinese such as dice and card games for money (Clark et al., 1990; Courtenay, 1996; Kim, 1996). This supports Chinese literature that shows that dice and card games can be dated back to about 300 B.C. (Galletti, 2002). This also supports the findings of VCGA (2000) which report that gambling among the Chinese was lower than that found for the general community in the VCGA Community Patterns Surveys (1999).

Australian Chinese were more likely to have reported never to have gambled than Caucasians. Caucasians were more likely than Chinese to have reported gambling \$100 or less,

whereas the Chinese were more likely than Caucasians to have reported gambling greater than \$100. This supports the findings of VCGA (2000) study, which reported that those Chinese that did participate in gambling spent larger amounts of money per week than the general community.

Chinese were more likely than Caucasians to report participating in chasing behaviour most of the time, or every time, they gambled; as well as claiming to win when they were not. On the other hand, Caucasians were more likely than Chinese to have reported gambling more than they intended. It is possible, that due to the importance of saving face among the Chinese, they underreport that their gambling may be out of control.

VCGA (2000) found that the percentage of Chinese participants with the SOGS scores of 5 or more was significantly greater than that of the general community. However, there were no significant differences in the extent of problem gambling between Caucasians and Chinese in this study. A number of differences between the two studies could have explained this, including variances in the location of the two samples and time the study was conducted. The analyses used in the two studies were also different. This study assessed the difference in the mean SOGS scores of the two groups, whereas the VCGA study assessed the percentage of participants with the SOGS score of 5 or more. Furthermore, this study compared the Chinese with only those participants that identified themselves as 'Caucasians', whereas the VCGA (2000) study compared the Chinese with the general population (including Caucasians and other cultural groups).

In relation to reports of parental gambling, Chinese were more likely to report excessive parental gambling, especially among their fathers. This is consistent with the perception of high rates of gambling amongst Chinese males.

A number of types of motivations could significantly predict problem gambling. First, as found in other studies (e.g. Ladouceur et al., 1997; Clarke, 2004), amotivation could significantly predict problem gambling. This finding is unsurprising, given the absence of a perceived relationship between ones own actions and gambling outcomes are a characteristic of gamblers' loss of control over their gambling.

Second, although intrinsic motivation towards knowledge could also predict problem gambling, intrinsic motivation towards knowledge had a significant negative contribution to problem gambling, only for female participants. It is possible that gambling to gain more knowledge about gambling, acts as a protection against gambling problems only for females. More research is required to understand this finding.

Other studies (e.g. Ladouceur et al., 1997; Clarke, 2004) have also found that introjected regulation (e.g. gambling to release tension or guilt) could predict problem gambling. This study found that this type of motivation had a significant negative contribution to problem gambling for

Chinese participants only. It is possible that gambling as a means to release tension or guilt acts as a protection against gambling problems only for Chinese participants. More research is required to understand this finding.

Clarke (2004) also found that intrinsic motivation towards accomplishment (i.e. gambling to achieve a sense of accomplishment) could predict problem gambling. This study found intrinsic motivation toward accomplishment to be a significant contributor to problem gambling for neither of the ethnic groups. However, this motivation was more strongly positively correlated with problem gambling for the Chinese than for Caucasians. This is not surprising as family recognition through achievement is an important belief among the Chinese (Kim, Atkinson & Yang, 1999).

Two other types of motivations that could predict problem gambling in this study were intrinsic motivation toward stimulation and extrinsic motivation – identification. Results showed that intrinsic motivation toward stimulation was higher among the Caucasians than the Chinese individuals residing in Australia. On the other hand, extrinsic motivation – identification (e.g. gambling for certain internal values such as wanting to be important in the eyes of others) was higher among the Chinese than Caucasian participants residing in Australia. The GAMEESC project (1999) found that Chinese participants regarded gambling as a regular social activity rather than using it to escape from daily life problems or boredom. Furthermore, immigrant Chinese often suffer from a loss of social status. Gambling may be a way to feel important. Furthermore, given the history of social classes, gambling may provide the opportunity to improve social standing.

Both Chinese and Caucasian males were more likely than their female counterparts to report intrinsic motivation towards accomplishment, intrinsic motivation toward stimulation and extrinsic motivation – introjected. This supports the findings of one of our earlier studies (Raylu & Oei, unpublished manuscript). In addition, Chinese males were also more likely to report intrinsic motivation toward knowledge and extrinsic motivation – identification, than their female counterparts. This was not found for Caucasians. It is possible this is partially due to differences in the social status of males compared to females in the Chinese culture. As discussed earlier, immigrant Chinese (especially males) often suffer from a loss of social status. Thus, it is possible that Chinese males perceive certain consequences of their gambling (e.g. increased knowledge of gambling or gain of certain internal values such as becoming important in the eyes of others) as an improvement in their social status.

Although Taiwanese Chinese were more likely to participate in the assessed types of gambling (gaming machines, table games, betting on horses or dogs, and other forms) than Australian Chinese, there were no significant differences found in the average amount gambled. There were also no significant differences in the SOGS scores between the two groups. The higher

participation of Taiwanese Chinese may arise because gambling is more acceptable in Taiwan than in Australia. Furthermore, the VCGA (2000) suggested that Chinese tend to gamble for social reasons, rather than to cope with the stress associated with being an immigrant. Thus, it is possible that they gamble in a more controlled manner and thus, are less likely to develop gambling problems.

Significant differences were found for only two of the problem gambling behaviours. Australian Chinese were more likely to feel guilty about their gambling and hide their gambling than Taiwanese Chinese. It is possible that gambling is less acceptable in Australia compared to Taiwan. Consequently, the thought of breaking a moral code (i.e. gambling), especially after perceiving their gambling as being out of control, losing large amounts of money and/or getting into debt, may lead to guilt and shame. Li, Wang and Fischer, (2004) reported that among Chinese, shame often occurs when they perceive themselves to have desecrated a moral code and often is followed by behaviours such as turning away and escaping. However, such hypotheses still need to be tested.

Although the study found significant results for a number of relationships between gambling behaviours/motivations and problem gambling, the studies need to be replicated with clinical samples. Given the differences in gambling behaviours and motivations towards gambling amongst the Chinese, current theoretical models that are predominantly based on Western research need to incorporate these changes to improve the generalisability of the models. Future studies also need to investigate whether there are differences in gambling and problem gambling behaviours, as well as gambling correlates, between the Chinese from different countries. This is important as Chinese populations exist in many countries and the history of gambling in each country is distinct.

The cultural differences in gambling habits and problem gambling could be accounted for by two different processes. First, exposure to different levels of risk factors for gambling (e.g. differences in number of individuals they know that gamble and who model gambling behaviour, number of individuals in their lives that approved of gambling, perceived norms (peer or family) of gambling, and differences in the expectations of costs and benefits of gambling). Second, they could differ in their susceptibility to risk factors (i.e. whether the abovementioned risk factors are differentially related to gambling across different cultural groups). Thus, the presence of varying susceptibilities implies there to be an interactive or moderating effect of risk factors with culture. Knowledge about these possible interactive effects would be valuable in developing effective prevention and treatment programs. It is, however, important that the two processes are not mutually exclusive but can both operate at the same time. Thus, to further understand the sources of cultural differences in gambling, we need to investigate both processes simultaneously.

Given the small sample size of Taiwanese Chinese involved in this study, results need to be interpreted cautiously. The study only assessed Chinese from Australia and Taiwan and therefore the generalisability of the findings is limited. Also, there were variations in the way different types of gambling were assessed in the main study compared to the supplementary study. This makes it difficult to compare the results of the two studies regarding different forms of gambling.

However, regardless of these limitations, this is an important study because it is the first to assess gambling among Chinese in two countries and to compare Chinese to Caucasians. The findings provide relevant information in understanding gambling behaviours among the Chinese.

## CHAPTER 5

# **Relationship between Gambling Cognitions, Psychological States and Gambling: A Cross-Cultural Study of Chinese and Caucasians in Australia**

### **5.1 INTRODUCTION**

Information about the relationships between important gambling correlates and gambling behaviours among the Chinese are lacking. Currently, two of these variables, psychological states (e.g. depression and anxiety) and gambling cognitions, are gaining attention for a number of reasons. First, numerous studies have postulated the importance of these variables in gambling problems (Raylu & Oei, 2002). Second, behavioural and cognitive behavioural therapies aim to reduce these variables. These kinds of therapy are currently the most effective treatment for gambling problems (Raylu & Oei, 2002).

Gambling cognitions. Evidence suggests problem gamblers hold a set of false and erroneous beliefs about gambling (e.g. their ability to control, or predict, gambling outcomes) that maintains their gambling despite continuous losses (Raylu & Oei, 2002). The more a chance situation contains factors of choice (e.g. having the opportunity to choose own gaming machine), familiarity (e.g. having a favourite gaming machine), and involvement (e.g. being able to throw own dice in game of craps), the more it creates an illusion of control (Raylu & Oei, 2002).

Sharpe (2002) suggested that gambling history (e.g. big wins at early stages of gambling) and exposure to gambling opportunities contribute to developing gambling cognitions and setting down patterns of behaviour (i.e. wins and losses are associated with gambling related arousal). A gambler's cognitions may work together with arousal to maintain problem gambling (Griffiths, 1991). When a gambler wins or nearly wins, he or she gets physiologically aroused and gamblers' cognitions suggest that he/she is not constantly losing but constantly "nearly winning" and thus stimulates further play (Griffiths, 1991). As the intensity and frequency of gambling increases, these patterns become more automatic, and lead these individuals to be at high risk for developing gambling problems (Sharpe, 2002).

By using the “thinking-aloud” method, a technique that encourages gamblers to provide commentary about everything going on in their minds during gambling, Gaboury and Ladouceur (1989) found that 70% of gamblers’ verbalisations are erroneous. This has been found for a variety of games such as blackjack, video poker machine (Coulombe et al., 1992), slot machines (Walker, 1992a; Griffiths, 1994), roulette, and sports betting (Gaboury & Ladouceur, 1989). Also, research (e.g. Sylvain et al., 1997) suggests that the correction of thinking errors using cognitive therapy reduces problem gambling behaviours.

Several authors have tried to identify and categorise gambling cognitions among gamblers (Gaboury & Ladouceur, 1989; Raylu & Oei, 2004b; Toneatto, 1999). Toneatto (1999) identified three general categories of gambling cognitions. The first category included the belief that one could control gambling outcomes (e.g. believing that engaging in superstitious behaviours such as carrying a rabbit’s foot, praying before gambling, and not associating with gamblers that are losing will lead to positive gambling outcomes). The second category included the belief that one could predict gambling outcomes based on salient cues (e.g. the weather or hunches), or on past wins/losses. The third category involved reframing gambling outcomes that would encourage continued gambling (e.g. attributing successes to one’s own skill, and failures to other’s influences or luck; believing that continued gambling would eventually recoup lost money and expecting that a series of losses would be corrected by series of wins).

Recently, Raylu and Oei (2004b) identified two other gambling cognitions that are relevant for problem gamblers. These cognitions related to the individuals’ perceived expectations about the effects of gambling (i.e. gambling expectancies that gambling would help them to relax, be less bored, escape from daily life hassles, etc.) and beliefs regarding their inability to stop gambling (e.g. ‘my gambling is overpowering’ or ‘I am not strong enough to stop gambling’). These latter two cognitions are comparable to the thinking errors found among individuals with similar psychological problems (e.g. substance or mood related problems).

To date, evidence supports the relationship between gambling cognitions and problem gambling behaviours. However, almost all of these studies have been Western-based (e.g. predominantly from North America). Thus, whether gambling cognitions play an important role in gambling among the Chinese is still unclear.

Psychological states. Although the direction of causality has not been established, studies have found an association between psychological states (e.g. depression, anxiety and stress) and problem gambling (Raylu & Oei, 2002). However since this research has been conducted using Western (e.g. American and Australian) samples, it is as yet unknown if they play an important role amongst Chinese gamblers.

A number of studies have found that problem gamblers tend to have higher depression scores compared to non-problem gamblers (Blaszczynski et al., 1990; McCormick, Russo, Ramirez, & Taber, 1984). The relationship between problem gambling and depression has been found in a number of countries including Australia (Blaszczynski & McConaghy, 1988; 1989), Spain (Garcia, Diaz, & Aranda, 1993), and Sweden (Bergh & Kuhlhorn, 1994). The co-morbidity of depression among problem gamblers have found to range from 21% to 76% (Bergh & Kuhlhorn, 1994; McCormick et al., 1984).

Studies have also supported the role of anxiety in the development of problem gambling (Blaszczynski et al., 1991; Henry, 1996). These studies show a reduction of anxiety following treatment that resulted in reduced problem gambling behaviours. Although there is currently very limited research regarding the role of stress in a gamblers' life, some studies (e.g. Coman et al., 1997; Friedland et al., 1992) have reported that stress also plays an important role in the development and maintenance of gambling problems (Raylu & Oei, 2002).

Gambling cognitions and negative psychological states (e.g. anxiety and depression) are related to problem gambling behaviours. However, most of the studies investigating these variables are based on Western cultures and results are often generalised (inappropriately) to other ethnic groups (Raylu & Oei, 2002). Consequently, it is unknown whether these variables play an important role amongst Chinese problem gamblers.

There are a number of reasons why the relationship between gambling correlates (e.g. psychological states and gambling cognitions) and problem gambling among the Chinese, might be different to what has been found for Western samples. The scientific literature has consistently shown that individuals with a Chinese cultural background who live in a western country are exposed to different life circumstances (e.g. different parental attitudes, different socialisation, etc.) and environmental stressors (e.g. culture conflict, lack of sufficient social support, prejudice, discrimination and language problems) compared to Caucasians. They also hold different values and beliefs and have distinct coping styles (Shweder, 1991). Research has also shown there are significant psychobiological differences between Asians (including the Chinese) and Caucasians, as evidenced in early developmental differences in temperament and excitability/imperturbability (Chun, Eastman, Wang & Sue, 1998). Consequently, these variances could lead to cognitions, psychological states and gambling behaviours that are distinct to Asians. For example, predicting gambling outcomes based on superstitious beliefs is a very common cognitive error implicated in the development and maintenance of gambling problems. Superstitious thinking (e.g. fortune telling) is more commonly reported as part of the Chinese culture (Tsang, 2004; Yip, 2003) than in Western culture. Chinese strongly believe in luck and often associate colours, numbers, animals and

objects to good or bad luck (Galletti, 2002). Papineau (2005) postulated that due to these specific Chinese cultural beliefs and values, beliefs regarding fate and the illusion of control among Chinese gamblers may be more insidious and profound. Thus, it is possible that there are differences in the types of gambling cognitions that are associated with problem gambling among the Chinese compared to Caucasians.

There is a strong need to explore patterns of gambling correlates among the Chinese because, as discussed above, numerous studies have suggested significant gambling among the Chinese (Raylu & Oei, 2004b). Furthermore, there is currently very little known about the factors that are important in predicting problem gambling among the Chinese. Better knowledge of the relationships between gambling correlates (e.g. thinking errors and negative psychological states) and problem gambling among the Chinese would help improve the conceptualisation of gambling among the Chinese. It would help identify variables (e.g. cognitions and psychological states) that need to be targeted in preventive and treatment programs.

Significant gender differences have been found in gambling behaviours such as betting behaviours, forms of gambling preferred, gambling motivations and extent of gambling (see Raylu & Oei, 2002 review). Gender differences in the problems presented for treatment and for treatment outcomes (Crisp et al., 2000) have also been found. Gender differences have also been reported in coping styles amongst problem gamblers (Nower, Derevensky & Gupta, 2004). Our earlier study (Raylu & Oei, 2004b) found that gambling cognitions were higher for males than for females. Studies have shown that male problem gamblers have higher rates of substance use and legal problems, compared to females who have higher rates of affective problems, such as anxiety and depression (McCallum & Blaszczyński, 2002; Ladd & Petry, 2002). Such differences emphasise the importance of assessing gender differences in any gambling research.

Thus, the current study aimed to investigate the relationship of gambling correlates (i.e. gambling cognitions and psychological states) amongst the Chinese and to compare these to that of Caucasians living in Australia. The study also aimed to assess gender differences in the gambling correlates between the two ethnic groups. We hypothesised that (a) there would be a positive relationship between gambling correlates (cognitions and psychological states) and problem gambling in both the Chinese and Caucasian groups; (b) due to the specific beliefs regarding fate and illusion of control among the Chinese, certain gambling cognitions (e.g. illusion of control) would be greater among the Chinese group than the Caucasian group; and (c) there would be significant gender differences in gambling correlates for both the Chinese and Caucasians.

## 5.2 METHOD

### **Participants**

There were 501 participants (mean age = 25.43; range = 16 - 78 years) from Brisbane, Australia, including 306 Caucasian and 195 Chinese participants. Chinese participants had one, or both, parents that were Chinese. To minimise the number of new overseas students participating in the study, individuals were encouraged to participate if they had been in Australia for at least one year.

Questionnaires were distributed to first year Caucasian and Chinese psychology students from the University of Queensland. This group accounted for 52% of the total sample and they received course credit for participation. Questionnaires were also distributed to Caucasian and Chinese individuals living in metropolitan Brisbane and this group accounted for 48% of the sample. These individuals were recruited via advertisements in local newspapers, relevant community magazines and newsletters. The study was also advertised in various Chinese clubs and society magazines, newsletters and noticeboards. Advertisement of the study and request for assistance with the study were also sent to several selected employment organisations from the Brisbane business directory and acquaintance networks.

There were no significant differences between the two samples in relation to gender  $F(1,500) = 2.11$ , *ns*, religion  $F(1,500) = 0.16$ , *ns*, and parental gambling  $F(1,500) = 2.27$ , *ns*. Thus, data for the two groups were combined and then divided into the Caucasian and Chinese groups for analyses.

Of the Caucasian sample, 35% were male and 65% were females. Of the Chinese sample, 36.4% were male and 63.6% were female. The mean age of the Caucasian participants was 22.38 years (SD = 9.19; range = 17-72 years). The mean age of the Chinese participants was 30.22 years (SD = 14.14; range = 16-78 years). Over eighty percent (80.7%) of the Caucasian participants were single and 38.2% were students. On the other hand, 60% of the Chinese participants were single and 52.3% were students.

### **Measures**

A number of questionnaires including the SOGS, GRCS and DASS were used in this study. For full descriptions and psychometric properties of the GRCS (Chinese version), refer to the study

described in Chapter 3. For full descriptions of the Chinese versions of the SOGS and DASS, refer to the ‘Measures’ section of the study described in Chapter 2. For the full details of how the questionnaires were translated, refer to the ‘Materials’ section of the study described in Chapter 2. All respondents were asked questions on gender, income, education, age, marital status, employment, and ethnic background.

All instruments were assessed for reliability in the Chinese group. For the Caucasian group, the Cronbach’s alpha coefficient for the SOGS was .86, for the GRCS (full scale) it was .92, and for the DASS-21 (full scale) it was .93. The alpha coefficients for the five scales of the GRCS ranged from .82 to .92 (except subscale PC,  $\alpha = .74$ ), and for the subscales of the DASS, they ranged from .79 to .90. Similar psychometric properties were found for the Chinese group. For the Chinese, the Cronbach’s alpha coefficient for the SOGS was .75, for the GRCS (full scale) it was .85, and for the DASS-21 (full scale) it was .93. The alpha coefficients for the five scales of GRCS ranged from .84 to .91 (except subscale PC,  $\alpha = .42$ ), and for the subscales of the DASS, they ranged from .74 to .87.

## **Procedure**

Students completed the questionnaires in groups of 8-11 in the presence of an experimenter. All volunteers were given stamped addressed envelopes so that they could return their questionnaires. This ensured confidentiality of their responses. The response rate for the psychology students and for the community sample was 100% and 75% respectively. The completion rate for the psychology students and for the community was 100% and 95% respectively. The average time taken to complete the questionnaires was 25 minutes. Responses were confidential and identifying codes, rather than names, were used.

## **5.3 RESULTS**

### **Data Screening/Analyses**

The completed questionnaires were analysed using the Statistical Package for the Social Sciences (SPSS, Inc., 1988). Prior to analyses all variables were examined through various SPSS programs for accuracy of data entry, missing values, fit between their distributions and the assumptions of multivariate analysis. Two missing values on gender were replaced by the mode for all cases. Three missing values on age and one missing value on DASS-stress, GRCS-IC, and GRCS-PC were replaced by the mean for all cases. Using  $p < .001$  criterion for Mahalanobis

distance, no outliers among cases were found. Collinearity was assessed using collinearity statistics/tolerance via a multiple regression analysis. The scores were greater than .01 suggesting that collinearity was not a problem for the model.

### **Relationship between Gambling Cognitions, Psychological States and problem gambling Behaviour among Chinese and Caucasians**

The relationships between the gambling correlates (i.e. gambling cognitions and psychological states) and problem gambling were assessed by exploring the association between the variables via zero order correlations and the extent to which the gambling correlates, gender and ethnicity predicted problem gambling behaviour via HMR analyses. Mean differences in the gambling correlates between the two ethnic groups were explored using analyses of variance (ANOVA).

Mean differences in gambling correlates between Caucasians and Chinese. ANOVA results showed there were significant differences between the two groups in three of the assessed variables: DASS-anxiety, GRCS-IS and GRCS-IC. For all three of these variables, the Chinese participants scored higher than the Caucasian participants. ANOVA results also showed some gender differences in the gambling correlates between the two ethnic groups. Chinese males scored higher on anxiety and GRCS-IC compared to their male Caucasian counterparts. On the other hand, Caucasian females scored higher on stress compared to their female Chinese counterparts. The mean gambling correlate and SOGS scores for the two ethnic groups (including gender differences) are shown in Table 5.1.

Table 5.1

Descriptive Statistics (including Gender Differences) for the Caucasian and Chinese groups.

Variables	Males		Females		Total	
	Caucasian ( <i>N</i> = 107)	Chinese ( <i>N</i> = 71)	Caucasian ( <i>N</i> = 199)	Chinese ( <i>N</i> = 124)	Caucasian ( <i>N</i> = 306)	Chinese ( <i>N</i> = 195)
SOGS-T	1.64 (2.72)	2.04 (2.72)	.96 (2.03)	1.06 (1.99)	1.20 (2.31)	1.42 (2.33)
DASS-T	28.30 (21.91)	31.77 (21.50)	32.25 (26.47)	32.06 (23.05)	31.05 (25.02)	31.96 (22.74)
DASS-D	9.00 (9.07)	9.10 (7.49)	9.53 (10.05)	9.90 (9.25)	9.34 (9.70)	9.61 (8.64)
DASS-A	6.75 (7.22)	10.34 (7.44)**	8.39 (8.57)	9.97 (9.25)	7.82 (8.15)	10.10 (7.63)**
DASS-S	12.56 (8.59)	12.34 (7.44)	14.60 (10.12)	12.19 (8.92)*	13.89 (9.64)	12.25 (8.82)
GRCS-T	47.87 (18.73)	50.20 (23.70)	41.68 (19.85)	42.97 (21.43)	43.51 (19.69)	45.60 (22.49)
GRCS-IS	6.93 (4.27)	8.18 (5.07)	6.06 (4.06)	6.90 (3.65)	6.36 (4.15)	7.37 (4.25)**
GRCS-IB	8.86 (5.69)	8.60 (5.27)	6.93 (4.83)	7.56 (4.85)	7.61 (5.21)	7.94 (5.02)
GRCS-IC	5.96 (3.15)	8.27 (5.10)**	6.23 (4.16)	6.90 (4.15)	6.14 (3.83)	7.40 (4.55)**
GRCS-GE	11.25 (5.04)	10.13 (5.81)	8.22 (4.67)	7.84 (4.42)	9.28 (5.01)	8.67 (5.08)
GRCS-PC	14.87 (6.59)	15.02 (7.35)	13.73 (7.15)	13.77 (11.14)	14.13 (6.97)	14.22 (9.93)

NOTE: SOGS = South Oaks Gambling Screen; GRCS = Gambling Related Cognitions Scale; DASS = Depression Anxiety Stress Scale; T = total score; IS = perceived inability to stop gambling scale; IB = interpretative control/bias scale; IC = illusion of control scale; GE = gambling related expectancies scale; PC = predictive control scale; D = depression scale; A = anxiety scale; S = stress scale.

\*  $p < .05$

\*\* $p < .01$

### Correlations between the gambling correlates and problem gambling behaviour.

Zero-order correlations between the total and subscale scores were calculated (see Table 5.2) to examine the relationships between the assessed variables. Results showed high correlations between GRCS subscale scores and the GRCS total score as well as between DASS subscale scores and the DASS total score. Low to moderate correlations were found between most of the other variables.

Table 5.2

## Correlations between the Assessed Variables

Variables	DASS-T	DASS-D	DASS-A	DASS-S	GRCS-T	GRCS-IS	GRCS-IB	GRCS-IC	GRCS-GE	GRCS-PC
SOGS-T	.25**	.25**	.22**	.19**	.45**	.51**	.40**	.22**	.44**	.24**
DASS-T		.91**	.87**	.93**	.15**	.08	.09**	.14**	.11*	.09*
DASS-D			.67**	.78**	.13**	.10*	.15**	.09*	0.11*	.07
DASS-A				.72**	.16**	.09*	.21**	.18**	.08	.10*
DASS-S					.12**	.04	.16**	.10*	0.09*	.08
GRCS-T						.69**	.82**	.76**	.75**	.82**
GRCS-IS							.51**	.49**	.50**	.35**
GRCS-IB								.59**	.55**	.55**
GRCS-IC									.45**	.53**
GRCS-GE										.47**

NOTE: SOGS = South Oaks Gambling Screen; GRCS = Gambling Related Cognitions Scale; DASS = Depression Anxiety Stress Scale; T = total score; IS = perceived inability to stop gambling scale; IB = interpretative control/bias scale; IC = illusion of control scale; GE = gambling related expectancies scale; PC = predictive control scale; D = depression scale; A = anxiety scale; S = stress scale \* $p < .05$  \*\* $p < .01$

Extent to which ethnicity, gender and gambling correlates predict problem gambling. In order to explore cultural differences, a HMR analysis was conducted with combined Caucasian and Chinese samples using the SOGS score as the dependent variable. Considering the age differences between the two ethnic groups, age was controlled for across all regression analyses. Age (entered in the first step), ethnicity and gender (second step), DASS total and GRCS total (third step), 2-way interactions between gender and the two total scores (fourth step), 2-way interactions between ethnicity and the two total scores (fifth step), and 3-way interactions between gender, ethnicity with the two total scores (sixth step) were predictor variables.

Results showed that the 32% variance ( $R^2 = 30.62\%$  adjusted) in SOGS scores were accounted for by the predictors ( $R = .57, p < .001$ ). Only the variables of age, GRCS total, DASS total, interaction between gender and GRCS total, and the interaction between gender and DASS total contributed significantly to the prediction of the SOGS scores. The proportion of variance in SOGS scores accounted for by these variables were 1.8%, 5.0%, 17.0%, 2.0% and 3.2%, respectively.

Another HMR analysis was conducted with combined samples using the SOGS score as the dependent variable and age (first step), ethnicity, gender (second step), DASS and GRCS subscale scores (third step), 2-way interactions between the subscale scores and gender (fourth step), 2-way interactions between the subscale scores and ethnicity (fifth step), and 3-way interactions between ethnicity, gender and each of the subscale scores (sixth step) as predictor variables.

Results showed that 44% of the variance ( $R^2 = 39.6\%$  adjusted) in SOGS scores was accounted for by the predictors ( $R = .66, p < .001$ ). Only age, DASS-depression and four of the GRCS subscales (GRCS-IS, GRCS-IB, GRCS-IC, GRCS-GE) contributed significantly to the prediction of the SOGS scores. The proportions of variance in SOGS scores accounted for by these variables were 1.0%, 1.8%, 13.0%, 1.3%, 1.8% and 4.8% respectively. Results of both HMR analyses are illustrated in Table 5.3.

Table 5.3

HMR Results Assessing Whether the Interactions between Ethnicity, Gender and the Gambling Correlates Predict problem gambling.

Dependent Variables	Independent Variables	Beta
SOGS score	1) Age	.14**
	2) Gender	.08
	Ethnicity	-.02
	3) GRCS-TOT	.41***
	DASS-TOT	.22***
	4) Gender x GRCS-TOT	.18***
	Gender x DASS-TOT	.14***
	5) Ethnicity x GRCS-TOT	-.06
	Ethnicity x DASS-TOT	-.01
	6) Gender x ethnicity x GRCS-TOT	-.03
	Gender x ethnicity x DASS-TOT	.05
SOGS score	1) Age	.09*
	2) Gender	.08
	Ethnicity	-.02
	3) DASS-DEP	.13*
	DASS-ANX	.10
	DASS-STR	.01
	GRCS-IS	.36***
	GRCS-IB	.12*

GRCS-IC	-.13*
GRCS-GE	.22***
GRCS-PC	.02
4) Gender x DASS-DEP	-.01
Gender x DASS-ANX	.09
Gender x DASS-STR	.07
Gender x GRCS-IS	.08
Gender x GRCS-IB	.07
Gender x GRCS-IC	.08
Gender x GRCS-GE	-.02
Gender x GRCS-PC	-.02
5) Ethnicity x DASS-DEP	-.01
Ethnicity x DASS-ANX	-.02
Ethnicity x DASS-STR	-.01
Ethnicity x GRCS-IS	-.06
Ethnicity x GRCS-IB	.06
Ethnicity x GRCS-IC	-.05
Ethnicity x GRCS-GE	-.01
Ethnicity x GRCS-PC	.03
6) Gender x ethnicity x DASS-DEP	.09
Gender x ethnicity x DASS-ANX	-.03
Gender x ethnicity x DASS-STR	-.00
Gender x ethnicity x GRCS-IS	-.08
Gender x ethnicity x GRCS-IB	.02
Gender x ethnicity x GRCS-IC	-.04
Gender x ethnicity x GRCS-GE	.00

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NOTE: SOGS = South Oaks Gambling Screen; GRCS = Gambling Related Cognitions Scale; DASS = Depression Anxiety Stress Scale; TOT = total score; IS = perceived inability to stop gambling scale; IB = interpretative control/bias scale; IC = illusion of control scale; GE = gambling related expectancies scale; PC = predictive control scale; DEP = depression scale; ANX = anxiety scale; STR = stress scale.

\* $p < .05$

\*\* $p < .01$

\*\*\* $p < .001$

## 5.4 DISCUSSION

The hypothesis that there would be a positive relationship between gambling correlates (i.e. gambling cognitions and psychological states) and problem gambling behaviour was supported. The findings indicated that total GRCS and DASS scores could significantly predict the extent of gambling problems (i.e. SOGS scores) for both the Caucasian and Chinese groups. These results support previous studies in the Western literature that have shown that higher frequencies of gambling and gambling problems are associated with higher levels of gambling cognitions (Gaboury & Ladouceur, 1989), and higher levels of negative psychological states such as depression, anxiety, and stress (Blaszczynski & McConaghy, 1989; Henry, 1996; Raylu & Oei, 2002). Thus, cognitive errors and psychological states play an important role among Chinese problem gamblers, similar to what has been found for Western samples.

The present study found that four of the five GRCS subscales have significant positive relationships with SOGS scores, for both the Caucasian and Chinese groups. This may eventually suggest a cross cultural model of gambling cognitions. This is similar to an earlier study (Raylu & Oei, 2004b) which reported that only the GRCS-IS, GRCS-IC, GRCS-IB and GRCS-GE subscales accounted for the variance in SOGS scores. Raylu and Oei (2004b) also found a negative beta weight on the GRCS-IC subscale for the community sample as this study found for Chinese participants. Thus, the suggestion by Raylu & Oei (2004b) that the subscale GRCS-IC was masking the effects of GRCS-PC may also apply to the findings for the Chinese population.

Although the DASS total score (reflecting depression, anxiety and stress levels) accounted for the variance in SOGS scores, only the depression subscale was significant. This finding is not consistent with the literature. One possible reason for this could be the high inter-correlation between the DASS subscale scores. Another reason for this result could be that most (92.6%) of the respondents in this study were non-problem gamblers and thus they may not have had higher levels of depression, anxiety, and stress which is normally found among a clinical sample of problem gamblers. Consequently, the stress and anxiety subscales of the DASS were not able to distinguish between problem gamblers and non-problem gamblers. It is still possible that when the clinical samples are used, all three variables (anxiety, depression and stress) would be able to distinguish between problem and non-problem gamblers.

Only the Chinese males (and not Chinese females) scored higher on GRCS-IC subscale compared to their Caucasian counterparts. This is in line with previous research that has found Chinese males have higher rates of problem gambling than Chinese females (Blaszczynski et al., 1998; Chen et al., 1993). However, the study found that Caucasian and Chinese ethnicities had no significant relationship with problem gambling either as a main effect, or interaction effect. However, culture is still an important factor to consider in the conceptualisation and treatment of Chinese gambling as there were some differences in gambling cognitions (e.g. GRCS-IC) between the two ethnic groups. For example, it is possible that beliefs regarding illusion of control among Chinese gamblers may be more insidious and profound, since they are associated with specific Chinese cultural beliefs and values. It would be more difficult to change them in existing preventive and treatment programs. Another reason why culture is an important factor to consider in the prevention and treatment of gambling problems is because cultural variables (e.g. help seeking behaviours) may influence the outcomes of any preventive, or treatment, program designed for Chinese gamblers.

The higher anxiety reported by the Chinese compared to the Caucasians appear to be consistent with findings of other studies in the general literature (Lin, Endler & Kocovski, 2001; Xie, 2005), and is possibly related to socio-characteristics of the Chinese family, or acculturation difficulties. Analyses of gender differences showed that only Chinese males (i.e. not Chinese females) scored higher on anxiety compared to their Caucasian counterparts. Western literature has indicated higher rates of anxiety among females compared to males (e.g. Weich, Sloggett & Lewis, 2001). It is possible that females in general (regardless of ethnicity) report high levels of anxiety. However, the anxiety reported by Chinese males is higher than that reported by Caucasian males.

Caucasian females scored slightly higher on the stress subscale compared to their Chinese counterparts. These differences may reflect variances in coping styles and perception of stress between the two ethnic groups. More research is required to clarify this further.

The results of this study have several theoretical and clinical implications. The significant positive relationship found between gambling cognitions and negative psychological states on self-reported problem gambling behaviour (similar to what has been reported in the Western literature) among the Chinese assists the conceptualisation of gambling for the Chinese. More specifically, it strengthens evidence for a cognitive behavioural perspective of problem gambling.

The findings also highlight the importance of addressing gambling cognitions and negative psychological states in preventive programs for both Caucasians and Chinese. Psycho-education regarding faulty beliefs about winning (especially the error of linking superstitious beliefs and gambling outcomes) may be beneficial among the Chinese. Our earlier study (Oei & Raylu, 2004) found parents' gambling cognitions and behaviour influenced offspring's gambling behaviour via offspring's gambling cognitions. Consequently, we suggested that prevention could begin at home by having early intervention education attempting to modify both parental and offspring's gambling cognitions. Although research on this topic is yet to be carried out in relation to children with gambling cognitions, it has been completed with children with alcohol-related and cigarette-related cognitions (Oei & Raylu, 2004).

While results indicated there was a positive relationship between gambling cognitions and negative psychological states for the Australian Chinese, caution is required in interpreting the results given some methodological limitations. The sample should not be regarded as representative of the Chinese speaking population in Australia, given that 52% of the respondents were students.

The study should be replicated with clinical samples as it is possible that certain cognitions could be more strongly represented among the Chinese compared to Caucasians, but only in clinical samples. Other factors, which are reported to influence the development and maintenance of problem gambling in Western samples (e.g. familial/genetic, sociological, and personality), still need to be investigated in a Chinese population. Given the lack of cross cultural research in this area, future studies need to explore a range of gambling related variables and other important factors (e.g. cultural factors, particularly cultural beliefs and values, help seeking behaviours and acculturation issues) by comparing Caucasians with Chinese living in Australia, and both of these groups with Chinese living in Asian countries. Such studies are currently being conducted by the authors at the University of Queensland.

In summary, this study clearly demonstrates that gambling cognitions and psychological states could play an important role in problem gambling behaviour among the Chinese community in Australia. This is similar to what other studies with Caucasian samples found throughout Australia and overseas. However, some differences in gambling cognitions (e.g. superstitious thoughts regarding controlling gambling outcomes) were observed between the two groups. This is an important first step towards understanding problem gambling in Chinese populations.

## CHAPTER 6

# **The relationship between cultural beliefs and values with gambling**

### **6.1 INTRODUCTION**

The literature review given in both Chapter 1 and Chapter 4 of this report have suggested there are cultural differences in relation to motivations towards gambling, frequency and amount of money spent on gambling, types of games played and rates of problem gambling (Raylu & Oei, 2004a; VCGA, 2000; GAMECS project, 1999). The gambling literature has shown that a number of variables including sociological, familial and individual factors (e.g. gambling cognitions, biochemistry, psychological states) have been implicated in the development and maintenance of gambling problems (Raylu & Oei, 2002). However, these variables do not sufficiently account for the cultural differences found in gambling. Thus, it is possible that culturally specific variables could better account for these differences. However, no such investigation has been reported in the gambling literature.

As discussed in the earlier review, scientific literature has implicated a number of cultural variables as playing a role in the development and maintenance of many psychological problems, including substance abuse and mental health problems (De La Rosa et al., 2000; Escobar et al., 2000; Loue, 1998; Westermeyer, 1999; Oei & Hodges, 2005). Some of these variables include cultural values and beliefs, acculturation effects, and attitudes towards seeking professional help. It is possible that such cultural variables can also play a role in the initiation and maintenance of gambling. These three cultural variables are summarised below.

Cultural values and beliefs. The culturally specific value and belief systems that are passed between members of a particular cultural group provides a collective means by which members decide meanings that are given to risk taking, gambling behaviours, the advantages and disadvantages of gambling and the concept of problem gambling (Abt, McGurrin & Smith, 1985; Abt & McGurrin, 1992). Consequently, they can encourage or discourage involvement in gambling.

It is possible that cultures which perceive gambling as part of their lifestyle, history and tradition have integrated values and beliefs that approve/encourage gambling which are passed on to their members. It has been suggested that gambling by a large number of Chinese has resulted in

the perception that gambling is a way of life for them, especially for males (Clark et al., 1990). Thus, Chinese individuals that adhere to Chinese cultural beliefs and values are more likely to gamble and subsequently develop problem gambling. Cultural beliefs and values have been found to play a role in the development, maintenance and treatment of substance related problems (Colon & Wuollet, 1994; Jerrel, 1989; McCormick, 2000).

Attitudes towards professional help. The unwillingness of some cultural groups to seek professional assistance occurs for many mental health/substance abuse problems (Jordan & Oei 1989, Gloria & Peregoy, 1996; Kua, 1994; Natera-Rey et al., 1999; Cuadrado, 1999). Cultural minority groups with substance related problems are less likely to initiate and complete treatment, as well as stop/reduce substance use compared to cultural majority groups (Finn, 1994). Studies which have investigated presentation rates to problem gambling treatment services, reported that individuals from some cultural groups (e.g. Arabic, Chinese, Korean and Vietnamese) were less likely to seek professional help than other cultural groups, despite having high unpaid gambling debts, or believing that they have problems with gambling (VCGA, 2000; GAMECS Project 1999).

A number of cultural factors may account for differential presentation rates, including:

- feelings of shame;
- varying preferences for seeking assistance;
- differences about who is attributed with the responsibility of providing support for problem gamblers (and their families);
- a limited knowledge of the availability of treatment services;
- differences in the acceptance of the counselling concept; insufficient social and financial resources to support treatment entry and behaviour change;
- language problems;
- perceptions, beliefs, and attributions related to mental health problems; and
- believing or experiencing treatment programs as not sensitive enough to address the needs of ethnic, or indigenous, minorities

(VCGA, 2000; GAMECS Project, 1999; Varma & Siris, 1996; Cheung, 1993a; Oei, 1998; Luk & Bond, 1992).

It is possible that negative attitudes towards seeking professional assistance could be related to the development and/or maintenance of problem gambling. For example, members of cultures (e.g. the Chinese culture) whose cultural beliefs and values highly encourage gambling behaviours and discourage seeking professional help behaviours are less likely to seek help for gambling problems, even when it is needed.

Acculturation. The process of acculturation occurs when a migrant attempts to gradually adopt the cultural values and beliefs of the dominant society. Some immigrants adapt to the mainstream culture faster and to a greater degree than others do depending on their language abilities, education levels, occupational skills, availability of a cohesive ethnic community, and social networks for emotional and social support (Cheung, 1990-1991; Hyman, Vu & Beiser, 2000).

It is possible that increased gambling and problem gambling is either related to a successful acculturation process (i.e. successfully adapting to a culture that has high acceptance and practice of gambling), or related to problems in the acculturation process (i.e. difficulties in adapting to the mainstream culture). Acculturation can also lead to the deterioration of one's own cultural values and beliefs. This often occurs when an individual adopts the values and beliefs of the host country. It is also reported that increased acculturation towards a behaviour of the host country can increase the particular behaviour among immigrants. Sabogal et al. (1998) interviewed 263 Hispanic and 150 white smokers and found that increased acculturation among Hispanics led to high levels of smoking similar to that of Caucasians. Consequently, if an individual from a culture with low acceptance and practice of gambling assimilates and identifies with a culture that has a high acceptance and practice of gambling, he/she may be encouraged to take up gambling or continue gambling despite continuous losses.

Low levels of acculturation or difficulties in the acculturation process have been associated with greater health related problems (including substance abuse) in a range of cultural groups (Weber, 1996; Nemoto et al., 1999). Gambling has been associated with the trauma of migration (e.g. experience of racism and discrimination) and the unrealistic expectations of newly arrived migrants to make money in Australia (VCGA, 2000; Raylu & Oei, 2004a). Some immigrants experienced conflicts about their place in society, particularly when linked to feelings of shame and self doubt regarding their ethnic identity, and this could result in antisocial behaviour such as gambling (Kaplan, 1985). Several other factors often associated with refugees or immigrants including low income, lack of employment and low socioeconomic status have been linked to problem gambling (Shepherd et al., 1998; Albers & Huebl, 1997; Buehringer & Konstanty, 1992; Hraba & Lee, 1995; Ladouceur, 1991; PCR, 1999). Immigrants with adaptation problems are also likely to experience isolation, boredom, loneliness, stress and mood states such as depression and anxiety (VCGA, 2000). These variables have been shown to be important motivators for gambling and continued gambling (Grant & Kim, 2002; Blaszczynski, 1995; Coman et al., 1997; Trevorrow & Moore, 1998; Hallebone, 1999). Immigrants also often report gambling to escape from these problems (VCGA, 2000).

The above discussion highlights that cultural variables play important roles in the initiation and maintenance of many mental health/substance related problems. Thus, it is possible these also play a role in gambling/problem gambling. As there are currently no studies that have looked at the impact of these cultural variables on gambling behaviours, the aim of this study is to address this gap in the gambling literature in two parts. Part A of the study tested whether cultural values and beliefs could predict problem gambling among both the Chinese residents of Australia and the Chinese residents of Taiwan. Part B of the study assessed whether the attitudes towards professional help and acculturation could predict problem gambling among Australian Chinese.

## **6.2 METHOD**

### **Participants**

The participants were 485 Chinese individuals, of which 284 Chinese individuals were residing in Brisbane, Australia and 201 Chinese were residing in Taipei, Taiwan. For more information on the recruitment procedures, refer to the 'Participants' section of the study described in Chapter 2.

Of the Taiwanese Chinese, 59.0% were females and 41.0% were males. Mean age was 34.03 (SD = 12.18) and age range was 17-72 years. Of the Australian Chinese, 62.1% were females and 37.9% were males. Mean age of the Australian Chinese group was 30.20 (SD = 13.34) and age range was 16-78 years.

### **Measures**

A number of instruments were used in this study. All the questionnaires including the introduction sheet were translated into Mandarin and back translated into the original language. For more information on the translation procedures, refer to the 'Measures' section of the study described in Chapter 2.

South Oaks Gambling Screen (SOGS; Lesieur & Blume, 1987). For a detailed description of the SOGS, refer to the 'Measures' section of the study described in Chapter 2.

Asian Values Scale (AVS; Kim, Atkinson & Yang, 1999). Adherence to Asian cultural beliefs and values was assessed using the AVS (a 36 item questionnaire). The scale assesses a number of cultural dimensions including conformity to norms, family recognition through achievement, emotional self control, collectivism, humility, and filial piety. The items of these factors, as well as other items that did not load onto the factor structure, are used to assess a total score and average scale score (total score divided by 36). Participants are asked to indicate the degree to which they agreed with each of the items using a 7 point Likert scale (1 = strongly

disagree to 7 = strongly disagree). Eighteen of the items are reverse coded. Higher scores represented greater adherence to Asian beliefs and values. Kim et al. (1999) reported an alpha coefficient of .82 and retest reliability of .83. The scale also reported good validity ( $r = .97$ ; Kim et al., 1999). The alpha coefficient for this study was .80.

Attitudes toward Seeking Professional Help Scale (ATSPPHS; Fischer & Turner, 1970).

The ATSPPH scale is a 29 item questionnaire that assesses one's tendency to seek professional help. It consists of four subscales that underlie the following help-seeking attitudes: (a) Need - recognition of personal need for professional help; (b) Stigma - tolerance of the stigma associated with psychological help; (c) Openness - interpersonal openness regarding one's problems; and (d) Confidence - confidence in the mental health profession. The participants are asked to score each item using a 4-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree). Those scoring high are more likely to disclose important aspects of themselves more readily than those with low scores. The scale has shown to have good reliability (Cronbach's alpha = .83) and validity. The alpha coefficient for this study was found to be .80.

Cultural Life Styles Inventory (CLSI; Mendoza, 1989). The CLSI is a self report measure designed to assess assimilation of Mexican Americans into the American culture. This scale was modified to assess acculturation in Australian Chinese. The CLSI is a 29 item questionnaire that assesses three dimensions of acculturation (cultural resistance, cultural shift, and cultural incorporation), in five domains, including English language use (intra- and extra-familial), social affiliation and activities, familiarity with culture related activities and cultural pride. Values of 1 to 5 were assigned to these items, with higher scores indicating higher assimilation. An overall assimilation score represented the extent to which participants living in Australia participated in the Australian culture, while withdrawing from their own culture. The scores were summed across items and divided by the number of items to produce an average score. Mendoza (1989) reported good psychometric properties. The alpha coefficient for this study was found to be .89.

Demographic questionnaire. For a detailed description of the demographics questionnaire, refer to the 'Materials' section of the study described in Chapter 2.

## **Procedures**

Volunteers who agreed to participate in the study were either handed or posted a set of questionnaires and asked to return them to the researchers via stamped, addressed envelopes or to hand deliver them. All participants were provided the questionnaires in the same order. Responses were confidential and identifying codes rather than names were used.

The overall response rate (percentage of questionnaires returned) for the Taiwanese sample was about 73%, whereas the overall completion rate (percentage of returned questionnaires that were completely answered) was 90%. The overall response rate of the Australian sample was approximately 80%, whereas the overall completion rate was 90%.

The aim of the first part of the study was to assess whether cultural values could predict problem gambling among both Australian and Taiwanese Chinese participants, therefore all participants provided demographic information and completed the AVS and SOGS. Since the aim of the second part of the study was to assess whether help seeking attitudes and acculturation predicted problem gambling among the Australian Chinese, the Australian Chinese participants completed two additional questionnaires: the ATSPPHS and the modified CLSI. However, data from only 258 of the original 284 Australian Chinese participants were used in Part B of the study, as only 258 participants completed these additional questionnaires adequately.

### **Data Analyses**

The data was checked and no violations were detected. Minor and non-systematic missing data were found for approximately four percent of individuals and these were replaced with means.

Generally, a series of HMR analyses were used to assess whether the three cultural variables (adherence to Asian values, attitudes towards professional help and acculturation) could predict problem gambling. As previous studies have reported significant gender differences in gambling behaviours (Abbott & Cramer, 1993; Bruce & Johnson, 1994; Welte, Barnes, Wieczorek, Tidwell & Parker, 2002), gender was controlled for in all analyses.

Part A of this study aimed to test whether cultural values and beliefs could predict problem gambling among both Chinese residing in Australia ( $N = 284$ ) and Chinese residing in Taiwan ( $N = 201$ ), therefore the regression analysis was conducted using a combined sample and interaction terms with location of the participants (i.e. Australia or Taiwan). Since Part B aimed to explore the effect of attitudes towards seeking professional help and acculturation on gambling, only the Australian Chinese data ( $N = 258$ ) was suitable. Bivariate correlations were also assessed to explore the associations between the variables.

## **6.3 RESULTS**

### **Part A: Do cultural values and beliefs predict problem gambling in both Taiwanese and Australian Chinese?**

In order to assess whether adherence to Asian values could predict problem gambling

among Australian Chinese as well as the Taiwanese Chinese, the first HMR analysis was conducted with SOGS total scores as the dependent variable (DV). The independent variables (IV) were location (Australian Chinese and Taiwanese Chinese) and gender (1<sup>st</sup> step), AVS average scale score (step 2) and 2-way interactions between the three variables (gender x AVS average score, and location x AVS average score). Results of the first HMR showed that six percent ( $R^2 = 5.2\%$  adjusted) of the variance in SOGS scores was accounted for by the predictors ( $R = .25, p < .01$ ). Both gender and the interaction between location and average scale score contributed significantly to the prediction of the SOGS scores. They accounted for 4.0% and 1.2% of the proportion of variance in SOGS scores, respectively (see Table 6.1).

The next HMR analysis was conducted with location and gender (1<sup>st</sup> step) and the five AVS subscales (i.e. conformity to norms, family recognition through achievement, emotional self control, collectivism, humility, and filial piety). Only gender, location, location x family recognition through achievement interaction, location x emotional self control interaction and location x remaining items that do not load onto any factors, contributed significantly to the prediction of the SOGS scores. They accounted for 4.6%, 1.7%, 1.0%, 1.5%, and 1.9% of proportion of variance in SOGS scores. Results of these HMR analyses are shown in Table 6.1.

Table 6.1.

HMR results assessing the extent that the interactions between location, gender and the cultural beliefs and values predict problem gambling.

Dependent Variables		Independent Variables	$\beta$
SOGS score	1)	Gender	.20***
		Location	-.08
	2)	AVS average scale score	.05
	3)	Gender x AVS average scale score	.01
		Location x AVS average scale score	-.11*
SOGS score	1)	Gender	.21***
		Location	.13*
	2)	Conformity to norms	.01

	Family recognition through achievement	-.00
	Emotional self control	.01
	Collectivism	.07
	Humility	-.11
	Filial piety	.07
	Other items that do not load onto any factors	.08
3)	Gender x Conformity to norms	.04
	Gender x Family recognition through achievement	-.07
	Gender x Emotional self control	.05
	Gender x Collectivism	-.09
	Gender x Humility	-.04
	Gender x Filial piety	-.01
	Gender x Other items that do not load onto any factors	.09
	Location x Conformity to norms	-.07
	Location x Family recognition through achievement	-.10*
	Location x Emotional self control	-.12*
	Location x Collectivism	.03
	Location x Humility	-.02
	Location x Filial piety	-.05
	Location x Other items that do not load onto any factors	.13*

---

\* $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$

$N = 284$  (Australian Chinese)

$N = 201$  (Taiwanese Chinese)

The interaction term of location and AVS average scale score was statistically significant when associated with problem gambling. Bivariate correlation analyses showed that the association of AVS average scale score and problem gambling was only significant for Australian Chinese and not Taiwanese Chinese. Furthermore, the AVS average scale score was significantly higher for Taiwanese Chinese compared to Australian Chinese.

There was also a significant interaction term between location and three other AVS subscales. Bivariate correlations showed that none of these three subscales were significantly correlated to problem gambling. However, Taiwanese Chinese scored significantly higher on the latter two subscales than Australian Chinese.

Overall, conformity to norms, collectivism and filial piety were the only subscales that were significantly correlated with problem gambling for Australian Chinese. In comparison, humility was the only subscale that was significantly correlated with problem gambling for the Taiwanese Chinese. AVS average scale scores were only significantly correlated to problem gambling for the Australian Chinese.

All AVS subscale mean scores (except humility and family recognition via achievement) as well as the AVS average scale score, were significantly higher among the Taiwanese Chinese than the Australian Chinese.

Results of the bivariate correlations are shown in Table 6.2. The mean differences (and standard deviations) in the AVS subscales between the Australian Chinese and Taiwanese Chinese are shown in Table 6.3.

Table 6.2.

Correlations between the AVS subscales and problem gambling for the Australian Chinese and Taiwanese Chinese.

AVS subscale	Australian Chinese	Taiwanese Chinese
Conformity to norms	.13*	-.12
Family recognition via achievement	.08	-.11
Emotional self control	.11	-.12
Collectivism	.13*	-.10
Humility	-.02	-.16*
Filial piety	.16*	-.06

Items that do not load onto any factors	.03	.11
AVS average scale score	.15*	-.11

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\*  $p < .05$        $N = 284$  (Australian Chinese)       $N = 201$  (Taiwanese Chinese)

Table 6.3.

Mean differences (and standard deviations) in the AVS subscales between the Australian Chinese and Taiwanese Chinese.

AVS subscale	Australian Chinese	Taiwanese Chinese
Conformity to norms***	33.83 (8.02)	39.18 (7.43)
Family recognition via achievement	12.04 (3.98)	12.71 (3.83)
Emotional self control*	13.58 (3.25)	14.27 (2.98)
Collectivism***	14.11 (3.49)	15.69 (3.32)
Humility	16.41 (3.83)	16.57 (3.50)
Filial piety**	19.32 (4.10)	20.48 (4.06)
Items that do not load onto any factors***	48.76 (7.91)	53.04 (5.81)
AVS average scale score***	4.39 (.58)	4.78 (.57)

---

\*  $p < .05$        $N = 284$  (Australian Chinese)       $N = 201$  (Taiwanese Chinese)

## **Part B: Do acculturation and help seeking behaviours predict problem gambling in Australian Chinese?**

### **Acculturation.**

Similar to Part A analyses, two further HMR analyses were conducted. The first of these HMR analysis had the following steps: gender (1st step); the five CLSI subscale scores - i.e. language use (intra), language use (extra familial), social affiliation and activities, familiarity with culture related activities and cultural pride (2nd step) as the IV; and the SOGS scores as the DV.

The second HMR analysis included gender (1st step); the total CLSI score (2nd step) as the IV; and the SOGS scores as the DV.

Results of the first HMR showed that about eleven percent ( $R^2 = 8.5\%$  adjusted) of the variance in SOGS scores was accounted for by the predictors ( $R = 0.33, p < .01$ ). Only gender could significantly predict problem gambling. It accounted for 4% of the variance in SOGS scores. The second HMR showed that eight percent ( $R^2 = 7.8\%$  adjusted) of the variance in SOGS scores were accounted for by the predictors ( $R = 0.29, p < .01$ ). Both gender and total CLSI scores could predict problem gambling. They both accounted for 4.2% each of the variance in SOGS. Results of the HMR analyses are shown in Table 6.4.

Table 6.4

HMR results assessing whether gender and CLSI subscale and total scores can predict problem gambling among the Australian Chinese (N=258).

DV		IV	Beta
SOGS score	1)	Gender	.21***
	2)	total CLSI	.21***
SOGS score	1)	Gender	.20**
	2)	language use (intra)	-.02
		language use (extra familial)	.01
		social affiliation and activities	.06
		familiarity with culture related activities	.11
		cultural pride	.10

\*\*\* $p < .001$       \*\* $p < .01$       \* $p < .05$

Using the average CLSI scores, the sample was divided into two groups: a) cultural resistance (those that prefer Chinese cultural norms and customs) and b) cultural shift (those that prefer Australian norms and customs). Analyses of variance testing conducted with these two groups as the IV and the SOGS scores as DV, showed there was a significant difference in SOGS scores between the two groups  $F(1, 253) = 12.84, p < .001$ . Those displaying cultural resistance

had significantly higher SOGS scores than those displaying cultural shift.

#### Attitudes towards seeking help.

In order to assess whether the attitudes towards professional help could predict problem gambling among Australian Chinese, the following steps were used in a HMR: gender (1st step); the four ATSPPHS subscale scores - i.e. recognition of need for professional help, stigma-tolerance, interpersonal openness and confidence in the mental health profession (2nd step) as the IV; and the SOGS scores as the dependent variable (DV).

Results showed that seven percent ( $R^2 = 5.4\%$  adjusted) of the variance in SOGS scores was accounted for by the predictors ( $R = .27, p < .01$ ). Only gender ( $R = .22, p < .01$ ) and the subscale of interpersonal openness ( $R = -.18, p < .05$ ) contributed significantly to the prediction of the SOGS scores. The proportion of variance in SOGS scores that was accounted for by these variables was 4.6% and 3.2%, respectively.

#### Correlations between help-seeking and acculturation

The correlation matrix of the ATSPPHS subscales and CLSI subscales and total score is presented in Table 6.5 to provide a summary of how each variable in this study was related to one another.

All CLSI subscales and total CLSI score correlated significantly and positively with the total SOGS score. Interpersonal openness was the only ATSPPHS subscale that significantly correlated with the total SOGS score.

There was also a significant relationship between the two scales. All CLSI subscale scores, along with the total score, significantly correlated with the interpersonal openness subscale of the ATSPPHS. The total CLSI score and some of the CLSI subscales were significantly correlated with the recognition of need for professional help subscale of the ATSPPHS.

Table 6.5.

Correlation Matrix of the ATSPPHS subscale and CLSI subscale and total scores for Australian Chinese participants (N = 258).

Variables	CLSI-TS	CLSI-LI	CLSI-LF	CLSI-SA	CLSI-FC	CLSI-CP	A-RH	A-ST	A-IO	A-CM	SOGS
CLSI-TS	1.00	.87**	.87**	.82**	.85**	.75**	-.16**	-.03	-.19**	-.07	.22**
CLSI-LI		1.00	.71**	.58**	.61**	.47**	-.10	-.01	-.14**	-.03	.14*
CLSI-LF			1.00	.63**	.67**	.48**	-.12	-.03	-.15*	-.05	.15*
CLSI-SA				1.00	.69**	.69**	-.23**	-.07	-.19**	-.07	.22**
CLSI-FC					1.00	.75**	-.10	-.04	-.16*	-.09	.23**
CLSI-CP						1.00	-.20**	-.05	-.19**	-.11	.24**
A-RH							1.00	.41**	.54**	.61**	-.07
A-ST								1.00	.44**	.42**	-.04
A-IO									1.00	.43**	-.16*
A-CM										1.00	-.03
SOGS											1.00

NOTE: CLSI-TS (total score); CLSI-LI (language use - intra); CLSI-LF (language use - extra familial); CLSI-SA (social affiliation/activities); CLSI-FC (familiarity with cultural activities); CLSI-CP (cultural pride); A-RH (ATSPPHS - Recognition of need for professional help); A-ST (ATSPPHS - stigma-tolerance); A-IO (ATSPPHS - Interpersonal openness); A-CM (ATSPPHS - Confidence in the mental health profession)

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

## 6.4 DISCUSSION

Part A results showed that an adherence to Asian beliefs and values, (average AVS scale score), could only predict problem gambling for the Australian Chinese participants. There was a positive correlation between AVS score and problem gambling, only for the Australian Chinese group. This suggested that higher adherence to Asian beliefs and values leads to the higher problem gambling scores amongst Australian Chinese. No such relationship was found for the Taiwanese Chinese. Inspection of the data suggested that Taiwanese Chinese had similar AVS scores. Greater diversity amongst the Australian Chinese group (e.g. variances in the country of origin, differences in the degrees of acculturation, level of spoken and written English, etc) could also account for the significant differences. Furthermore, Australian Chinese are more likely to be migrants from other countries, and Taiwanese Chinese who are most likely to be born in their country. This was supported by the finding that the Taiwanese Chinese group had a higher adherence to Asian beliefs and values than the Australian Chinese group. There were also more variances in the AVS scores of the Australian Chinese group compared to the Taiwanese Chinese group.

Interaction terms between location and three other AVS subscales (family recognition through achievement, emotional self-control and items that do not load onto any factors) could also predict problem gambling. However, none of these were significantly correlated with problem gambling. Conformity to norms, collectivism and filial piety were the only subscales that were significantly correlated with problem gambling for the Australian Chinese. In comparison, humility was the only subscale that was significantly correlated with problem gambling for the Taiwanese Chinese. Kim et al. (1999) reported that the reliability (i.e. coefficient alphas) for the six factors of the AVS was low and they recommended that only AVS average or scale scores be used when measuring adherence to Asian cultural values.

Part B found that all CLSI subscale and total CLSI scores correlated significantly and positively with the total SOGS score; however, only the total CLSI could significantly predict problem gambling. Those displaying higher cultural resistance in the Australian Chinese sample had significantly higher SOGS scores than those displaying cultural shift. This showed that gambling/problem gambling among the Australian Chinese is related to resistance in adapting to the mainstream culture. This supports previous studies in the addiction literature where it has been shown that low levels of acculturation have been associated with greater substance use related problems and poorer health status in a range of cultural groups (Weber, 1996; Castro et al., 1992; Nemoto et al., 1999).

As discussed above, a large percentage of Australian Chinese are immigrants or refugees. An immigrant or refugee undergoes a number of changes that are significant, including environmental, biological, political, economic, cultural, social and psychological changes (Symposium Paper, 1998). Immigrants experience a vast number of stressors (racism, conflicts about their place in society, shame and self doubt regarding their ethnic identity, low income, lack of employment and low socioeconomic status, isolation, boredom, loneliness, stress and mood states such as depression and anxiety) most of which have been associated with gambling problems (Raylu & Oei, 2004a; VCGA, 2000).

However, what remains unclear from these results is whether the lack of acculturation is related to the stress and circumstances associated with the acculturation process (e.g. stressors encountered when trying to adapt to a new environment/ country) and if so, whether this could increase the risk of him/her taking up gambling, or identifying more with a culture where gambling is predominant. Further research is required to clarify this.

In relation to help seeking behaviours, only interpersonal openness regarding one's problems was significantly negatively correlated to and predicted problem gambling. Those that displayed low interpersonal openness were more likely to have gambling problems. Researchers (such as Jourard, 1964) consider self-disclosure in psychotherapy as an essential factor in the psychotherapy processes. It is believed that to be assisted, it is important to disclose intimate aspects of one's life and feelings (Jourard, 1964).

There was also a significant relationship between help-seeking attitudes and acculturation. All CLSI subscale scores and the total score significantly correlated with the interpersonal openness subscale of the ATSPPHS. The total CLSI score and some of the CLSI subscales were also significantly correlated with the recognition of need for professional help subscale of the ATSPPHS. This supports other published studies that have found a link between acculturation and help-seeking attitudes among the Chinese (e.g. Pang, 2004; Zhang, 2000; Atkinson & Gim, 1989). That is, less acculturated Chinese residents also expressed less favourable attitudes towards seeking professional help compared to those that were more highly acculturated.

The findings of this study have implications for future research. First, the study needs to be replicated with a clinical population in order to support the findings in this study. Second, via model testing it would be useful to assess how these cultural variables fit into theoretical problem gambling models and interact with other important variables relevant to problem gamblers, such as depression, gambling urges, stress and gambling cognitions. Our earlier studies found that a number of gambling related variables previously reported in Western samples, such as gambling cognitions and urges, have also been found in Chinese samples (Oei, Raylu & Lin, submitted for

publication). Third, via model testing, it would also be useful to assess how these cultural variables interact with one another and influence problem gambling. This study already found a relationship between acculturation and help seeking attitudes. There are a number of ways that cultural variables can interact with one another to influence development and maintenance of problem gambling. These were originally discussed in our review earlier. Cultural beliefs and values can influence not only gambling behaviours (e.g. frequency of gambling, mode of gambling chosen, etc.) but also help seeking attitudes. It is suggested that cultures which have cultural values and beliefs that favour gambling (such as the Chinese) are more likely to gamble or develop problem gambling compared to cultures that do not have values that encourage gambling (e.g. Muslims). Cultures that show high conformity to cultural norms, values, laws, and attitudes and/or follow a collectivist way of life tend to regard family as important and are more likely to follow the norms, values, laws, and attitudes their culture dictates (Raylu & Oei, 2004a). Individuals from cultures that favour individualism (i.e. priority of personal goals, over group goals), compared to those that favour collectivism (i.e. priority of group goals, over personal goals), are likely to have different attitudes about seeking professional psychological help. Also, individuals from cultures that have negative attitudes towards getting professional help are less likely to seek professional assistance when they initially begin experiencing gambling problems and thus, are more likely to continue gambling.

Acculturation can influence individuals' beliefs and values and consequently gambling behaviours and help seeking attitudes. The review suggested that it is possible that cultural groups who value abstinence and integrate it into their values and belief systems have low rates of gambling/problem gambling as long as individuals remain within that group. However, if they leave the group and associate with another cultural group, the chance for gambling increases if this other group has high acceptance and practice of gambling. Therefore, it is possible that those that are more acculturated (i.e. similar to the host country) are more likely to adopt the help seeking attitudes of the host country, rather than the attitudes from their country of origin.

The main strength of this study was a large sample size, incorporation of data from two different countries and use of valid and reliable assessment tools. However, since the data was gathered in two locations, the generalisability of findings is limited. Despite this, the study supported the important role of cultural variables, such as cultural beliefs and values, attitudes towards seeking professional help and acculturation, in problem gambling.

## CHAPTER 7

# **The effectiveness of group versus individual CBT programs for problem gamblers**

### **7.1 INTRODUCTION**

Our review of the gambling literature showed that numerous treatment approaches (including pharmacological and psychotherapy approaches) have been used to treat problem gambling (Lamberton & Oei, 1997; Raylu & Oei, 2002). However, since there is a significant lack of controlled randomised studies testing the efficacy of these treatment approaches, the best approach to treat problem gamblers is still unclear. Presently, behavioural, cognitive and combined cognitive behavioural therapy (CBT) have the most research documenting outcomes and appear to be the most effective at treating problem gambling (Raylu & Oei, 2002).

A series of controlled randomised trials showed that certain behavioural components of CBT (e.g. imaginal desensitisation) were superior to other behavioural approaches (e.g. in vivo exposure and aversion therapy - McConaghy, Armstrong, Blaszczynski & Allcock, 1983; 1988; McConaghy, Blaszczynski & Frankova, 1991) in improving problem gambling behaviours and anxiety. Although there are few randomised controlled studies testing the effectiveness of non-behavioural components of CBT (e.g. cognitive restructuring), these studies (e.g. Hodgins, Currie & el-Guebaly, 2001; Ladouceur et al., 1989) have also reported positive outcomes.

Studies that have tested the efficacy of combined CBT programs (with components such as cognitive correction, problem solving and relapse prevention) to treat problem gambling (Sharpe & Tarrier, 1992; Ladouceur, Boisvert & Dumont, 1994; Arribas & Martinez, 1991) have found improvements in gambling problems, mood status and perceptions of control over gambling at post-treatment, along with maintenance of these gains for up to 2 years. However, with the exception of a few random control studies (e.g. Sylvain et al., 1997; Ladouceur & Sylvain, 1999), most of these studies have small sample sizes, no random assignment, no control group and exclusively, or predominantly, all male samples.

Multimodal studies with a CB component (e.g. Russo, Taber, McCormick & Ramirez, 1984; Taber, McCormick, Russo, Adkins & Ramirez, 1987; Lesieur & Blume, 1991) and which have included a group support component (e.g. Gamblers Anonymous), suggest that attendance to such support groups improves treatment outcomes. Recently, Ladouceur, Sylvain, Boutin, Lachance,

Doucet and Leblond (2003) assessed the effectiveness of a group cognitive treatment for problem gambling. Post-test results showed that 88% of the treated subjects no longer met the DSM-IV criteria for problem gambling, compared to only 20% in the control group. Therapeutic gains were maintained at 6, 12 and 24 month follow ups. Echeburua, Baez and Fernandez-Montalvo (1996) compared the effectiveness of individual stimulus control and in vivo exposure with response prevention and group cognitive restructuring therapy. They found no differences in treatment outcomes between the two. Also, the addition of group cognitive therapy reduced the effectiveness of the individual behaviour therapy.

Generally, the literature indicates that CBT is effective in treating problem gambling. However, a number of limitations of these studies such as the use of predominantly male samples, lack of comparison/control groups, lack of validated measures to assess problem gambling related variables (e.g. gambling cognitions/urges), poor discussion of dropouts, lack of intention to treat analyses and small sample sizes, restrict the interpretation of these findings (Ladouceur, Sylvain & Boutin, 2000). Also, although Ladouceur et al.'s (2003) study showed efficacy of group CBT in the treatment of problem gambling, the efficacy of group CBT in comparison to individual CBT for problem gambling is non-existent. Group CBT has the advantage of being cost effective and permits the use of booster sessions. It is our intention to test the effectiveness of group and individual CBT. It is hypothesised that the group and individual CBT will be more effective than a control condition at post-treatment and at follow up. Based on the evidence that group attendance improves treatment outcomes, it is also hypothesised that group CBT would outperform individual CBT at both post-treatment and at follow up.

## **7.2 METHOD**

### **Participants and Procedure**

Participants were individuals living in Brisbane that volunteered to take part in a CBT program to treat their gambling problems. They were recruited through TV and radio interview/advertising, promoting CBT programs offered at the University of Queensland, as well as by means of media release, internet links from various search engines, mental health websites and by placing advertisements in local and community newspapers. The inclusion criteria involved being over 18 years of age, a score of 5 or more on the DSM IV (APA, 1994) and a signed informed consent form. Exclusion criteria included participants receiving additional assistance for their gambling problem from a health professional (e.g. psychologist, Break Even agency), participants who were not proficient with English, those with severe personality disorder(s) (such as borderline

personality disorder, antisocial personality disorder; assessed by a clinical interview using the DSM IV criteria), and those that had been diagnosed with Bipolar Disorder or Hypomania and whose conditions accounted for their gambling behaviours (e.g. they gamble whenever they are experiencing a manic episode).

When participants phoned the University, they were provided with information about the study. For those who agreed to continue, a semi-structured interview was conducted over the phone to assess the client's suitability to the study. Those that were appropriate were asked to complete a face-to-face interview with a clinical psychologist (to verify diagnoses and complete pretreatment questionnaires). They were then randomly assigned to a treatment condition (group, or individual, CBT condition) using a computer generated randomised number system.

Approximately 155 individuals volunteered for the program. Of this, 55 individuals dropped out after the original telephone screen because they either did not fit the inclusion criteria, decided not to participate in the program after receiving information about the nature/requirements of participation, or their profile fit the exclusion criteria. The remaining 100 participants were randomly allocated into two categories: individual ( $N = 49$ ) or group ( $N = 51$ ) CBT categories. However, 1 individual allocated to the individual condition and 7 participants allocated to the group treatment condition dropped out after pretreatment interview, resulting in 92 participants.

Thirty-seven of the 100 participants (17 from the group condition and 20 from the individual condition) were also chosen to be on the wait list. These individuals in the wait list control group were not told what form of treatment they would be given after their 6 week wait period until the end of the wait period. Overall, only 30 participants successfully completed the wait list condition and were given their designated treatment after the 6-week wait period.

Of the 92 participants that remained after both the telephone screen and face-to-face pretreatment interview, 9 participants completed the wait list condition and designated treatment. However, their data was only used for wait list analyses (and not in the analyses of pre-, post- and 6-month follow up data), as their follow up had not been completed at the time the report was completed. Of the remaining 83 participants, only 51 completed both the treatment and follow up (24 from individual and 27 from group CBT). Of the remaining 32 participants, 4 completed treatment, but dropped out of the follow up (2 from individual and 2 from group CBT), 4 dropped out of group treatment, 11 dropped out of individual treatment, 7 dropped out of wait list (2 from individual and 5 from group treatment conditions), and 6 completed the wait list but dropped out before commencement of treatment (2 from individual and 4 from group CBT conditions).

The mean age of the 92 participants (45.5% females and 54.5% males) was 45.20 years ( $SD = 11.24$ ; age range 22-72 years). Distribution of income was as follows: Less than \$10,000AU

(11.5%), \$10,000-19,000AU (19.5%), \$20,000-\$29,000AU (12.6%), \$30,000-\$39,000AU (14.9%), \$40,000-\$49,000AU (14.9%), \$50,000-\$59,000AU (9.3%) and \$60,000AU or greater (17.3%). Most of the participants reported secondary as their highest level of education (i.e. junior secondary, 29.9%; senior secondary, 21.8%). Others reported diploma/certificate (24.1%), university degree (21.8%), or primary (2.4%), as their highest level of education. 29.1% reported being single, 26.7% married, 15.1% living together, 15.1% divorced, 2.3% engaged, 10.5% separated and 1.2% widowed. Most participants were employed either full time (59.8%), or part time (14.6%). Others reported to be doing home duties (6.1%), receiving a disability pension (6.1%), retired (6.1%) looking for work (4.9%), on sick leave (1.2%) or full-time student (1.2%). Most individuals were Caucasians (85.5%). In relation to religion, 36.0% stated that they had no religion, 32.6% identified themselves as Catholics, 14.0% identified as Protestants, 2.2% as Buddhists, 1.2% as Muslims and 14.0% identified themselves as “other” religions.

Participants generally tended to gamble on gaming machines. The percentages of participants engaging in various forms of gambling were as follows: gaming machines (96.5%), betting on animals (35.2%), table games (28.4%), and other types of gambling (83.0% - mostly lotteries). However, of those who played these games more than once a week, the percentages were as follows: gaming machines (32.6%), betting on animals (13.6%), table games (2.3%), and other forms of gambling (6.8%). The average amount gambled per day on various games was \$159.45 (*SD* = \$175.65) on gaming machines, \$119.26 (*SD* = \$179.08) on table games, \$292.72 (*SD* = \$2206.76) on animals and \$32.61 (*SD* = \$88.14) on other forms of gambling.

## **Treatment**

Raylu and Oei (2003 a, b) developed a CBT Manual (both for group and individual treatment) that was used to treat the participants. The program included components that have been normally included in other CBT treatment programs reported in the problem gambling literature, including cognitive correction of erroneous perceptions about gambling, problem solving training and relapse prevention. The program was divided into four parts. The aim of the first part was to assess the client’s problems and needs and to encourage or motivate the client towards change. This was achieved both by educating the client as well as using motivational interviewing techniques. The second phase aimed to provide the client with basic cognitive and behavioural self-management strategies, to assist in stabilising their excessive gambling, to cope with urges and minimise negative consequences in-case they experienced a relapse. This was thought to be important in increasing motivation and a sense of efficacy in relation to successfully completing the program. The third part of the program aimed to help clients develop strategies to maintain

abstinence/control, or any other positive changes that they made. This included making them aware and helping them deal with the thoughts, feelings and physical sensations that were maintaining their gambling behaviours (Sharpe, 1998). Finally, the fourth phase of treatment was intended to teach clients strategies about how to maintain therapeutic gains and minimise relapse in the future. Echeburua, Fernandez-Montalvo and Baez's (2000) controlled and randomised study showed that inclusion of relapse prevention strategies in treatment yielded better long-term treatment outcomes.

Individual treatment was designed to be 1-1½ hours in length across approximately 12 modules (10 core modules and up to 4 elective modules: interpersonal relationships, dealing with debts, and two sessions with significant others). Individual sessions involved two one hour weekly sessions (covering two modules per session) for 6 weeks. Group therapy was run for a six-week period, once a week. The group sessions were approximately 2½ hours long (excluding a half-hour break), and covered similar material as in the 10 core individual modules and two of the elective modules (interpersonal relationships, dealing with debts). The individuals in the group treatment were also given an opportunity to complete the other two elective modules with their significant others on a one-to-one basis, with a therapist if they felt they would benefit from it.

All therapists were registered intern psychologists (i.e. had completed a 4 year psychology degree and were undergoing postgraduate training/supervision in the field of clinical psychology). To enhance treatment fidelity, all therapists were taught to follow the manual closely, were properly trained and closely supervised. Furthermore, an adaptation of the Yales Adherence and Competence Scale was used to rate therapists' adherence and competence in delivering the treatment program. Independent researchers conducted the telephone screens and pre-treatment interviews (all researchers had a minimum 4-year psychology degree).

### **Assessment**

All participants were assessed using questionnaires listed below at pre, post, and 6 month follow up periods. Interviews were not used at follow ups, as it would be too costly and time consuming. This is a standard practice in treatment outcome research. Thus, questionnaires were mailed to clients. However, clients were advised to contact the researcher if they wanted to have booster sessions with a therapist. It was assumed that a good outcome would be indicated by an improvement in the dependent variables assessed at post-treatment and the maintenance of treatment gains at the two follow up points.

## **Measures**

South Oaks Gambling Screen (SOGS; Lesieur & Blume, 1987). For a detailed description of the SOGS, refer to the 'Measures' section of the study described in Chapter 2.

Gambling Related Cognitions Scale (GRCS; Raylu & Oei, 2004b). For a detailed description of the GRCS, refer to the 'Measures' section of the study described in Chapter 2.

Gambling Urges Scale (GUS – Raylu & Oei, 2004c). For a detailed description of the GUS, refer to the 'Measures' section of the study described in Chapter 2.

Depression Anxiety Stress Scale-21 (DASS-21; Lovibond & Lovibond, 1995). For a detailed description of the DASS-21, refer to the 'Measures' section of the study described in Chapter 2.

Satisfaction with Life Questionnaire (SWLQ; Diener, Emmons, Larsen & Griffin, 1985). THE SWLQ is a five-item scale that measures global life satisfaction. The scale allows the client to weigh various domains (e.g. health or material wealth) and diverse feeling states (e.g. loneliness) in anyway they choose. The questionnaire has good validity and internal consistency (Diener et al., 1985).

Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente & Grant, 1993). This is a 10-item questionnaire to assess excessive drinking. It contains three domains: hazardous alcohol use (frequency and quantity of drinking), dependence symptoms and harmful alcohol use (e.g. blackouts, alcohol-related injuries, etc). Each item has a set of responses ranging from 0 - 4. This study will assess only the hazardous alcohol use domain of the AUDIT. The questionnaire has been found to have good validity and reliability (Saunders et al., 1993).

All respondents were asked questions on gender, income, education, age, marital status, employment, religion and ethnic background at pre-test. They also had to report the frequency and amount gambled in various forms of gambling (i.e. gaming machines, table games, betting on animals and other forms of gambling), over the 2 weeks prior and at the 3 assessment points.

## **Data Analyses**

Minor missing data were replaced with means. Data was explored using SPSS to ensure all relevant statistical assumptions were met. Square root transformations were performed on variables that had skewed data. Data analyses were conducted using ANOVA techniques through SPSS to test whether there were significant differences across a range of dependent variables, for different treatment conditions, or at different points in time. These dependent variables could be divided into two categories. One category included gambling behaviours (i.e. frequency and average amount gambled per day on gaming machines, table games, betting on animals and other forms of

gambling), and the other involved gambling correlates (i.e. depression, anxiety, stress, gambling cognitions, gambling urges, alcohol use, and satisfaction with life).

First, repeated measure t-tests were conducted to examine whether there were any significant differences in the dependent variables prior to (i.e. pre-test 1) and following the 6-week wait period (pre-test 2) for the wait list control condition. Second, a series of 2 X 3 repeated ANOVA [2 treatment conditions (individual vs. group condition) and 3 assessment points (pre-test 3, post-treatment, and 6-month follow up)] were conducted for each of the dependent variables. Pre-test 3 involved the pre-test scores of those that completed the treatment conditions. Three effects were explored in these repeated ANOVA, with results indicating whether there was a significant group effect, time effect and interaction effect. A significant group effect would show there was a significant difference between the two treatment conditions, while a significant time effect would show there was a significant difference between the 3 assessment points. Post-hoc tests were conducted to explore the nature of the differences in the various dependent variables between the 3 assessment points. A significant interaction would show an interaction pattern between the treatment conditions and assessment points.

## 7.3 RESULTS

### **Changes in dependent variables for wait list control condition following 6 week wait period**

Repeated measure t-tests were used to compare pre-test 1 vs. pre-test 2 scores, for participants in the wait list control group (refer to Table 7.1). Results showed that there were no significant differences in most of the dependent variables (average amount gambled on various forms of gambling and gambling correlates) between pre-test 1 and pre-test 2 scores for those in the wait list control condition, except for anxiety  $F(1,28) = 7.30, p < .05$  and hazardous drinking  $F(1,27) = 27.82, p < .01$ . Pre-test 2 scores for these variables were significantly better than pre-test 1 scores. Results also showed that there were no significant differences in all the assessed variables at post-test (compared to pre-test 3) between those that completed wait list condition and those that did not.

Table 7.1.

Means and standard deviations of the dependent variables for the wait list control group prior (pre-test 1) and after (pre-test 2) the 6 week wait period.

Variables	Pre-test 1	Pre-test 2
Average amount spent per day on various games		
- gaming machines	160.51(221.90)	126.21(196.89)
- table games	12.75 (32.19)	18.11 (47.47)
- betting on animals	60.18 (165.88)	45.71 (109.08)
- other forms of gambling	45.64 (109.58)	31.86 (66.81)
- all games	289.52 (313.73)	217.14 (231.68)
Gambling Correlates		
Gambling cognitions (GRCS total score)	78.21 (20.68)	79.46 (18.03)
Gambling urge (GUS total score)	19.79 (11.18)	20.62 (11.10)
Depression (DASS subscale-depression)	20.14 (12.87)	18.41 (12.79)
Anxiety (DASS subscale-anxiety)*	13.45 (10.91)	10.97 (10.44)
Stress (DASS subscale-stress)	21.58 (10.32)	20.14 (10.25)
Satisfaction with life	13.41 (6.55)	12.97 (6.81)
Hazardous drinking**	5.07 (3.19)	3.68 (3.49)
$N = 29$ * $p < .05$ ** $p < .01$		

**Changes in dependent variables for the two treatment conditions (group and individual CBT conditions) at the three assessment points (pre-test 3, post-test, and 6 month follow up)**

There were no significant differences in the pre-test 3 scores between the two treatment conditions for all dependent variables except anxiety  $F(1, 29) = 7.30, p < .05$ .

*Group effects.* A series of repeated 2 X 3 ANOVA showed there was a non-significant group effect for all dependent variables. This indicated there were no significant differences between the two treatment groups in relation to the average amount spent on gaming machines  $F(1, 38) = 0.05, ns$ , table games  $F(1, 38) = 1.44, ns$ , betting on animals  $F(1, 38) = .88, ns$ , other forms of gambling  $F(1, 38) = 1.39, ns$  and all forms of gambling  $F(1, 38) = 1.38, ns$ . A non-significant group effect was also found for all gambling correlated dependent variables including gambling cognitions

$F(1,39) = .16$ , *ns*, gambling urge  $F(1, 39) = .20$ , *ns*, depression  $F(1,38) = 1.65$ , *ns*, anxiety  $F(1, 38) = .23$ , *ns*, stress levels  $F(1, 38) = .01$ , *ns*, satisfaction with life  $F(1,38) = .12$ , *ns* and hazardous drinking  $F(1,37) = 2.85$ , *ns*. Pre-test, post-test and follow up means (including standard deviations) of all the dependent variables for each treatment condition are displayed in Table 7.2.

Table 7.2.

Means and standard deviations of the of the dependent variables at pre-test 3, post-test, and 6 month follow- up for the two treatment conditions.

Variables	Pre-test 3	Post-test	6-month follow up
Average amount gambled per day on various games			
Gaming machines			
Group	118.52 (82.10)	60.71 (76.95)	80.05 (109.68)
Individual	112.65 (105.70)	46.94 (143.97)	86.18 (134.94)
Table games			
Group	15.89 (32.84)	15.00 (56.42)	12.52 (39.32)
Individual	41.47 (106.29)	35.29 (105.72)	33.53 (76.56)
Betting on animals			
Group	34.09 (67.80)	9.09 (42.64)	9.56 (33.15)
Individual	32.22 (94.90)	4.78 (12.47)	22.22 (49.56)
Other games			
Group	10.83 (14.45)	15.10 (23.85)	8.30 (10.75)
Individual	72.59 (172.49)	8.13 (12.45)	14.44 (27.17)
Total spent			
Group	173.64 (123.05)	79.00 (94.51)	96.50 (98.65)
Individual	275.43 (407.60)	105.47 (179.96)	133.07 (222.33)
Gambling Correlates			
Gambling related cognitions (GRCS total score)			
Group	78.68 (17.37)	51.32 (25.05)	57.77 (23.71)
Individual	78.89 (16.18)	47.42 (26.54)	54.63 (28.02)
Gambling urge (GUS total score)			
Group	19.05 (8.64)	12.86 (7.07)	16.22 (8.86)
Individual	19.89 (11.91)	10.78 (5.24)	14.68 (10.24)

Depression (DASS subscale – depression)			
Group	21.27 (11.92)	12.18 (9.35)	11.50 (9.58)
Individual	15.89 (12.95)	6.33 (6.79)	12.44 (11.34)
Anxiety (DASS subscale – anxiety)			
Group	13.54 (10.86)	5.73 (6.85)	5.86 (6.38)
Individual	8.56 (7.66)	6.00 (6.05)	7.56 (8.47)
Stress (DASS subscale – stress)			
Group	20.91 (10.77)	11.72 (8.64)	14.27 (9.66)
Individual	21.33 (10.22)	9.89 (8.49)	15.06 (11.76)
Satisfaction with life			
Group	13.14 (6.20)	18.81 (7.43)	18.00 (7.98)
Individual	14.06 (7.22)	19.67 (7.96)	18.44 (7.92)
Hazardous drinking			
Group	3.35 (3.53)	2.62 (2.47)	2.33 (2.47)
Individual	5.22 (3.65)	4.11 (3.41)	3.83 (3.53)

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Interaction effects. Results showed that there was a non-significant interaction effect for most of the dependent variables. Thus, there were no significant interaction effects for the average amount gambled on gaming machines  $F(1, 76) = 0.09, ns$ , table games  $F(1, 76) = .03, ns$ , betting on animals  $F(1, 76) = .36, ns$ , and other forms of gambling  $F(1, 76) = 2.73, ns$ , and total amount spent on all forms of gambling  $F(1, 76) = .36, ns$ . Non-significant group effects were also found for most gambling correlate dependent variables including gambling cognitions  $F(2, 78) = .16, ns$ , gambling urge  $F(2, 78) = .47, ns$ , depression  $F(2, 76) = 2.40, ns$ , anxiety  $F(2, 76) = 4.24, ns$ , stress levels  $F(2, 76) = .40, ns$ , satisfaction with life  $F(2, 74) = .04, ns$  and hazardous drinking  $F(2, 74) = .30, ns$ , except anxiety  $F(2, 76) = 4.24, p < .05$ . The pre-treatment anxiety in group treatment was significantly higher for those in the individual treatment condition. Such a difference was not found between the two treatment conditions at post-test and 6-month follow up.

Time effects. Significant differences across assessment points were only found in relation to the average amount spent on gaming machines  $F(1, 76) = 3.35, p < .05$  and betting on animals  $F(1, 76) = 3.63, p < .05$  and total spent on all forms of gambling  $F(1, 76) = 4.27, p < .05$ . No such differences were found for the average amount spent on table games  $F(1, 76) = .08, ns$  and other forms of gambling  $F(1, 76) = 2.49, ns$ . There were significant differences in the assessment points

for all the gambling correlates including gambling cognitions  $F(2, 78) = 31.25, p < .01$ , gambling urge  $F(2, 78) = 11.31, p < .01$ , depression  $F(2, 76) = 15.33, p < .01$ , anxiety  $F(2, 76) = 10.59, p < .01$ , stress levels  $F(2, 76) = 21.74, p < .01$ , satisfaction with life  $F(2, 74) = 21.43, p < .01$  and hazardous drinking  $F(2, 74) = 12.13, p < .01$ . Post-hoc tests were conducted to explore the nature of differences in the various dependent variables between the three assessment points (pre-test 3, post-test, and 6 month follow up), for the two treatment conditions (group and individual CBT conditions). Results showed that for those dependent variables with significant time effects, there were generally significant differences between pre-test 3 scores and the other two assessment points (i.e. post-test, and 6 month follow up). Furthermore, there were no significant differences between post-test scores and 6-month follow up scores for any of the dependent variables. However, for the GUS total scores, although there was a difference between pre-test 3 and post-test scores, the difference between pre-test 3 and 6 month follow up scores was not significant.

## 7.4 DISCUSSION

The results of this study showed a significant improvement in problem gambling behaviours (such as frequency and amount of gambling) and gambling correlates (e.g. negative moods, gambling cognitions, gambling urges, satisfaction with and alcohol consumption) at post-treatment for both treatment conditions compared to the wait list condition. This outcome supported the first hypothesis. Furthermore, results were maintained at 6 month follow up. These results also support previous studies which have shown CBT to significantly improve problem gambling and for these gains to be maintained at follow up (Ladouceur et al., 2001; Arribas & Martinez, 1991; Ladouceur et al., 1997; Sylvain, et al., 1997).

However, our second hypothesis which predicted that group CBT would do better than individual CBT was not supported. There are many important clinical implications for this finding. Group therapy has the advantage of being cost effective and would be ideal for use in public health settings, or for those that cannot afford individual treatment. Furthermore, for some individuals, group settings are a great place to interact with other problem gamblers, as well as to discuss and generate ideas on what strategies others have used to control their gambling behaviours and deal with gambling urges. Group therapy is an ideal setting to obtain support and understanding from a number of individuals. Nevertheless individual therapy does have advantages, including the one-to-one contact with a therapist and a secure environment where it is often easier to disclose sensitive information which might not otherwise be ideal to discuss in a group format. Thus, individual

therapy may be more suitable for those who can afford therapy and those who prefer discussing life events on a one-to-one basis.

The pre-treatment anxiety reported by participants in the group condition was significantly higher for those in the individual treatment and 6-month follow up. Participants are often anxious prior to initiating group therapy (Fieldsteel & Joyce, 2005), which is possibly related to the apprehension of disclosing information and interacting with a number of unfamiliar individuals at once. Therefore, it is possible the high pre-treatment anxiety among the participants in the group condition reflected this.

Both anxiety and hazardous drinking reduced during the 6-week wait list period. It is possible that the slight reduction in anxiety regarding their gambling problems prior to commencement of treatment may be attributed to a commitment to the treatment program. Furthermore, commitment to treatment has often been related to individuals' motivation to change their problematic behaviours (Longshore & Teuya, 2006). Thus, it is not surprising that motivated individuals who have committed to a treatment program could start reducing their problematic behaviour(s), even prior to commencement of the treatment program.

Although scores showed a reduction in all forms of gambling including total spent on all forms of gambling, the reduction was not significant for those reported playing table games and participating in "other" forms of gambling (compared to the forms of gambling directly assessed). This could be due to the large variability in data of the average amount spent per day on each game.

Results also showed that although participants reported lower gambling urges after treatment (compared to before treatment), there were no differences between gambling urge scores before treatment and at the 6 month follow up. Although the 6 month GUS scores had slightly risen compared to post-test, it was still generally lower than the pre-test score; although not significantly lower. Gambling urges continue, in varying degrees, even when clients are abstinent especially at the beginning of their recovery (Monti, Rohsenow & Hutchinson, 2000).

There were a number of limitations of this study. Most of the participants were Caucasians. Furthermore, although adaptation of the Yales Adherence and Competence Scale were used to rate therapists' adherence and competence in delivering behaviour treatments for gambling problems to further improve treatment integrity, audio taped sessions to establish treatment and therapist consistency could be used. Discussion of long term maintenance of therapeutic gains (i.e. at 12 month follow up) were not included in this study as this data was not fully available at the time this report was written. This data will be available at the University of Queensland in the near future.

Future studies would need to compare the effectiveness of group and individual therapy both in clinical settings and controlled university settings. This is important, as individuals who seek

assistance at clinical settings are different to those that volunteer to newspaper advertisements. Such a study would provide information on the utility of such treatments in clinical settings.

Compared to similar studies in the gambling literature, this study had a number of strengths. It is the first study to have compared the treatment outcomes of a similar treatment (CBT) in two formats, as well as with a wait list control group for problem gamblers. As discussed previously, most treatment studies in the problem gambling literature have not included a comparison group, or control group. Second, it is the first treatment-outcome study to have assessed changes in variables such as gambling cognitions and gambling urges using specialised assessment tools. Other gambling treatment outcome studies have either not assessed changes in these variables after CBT, or used one item and non-validated questionnaires to assess these variables (Raylu & Oei, 2002).

In summary, the results of the present study showed that CBT could significantly improve problem gambling behaviours as well as a number of gambling correlates (e.g. mood, alcohol intake, satisfaction with life, gambling cognitions and gambling urges) and maintain these changes for at least a 6-month period. More importantly it provided support that CBT applied in group or individual format has the potential of significantly improving problem gambling behaviours, as well as gambling correlates.

## CHAPTER 8

### General Discussion

The aim of this report was to address the cultural gap in the gambling literature by expanding on the Chinese gambling literature. It presented a literature review of cultural differences in gambling and problem gambling. The review highlighted gaps in the current research within this area and proposed six studies that were reported on in subsequent Chapters (Chapters 2-7). The studies described in Chapters 2 and 3 presented a validation of a Chinese version of two instruments assessing gambling related variables (GRCS, that assesses gambling cognitions and GUS, that assesses gambling urges). The study described in Chapter 4 compared the gambling behaviours and motivations towards gambling between Australian Chinese and Caucasians. Supplementary analyses were also conducted to compare gambling behaviours between Australian Chinese and Taiwanese Chinese. The instruments validated in Chapters 2 and 3 (along with other instruments) were then used to assess these and other variables among a community based Australian Chinese sample in comparison to a Caucasian sample (Chapter 5). The study described in Chapter 6 explored whether cultural variables (e.g. cultural beliefs and values, acculturation and help seeking attitudes) predicted problem gambling. Finally, the study described in Chapter 7 assessed the effectiveness of group versus individual CBT programs for problem gamblers.

The studies contained in this report were unique as they presented new information and consequently contributed significantly to the current gambling research. They have many implications for the conceptualisation, prevention and treatment of problem gambling among the Chinese. They also pave the way for future research. These are discussed in more detail below.

#### Implications for the conceptualisation of problem gambling among the Chinese

The studies described in this project highlighted the importance of incorporating culture in the conceptualisation of problem gambling among the Chinese. The cultural variables, however, should not be considered in isolation but in the context of other possible factors that have already been implicated by the gambling literature as playing a role in the cause and maintenance of problem gambling (Raylu & Oei, 2002). Gambling is a consequence of a complex interaction of a number of variables. The Raylu and Oei (2002) review showed that a range of variables have been implicated in the development and maintenance of problem gambling including the familial/genetic,

sociological and individual factors (e.g. an individual's personality, biochemistry, psychological states and cognitions).

There are a number of ways the influence of culture could be incorporated into the current theoretical models of problem gambling for the Chinese. It is possible that there are cultural factors that predispose Chinese participants to gambling. Gambling has been popular throughout the Chinese history. Thus, it is not surprising that the Chinese have lifestyles, traditions, beliefs and values that approve of and encourage gambling. Cultures (i.e. the Chinese culture) that show high conformity to cultural norms, values, laws, and attitudes and/or follow a collectivist way of life are more likely to follow the norms, values, laws, and attitudes their culture dictates (Shweder, 1991). Cultural beliefs and values can be passed to members directly through modelling (e.g. by family members, or other respected members from an individual's culture such as elders), or indirectly (e.g. by showing their approval and tolerance of gambling or by sharing historical texts, stories and myths with their members that show approval and acceptance of gambling). This supports the literature that suggests that gambling and problem gambling appears to be higher among those whose parents gamble (Lesieur, et al., 1991; Wallisch, 1996; Gambino et al., 1993). The study described in Chapter 4 showed that Chinese participants reported higher rates of gambling among parents than Caucasians. It also supports evidence that children who gamble tend to gamble with friends and family members (Gloria, 2006; Gupta & Derevensky, 1997; Daghestani et al., 1996) and were more likely to have begun gambling with parents (Griffiths, 1995). Wynne et al. (1996) reported that problem gamblers were more likely to view gambling as part of their family norms.

Chinese culture appears to influence a number of aspects of gambling (e.g. gambling behaviours, forms of gambling chosen, motivations towards gambling, gender differences in gambling related variables, etc.). Studies in the gambling literature as well as those contained in this report have shown that certain aspects of Chinese culture could account for some of the patterns in gambling behaviours (e.g. participation in dice and card games) and gambling related variables (e.g. gambling cognitions related to superstitious beliefs) found among the Chinese. The higher rates of gambling related variables such as gambling cognitions and urges among Chinese males, compared to Chinese females, could at least partially be attributed to Chinese culture and history.

It is also possible that cultural factors trigger problem gambling among Chinese individuals who already have a predisposition (e.g. they have particular individual factors, such as personality and biological aspects, that have been found to play a role in the development of problem gambling). One such precipitating factor could be acculturation.

Psychological mood states (e.g. depression, anxiety, stress, loneliness, isolation, etc.) that are often associated with acculturation have been linked to problem gambling (Raylu & Oei, 2002).

Several other factors often associated with refugees or immigrants including low income, lack of employment and low socioeconomic status have also been linked to problem gambling (Shepherd et al., 1998; Albers & Huebl, 1997; Hrabá & Lee, 1995; PCR, 1999). The study described in Chapter 6 shows that the overall AVS scale score could also significantly predict problem gambling. Those displaying cultural resistance towards Australian cultural norms and customs had significantly higher SOGS scores than those displaying cultural shift.

Unger et al. (2004) suggested that acculturative stress can affect the entire family. Stressful experiences impact on parents' psychosocial wellbeing, and consequently their parenting. Inadequate parenting could affect children's psychosocial wellbeing and ability to cope with stress. The effects of acculturative stress can continue affecting future generations (Unger et al., 2004). Parents and children may experience different acculturation processes. For example, children may become acculturated to the host culture more quickly than parents. When parents have to depend on their children for assistance to adapt to the new host country, parental authority can be affected which can consequently lead Chinese adolescents to rebel and engage in risk taking behaviours such as gambling (Unger et al., 2004). The differences in acculturation between parents and children can also lead to family conflict, resulting in Chinese adolescent rebellion and risk taking behaviours which may include gambling (Unger et al., 2004).

Culturally determined help seeking attitudes/behaviours can maintain gambling or problem gambling. Chinese individuals tend to possess values of collectivism (giving priority to group goals, over personal goals) rather than individualism (giving priority to personal goals, over group goals). Thus, Chinese individuals are likely to have similar attitudes towards seeking professional psychological help as other members in their culture. Furthermore, the Chinese culture encourages negative attitudes towards getting professional help. Therefore, Chinese would be less likely to try and get help when they initially begin experiencing problems and be more likely to continue gambling despite losses. The study described in Chapter 6 showed that adhering to Asian values predicted problem gambling among the Australian Chinese participants. Low interpersonal openness regarding one's problems was also related to problem gambling. There were also significant correlations between acculturation and attitudes towards seeking professional help.

Gambling among the Chinese may also be maintained by other cultural factors such as gambling cognitions related to superstitious behaviours. The study described in Chapter 5 shows that there are some differences in gambling cognitions between Australian Chinese and Caucasians. That is, Chinese participants are more likely to report beliefs relating to superstitious behaviours controlling gambling outcomes, than Caucasians. It is possible that beliefs regarding illusion of control among Chinese gamblers may be more insidious and profound, since they are associated

with specific Chinese cultural beliefs and values.

### Implications in the prevention and treatment of problem gambling among the Chinese

The final study described in Chapter 7 shows CBT (delivered both in individual and group formats) can significantly reduce the frequency and amount of money spent on gambling, as well as gambling correlates (e.g. gambling cognitions, negative psychological states, gambling urges, hazardous drinking and satisfaction with life) at post-treatment compared to pre-treatment. Furthermore, these improvements were maintained at a 6-month follow up. There were no significant differences in treatment outcomes between those in the group CBT condition and those in the individual CBT condition. Thus, it is likely that CBT would be effective with Chinese problem gamblers as well (Hodges & Oei, 2007). As discussed in the literature review in Chapter 1, the success of CBT among the Chinese with other mental health problems might be related to the similarity in the characteristics of CBT and the Chinese cultural beliefs, values, and worldviews. However, there are a number of issues to consider before such treatment could be adopted for Chinese problem gamblers and the adopted program is assessed for its effectiveness.

The first issue relates to presentation of Chinese clients for treatment. As discussed in the literature review in Chapter 1, several studies have shown that ethnic minorities are often underrepresented in the treatment agencies for problem gambling. The literature review in Chapter 1 discusses a number of cultural factors that could be attributed to such presentation rates. Some of the factors relevant in the Chinese culture include shame, which was associated with losing face and respect amongst other Chinese, or beliefs it was their own, their family's or the Chinese community's responsibility to deal with the gambling problems. Other possible reasons for these different rates may include a limited knowledge of the availability of services, insufficient social and financial resources to support treatment entry, fear of admitting illegal behaviours among illegal immigrants, and language problems. The study described in Chapter 6 showed that in relation to help seeking behaviours, interpersonal openness regarding one's problems could predict problem gambling. Australian Chinese scored lower on interpersonal openness regarding their problems and were more likely to have problem gambling.

Programs may need to be designed and implemented to address the barriers to seeking help. There is a great need for culturally relevant, community based and supported sources of help, rather than clinic or hospital based programs. Self help groups and/or telephone counselling might be more beneficial as the Chinese tend to view professional psychological help as foreign and uncomfortable. A family systems approach might have to be taken for treatment, given the

collective nature of the Chinese culture. Information and support for the relatives of problem gamblers are especially important. Since Chinese families expect more practical types of assistance from the mental health system, programs should focus on providing factual information about the illness. Intervention programs need to be adapted to fit the idiosyncratic beliefs and immigrant experiences of many Chinese families. As discussed earlier, common stressors among migrants include cultural conflict, minority group status, social change, and lack of language or other marketable skills (Varma & Siris, 1996). Thus, training these gamblers to overcome these deficiencies through language and/or job skills training can be beneficial. Therapists need to work to increase immigrants self esteem and assist them in adapting more easily to their new environments and consequently, reducing their need to seek solace in gambling (Varma & Siris, 1996).

Many authors have reported a lower dropout rate with bi-cultural treatment programs especially in the areas of mental health (Sue & McKinney, 1975; True, 1975). Furthermore, some researchers also report ethnic minorities more frequently utilise a facility if bi-cultural programs are available (Uba, 1982). Le (1999-2000), in relation to problem gambling amongst the Vietnamese community in Australia, concluded that bi-cultural professionals are important in providing an effective service to culturally diverse clients. Increase in referral rates of ethnic minority groups to treatment has been related to employment of ethno specific community educational workers (Barrett & Fraser, 1999). Thus, it may also be necessary to change processes beyond the specific treatment program that encourage and support culturally and linguistically diverse access. This may include producing treatment program material (e.g. treatment program brochures, client handouts, etc.) in various languages and employing clinicians with skills in various languages. Programs that provide Chinese gamblers access to Chinese lawyers and debt managers would also be useful.

Leaving brochures (translated into Chinese) about treatment programs at various sites such as libraries, doctors' surgeries and senior citizens clubs may attract Chinese problem gamblers to a gambling treatment facility. Media in all forms need to be targeted (e.g. Chinese newspapers, ethnic radio and public speaking gatherings). Brochures advertising the treatment program should emphasise issues of confidentiality to address Chinese clients' fear of personal or family stigma and the fear of contact with the legal system. Furthermore, emphasising the availability of Chinese professional workers and/or translators may be beneficial.

In order to improve retention of Chinese participants in treatment, it would be beneficial for therapists to take the time to learn about the clients culture and understand the history of their culture (including the circumstances that brought them to the country) when presented with Chinese

clients. This may be important as trust can be built by demonstrating openness and interest, as well as by recognising cultural rituals as much as possible (Finn, 1994).

Given the nature of findings of this project, more resources should be allocated to providing prevention programs to Chinese individuals. Prevention programs may help breakthrough denial of problem gambling among the Chinese (Gloria, 2006). There is a need to increase awareness and knowledge of problem gambling, its impact among Chinese individuals and the availability of problem gambling support and treatment services (especially among Chinese immigrants/refugees). Preventive programs are also required to target the superstitious cognitions related to gambling. It is important to note that any prevention program needs to emphasise issues of confidentiality to address Chinese clients' fear of personal or family stigma and fear of contact with the legal system. Programs also need to be culturally appropriate and target the issues that are most relevant to them (Unger et al., 2004). For example, it may be more relevant to discuss the types of gambling and location of gambling that are common among Chinese (e.g. dice and card games in casinos, rather than sports betting at the TAB). Also, it is important to avoid the assumption that all individuals from a similar cultural background will have the same attitudes, beliefs and values; or the same risk and protective factors and behaviours (Unger et al., 2004). Levels of acculturation are likely to be different from one Chinese individual to another (i.e. depending on country of birth and the length of time in Australia). Thus, prevention programs need to acknowledge such individual differences.

The second issue to consider before CBT could be adopted for Chinese problem gamblers are the weaknesses of applying CBT with Chinese participants. Chinese values of filial piety, respect for familial and social hierarchy, discouragement of self-centeredness, emphasis on academic achievement, and importance of interpersonal harmony have significant impact on cognitions and behaviours of Chinese (Chen & Davenport, 2005). A number of researchers (Lin, 2002; Chen & Davenport, 2005; Chen, 1995; Sue & Sue, 1999; Sue, 1997) suggested that in order to work with Chinese clients effectively, clinicians need to carefully modify CBT, so it is compatible with Chinese beliefs, values and expectations of counselling. These are summarised below:

- 1) CBT emphasises that clients empowerment should be achieved internally (i.e. through an internal locus of control and responsibility) by allowing them to make their own decisions and being assertive in pursuing what they want. In contrast, Chinese tend to make decisions, or deal with life problems, under the influence of others (e.g. elders) and external factors. In the western approach, enhancing an individual's internal locus of control over problems and increasing responsibility for behaviours is emphasised. In contrast, the Chinese favour a worldview that

asserts an external locus of control and puts a greater value on collectivism, whereby a person accommodates the requirements of the system through modification of his or her attitudes and behaviours. Thus, Chinese might not be very motivated to increase their sense of internal control to cope with problems. Thus, some CBT techniques, such as supporting clients' independence, autonomy, assertiveness and responsibility for own behaviours, thoughts, feelings and emotions, may not be appropriate.

- 2) Chinese clients view therapists as teachers in a therapy session. In the Chinese culture, teachers are respected. Consequently, the client may be reluctant to disagree with the therapist. They may also have high expectations of the therapy process and outcomes. Therefore, it may be important to educate Chinese clients about the therapy process and role of the therapist to help reduce anxiety and to have realistic expectations of the therapy process.
- 3) In CBT, the clients' dysfunctional beliefs are often challenged with Socratic "why" and "what" types of questions. This may not be appropriate with Chinese clients because when students are questioned by a teacher, if they do not know the right answer or are unable to respond to the question immediately and correctly, the Chinese student will feel ashamed or incompetent. If the therapist-client relationship is explained to the Chinese clients, it may help the client feel less intimidated and make them more comfortable to explore their thoughts and beliefs.
- 4) Chinese may have difficulty with assertiveness training, direct confrontations and straightforward discussions about sensitive issues, such as sexual concerns and problems with family members, as Chinese values tend to emphasise the importance of patience, harmony and respect. In addition, the Chinese concept of face saving often results in avoidance of any social interaction that might affect interpersonal harmony. Assertiveness could be viewed as offensive, or intrusive, in social interactions. Therefore, it would be important to help Chinese clients recognise that they can be assertive in some situations (e.g. when interacting with non-Asian individuals) and practice assertiveness outside the Chinese community.
- 5) Chinese individuals are socialised to remain calm and to restrain themselves from expressing emotions. Consequently, they may lack the experience to label, acknowledge, or talk coherently, about their emotional states (Sue, 1997). Furthermore, the emotive exercises of CBT (e.g. confrontational exercises, role playing and rational emotive imagery) could make some clients feel puzzled, uncomfortable, or frightened. Therefore at the beginning of therapy, therapists may need to refrain from directly assessing and discussing clients' emotions, until the clients become more familiar with the therapy setting and more comfortable with connecting their thoughts and behaviours to their feelings.

- 6) Among the Chinese, a common and culturally appropriate means of expressing psychological and emotional stress is through physical complaints. Also, physical complaints are often used to mask emotions which have the stigma of shame. Indeed, it is not unusual for Chinese to believe their physical illness is the only source of their problems. Thus, it is important not to invalidate the Chinese clients' physical complaints by challenging them. Physical complaints can be acknowledged by recommending physical treatment (i.e. referring clients to see a general practitioner).
- 7) Exploring beliefs and values is an important role in all CBT approaches. Due to the hierarchical nature of the family and social structure, it would be difficult for Chinese clients to challenge the values that have been taught to them by parents, teachers, or people of higher social status, or to confront any beliefs that are considered important to interpersonal harmony of the group. Thus, when identifying the thoughts and beliefs that cause problems for the Chinese clients, it may be useful for the therapist to use words such as "impractical" and "inapplicable", instead of "irrational" or "dysfunctional", in order to describe these thoughts and beliefs in a way that lowers the clients' defensiveness. It may also be helpful to gently reframe the clients' beliefs about their parents' role and responsibilities in a more positive way (e.g. reframe the belief that "parents should know what is best for their children" to "parents always have their children's best interests at heart"). This reframed notion implies the possibility that the parents may not be aware of what the clients want for their lives, even though their intentions are to help. It may also be helpful for clients to understand the source and background of the impractical beliefs that they have adopted from their parents. For example, understanding parents' past experiences and difficulties as new immigrants may help explain the belief that one should only trust people of their own culture. This will help the client see that because circumstances have changed, this belief is no longer applicable to his or her current situation.

#### Suggestions for future research

- Since most of the studies contained in this report are based on community samples, it would be beneficial to replicate these studies with clinical samples in order to strengthen the findings regarding problem gamblers.
- The reliabilities and validities of the instruments used to assess problem gambling (e.g. the SOGS) have often been criticised (Walker & Dickerson, 1996). The SOGS was developed in a clinical setting, but is often used in general population studies. Several studies have raised the issue of obtaining high false positives (i.e. where a person does not have a problem, but is

diagnosed as having one) in general population surveys when using the SOGS to identify problem gamblers (Dickerson, 1993; Abbott & Volberg, 1992). These differences could be due to cross-cultural issues (Lesieur, 1994). Thus, it could be beneficial to devise and validate measuring instruments to assess the extent of problem gambling among the Chinese.

- This study validated the GRCS and GUS as suitable for use with the Chinese population. Other instruments which currently exist in the gambling literature that can be used to assess gambling related variables (e.g. gambling motivations, severity of gambling, etc.) also need to be validated with the Chinese population.
- Considering that this study found significant gender differences in gambling related variables such as gambling urges and cognitions, future studies may need to assess gender differences in this area of research. For example, future research could explore whether gender affects the relationship between cultural variables (e.g. acculturation) and problem gambling. Unger et al. (2004) reported two studies that showed that acculturation was associated with higher risk of drug use among females only. Gender differences in gambling behaviours and motivations towards gambling among Chinese gamblers also need to be explored.
- Cultural differences in gambling habits and problem gambling could be accounted by two different processes. First, they could be exposed to different levels of risk and protective factors of gambling (e.g. differences in number of individuals they know that gamble/models of gamblers, number of individuals in their lives that approved gambling, perceived norms about gambling from peers or family and differences in the expectations of costs and benefits of gambling). Secondly, they could differ in their susceptibility to risk factors (i.e. whether risk factors are differentially related to gambling in different cultural groups – e.g. correlation between an individuals gambling and other adults they know (e.g. friends, peers and others). Thus, the presence of different susceptibilities implied interactive, or moderating, effects of risk factors with culture. Knowledge about these possible interactive effects would be valuable in developing effective prevention and treatment programs. It is, however, important that the two processes are not seen mutually exclusive; both can operate at the same time. Thus, to further understand the sources of cultural differences in gambling, it is necessary to investigate both processes simultaneously.
- Using model testing, it would be useful to asses how cultural variables (i.e. cultural beliefs and values, process of acculturation and help seeking attitudes) fit into theoretical problem gambling models and interact with other important variables relevant to problem gamblers, such as depression, gambling urges, stress, gambling cognitions, etc.

- Future research also needs to look at the impact of family factors (e.g. family cohesiveness) on early gambling initiation. Researchers exploring gambling among children and adolescents have suggested that rates of gambling and problem gambling are high among this group. For a significant minority of youth, gambling occurs during preadolescence when family factors are likely to exert a strong influence. Early initiation has also been associated with later stage problems of abuse. Thus, there is a need for studies that look at whether these cultural differences in gambling are due in part to parallel cultural differences in family factors, or whether they are due to cultural differences in the ability of the identified family factors to predict gambling. This is especially important as cultural differences among cultural groups are often rooted in family traditions which can enhance, or inhibit, gambling patterns. However, there is a distinct lack of studies exploring how culture can influence family functioning (e.g. family characteristics, such as family involvement and attachment, attitudes of parents/siblings towards gambling family structure/configuration) in a way that supports or discourages gambling. This is important, as it has already been found that problem gamblers are more likely to have parents who gamble, to have begun gambling with parents and view gambling as part of their family norm.
- The present report found that acculturation was significantly associated with problem gambling. There are number of aspects of this relationship that need to be clarified. First, there is a need to explore whether increased gambling/problem gambling is related to a successful acculturation process (e.g. successfully assimilating to a culture that has high acceptance and practice of gambling) or to difficulties in the acculturation process (e.g. personal difficulties such as depression and stress and socio-demographic determinants such as poverty, unemployment, etc.). It is very likely that a combination of the two exists. Second, research is required to assess the changes in gambling patterns over time, as individuals move through the acculturation process. This will help gain information about the influence of acculturation on age of first gambled, progression of gambling frequency or form of gambling, and development of problem gambling. Third, there are a number of factors that can affect the acculturation process (Unger et al., 2004) and consequently affect gambling behaviours. Such factors include location of migration (e.g. rural vs. urban), available support networks, and immigration status (refugee, illegal, permanent resident). The relationship between these factors, acculturation process and problem gambling need to be assessed. The assertion that gambling could be a means of coping with acculturation stress, has not been directly assessed. Thus, the coping strategies of Chinese problem gamblers need to be assessed.

However, before any research is conducted in the area of acculturation, researchers need

to be careful about their assumptions about acculturation. Previous acculturation research (including the study described in Chapter 6), has assumed that as people become more acculturated with the host culture, they become less acculturated with their own culture (Zane & Huh-Kim, 1998). However, several studies have shed some doubt on such assumptions. Studies on acculturation (Huh & Kim, 1984) and cultural identity (Oetting & Beauvais, 1990-1991) have shown that for immigrants, identification with a particular culture may occur separate to the identification with another culture (Zane & Huh-Kim, 1998).

- There are several variables associated with immigrants from certain cultures that need to be treated with caution when investigating the role of cultural variables in the development and maintenance of gambling problems among these groups. First, socio-demographic variables such as poor socio economic status, unemployment and low-income levels have been linked to problem gambling (Raylu & Oei, 2002). A significant number of immigrants, refugees or indigenous groups have this status. Thus, it is difficult to determine whether problem gambling is related mainly to factors about an individual's culture, or about their socio-demographic status. Thus, future research needs to help determine the level to which each of the two factors contributes towards the differences in prevalence rates of gambling/problem gambling between certain cultural groups (e.g. between indigenous/ethnic minorities and Caucasians). Furthermore, studies exploring the role of cultural variables in the initiation and maintenance of gambling need to distinguish between the two.

#### Difficulties encountered during this study

One of the major difficulties encountered in this study was recruitment of Chinese problem gamblers to assess the effectiveness of CBT with this group. A number of strategies were used to try to recruit Chinese participants. The study was advertised in various Chinese clubs and society magazines, newsletters and noticeboards. Advertisement of the study and request for assistance with the study were also sent to several chosen employment organisations from the Brisbane business directory and acquaintance networks. A media release was also organised. Breakeven (a major outpatient treatment agency that provides treatment for problem gamblers) was also used as a referral source. However, the number of Chinese problem gamblers recruited using these processes was poor. Consequently, 1½ years prior to the completion of the grant, we obtained permission from Queensland Treasury to conduct the treatment study using the general population, rather than just Chinese problem gamblers.

## Conclusion

In conclusion, the findings of the studies discussed in this report have made advances in understanding gambling and problem gambling among the Chinese. The studies contained in this thesis are unique investigations within Australian and international research and thus, add considerably to this growing area of gambling and problem gambling literature. Further, these studies could assist in the design and conduct of preventative and treatment programs, as well as providing direction for future studies with the Chinese population.

## REFERENCES

- Abbott, P. J. (1996). American Indian and Alaska native aboriginal use of alcohol in the United States. *American Indian & Alaska Native Mental Health Research*, 7, 1-13.
- Abbott, D. A., & Cramer, S. L. (1993). Gambling attitudes and participation: A Midwestern survey. *Journal of Gambling Studies*, 9, 247-263.
- Abbott, M. W., & Volberg, R. A. (1992). *Frequent gamblers and problem gamblers in New Zealand: Report on Phase Two of the national survey*. Research Series No. 14. Wellington: New Zealand Department of Internal Affairs.
- Abbott, M. W., & Volberg, R. A. (1994). Gambling and pathological gambling: Growth industry and growth pathology of the 1990s. *Community Mental Health in New Zealand*, 9, 22-31.
- Abbott, M. W., & Volberg, R. A. (1996). The New Zealand national survey of problem and pathological gambling. *Journal of Gambling Studies*, 12, 143-160.
- Abt, V., & McGurrin, M. C. (1992). Commercial gambling and values in American society: The social construction of risk. *Journal of Gambling Studies*, 8, 413-420.
- Abt, V., McGurrin, M. C., & Smith, J. F. (1985). Toward a synoptic model of gambling behavior. *Journal of Gambling Behaviour*, 1, 79 – 88.
- Albers, N., & Huebl, L. (1997). Gambling market and individual patterns of gambling in Germany. *Journal of Gambling Studies*, 13, 125-144.
- American Psychiatric Association (APA, 1980). *Diagnostic and statistical manual of mental disorders* (3<sup>rd</sup> ed). Washington, D. C.: American Psychiatric Press.
- American Psychiatric Association (APA, 1994). *Diagnostic and statistical manual of mental disorders* (4<sup>th</sup> ed). Washington, D. C.: American Psychiatric Press.
- Anderson, G., & Brown, R. I. F. (1984). Real and laboratory gambling, sensation seeking and arousal. *British Journal of Psychology*, 75, 401-410.
- Antony, M. M., Bieling, P. J., Cox, B. J., Enns, M. W., & Swinson, R. P. (1998). Psychometric properties of the 42-item and 21-item versions of the depression anxiety stress scales in clinical groups and a community sample. *Psychological Assessment*, 10, 176-181.
- Arribas, M. P., & Martinez, J. J. (1991). Tratamiento individual de jugadores patológicos: Descripcion de casos. *Analisis y Modificacion de Conducta*, 17, 255-269.
- Atkinson, D. R., & Gim, R. H. (1989). Asian-American cultural identity and attitudes toward mental health services. *Journal of Counseling Psychology*, 36, 209-212.

- Baldwin, A. R., Oei, T.P.S. P., & Young, R. (1993). To drink or not to drink: The differential role of alcohol expectancies and drinking refusal self-efficacy in quantity and frequency of alcohol consumption. *Cognitive Therapy & Research*, 17, 511-530.
- Barnes, G. M., & Welte, J. W. (1986). Patterns and predictors of alcohol use among 7-12<sup>th</sup> grade students in New York State. *Journal of Studies in Alcohol*, 47, 53-62.
- Barrett, L., & Fraser, S. (1999). *The challenge of working with NESB communities experiencing gambling issues on the outskirts of Melbourne*. Paper presented at the 9<sup>th</sup> National Association of Gambling Studies Conference, Gold Coast, Australia.
- Beck, A. T., Wright, F. D., Newman, C. F., & Liese, B. S. (1993). *Cognitive therapy of substance abuse*. New York: Guilford Press.
- Bentler, P. M. (1990). Comparative fit indices in structural models. *Psychological Bulletin*, 88, 588-606.
- Bergh, C., & Kuhlhorn, E. (1994). Social, psychological and physical consequences of pathological gambling in Sweden. *Journal of Gambling Studies*, 10, 275-285.
- Betancourt, H., & Lopez, S. R. (1993). The study of culture, ethnicity, and race in American Psychology. *American Psychologist*, 48, 629-637.
- Bohn, M. J., Krahm, D. D., & Staehler, B. A. (1995). Development and initial validation of a measure of drinking urges in abstinent alcoholics. *Alcoholism: Clinical & Experimental Research*, 19, 600-606.
- Bollen, K. (1989). *Structural equations with latent variables*. New York: Wiley.
- Blaszczynski, A. P. (1995, May). *Workshop on the assessment and treatment of pathological gambling*. Australian and New Zealand Association of Psychiatry, Psychology and the Law Conference. Melbourne, Australia.
- Blaszczynski, A. P., & McConaghy, N. (1988). SCL-90 assessed psychopathology in pathological gamblers. *Psychological Reports*, 62, 547-552.
- Blaszczynski, A. P., & McConaghy, N. (1989). Anxiety and/or depression in the pathogenesis of addictive gambling. *The International Journal of Addictions*, 24, 337-350.
- Blaszczynski, A., McConaghy, N., & Frankova, A. (1990). Boredom proneness in pathological gambling. *Psychological Reports*, 67, 35-42.
- Blaszczynski, A., McConaghy, N., & Frankova, A. (1991). Control versus abstinence in the treatment of pathological gambling: A two to nine year follow up. *British Journal of Addiction*, 86, 299-306.

- Blaszczynski, A. P., Huynh, S., Dumlao, V. J., & Farrell, E. (1998). Problem gambling within a Chinese speaking community. *Journal of Gambling Studies*, 14, 359-380.
- Blaszczynski, A. P., Winter, S. W., & McConaghy, N. (1986). Plasmaendorphin levels in pathological gambling. *Journal of Gambling Behaviour*, 2, 3-14.
- Brady, M. (1995). Culture in treatment, culture as treatment. A critical appraisal of developments in addictions programs for indigenous North Americans and Australians. *Social Science & Medicine*, 41, 1487-1498.
- Bruce, A. C., & Johnson, J. E. V. (1994). Male and female betting behavior: New perspectives. *Journal of Gambling Studies*, 10, 183-198.
- Buehringer, G., & Konstanty, R. (1992). Intensive gamblers on German-style slot-machines. *Journal of Gambling Studies*, 8, 21-38.
- Carroll, D., & Huxley, J. (1994). Cognitive, dispositional, and psychophysiological correlates of dependent slot machine gambling in young people. *Journal of Applied Social Psychology*, 24, 1070-1083.
- Catalano, R. F., Morrison, D. M., Wells, E. A., Gillmore, M. R., Iritani, B., & Hawkins, J. D. (1992). Ethnic differences in family factors related to early drug initiation. *Journal of Studies on Alcohol*, 53, 208-217.
- Chantal, Y., Vallerand, R. J., & Vallières, E. F. (1994). On the construction and validation of the Gambling Motivation Scale (GMS). *Society & Leisure*, 17, 189-212.
- Chen, C. (1995). Counseling applications of RET in a Chinese cultural context. *Journal of Rational Emotive & Cognitive Behaviour Therapy*, 13, 117-129.
- Chen, C., Wong, J., Lee, N., Chan-Ho, M. W., Lau, J., & Fung, M. (1993). The Shatin Community Mental Health Survey in Hong Kong: II. Major findings. *Archives of General Psychiatry*, 50, 125-133.
- Chen, S. W., & Davenport, D. S. (2005). Cognitive-behavioral therapy with Chinese American clients: cautions and modifications. *Psychotherapy: Theory, Research, Practice, Training*, 42, 101-110.
- Cheung, F. M. (1986). Psychopathology among Chinese people. In M. H. Bond (Ed.), *The Psychology of the Chinese People* (pp. 171-212). Hong Kong: Oxford University Press.
- Cheung, Y. W. (1990-91). Ethnicity and alcohol/drug use revisited: A framework for future research. *The International Journal of the Addictions*, 25, 581-605.
- Cheung, Y. W. (1993a). Approaches to ethnicity: Clearing roadblocks in the study of ethnicity and substance use. *The International Journal of the Addictions*, 28, 1209-1226.

- Cheung, Y. W. (1993b). Beyond liver and culture: A review of theories and research in drinking among Chinese in North America. *The International Journal of the Addictions*, 28, 1497-1513.
- Chinese Family Service of Greater Montreal (1997). *Gambling and problem gambling among the Chinese in Quebec: An exploratory study*. Quebec, Canada: Author.
- Chun, K. M., Eastman, K. L., Wang, G. C. S., & Sue, S. S. (1998). In L. C. Lee and N. W. S Zane (Eds.), *Handbook of Asian American psychology* (pp. 457-483). Thousand Oaks, CA, US: Sage Publications.
- Ciarrocchi, J., & Richardson, R. (1989). Profile of compulsive gamblers in treatment: Update and comparisons. *Journal of Gambling Behaviour*, 5, 53-65.
- Clarke, D. (2004). Impulsiveness, locus of control, motivation and problem gambling. *Journal of Gambling Studies*, 20, 319-345.
- Clark, R., King, B., & Laylim, D. (1990). *Tin Sin Kuk (Heavenly Swindle)*. Asian Community Research Unit State Intelligence Group: New South Wales.
- Colon, I., & Wuollet, C. A. (1994). Homeland, gender and Chinese drinking. *Journal of Addictive Diseases*, 13, 59-67.
- Coman, G. J., Burrows, G. D., & Evans, B. J. (1997). Stress and anxiety as factors in the onset of problem gambling: Implications for treatment. *Stress Medicine*, 13, 235-244.
- Cotte, J. (1997). Chances, trances, and lots of slots: Gambling motives and consumption experiences. *Journal of Leisure Research*, 29, 380-406.
- Coulombe, A., Ladouceur, R., Desharnais, R., & Jobin, J. (1992). Erroneous perceptions and arousal among regular and occasional video poker players. *Journal of Gambling Studies*, 8, 235-244.
- Courtenay, B. (1996). Inside the house of cards. *The Sunday Age: News*. 7 January.
- Coventry, K. R., & Norman, A. C. (1997). Arousal, sensation-seeking and frequency of gambling in off-course horse racing bettors. *British Journal of Psychology*, 88, 671-681.
- Cozzetto, D. A., & Larocque, B. W. (1996). Compulsive gambling in the Indian Community: A North Dakota Case Study. *American Indian Culture & Research Journal*, 20, 73-86.
- Crisp, B. R., Thomas, S. A., Jackson, A. C., Thomason, N., Smith, S., Borrell, J., Ho, W., & Holt, T. (2000). *Research on Social Work Practice. Special Issue: Australian social work research*, 10, 229-242
- Cuadrado, M. (1999). A comparison of Hispanic and Anglo calls to a gambling help hotline. *Journal of Gambling Studies*, 15, 71-81.
- Custer, R. L., & Milt, H. (1985). *When luck runs out*. New York: Facts on File.

- Daghestani, A. N., Elenz, E., & Crayton, J. W. (1996). Pathological gambling in hospitalised substance abusing veterans. *Journal of Clinical Psychiatry*, 57, 360-363.
- Dai, Y., Zhang, S., Yamamoto, J., Ao, M., Belin, T. R., Cheung, F., & Hifumi, S. S. (1999). Cognitive behavioral therapy of minor depressive symptoms in elderly Chinese Americans: A pilot study. *Community Mental Health Journal*, 35, 537-542.
- Delfabbro, P.H. (2004). The stubborn logic of regular gamblers: Obstacles and dilemmas in cognitive gambling research. *Journal of Gambling Studies*, 20, 1-21.
- De La Rosa, M., Vega, R., & Radisch, M. A. (2000). The role of acculturation in the substance abuse behavior of African-American and Latino adolescents: Advances, issues, and recommendations. *Journal of Psychoactive Drugs*, 32, 33-42.
- Dickerson, M. G. (1993). Internal and external determinants of persistent gambling: Problems in generalising from one form of gambling to another. *Journal of Gambling Studies*, 9, 225-245.
- Dickerson, M. G., Baron, E. H., Hong, S. M. & Cottrell, D. (1996). Estimating the extent and degree of gambling related problems in the Australian population: A national survey. *Journal of Gambling Studies*, 12, 161-178.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49, 71-75.
- Dumont, M., & Ladouceur, R. (1990). Evaluation of motivation among video-poker players. *Psychological Reports*, 66, 95-98.
- Duvarci, I., & Varan, A. (1997). Reliability and validity study of the Turkish form of the South Oaks Gambling Screen. *Turk Psikiyatri Dergisi*, 12, 34-45.
- Duvarci, I., Varan, A., Coskunol, H., & Ersoy, M. A (1997). DSM-IV and the South Oaks Gambling Screen: Diagnosing and assessing pathological gambling in Turkey. *Journal of Gambling Studies*, 13, 193-206.
- Echeburua, E., Baez, C., & Fernandez-Montalvo, J. (1996). Comparative effectiveness of three therapeutic modalities in the psychological treatment of pathological gambling: Long-term outcome. *Behavioral & Cognitive Psychotherapy*, 24, 51-72.
- Echeburua, E., Fernandez-Montalvo, J., & Baez, C. (2000). Relapse prevention in the treatment of slot machine pathological gambling: Long term outcome. *Behaviour Therapy*, 31, 351-364.
- Ellias-Frankel, J., Oberman, A. & Ward, K. (2000). Addiction treatment for Jewish Americans and their families. In J. Krestan. *Bridges to Recovery*. New York: The Free Press.
- Escobar, J. I., Nervi, C. H., & Gara, M. (2000). Immigration and mental health: Mexican Americans in the United States. *Harvard Review of Psychiatry*, 8, 64-72.

- Exum, H. A., & Lau, E. Y., (1988). Counseling style preference of Chinese college students. *Journal of Multicultural Counseling and Development*, 16, 84-92.
- Fieldsteel, N., & Joyce, A. (2005). Does Anyone Want Group? In L. Motherwell & J. J. Shay (Eds.), *Complex dilemmas in group therapy: Pathways to resolution* (pp. 135-141). New York, NY, US: Brunner-Routledge.
- Finn, P. (1994). Addressing the needs of cultural minorities in drug treatment. *Journal of Substance Abuse Treatment*, 11, 325-337.
- Fischer, E. H., & Turner, J. I. (1970). Orientations to seeking professional help: Development and research utility of an attitude scale. *Journal of Consulting & Clinical Psychology*, 35, 79-90.
- Fong, D. K., & Ozorio, B. (2005). Gambling participation and prevalence estimates of pathological gambling in a far-east gambling city: Macao. *UNLV Gaming Research & Review Journal*, 9, 15-28.
- Friedland, N., Keinan, G., & Regev, Y. (1992). Controlling the uncontrollable: effects of stress on illusory perceptions of controllability. *Journal of Personality & Social Psychology*, 63, 923-931.
- Gaboury, A., & Ladouceur, R. (1989). Erroneous perceptions and gambling. *Journal of Social Behaviour & Personality*, 4, 411-420.
- Galletti, S. (June, 2002). Chinese culture and casino customer service. <http://www.urbino.net/bright.cfm?specificBright=CHINESE%20CULTURE%20AND%20CASINO%20CUSTOMER%20SERVICE>.
- GAMECS Project (1999). *Gambling among members of ethnic communities in Sydney: Report on "Problem gambling and Ethnic Communities" (Part 3)*. Sydney: Ethnic Communities' Council of NSW.
- Gambino, B., Fitzgerald, R., Shaffer, H. J., Renner, J., & Courtnage, P. (1993). Perceived family history of problem gambling and scores on SOGS. *Journal of Gambling Studies*, 9, 169-184.
- Garcia, J. L., Diaz, C., & Aranda, J. A. (1993). Diseases associated with pathological gambling. *Anales de Psicologia*, 9, 83-92.
- Gloria, A. M., & Peregoy, J. J. (1996). Counseling Latino alcohol and other substance users/abusers: Cultural considerations for counselors. *Journal of Substance Abuse Treatment*, 13, 119-126.
- Goh, Y. W., & Oei, T. P. S. (1998). Issues in the application of behavior and cognitive therapy in Aisa. In T. P. S. Oei (Ed.), *Behaviour therapy and cognitive behavior therapy in Asia*. Sydney: Edumedia

- Goodale, J. C. (1987). Gambling is hard work: Card playing in Tiwi society. *Oceania*, 58, 6-21.
- Grant, J. E., & Kim, W. S. (2002). Gender differences in pathological gamblers seeking medication treatment. *Comprehensive Psychiatry*, 43, 56-62.
- Grant, J. E., Kim, W. S., & Brown, E. (2001). Characteristics of geriatric patients seeking medication treatment for pathological gambling disorder. *Journal of Geriatric Psychiatry & Neurology*, 14, 125-129.
- Griffiths, M. D. (1991). Psychobiology of the near miss in fruit machine gambling. *Journal of Psychology*, 125, 347-357.
- Griffiths, M. (1993). Tolerance in gambling: an objective measure using the psychophysiological analysis of male fruit machine gamblers. *Addictive Behaviours*, 18, 365-372.
- Griffiths, M. D. (1994). The role of cognitive bias and skill in fruit machine gambling. *British Journal of Psychology*, 85, 351-369.
- Griffiths, M. D. (1995). The role of subjective mood states in the maintenance of fruit machine gambling behavior. *Journal of Gambling Studies*, 11, 123-135.
- Griffiths, M. D. (1996). *Adolescent gambling*. London: Routledge.
- Gupta, R., & Derevensky, J. (1997). Familial and social influences on juvenile gambling behavior. *Journal of Gambling Studies*, 13, 179-192.
- Hallebone, E. (1999). Women and the New Gambling Culture in Australia. *Society & Leisure*, 22, 101-125.
- Heine, M. K. (1991). The symbolic capital of honor: Gambling games and the social construction of gender in Tlingit Indian culture. *Play & Culture*, 4, 346-358.
- Henry, S. L. (1996). Pathological gambling: Etiologic considerations and treatment efficacy of eye movement desensitization/reprocessing. *Journal of Gambling Studies*, 12, 395-405.
- Hodgins, D. C., Currie, S. R., & el-Guebaly, N. (2001). Motivational enhancement and self-help treatments for problem gambling. *Journal of Consulting & Clinical Psychology*, 69, 50-57.
- Hodges, J. & Oei, TPS, (2007) Would Confucius benefit from Psychotherapy?: The Compatibility of Chinese Values and Cognitive Behavior Therapy, *Behavior Research and Therapy*, In Press.
- Hraba, J., & Lee, G. (1995). Problem gambling and policy advice: The mutability and relative effects of structural, associational and attitudinal variables. *Journal of Gambling Studies*, 11, 105-121.
- Hurh, W. M., & Kim, K. C. (1984). *Korean immigrants in America: A structural analysis of ethnic confinement and adhesive adaptation*. Rutherford, NJ: Fairleigh Dickinson University Press.

- Hyman, I., Vu, N., & Beiser, M. (2000). Post-migration stresses among Southeast Asian refugee youth in Canada: A research note. *Journal of Comparative Family Studies*, 31, 281-293.
- Jarrett, I. (1995). Casinos battle for Asia's high-rollers: gaming brings growing economic benefits to region's gambling centers. *Asian-Business*, 31, p. 48.
- Jerrell, V. M. (1989). The relationship between cultural values of Alaskan natives and substance abuse. *Dissertation Abstracts International*, 50, 471.
- Jordan, C. M., & Oei, T. P. S. (1989). Help-seeking behaviour in problem drinkers: A review. *British Journal of Addiction*, 84, 979-988.
- Joreskog, K.G., & Sorbom, D. (1993). *LISREL 8: Structural Equation Modelling with the SIMPLIS command language*. Chicago: Scientific Software International.
- Jourard, S. M. (1964). *The Transparent Self. Self-disclosure and well-being*. New York: Van Nostrand Reinhold.
- Kandel, D. B. (1982). Epidemiological and psychosocial perspectives on adolescent drug use. *Journal of American Academy of Child Psychiatry*, 21, 328-347.
- Kaplan, H. B. (1985). Testing a general theory of drug abuse and other deviant adaptations. *Journal of Drug Issues*, 15, 477-492.
- Kassinove, J. I. (1998). Development of the Gambling Attitude Scales: Preliminary findings. *Journal of Clinical Psychology*, 54(6), 763-771.
- Kassinove, J. I., Tsytsarev, S. V., & Davidson, I. (1998). Russian attitudes toward gambling. *Personality & Individual Differences*, 24, 41-46.
- Kim, B. S. K., Atkinson, D. R., & Yang, P. (1999). The Asian Values Scale: Development, factor analysis, validation, and reliability. *Journal of Counseling Psychology*, 46, 342-352.
- Kim, Y. (1996). Leaving Las Vegas. *A Magazine*, 42, 83-84.
- Kinzie, J. D., & Manson, S. M. (1987). The use of self-rating scales in cross-cultural psychiatry. *Hospital & Community Psychiatry*, 38, 190-195.
- Krestan, J. A. (2000). *Bridges to recovery: Addiction, family therapy, and multicultural treatment*. New York: The Free Press.
- Kua, E (1994). Chinese women who drink. *Addiction*, 89, 956-958.
- Ladd, G. T., & Petry, N. M. (2002). Gender differences among pathological gamblers seeking treatment. *Experimental & Clinical Psychopharmacology*, 10, 302-309.
- Ladouceur, R. (1991). Prevalence estimates of pathological gambling in Quebec. *Canadian Journal of Psychiatry*, 36, 732-734.
- Ladouceur, R., Arsenault, C., Dubé, D., Freeston, M. H., & Jacques, C. (1997). Psychological characteristics of volunteers in studies on gambling. *Journal of Gambling Studies*, 13, 69-84.

- Ladouceur, R., Boisvert, J. M., & Dumont, J. (1994). Cognitive-behavioral treatment for adolescent pathological gamblers. *Behavior Modification*, 18, 230-242.
- Ladouceur, R., Gaboury, A., Bujold, A., Lachance, N., & Tremblay, S. (1991). Ecological validity of laboratory studies of videopoker gambling. *Journal of Gambling Studies*, 7, 109-116.
- Ladouceur, R., & Sylvain, C. (1999). Treatment of pathological gambling: A controlled study. *Anuario de Psicologica*, 30, 127-135.
- Ladouceur, R., Sylvain, C., & Boutin, C. (2000). Pathological gambling. In M. Hersen & M. Biaggio (Eds.), *Effective brief therapies: A clinician's guide* (pp. 303-318). San Diego: Academic Press.
- Ladouceur, R., Sylvain, C., Boutin, C., Lachance, S., Doucet, C., & Leblond, J. (2003). Group therapy for pathological gamblers: A cognitive approach, *Behaviour, Research & Therapy*, 41, 587-596.
- Ladouceur, R., Sylvain, C., Duval, C., Gaboury, A., & Dumont, M. (1989). Correction of irrational verbalizations among video poker players. *International Journal of Psychology*, 24, 43-56.
- Lamberton A., & Oei, T. P. S. (1997). Problem gambling in adults: A review. *Clinical Psychology & Psychotherapy* 4, 84-104
- Langer, E. (1975). The illusion of control. *Journal of Personality and Social Psychology*, 32, 311-328.
- Le, H. (1999-2000). *In search for a culturally appropriate intervention model for problem gambling in the Vietnamese community in New South Wales*, Integration, no. 15.
- Lee, N. K., & Oei, T. P. S. (1993). The importance of alcohol expectancies and drinking refusal self-efficacy in the quantity and frequency of alcohol consumption. *Journal of Substance Abuse*, 5, 379-390.
- Lee, N. K., Oei, T. P. S., & Greeley, J. D. (1999). The interaction of alcohol expectancies and drinking refusal self-efficacy in high and low risk drinkers. *Addiction Research*, 7, 91-102.
- Legge, K. (1992). Pokies and gambling. *Weekend Review*, 6/7 April.
- Leong, F. T. (1986). Counseling and psychotherapy with Asian-Americans: Review of the literature. *Journal of Counseling Psychology*, 33, 196-206.
- Lesieur, H. R. (1994). Pathological gambling and chemical dependency: differences. *Bettor Times*, 3, 1-4.
- Lesieur, H. R., & Blume, S. B. (1987). The South Oaks Gambling Screen (SOGS): A new instrument for the identification of pathological gamblers. *American Journal of Psychiatry*, 144, 1184-1188.

- Lesieur, H. R., & Blume, S. B. (1990). Characteristics of pathological gamblers identified among patients on a psychiatric admissions service. *Hospital & Community Psychiatry, 41*, 1009-1012.
- Lesieur, H. R., & Blume, S. B. (1991). Evaluation of patients treated for pathological gambling in a combined alcohol, substance abuse, and pathological gambling treatment unit using the Addiction Severity Index, *British Journal of Addiction, 86*, 1017-1028.
- Lesieur, H. R., Cross, J., Frank, M., Welch, M., White, C. M., Rubenstein G., Moseley, K., & Mark, M. (1991). Gambling and pathological gambling among university students. *Addictive Behaviors: An International Journal, 16*, 517-527.
- Lesieur, H. R., & Heineman, M. (1988). Pathological gambling among youthful multiple substance abusers in a therapeutic community. *British Journal of Addiction, 83*, 765-771.
- Lesieur, H. R., & Rosenthal, R. J. (1991). Pathological gambling: A review of the literature (Prepared for the American Psychiatric Association Task Force on DSM-IV Committee on Disorders of Impulse Control Not Elsewhere Classified). *Journal of Gambling Studies, 7*, 5-37.
- Li, J., Wang, L., & Fischer, K. W. (2004). The organisation of Chinese shame concepts. *Cognition & Emotion, 18*, 767-797.
- Lin, M. C., Endler, N. S., & Kocovski, N. L. (2001). State and trait anxiety: A cross-cultural comparison of Chinese and Caucasian students in Canada. *Current Psychology: Development, Learning, Personality, Social, 20*, 95-111.
- Lin, Y. N. (2002). The application of cognitive-behavioral therapy to counseling Chinese. *American Journal of Psychotherapy, 56*, 46-58.
- Longshore, D., & Teruya, C. (2006). Treatment motivation in drug users: A theory-based analysis. *Drug & Alcohol Dependence, 81*, 179-188.
- Lorenz, V. C., & Shuttlesworth, D. E. (1983). The impact of pathological gambling on the spouse of the gambler. *Journal of Community Psychology, 11*, 67-76.
- Loue, S. (1998). *Handbook of immigrant health*. New York, NY, US: Plenum Press.
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: comparison of the Depression Anxiety Stress Scales (DASS) with the Beck depression and anxiety inventories. *Behaviour Research & Therapy, 33*, 335-343.
- Lowenfeld, B. H. (1979). *Personality dimensions of a pathological gambler*. Unpublished doctoral dissertation, Kent State University, Kent, Ohio.
- Luk, C. L., & Bond, M. H. (1992). Chinese lay beliefs about the causes and cures of psychological problems. *Journal of Social & Clinical Psychology, 11*, 140-157.

- Marsh, H.W. (1993). The multidimensional structure of academic self-concept: Invariance over gender and age. *American Educational Research Journal*, 30, 841-860.
- Marsh, H., Hau, K. T., Balla, J., & Grayson, D. (1988). Is more ever too much? The number of indicators per factor in factor analysis. *Multivariate Behavioral Research*, 33, 89-100.
- McCallum, F., & Blaszczynski, A. (2002). Pathological gambling and comorbid substance use. *Australian & New Zealand Journal of Psychiatry*, 36, 411-415.
- McConaghy, N., Blaszczynski, A., & Frankova, A. (1991). Comparison of imaginal desensitisation with other behavioural treatments of pathological gambling: A two- to nine-year follow up. *British Journal of Psychiatry*, 159, 390-393.
- McConaghy, N., Armstrong, M. S., Blaszczynski, A., & Allcock, C. (1983). Controlled comparison of aversive therapy and imaginal desensitization in compulsive gambling. *British Journal of Psychiatry*, 142, 366-372.
- McConaghy, N., Armstrong, M. S., Blaszczynski, A., & Allcock, C. (1988). Behaviour completion versus stimulus control in compulsive gambling. *Behaviour Modification*, 12, 371-384.
- McCormick, R. M. (2000). Aboriginal traditions in the treatment of substance abuse. *Canadian Journal of Counseling*, 34, 25-32.
- McCormick, R. A., Russo, A. M., Ramirez, L. F., & Taber, J. I. (1984). Affective disorders among pathological gamblers seeking treatment. *American Journal of Psychiatry*, 141, 215-218.
- McDonald, R., & Steel, Z. (1997). *Immigrants, and mental health: An epidemiological analysis*. Transcultural Mental Health Center, Sydney.
- McNeilly, D. P., & Burke, W. J. (2000). Late life gambling: The attitudes and behaviors of older adults. *Journal of Gambling Studies*, 16, 393-415.
- Mendoza, R. H. (1989). An empirical scale to measure type and degree of acculturation in Mexican-American adolescents and adults. *Journal of Cross-Cultural Psychology*, 20, 372-385.
- Miller, G., Yang, J., Chen, M. (1997). Counseling Taiwan Chinese in America: Training issues for counsellors. *Counselor Education & Supervision*, 37, 22-31.
- Minas, I., Silove, D., & Kunst, P. (1993). *Mental health for multicultural Australia: A national strategy*. Victorian Transcultural Psychiatry Unit, Melbourne.
- Monti, P. M., Rohsenow, D. J. & Hutchinson, K. E. (2000). Toward bridging the gap between biological, psychobiological and psychosocial models of alcohol craving. *Addiction*, 95, S229-S236.
- Murray, J. B. (1993). Review of research on pathological gambling. *Psychological Bulletin*, 72, 791-810.

- Natera-Rey, G., Mora-Rios, J. & Tiburcio-Sainz, M. (1999). Barriers in the search for social support for families with addiction problems. *Salud-Mental*, 22, 114-120.
- Nemoto, T., Aoki, B., Huang, K., Morris, A., Nguyen, H. & Wong, W. (1999). Drug use behaviors among Asian drug users in San Francisco. *Addictive Behaviors*, 24, 823-838.
- Newcomb, M. D., & Bentler, P. M. (1986). Substance use and ethnicity: Differential impact of peer and adult models. *Journal of Psychology*, 120, 83-95.
- Ng, K. S. (1996). Chinese-Americans' perception of therapy: A qualitative study. *Dissertation Abstracts International Section A: Humanities and Social Sciences*, 56, 3758.
- Nower, L., Derevensky, J. L., & Gupta, R. (2004). The relationship of impulsivity, sensation seeking, coping, and substance use in youth gamblers. *Psychology of Addictive Behaviors*, 18, 49-55.
- Oei, T. P. S. (1998) *Behavior therapy and Cognitive Behavior Therapy in Asia*. (Ed.). Sydney: Edumedia.
- Oei, T. P. S., & Burrow, T. (2000). Alcohol expectancy and drinking refusal self-efficacy: A test of specificity theory. *Addictive Behaviors*, 25, 499-507.
- Oei, T. P. S., & Gordon, L.M. (2006-submitted for publication). The Prediction of Gambling Abstinence and Relapse in members of Gamblers Anonymous.
- Oei, T. P. S., & Hodges, (2005, December). *Can a knife and fork be used to eat fried rice? - The compatibility of Cognitive-Behaviour Therapy and Chinese culture*. Paper presented at the Innovations and Reproductions in Cultures and Societies Conference, Vienna.
- Oei, T. P. S., Lin, C. D., & Raylu, N. (2006c). Relationship between Gambling Cognitions, Psychological States and Gambling: A Cross-Cultural Study of Chinese and Caucasians in Australia *Journal of Cross Cultural Psychology* ( In Press)
- Oei, T. P. S., Lin, C. D., & Raylu, N. (2006a). Validation of the Chinese version of the Gambling Related Cognitions Scale (GRCS), *Journal of Gambling Studies*, In Press
- Oei, T. P. S., Lin, C. D., & Raylu, N. (2006b). Validation of the Chinese version of the Gambling Urges Scale (GUS-C), *International Gambling Studies*, ( In Press)
- Oei, T. P. S., & Raylu, N. (2004). Familial influence on offspring gambling: A possible mechanism for transmission of gambling behavior in families. *Psychological Medicine*, 34, 1279-1288.
- Oetting, E. R., & Beauvais, F. (1990-1991). Orthogonal cultural identification theory: The cultural identification of minority adolescents. *International Journal of the Addictions*, 25, 655-685.
- Ohtsuka, K., Bruton, E., Deluca, L., & Borg, V. (1997). Sex differences in pathological gambling using gambling machines. *Psychological Reports*, 80, 1051-1057.

- Ozorio, B., & Fong, D.K. (2004). Chinese casino gambling behaviors: Risk taking in casinos vs. investments. *UNLV Gaming Research & Review Journal*, 8, 27-38.
- Pang, E. K. (2004) Substance abuse in a Chinese-American family: A qualitative analysis of family attitudes and experiences. *Dissertation Abstracts International: Section B: The Sciences & Engineering*, 65, 2644.
- Papineau, E. (2005). Pathological gambling in Montreal's Chinese community: An anthropological perspective. *Journal of Gambling Studies*, 21, 157-178.
- Paton-Simpson, G.R., Gruys, M.A., & Hannifin, J. B. (2002). *Problem Gambling Counseling in New Zealand 2001 National Statistics*. Palmerston North, NZ: Problem Gambling Purchasing Agency.
- Peacock, R. B., Day, P. A., & Peacock, T. D. (1999). Adolescent gambling on a Great Lakes Indian Reservation. *Journal of Human Behavior in the Social Environment*, 2, 5-17.
- Potenza, M. N., Steinberg, M. A., Sukudlarski, P., Fulbright, R. K., Lacadie, C. M., Wilber, M. K., Rounsaville, B. J., Gore, J. C., & Wexler, B. E. (2003). Gambling Urges in Pathological Gambling. *Archives of General Psychiatry*, 60, 828-836.
- Productivity Commission Report (PCR, 1999). *Australia's Gambling Industries: Final Report*. Canberra: Government Press.
- Raylu, N., & Oei, T. P. S. (2002). Pathological gambling: A comprehensive review. *Clinical Psychology Review*, 22, 1009-1061.
- Raylu N., & Oei, T. P. S. (2006a) *A cognitive behavioral therapy program for problem gambling: Therapists manual*. University of Queensland, Brisbane, Australia.
- Raylu N., & Oei, T. P. S. (2006b) *A cognitive behavioral therapy program for problem gambling: Group therapy manual*. University of Queensland, Brisbane, Australia
- Raylu, N., & Oei, T. P. S. (2004a). Role of culture in gambling and problem gambling. *Clinical Psychology Review* 23, 1087-1114.
- Raylu, N., & Oei, T. P. S. (2004b). The Gambling Related Cognitions Scale (GRCS): Development, confirmatory factor validation and psychometric properties. *Addiction*, 99, 757-769.
- Raylu, N., & Oei, T. P. S. (2004c). The Gambling Urge Scale (GUS): Development, confirmatory factor validation and psychometric properties. *Psychology of Addictive Behaviors*, 18, 100-105.
- Rosenthal, R. J. (1989). Pathological gambling and problem gambling: Problems of definition and diagnosis. In H. J. Shaffer & S. A. Stein (Eds.), *Compulsive gambling: Theory, research, and practice* (pp. 101-125). Lexington, MA, US: Lexington Books.

- Russo, A. M., Taber, J. I. McCormick, R. A. & Ramirez, L. F. (1984). An outcome study of an inpatient treatment program for pathological gamblers. *Hospital & Community Psychiatry*, 35, 823-827.
- Sabogal, F., Otero-Sabogal, R., Perez-Stable, E. J., Marin, B. V. et al. (1989). Perceived self-efficacy to avoid cigarette smoking and addiction: Differences between Hispanics and non-Hispanic Whites. *Hispanic Journal of Behavioral Sciences*, 11, 136-147.
- Saunders, J. B., Aasland, O.G., Babor, T. F., de la Fuente, J. R., & Grant, M. (1993). Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption: II. *Addiction*, 88, 791-804.
- Sexton, L. (1987). The social construction of card playing among the Daulo. *Oceania*, 58(1), 38-46.
- Sharpe, L. (2002). A reformulated cognitive-behavioral model of problem gambling. A biopsychological perspective. *Clinical Psychology Review*, 22, 1-25.
- Sharpe, L & Tarrier, N. (1992). A cognitive behavioral treatment approach for problem gambling. *Journal of Cognitive Psychotherapy: An International Quarterly*, 6, 193-203.
- Sharpe, L., Tarrier, N., Schotte, D., & Spence, S. H. (1995). The role of autonomic gambling arousal in problem gambling. *Addiction*, 90, 1529-1540.
- Shepherd, R. M., Ghodse, H., & London, M. (1998). A pilot study examining gambling behavior before and after the launch of the National Lottery and scratch cards in the UK. *Addiction Research*, 6, 5-12.
- Shweder, R. A. (1991). *Thinking through cultures: Expeditions in cultural psychology*. Cambridge, MA, USA: Harvard University Press.
- SPSS, Inc. (1988). *SPSS user's guide* (3<sup>rd</sup> ed.). Chicago, IL: SPSS, Inc.
- Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research*, 25, 173-180.
- Stinchfield, R. (2000). Gambling and correlates of gambling among Minnesota public school students. *Journal of Gambling Studies*, 16, 153-173.
- Sue, D. (1997). Counseling strategies for Chinese Americans. In C. C. Lee (ED.), *Multicultural issues in counseling: New approaches to diversity* (2<sup>nd</sup> ed., pp. 173-187). Alexandria: VA: American Counseling Association.
- Sue, D. W., & Sue, D. (1999). Counseling Asian Americans. In D. W. Sue D. Sue, *Counseling the culturally different: Theory and practice* (pp. 255-271). New York: Wiley.
- Sue, S., & McKinney H. (1975). Asian Americans in community mental health care system. *American Journal of Orthopsychiatry*, 45, 111-118.

- Sylvain, C., Ladouceur, R., & Boisvert, J. M. (1997). Cognitive and behavioral treatment of pathological gambling: a controlled study. *Journal of Consulting & Clinical Psychology, 65*, 727-732.
- Symposium Paper (1998). *Investigating Solutions: Assisting Problem Gamblers in the Asian Community*, South Western Sydney Area Health Service & Psychiatry Research & Teaching Unit Impulse Control Research Unit, Liverpool.
- Taber, J. I., McCormick & Ramirez, L. R. (1987). The prevalence and impact of major stressors among pathological gamblers. *International Journal of the Addictions, 22*, 71-79.
- Tata, S. P., & Leong, F. T. L. (1994). Individualism-collectivism, social-network orientation, and acculturation as predictors of attitudes toward seeking professional psychological help among Chinese Americans. *Journal of Counseling Psychology, 41*, 280-287.
- Toneatto, T. (1999). Cognitive psychopathology of problem gambling. *Substance Use and Misuse, 34*, 1593-1604.
- Toneatto, T., Blitz-Miller, T., Calderwood, K., Dragonetti, R., & Tsanos, A. (1997). Cognitive distortions in heavy gambling. *Journal of Gambling Studies, 13*, 253-266.
- Trevorrow, K., & Moore, S. (1998). The association between loneliness, social isolation and women's electronic gaming machine gambling. *Journal of Gambling Studies, 14*, 263-284.
- True, R. (1975). Mental health services in the Chinese American community. In W Hikawa, N. & Hayashi N. *Service Delivery in Pan Asian Communities*. California: Pacific Asian Coalition.
- Tsang, E. W. K. (2004). Toward a Scientific Inquiry into Superstitious. *Business Decision-Making. Organization Studies, 25*, 923-946.
- Uba, L. (1982). Meeting the mental health needs of Asian Americans: Mainstream or segregated services. *Professional Psychology, 13*, 215-221.
- Unger, J. B., Baezconde-Garbanati, L., Shakib, S., Palmer, P. H., Nezami, E., & Mora, J. (2004). A cultural psychology approach to “drug abuse” prevention. *Substance Use & Misuse, 39*, 1779-1820.
- Varma, S. C., & Siris, S. G. (1996). Alcohol abuse in Asian Americans. Epidemiological and treatment issues. *American Journal of Addictions, 5*, 136-143.
- Victorian Casino and Gambling Authority (VCGA, 1999). *Seventh Survey of Community Gambling Patterns and Perceptions*. Melbourne, Victoria.
- Victorian Casino and Gaming Authority (VCGA, 2000). *The impact of gaming on specific cultural groups report*. Melbourne, Victoria.
- Volberg, R. A. (1996). Prevalence Studies of Problem gambling in the United States. *Journal of Gambling Studies, 12*, 111-128.

- Volberg, R. A., & Abbott, M. W. (1997). Gambling and problem gambling among indigenous peoples. *Substance Use & Misuse*, 32, 1525-1538.
- Volberg, R. A., & Steadman, H. J. (1992). Accurately depicting pathological gamblers: Policy and treatment implications. *Journal of Gambling Studies*, 8, 401-412.
- Walker, M. B. (1992a). Irrational thinking among slot machine players. *Journal of Gambling Studies*, 8, 245-261.
- Walker, M. B. (1992b). *The Psychology of Gambling*. Oxford, England UK: Pergamon Press.
- Walker, M. B., & Dickerson, M. G. (1996). The prevalence of problem and pathological gambling: A critical analysis. *Journal of Gambling Studies*, 12, 233-249.
- Wallisch, L. (1996). *Gambling in Texas: 1995 Surveys of adult and adolescent gambling behavior*. Austin, Texas: Texas Commission on Alcohol and Drug Abuse.
- Wardman, D., el-Guebaly, N., & Hodgins, N. (2001). Problem and pathological gambling in North American Aboriginal populations: A review of the empirical literature. *Journal of Gambling Studies*, 17, 81-100.
- Weber, T. R. (1996). The influence of acculturation on attitudes toward alcohol and alcohol use within the Punjabi community: An exploratory analysis. *Substance Use & Misuse*, 31, 1715-1732.
- Weich, S., Sloggett, A., & Lewis, G. (2001). Social roles and the gender difference in rates of the common mental disorders in Britain: A 7-year, population based cohort study. *Psychological Medicine*, 31, 1055-1064.
- Welte, J. W., Barnes, G. M., Wieczorek, W. F., Tidwell, M. C., & Parker, J. (2002). Gambling participation in the U.S. – Results from a national survey. *Journal of Gambling Studies*, 18, 313-337.
- Westermeyer, J. (1999). The role of cultural and social factors in the cause of addictive disorders. *The Psychiatric Clinics of North America*, 22, 253-273.
- Wong, I. L. K., & So, E. M. T. (2003). Prevalence estimates of problem and pathological gambling in Hong Kong. *American Journal of Psychiatry*, 160, 1353-1354.
- Wong, J., & Samson, T. (2002). The face of Chinese migrants' gambling: A perspective from New Zealand. eGambling: the electronic journal of gambling issues. <http://www.camh.net/egambling/issue9/opinion/wong>.
- Wurzman, I., Rounsaville, B. J., & Kleber, H. D. (1982-1983). Cultural values of Puerto Rican opiate addicts: An exploratory study. *American Journal of Drug & Alcohol Abuse*, 9, 141-153.

- Wynne, H., Smith, G., & Jacobs, D. F. (1996). *Adolescent gambling and problem gambling in Alberta*. Edmonton, Alberta: Alberta Alcohol and Drug Abuse Commission.
- Xie, D. (2005). Personality factors as cultural-specific predictors of anxiety among mainland Chinese and Caucasian American college students. *Dissertation Abstracts Internal: Section B: The Sciences & Engineering*, 65, 4888.
- Yang, R. L. (1992). Rational emotive group therapy applied to sense of inferiority among university students. *Chinese Mental Health Journal*, 6(2), 74-76.
- Yeh, E., Hwe, H. & Lin, T. (1995). Mental disorders in Taiwan: Epidemiological studies of community populations. In T. Lin, W. Tseng & E. Yeh (Eds.), *Chinese Societies and Mental*. Hong Kong: Oxford University Press.
- Yip, K. (2003). Traditional Chinese religious beliefs and superstitions in delusions and hallucinations of Chinese schizophrenic patients. *International Journal of Social Psychiatry*, 49, 97-111.
- Zane, N. W. S. & Huh-Kim, J. (1998). Addictive Behaviors. In L. C. Lee. & N. W. S. Zane, (Ed.). *Handbook of Asian American Psychology* (pp. 527-554). Thousand Oaks, CA, USA: Sage Publications, Inc.
- Zhang, N. (2000). Acculturation and counseling expectancies: Asian international students' attitudes toward seeking professional psychological help. (Asian students). *Dissertation Abstracts International Section A: Humanities & Social Sciences*, 60, 2392.
- Zimmer, L. (1986). Card playing among the Gende: A system for keeping money and social relationships alive, *Oceania*, 56, 245-263.
- Zitzow, D. (1996a). Comparative study of problematic gambling behaviors between American Indian and non-Indian adolescents within and near a northern plains reservation. *American Indian & Alaska Native Mental Health Research*, 7(2), 14-26.
- Zitzow, D. (1996b). Comparative study of problematic gambling behaviors between American Indian and non-Indian adults in a northern plains reservation. *American Indian & Alaska Native Mental Health Research*, 7, 27-41.
- Zuckerman, M. (1999). *Vulnerability to psychopathology: A biosocial model*. Washington, DC, US: American Psychological Association.