



The University of Sydney

FINAL REPORT

Differences in attitudes toward money between subgroups of gamblers:
Implications for smart card technologies and an exploration of the Tool and
Drug Theories of Money in gambling

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by

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Executive Summary

The potential to win money is the core feature and primary factor underlying the capacity of gambling to generate excitement and arousal. Given that money (winning) is a primary motivator for gambling, it is surprising that no studies have investigated differences in attitudes and perceptions to money and its perceived value among different sub-sets of gamblers or the relationship between such attitudes to problem gambling.

In gambling, money acts as an incentive and a second order reinforcer. The acquisition of money is pursued not because of its intrinsic value as an object (piece of paper or metal object) but rather for what it represents, that is, an opportunity to purchase desired goods and services. According to the Tool Theory of Money (Lea & Webley, 2006), money represents an instrumental ‘means to an end’, that is, the incentive to gamble is driven by the motive to obtain money to purchase things.

It is puzzling therefore, to observe that problem gamblers fail to use gambling-acquired funds to purchase goods and services but re-direct it into further gambling. Thus, gambling appears to be the product ‘purchased’ (secondary reinforcer). The excitement of winning appears to be the primary reinforcing agent and not the fact that it represents an opportunity to purchase something of value at a later time.

An alternative explanation is the Drug Theory of Money. According to Lea and Webley (2006), money is a powerful motivator at the cognitive level partly because it has the capacity “*to mimic the neural, behavioural, or psychological action of some other natural incentive*” (p.8). They refer to a number of studies in the field of neuro-economics in which brain imaging methodologies have shown that specific brain regions are activated by money-related stimuli and that money incentives stimulate cortical reward pathways. This theory argues that there is some inherent property of money that is intrinsically rewarding and that the incentive to gamble is linked to the stimulation of reward centers of the brain rather than to a motivation of personal economic gain.

Accordingly, the aim of this study was to conduct an exploratory evaluation of attitudinal differences toward money held by gamblers and problem gamblers, to evaluate the potential relevance of attitudes to smart card-based technologies and to explore the relevance of the Tool Theory and Drug Theory of Money in relation to gambling.

A sample of 127 patrons attending four venues in the Brisbane metropolitan region agreed to participate in the study. A battery of questionnaires assessing attitudes to money, the Canadian Problem Gambling Index (CPGI) to assess problem gambling status, and a brief questionnaire designed to elicit attitudes to smart card technologies were administered to patrons in the gaming area of venues.

The following findings were obtained:

- Approximately 15% of the participants met criteria for problem gambling on the CPGI.
- Men (74%) were overrepresented in the sample.
- There were no significant gender or age differences between the various CPGI subcategories of gamblers: non-problem, low risk, moderate risk and problem gamblers.
- The median expenditure reported by participants was \$20 with an average of \$71 per session.
- Non-problem gamblers gambled significantly less amounts (\$32) over three sessions per month compared to problem gamblers who spent \$185 over seven sessions per month.
- Moderate and problem gamblers reported a preference for electronic gaming machine play and betting on horses while non-problem gamblers indicated lotteries as their preferred form.
- Compared to non-problem gamblers, moderate and problem gamblers reported a greater degree of motivation to play electronic gaming machines for purposes of excitement/entertainment, income generation and emotional escape.
- Problem gamblers were less likely to endorse any form of pre-commitment or limit setting prior to play.
- Problem gamblers compared to non-problem gamblers were more likely to report a preference to allow the situation to dictate how much they would spend gambling based on the outcome of each session.
- Low risk gamblers were more likely to set and adhere to limits established prior to commencement of sessions.
- Problem gamblers expressed a strong reticence to the use of smart cards unless there were options available to 'top up' or access supplementary cards during sessions of play.
- In general, women were less likely to endorse the use of smart cards.
- Problem gamblers were more likely to view money as a symbol of power, prestige and success rather than a medium through which they could acquire material benefits.

- Problem gamblers were more anxious about money but not about having sufficient money to meet their needs suggesting psychological factors rather than acquiring wealth play an instrumental role in motivating problem gamblers.
- The data supported the Drug Theory of Money in the sense that attitudes to money reflected power, prestige, fantasies of wealth and influence as important reinforcing elements associated with gambling.

In summary, it was concluded that attitudes to money revealed that problem gamblers are motivated by the desire to win money to enhance their self-image and confidence in an attempt to boost their egos and meet narcissistic demands. Electronic gaming machine problem gamblers appear to seek reinforcing psychological rewards rather than material goods and services that money can offer. This adds a new dimension to understanding the aetiology of electronic gaming machine problem gambling that complements the cognitive belief schemas, behavioural learning and addiction models of gambling: that is, attitudes to money represent a self-gratifying desire for power, prestige and satisfaction of personal needs related to self-image and fantasies of wealth that motivates the gambler to persist in the face of adverse consequences. While winning money represents the core of gambling, for problem gamblers money provides psychological satisfaction rather than material benefits. The findings apply to electronic gaming machines but may differ for lottery players where winning large prizes for minimal outlay may be more consistent with the Tool Theory of Money.

1.0 Background

Gambling is an agreement between one or more people to risk an item of value on the outcome of an event that is determined to a large part by chance. Historical anecdotes describe a diverse set of goods and chattels of value ranging from personal possessions, land and related assets, slaves, wives and daughters, and extending to life and death (France, 1902; Scarne, 1975) and money. Money, in its various physical (coins, notes, and cheques) and nominal (electronic) forms represent the basic currency of exchange within contemporary commercial gambling activities.

Epidemiological studies indicate a past twelve-month general adult community prevalence rate of 0.2% to 2.1% for pathological gambling (Shaffer, LaBrie, LaPlante, Nelson, & Stanton, 2004; Stucki & Rhys-Middel, 2007) with adolescence rates almost twice that for adults (Shaffer & Hall, 2001). These figures are similar across international jurisdictions with indications that population prevalence rates for pathological gambling are beginning to plateau and possibly decreasing (Abbott, 2006). Pathological gambling is associated with low socio-economic status with young males, high school dropouts and the unemployed remaining most at-risk (Shaffer, LaBrie, LaPlante, Nelson, & Stanton, 2004).

Pathological gambling is classified as a psychiatric disorder within the category of Disorder of Impulse Control Not Otherwise Specified in the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2000). To qualify for a diagnosis of pathological gambling, five of ten diagnostic criteria items need to be met. Items refer to lifetime, past twelve or six month presence of excessive preoccupation, tolerance, withdrawal, impaired control and negative consequences across several domains of psychosocial functioning. The three most common psychometric instruments used to identify pathological gamblers are the South Oaks Gambling Screen (Lesieur & Blume, 1987), Canadian Problem Gambling Index (Ferris & Wynne, 2001) and National Opinion Diagnostic Screen (National Opinion Research Center, 1999).

However, in the literature, a myriad of terms is used to describe excessive gambling behaviours: problem, pathological, compulsive neurotic, and disordered among others (Blaszczynski & Nower, 2002). 'Problem' and 'pathological' are perhaps the two most commonly used. It is salient to acknowledge that the terms 'problem' and 'pathological' gambler are not synonymous but hold important conceptual distinctions. Problem gambler is a term that includes individuals who gamble to excess but who do not manifest symptoms of impaired control evidenced by repeated

unsuccessful attempts to cease. Pathological gamblers can be distinguished from problem gamblers by the presence of impaired control manifested by repeatedly gambling more time and money than intended, and by the inability to cease despite repeated attempts. For purposes of this study, the term 'pathological' is used to refer to those individuals meeting diagnostic criteria, and the term 'problem' to those experiencing gambling related problems but not meeting criteria for pathological gambling.

Money is an integral and ubiquitous element of commerce and everyday life. It permeates not only every aspect of our social, political and economic life, but also our sense of psychological and financial well-being. It affects spending habits, work performance, political aetiology, charitable giving, and attitudes towards climate change (Roberts & Sepulveda, 1999). Within western capitalist-oriented societies, the acquisition of money is an important driving force motivated by the belief that wealth brings with it a sense of financial security, subjective well-being, status, power and happiness. As Goldberg and Lewis (1978) observed, money appears to have four symbolic values: status, respect from others, freedom of choice, luxury of time. Cross-sectional studies consistently report a positive correlation between concepts of subjective well being and personal income, although this is not an invariable relationship since an increasing emphasis on materialism results in deleterious effects on happiness and stress (Diener & Seligman, 2004).

Although the Protestant Work Ethic is founded on the notion that people should acquire just rewards and benefits for their labour and efforts, for sectors of the working class, socially disadvantaged and indeed the general population, gambling represents an activity through which wealth can be rapidly and easily acquired. Epidemiological studies reveal that gambling is common with approximately 70% to 90% of adults engaging in the activity at least once annually, lotteries being most popular (60% purchasing lottery ticket on one form or another), and 40% gambling at least weekly on at least one form (see Delfabbro, 2007, Petry, 2005 and Productivity Commission, 1999 for reviews). Despite the popularity of lotteries, electronic gaming machines appear to be disproportionately related to government taxation revenue from gambling and problem gambling (Productivity Commission, 1999; Woods & Williams, 2004). While gaming machines account for approximately 50% of total revenue from gambling, the proportion from problem gamblers variably accounts for 23% to 41% in North America (in Canada the figure ranges from 6% to 38% depending on the province), 19% in New Zealand, and around 30% to 40% in Australia (Productivity Commission, 1999).

However, it is unclear whether the motivations to purchase lottery tickets and to play electronic machines are similar and linked to the prospect of winning large prize pools, or whether limited access to alternative forms of leisure and recreational facilities leads people to attend multipurpose social/recreational venues where electronic gaming machines are co-located with entertainment (shows, revues, live music), alcohol, sporting and food and beverage amenities.

Given the structure of lotteries where there is a time delay between purchase and outcome, it could be argued at face value that the majority of lottery players are predominantly motivated to purchase tickets to win substantially large prize pools rather than for entertainment purposes. Here, lottery represents value for money in the sense that one could gain a life-changing win for a modest outlay. In contrast, most electronic gaming machine players could be seen as being motivated to play principally, but not exclusively, for entertainment purposes, either attending the venue to specifically gamble, or for other purposes and only incidentally to gamble as a result of its availability.

For those playing electronic gaming machines, the prospect of winning produces the excitement associated with play; the arousal associated with risk is the key reinforcing component, with money relegated to a secondary element that is, allowing further gambling. This is consistent with the finding of an almost linear relationship between the distribution of electronic gaming machines and socially disadvantaged regions (Productivity Commission, 1999). In addition, the structural and situational characteristics of gaming machines are presumed to be highly reinforcing, resistant to decay and produce almost hypnotic or dissociative states that contribute to persistence in play (Griffiths, 1993; Parke & Griffiths, 2007). People access clubs and hotels because they are affordable, resulting in a greater degree of exposure to electronic gaming machines and the risk of problem gambling: but do they gamble for money, for entertainment or a combination/interaction of both? In other words, are people motivated to gamble for money to enhance personal wealth or, like other recreational activities, purely for the satisfaction of the excitement and enjoyment it generates? This has relevance for psychological explanations for problem gambling. On the one hand, cognitive models postulate irrational beliefs result in overestimates of the probability of winning, while emotional dysregulation frameworks focus on the need for 'action' and escape through dissociation in explaining the primary reasons for persistence in the face of continued losses.

Equally importantly from the perspective of the psychology of gambling is the issue of whether the initial motivation to gamble differs for recreational compared to problem gamblers, and whether differences in attitudes toward money (and its presumed effect on financial security, self-esteem and well being) play a role in the transition from recreational to problem gambling.

To date, no published studies have explored the relationship between attitudes to money and gambling. The aim of this study is to gather some preliminary data to determine whether this question has merit warranting further research.

1.1 The concept of money

The Concise Oxford Dictionary (1978) defines the term money in the following manner: “Current medium of exchange in form of portable pieces of metal; this and promissory documents representing it...; government and bank notes; property viewed as convertible into money...” (p.704). Money, therefore, can be considered as any token or other object that functions as a medium of exchange that is socially and legally accepted in payment for goods and services and in settlement of debts. These tokens are generally represented by, but not limited to, coins, notes, and cheques. In today’s technological age, the exchange of money can be carried out by traditional means of the physical transfers of money from one person to another, or, alternatively, electronically from one account to another through the internet (on-line banking), telephones or at point-of-sale terminals (EFTPOS). Smart cards, debit and credit cards substitute for physical money carried in wallets and purses, and increasingly represent the preferred mode of commercial exchange, except perhaps for purchasing minor items.

Most research on money has focused on its role in the domains of economics, management, marketing, and industrial and organisational psychology. From a functional perspective, money not only represents a medium of exchange, a standard of value (standardizing the value of goods and services for exchange), and a store of value (index of wealth), but also the symbolic medium that reflects individual achievements and recognition, status and respect, freedom and control, and power (Mitchell & Mickel, 1999). In an series of studies designed to explore the symbolic meaning of money, Rose and Orr (2007) identified four key dimensions: (i) status related to the extent that an individual perceives money as an index of prestige; (ii) achievement perceived as a symbol of accomplishments and sign of success; (iii) worry and anxiety linked to the extent that a person feels anxious about money; and (iv) security, reflecting an individual’s propensity to save money to secure financial safety. These authors suggested that the symbolic meaning of money varied

according to the amount of money people had and their developmental life stage, and acted as to mediate personal values and specific consumer behaviours.

Rose and Orr (2007), and others (Furnham & Argyle, 1998; Mitchell & Mickel, 1999), concluded that money is seen as a powerful motivator that shapes behaviours, moral values and actions, self-esteem and social status. How money and attitudes to money act to influence behaviours and psychological well-being, therefore, is of central relevance to the arena of gambling, an activity focused exclusively on the exchange of money based not on economic productivity or value but simply on chance-determined outcomes. The concept of money contains affective, symbolic and behavioural components (Mitchell & Mickel, 1999) and can be seen as paradoxically good, important, valuable and attractive, or alternatively, evil, shameful, useless and dishonest. Despite this ambivalence, money symbolises achievement, status, and respect, freedom and personal identity and, consequently, acts as a motivator leading people in the quest to seek out opportunities to save, invest and maximise wealth.

Gambling is about winning money, and attitudes to money can be postulated to represent an important determinant of motivation and governance over the intensity to gamble. Problem gambling behaviour results, in part, from misconceptions that gambling is a source of income that has the potential to change one's life dramatically and without effort (Walker, 1992). This is one of the fundamental cognitive distortions that are hypothesized to account for persistence in gambling.

Little is known about the psychology of money within the sphere of gambling or how the changing monetary environment affects gambling behaviour. A few cross-cultural studies have been undertaken but these have focused essentially on cultural and socio-demographic attributes to money attitudes from an economic and subjective well-being perspective (Bailey & Lown, 1993). This is perhaps not unexpected since research into the psychology of money has been essentially neglected outside the fields of reinforcement and occupational behavior, economic and market forces, and the commercial sector in general (Furnham & Argyle, 1998; Mitchell & Mickel, 1999). Anthropology has studied the nature and cultural meaning of gifts and money-related rituals. Sociologists evaluate money in respect to social class differences, power relationships, poverty, and agents of change (Rose & Orr, 2007). However, the study of money from a psychological perspective is limited to Freudian symbolism and behavioural learning theory with money as generalized conditioned secondary reinforcer. Social developmental theory explains how children

and adults acquire an understanding of the meaning of money and its relationship to Maslow's hierarchy of basic human needs (Furnham 1984; Oleson, 2004).

Other studies on the psychology of money have found differences in the perception of the size of coins following the introduction of decimal currency in England (Furnham, 1983; Lea, 1981), while early psychoanalytic approaches related interest in money to displacement of anal eroticism and retentive personality types (Ferenczi, 194/1976; Freud, 1959 cited in Lea & Webley, 2006; Furnham, 1984). Clinically, interest in the topic of money is ancillary to pathologies entailing the expenditure of this commodity, for example, compulsive shopping, miserliness, and pathological gambling without regard to the role or function of attitudes and subjective perceptions of money in shaping those behaviours.

With the exception of psychoanalytic accounts which are probably of tenuous value, no studies provide useful insight on the psychology of money and its influence on gambling behaviour. Given that gambling revolves around money, there is an imperative need to investigate the nature and extent of differences in attitudes and perceptions toward the value of money among different subsets of gamblers and the relationship of such attitudes and perceptions to problem gambling. What is needed is a clearer empirically derived knowledge describing the processes and variables influencing the transition from recreational to problem and pathological gambling: is the primary motivator the desire to win money, or is money simply the means to satisfy emotional benefits derived from gambling. A concomitant question relates to the effect of 'tokenization' associated with the use of smart cards in distancing the perceived monetary value of money from the act of gambling: similar to credit cards, smart cards can be seen as providing ready access to cash yet diminishing its perceived value.

1.2 The role of money in gambling

Money is central to gambling and both topics have the capacity to elicit mixed reactions of both positive and negative connotations (Tang, Tang, & Luna-Arocas, 2005). Attitudes are influenced by ideological, philosophical and religious sentiments and belief schemas. Money can be viewed as a token of recognition of hard work, self-sacrifice, effort and conscientious achievement reflecting the Protestant work ethic (Rose & Orr, 2007) while gambling is promoted as a form of recreation and opportunity for rapid wealth for the socially disadvantaged. Alternatively, moral approbation is directed to the love of money, its excessive pursuit and greed (expressed as the "love of money is the root of all evil"), while gambling is seen as inherently sinful, exploitative of the socially

vulnerable and contrary to the Protestant work ethic (Furnham, 1984). Yet despite the close links between money and gambling, surprisingly there is minimal research exploring the nature and relationship of various attitudes to money and problem gambling.

The ultimate objective of gambling is gaining profit through winning money. Winning is the driving force that generates excitement and forms the foundation for dreams of wealth and lifestyle changes. This is reflected in advertising material, marketing campaigns and media representations. These glamorize gambling and tantalize consumers with opportunities to win large prizes capable of rapidly improving life-styles free from financial stresses and worries, for example, advertising slogans such as ‘*Spend for the rest of your life.*’ From a sociological perspective, the attraction of gambling lies in it presenting an opportunity to socio-economically disadvantaged, disaffected and alienated individuals who have minimal alternative options to acquire personal wealth and prestige, to raise their socio-economic status. This explains in part the popularity of lotteries among the general population and in particular lower classes where substantial wealth may be gained for minimal outlay.

Although the popular belief is that wealth brings happiness, the association between money and subjective well-being is complex. On the one hand, research suggests that high personal income is positively correlated with well-being and happiness (Diener & Seligman, 2004) and, conversely, that wealthy people are perceived as relatively happy and well-adjusted (Luft, 1957). Having money does allow an individual access to material benefits, comfortable life-styles, enhances status, self-esteem and a sense of satisfaction, power and control. Lottery and soccer pools winners on average display a higher degree of well being compared to non-winners (Diener & Seligman, 2004) although such winning may bring certain stressors resulting from increased wealth.

For a proportion of the population, the motivation to gamble arises from the salience given to extrinsic values in life. This is characterised by a materialistic attitude where money is viewed as a sign of success and an important means by which enjoyment, security and success can be achieved (Oleson, 2004). It can be hypothesized that the attraction of a large win motivates many to gamble, but that the motive to gamble is different for those with low self-esteem and unmet needs compared to those with more integrated and self-actualized personalities. Gamblers in the former category may be more prone to hold exaggerated beliefs regarding the importance of winning as a means of overcoming their sense of social and personal inadequacy (Blaszczynski & McConaghy, 1989).

Clinical anecdotes suggest that a proportion of adolescent and young adults spending their money on lifestyle and leisure come to the realization that their peers have secured assets (family, home and cars) are motivated to turn to or increase their gambling in an impatient bid to 'catch up', particularly as they enter relationships with prospects of marriage. Gambling is perceived as a means of acquiring wealth.

Attaching high importance to money and a focus on material possessions to overcome self-doubts and insecurities and to gain social status and envy from others appears to be detrimental to self-satisfaction and subjective well being (Srivastava, Locke, & Bartol, 2001). This has been shown in a number of studies reporting a negative correlation between extrinsic and materialistic attitudes and subjective well-being (Srivastava, Locke, & Bartol, 2001). Srivastava, Locke and Bartol (2001) hypothesized that the relative importance and motivation assigned to money and its acquisition were factors that accounted for these negative relationships. In a series of studies, those authors administered a scale assessing motives for making money and found that there are multiple motives for pursuing money; when negative motives (money to overcome self-doubt, seek power, engage in social comparisons or show off) were controlled, the negative association between money importance and subjective well-being became non-significant.

These findings suggest that materialists who, rather than using material possessions to fulfil personal values and goals seek it out to gain status to satisfy their egos, experience dissatisfaction with their assets and standards of living and are frustrated to an extent that such disaffection permeates other aspects of their life and psychological well being (Sirgy, 1998). In contrast, the motivation to gamble is less pronounced among individuals striving for self-actualization and imposing a greater value on the more intrinsic aspects of life such as self acceptance and self-determination. The question arises as to whether or not this sector of the population, that is, extrinsic materialists, are more prone to gamble as a means of gaining wealth for self-gratification and would feature proportionality more among the population of problem gamblers.

Cognitive explanations of pathological gambling identify winning as the predominant motivation sustaining chasing behaviour and persistence in gambling (see Petry, 2005), although it is necessary to acknowledge that for a proportion, gambling is driven by a need to escape distressing emotions (Blaszczynski & Nower, 2002). In the cognitive framework, irrational beliefs, erroneous perceptions and misunderstanding concepts of randomness, mutual independence of chance events and probabilities lead to an over-inflated estimate of the likelihood of winning. Using the thinking

aloud technique, a procedure where a gambler's thoughts are verbalized and recorded during a gambling session, a number of studies have demonstrated the presence of irrational verbalizations among populations of gamblers, and the relationship of increased frequencies of irrational beliefs and a diagnosis of pathological gambling (Gaboury & Ladouceur, 1989; Manoso, Labrador, & Fernandez-Alba, 2004).

What is known is that a number of empirical studies have confirmed the desire to win money as a primary motivation for both recreational and problem gamblers (Ladouceur, Sylvain, Boutin, & Doucet, 2002; Neighbors, Lostutter, Crounce, & Larimer, 2002; Park, Griffiths, & Irwing, 2004). For example, in one study more than half of all gamblers endorsed the desire to win money as a main reason for gambling, though the highest endorsement was from probable pathological gamblers (Wood, Gupta, Derevensky, & Griffiths, 2004). Among college students, 22% of 712 respondents reported winning money as a motivator and, for 42% of 124 students it proved to be the primary motivator (Neighbors, Lostutter, Crounce, & Larimer, 2002). In a twelve months retrospective and prospective study, Hodgins and el-Guebaly (2004) investigated factors that contributed to relapse in a series of 101 treated pathological gamblers. They found that while both positive and negative mood states were associated with relapses, the most frequently reported impulses for both men and women were related to financial issues: optimism about winning (23% of relapses) and the need to make money (16%). Platz and Millar (2001) compared the motivation to gamble between recreational and pathological gambling students and found that winning emerged as the strongest motive, followed by excitement, for all gamblers. Compared to recreational gamblers, those meeting criteria for pathological gambling had the higher mean rating scores suggesting that for this group, money has a high salience value.

It is therefore reasonable to advance the notion that attitudes and motives for pursuing money associated with dysfunctional psychological states may combine with cognitive errors in thinking to act as vulnerability factors for problem gambling.

Research designed to map individual differences in attitudes to money and gambling behaviour may be useful in broadening our understanding of the motivation underlying the maintenance of problem gambling and, ultimately, in improving the outcome of cognitive behavioural, counselling and other clinical interventions for this behavioural 'addiction'. Is gambling about money or is it about the thrill and action engendered by risk-taking and sensation seeking? Are gamblers motivated by concepts of wealth, a drive to compensate for personal insecurities and inadequacies through the

acquisition of money, or do they seek the reinforcing arousal produced by the act of risking money rather than the pursuit of money as a goal?

These are questions that this preliminary research project essentially wishes to investigate in addition to exploring the potential implications for gambling and attitudes of the development of electronic management of funds that distance money from individuals.

1.3 The Tool and Drug Theories of Money and gambling

As Mitchell and Mickel (1999) note, money is a multidimensional construct containing instrumental, symbolic and emotional meanings at multiple levels: individual, social and cultural. Understanding what money represents to different people and how attitudes and values interact to influence behaviours extends beyond the domain of economics and commerce to encompass concepts of psychological well-being, identity, social status and satisfaction with life (Diener & Seligman, 2004; Furnham & Argyle, 1998; Mitchell & Mickel, 1999).

Lea and Webley (2006) have advanced an interesting but controversial theoretical framework based on biological parameters to explain the incentive and reinforcing powers of money. Traditionally, money represents a convenient unit of value whereby commodities (goods and services) can be exchanged in a standardized manner compared to systems of barter. The incentive value of money is found in its ability to acquire wealth and economic benefits. However, this function fails to explain situations where money is acquired for its own sake, for example, the continued accumulation of wealth by the wealthy and the hoarding of money by 'misers' or 'spendthrifts'.

To address this weakness, Lea and Webley (2006) postulate two conceptual models: the Tool Theory, in which money is used instrumentally to achieve certain commodities; and the Drug Theory, in which money, a metaphorical equivalent of a drug, exerts an action at the neurochemical level mimicking neural, behavioural and psychological actions of other natural incentives. In this section, we describe the fundamental concepts underlying these two models and their potential applicability to gambling.

1.3. 1 The Tool Theory of Money

Lea and Webley (2006) recognize the desire to acquire money is derived not from its intrinsic value as an object (money as a piece of paper, metal object or notational figure) but rather from what it represents: an opportunity to purchase desired commodities and services. Money is used as an

instrument to obtain commodities, and its incentive value lies in the benefits that are derived from the consumption of those commodities. Specifically, Lea and Webley suggest that money can be considered an incentive if people perceive that performing an action will lead them to obtain money. Money is reinforcing since it leads individuals to repeat acts with a high probability of generating additional funds.

In this context, the value of money resides in its capacity to be a unit of exchange for other tangible items of consumption that meet needs and provide rewards (shelter, security, food, etc.), and/or confer intangible benefits such as status, power and prestige and personal sense of self-worth. According to the Tool Theory of Money (Lea & Webley, 2006), money represents an instrumental 'means to an end': either materialism or status/egotism.

Extending this notion to the domain of gambling, it can be argued that the incentive to risk money in gambling is driven by the perception and motivation that this activity represents an opportunity to enhance personal wealth and improve life-style standards: either through the acquisition of goods and services otherwise out of financial reach, or through the reduction of financial pressures. Gamblers, it can be argued, are primarily motivated to win money and, from a learning/conditioning framework, money represents a second order reinforcer. Through repeated associations with the reinforcement provided by the acquisition and consumption of goods, money becomes conditioned to be a secondary reinforcer and acts as a reinforcing stimulus in its own right. This formulation is consistent with Skinner's (1953) operant conditioning paradigm where money assumes the properties of a generalised token reinforcer to be exchanged for later rewards. Applied to gambling, placing bets is reinforced through wins delivered according to intermittent random ratio schedules.

In this context, it is puzzling to observe that problem gamblers fail to use money acquired from gambling to purchase goods and services. Rather, the majority of wins seem to be re-directed into the pursuit of further gambling until all funds are exhausted forcing cessation of play. Thus, the activity of gambling in its own right appears to be the essential ingredient or product 'purchased' (secondary reinforcer) with money won through gambling reinvested to allow continued gambling. The excitement of winning appears to be the primary reinforcing agent and not the fact that it represents an opportunity to purchase something of value at a later time. In this manner, some inherent property of gambling that generates a reinforcing high is the primary incentive and acquiring money is simply the means by which such the reinforcement can be achieved. On this basis, it is reasonable to argue that money has been conditioned to act as a reinforcer through its

capacity to elicit states of subjective arousal which, in combination with the arousal produced by risk inherent in the process of gambling, results in a powerful drive to maintain gambling. Money exerts the same effect, or serves the same purpose, as a drug.

1.3.2 The Drug Theory of money

An alternative explanatory model that is postulated to explain the powerful drive to acquire money is the Drug Theory of Money. According to Lea & Webley (2006), money is a powerful motivator at the cognitive level partly because it has the capacity, “...to mimic the neural, behavioural, or psychological action of some other natural incentive” (p.8). These authors refer to a number of studies in the field of neuro-economics in which brain imaging methodologies have shown that specific brain regions are activated by money-related stimuli and that immediate money incentives stimulate immediate cortical reward (Ross, Sharp, Vuchinich, & Spurrett 2008), pathways.

From this perspective repetitive gambling is not analogous to a non-substance addiction to money itself. Rather, there is some inherent property of money that is intrinsically rewarding on its own, that is, that incentive to gamble is linked to the stimulation of reward centers of the brain rather than to motives of personal economic gain. In this regard, wins simply represent a means of prolonging sessions of play and explain why problem gamblers continue until they exhaust their available funds for each session.

This conceptualisation of gambling is consistent with the addiction model of gambling (Blaszczynski & Nower, 2002), Jacobs’ (1986) General Theory of Addictions framework, and the criteria listed in Diagnostic and Statistical Manual IV (American Psychiatric Association, 2000) which was deliberately modelled on criteria for substance dependence (Lesieur & Rosenthal, 1991). The underlying logic of this thesis is as follows: Gambling produces excitement. The motivation to gamble is generally accepted to be winning money with money acting as a secondary reinforcer. The excitement is generated by two factors: the prospect of monetary gain, and the risk of losing the wager. The risk relates to the unpredictability of chance in determining the outcome of an event such that there is an element of excitement in the anticipatory phase leading up to the outcome, and excitement generated by the results itself. According to Ross, Sharp, Vuchinich and Spurrett (2008), the repeated unpredictability between gambling and winning money elicits a physiological state of arousal or excitement that has the effect of mimicking natural rewards at the neurochemical level. For these authors, gambling is the basic form of addiction conceptualized as a neurochemical disorder. They suggest that finding explanations for pathological gambling based on thrill-seeking,

escape from boredom, money or impulsivity traits is a fruitless endeavour. These authors claim that the more productive approach is to understand rewards in the neuroeconomic sense and to accept that “... *what leads some people to have a problem with gambling is that it is rewarding in itself*” (p.165). They go on to suggest that it is a mistake to ask what value gambling serves (e.g., entertainment, money, or escape) beyond the reward produced by the act of gambling in its own right.

Several neuroeconomic studies have demonstrated that money activates specific brain regions associated with immediate as compared to delayed rewards (Lea & Webley, 2006). Using functional magnetic resonance imaging (fMRI), Zink, Pagnoni, Martin-Skurski, Chappelow and Berns (2004) found increased brain activity under conditions where monetary rewards were contingent on performance compared to non-contingent unrelated tasks. Similarly, Crockford, Goodyear, Edwards, Quickfall and el-Guebaly (2005) investigated fMRI responses to gambling-related video visual stimuli and nature scenes in a sample of pathological gamblers and controls. They found pathological gamblers exhibited significantly greater activity in the right dorsolateral prefrontal cortex in response to gambling related stimuli compared to controls, leading them to argue that monetary rewards from gambling activates brain reward circuitry “*which may result in the salience of gambling being associated with contextual cues that are processed by potentially different aspects of the prefrontal cortex for reward expectancy*” (Crockford, Goodyear, Edwards, Quickfall & el-Guebaly, 2005, p. 793).

However, scant reference is made in clinical diagnostic formulations to the motivation of acquiring wealth from gambling: this is assumed and at best, suggested in the item related to chasing losses where the incentive is to recoup losses, or to increase gambling to generate constant levels of excitement (tolerance). Similarly, other criteria focus more on the rewards generated by the act of gambling: preoccupation with obtaining money to gamble more; increasing bets to generate the same effect (as opposed to winning more money to increase wealth); or restless and irritable on ceasing (withdrawal from gambling with no mention of reducing options for increasing wealth). Combined, these criteria can be interpreted to support the argument that people gamble because they enjoy the excitement of gambling, and that winning money is simply the incentive and means of gaining further rewards. This would explain why the drive to gamble is rarely satiated in the problem gambler and why he/she persists until all funds are exhausted and further gambling is prohibited. It would also explain why gamblers retain their winnings (money) for future occasions rather than spending it on commodities. This view is also consistent with the typology of the ‘action

gambler', the gambler that seeks the excitement generated by the act rather than the pursuit of wealth (Lesieur, 1984).

1.4 Implications of the Tool and Drug Theories for gambling

Presently, no published research exists regarding money-related attitudinal differences among recreational, heavy, problem and pathological gamblers and whether or not attitudes shift during sessions of play or vary according to use of money or 'tokens' (smart card or similar technologies) in gambling. Further, while cognitive conceptualisations of gambling emphasize irrational and erroneous beliefs schemas, research has ignored the relative importance of gamblers' attitudes toward money in fostering impaired control. The purpose of the research project is to take the first step in studying in more depth the question of attitudinal differences toward money among various sub-groups of gamblers and to evaluate the changes within, and the functional relationship between, attitudes and persistence in play during sessions.

Accordingly, it is hypothesised that there will be differences in attitudes and perceptions held toward the value of money between recreational and problem gamblers; the former motivated more by the desire to win money as an instrumental means of improving their financial position; the latter influenced less by motives of personal gain and more by a desire to generate excitement and the stimulation of reward centers. Gamblers who use their own money to gamble will exhibit different attitudes and perception as compared to those gamblers with a preference to use ticket-in-ticket-out facilities. The results will have significant implications for harm minimization initiatives that serve to separate or 'tokenize' the value of money from the act of gambling.

1.5 Psychometric measurement of money attitudes

In this following section, existing measures assessing attitudes to money and their findings will be described. A review of this literature reveals the absence of sound, psychometrically validated, standardised and normed measures of attitudes and beliefs to money, a factor that has hampered research on this topic (Furnham & Argyle, 1998; Yamauchi & Templer, 1982; Furnham & Okamura, 1999). A number of attempts at devising and validating scales began to emerge in the 1980s but as Furnham and Okamura (1999) note, the majority of questionnaires vary according to their theoretical foundations, generality versus specificity, and the extent to which beliefs/attitudes and/or behaviours were being assessed making it difficult to compare dimensions measured and comparing findings across studies.

Rubinstein (1980) constructed a brief survey to assess attitudes and feelings about money, perceptions of its importance, evoked associations, and its effect on interpersonal relationships but only reported descriptive statistics of data obtained from approximately 20,000 readers of a popular psychology magazine. Responses to the survey showed that those with a more miserly attitude had lower self-esteem and expressed much less satisfactory finances, personal growth and interpersonal relationships. Rubinstein classified people into three categories: those who were *money contented* (respondents identifying themselves as ruling money, rather than vice versa), *money troubled* (respondents more likely to be unhappy, using credit cards and accounts, and suffering psychosomatic illnesses) and *neutral*. A number of sex differences were noted with men being more confident, self assured and happier about their financial situation in contrast to women who showed a tendency to associate money with anxiety, depression, anger, and helplessness.

Yamauchi and Templer (1982) constructed and validated a 29-item Money Attitude Scale from a factor analysis of a 62 item measure. Five factors were revealed; Power-Prestige, Retention Time, Distrust, Quality and Anxiety. Interestingly, money attitudes appear to be essentially independent of income. However, as Furnham (1984) noted, these authors did not include any evaluation of the relationships between money attitudes and demographic variables apart from income, tended to focus on the psychopathological correlates of money attitudes rather than normal social beliefs, and did not investigate the origins of these attitudes and beliefs.

However, Gresham and Fontenot (1989) failed to replicate this same factor structure using Yamauchi and Templer's (1982) Money Attitudes Scale although they did find several factors, they labelled Power-Prestige (use of money to influence and impress), Retention-Time (money behaviours requiring planning and preparation for the future), Distrust-Anxiety (nervousness about spending money), and Quality (purchasing quality products as a predominant behaviour). Their data, consistent with earlier studies, suggested women were more anxious about money in general compared to men, and were more interested in quality of goods and services purchased.

To address the influence of socio- demographic variables, Furnham (1984) constructed the Money Beliefs and Behaviour Scale based on items sourced from a variety of money related attitude statements that were contained in clinically oriented books, surveys and literature searches, and interviews with people. This scale was used to investigate the relationship between various demographic and social beliefs, variables, and people's attitude to, and habits of, money usage in a sample of 250 participants from a predominantly university student population. Participants were

administered five questionnaires: Money Beliefs and Behaviour Scale (Furnham, 1984); Money in the Past and Future (Rubinstein, 1980); Protestant Work Ethic (Mirels, & Garrett, 1971); Conservative Beliefs (Wilson & Patterson 1968); and Anomie Scale (Srole, 1956).

A factor analysis conducted on the Money Beliefs and Behaviour Scale revealed six factors accounting for 35% of the total variance. These factors included: Obsession, reflecting people obsessed by all aspects of money; Power/Spending, referring to the giving of money as a means of power; Retention, reflecting people who are careful with money; Security/Conservative, referring to traditional approaches to money; Inadequate, referring to a feeling that has not enough money; and Effort/Ability, referring to the means by which one obtains money. These factors were interpreted to be similar to those found by Yamauchi and Templer (1982).

In relation to demographic variables, it was found that younger people used money as a means of power and showed a tendency to be less careful, tentative, and security minded compared to older people. Less educated and more alienated people were also found to be more obsessed with money and to use money as a means of power over others. In contrast, the more educated and those with higher incomes, showed a tendency to believe that a person's wealth was under their control and that the ability to earn money was due to personal effort and ability. In regards to gender, females were found to be more conservative and security conscious and believed they had little control over their financial situation and had less money than they deserved. This is consistent with the findings of Oleson (2004) who found that women tended to score higher on anxiety money attitudes assessed using the Lim and Teo (1997) scale, although the relationship was somewhat weak.

Furnham concluded that people's attitudes and habits toward money usage are multifaceted with beliefs and behaviours differing according to demographic variables of sex, age and education. In addition, the importance of money appears to vary according to age and maturation as Oleson (2004) found in his exploration of the relationship between Maslow's hierarchy of basic human needs and attitudes to money in a cohort of university students.

Of relevance to gambling, Handley and Wilhelm (1992) used the Furnham scale to investigate the relationship between self-esteem and money attitudes. As predicted, they found compulsive spenders had relatively lower self-esteem, and held beliefs about money that reflected the symbolic ability to enhance self-image and self-esteem compared to normal consumers. They found that,

“Compulsive spenders reported a greater likelihood of ‘normal’ consumers to be preoccupied with the importance of money as a solution to problems and to use money as a means of comparison. Additionally, compulsive spenders were likely to report the need to spend money in a manner which was reflective of status and power.... Compulsive spenders were more likely to report that they did not have enough money for their needs, especially in comparison to friends. Finally, compulsive spenders reported a greater tendency, than did ‘normal’ consumers, to feel a sense of conflict over spending money” (p. 16-17).

Tang (1995) constructed the Money Ethic Scale to assess people’s perceptions toward money as good, evil, and a symbol of achievement, respect and power. More recently, Srivastava, Locke, & Bartol (2001) developed a scale to evaluate the motives underlying an individual’s drive, to make money. These authors administered a 51 item questionnaire evaluating 17 identified motives to a sample of 240 university business students: three items were used to assess each motive. Principal components analyses with varimax rotation revealed 10 meaningful first order factors: Security, Family support, Market worth, Pride, Leisure, Freedom, Impulse, Charity, Social comparison, and Overcoming self-doubt. Confirmatory factor analysis carried out on a subsequent sample of 266 business students essentially replicated the factor structure, with three second order factors emerging: Positive Motives, Freedom of Action Motives, and Negative Motives. Positive Motives were interpreted to reflect a need to meet requirements of life’s necessities, a measure of market worth and achievement in life; Freedom of Action implied spending money according to one’s desires, and Negative Motives reflected in orientation toward need to feel superior in social comparison or the acquisition of power over others, including overcoming self-doubt. Based on their studies, these authors concluded that there are many different motives for wanting or earning money but that holding money important may not be a direct cause of low subjective well-being. Their results indicated that the negative relation between money importance and subjective well-being was due not to the aspirations of obtaining money, but to the presence of self-doubt, and the drive to overcome such doubts through acquiring money.

Forman (1987) attempted to assess various money complexes and pathology using a 20 item scale to assess money beliefs and behaviours, and a series of multiple-choice questions to obtain an ipsative measure of money pathology referred to as ‘*moneysanity*’. Forman identified five distinct types with one type specifically referring to the topic of gambling:

- *Miser*: Hoarding money. Individuals with a fear of losing money, showing a tendency to be distrustful, and having trouble enjoying the benefits of money.
- *Spendthrift*: Individuals displaying a tendency to be compulsive and uncontrolled in spending, particularly when depressed or feeling worthless. Spending produces instant but short-lived gratification that frequently leads to guilt.
- *Tycoon*: Totally absorbed with acquiring money as a means of gaining power, status and approval. Manifesting an attitude that the more money they have, the better the control they have over their world and their happiness.
- *Bargain hunter*: Always seeking to obtain bargains. They respond with anger and depression when required to pay full price, and gain a sense of superiority over others when gaining a discount or advantage.
- *Gambler*: Experiences exhilaration and optimism when taking chances, finding it difficult to cease when losing because of the sense of power achieved when they are winning.

In their study, Furnham and Okamura (1999) designed a study utilising Rubinstein's (1981) and Forman's (1987) instruments to look specifically at the relationship between general money attitudes, beliefs and behaviours and demographic and individual differences using Forman's typologies. With relevance to our topic of interest, Forman and Okamura hypothesised that tycoons and gamblers would display increased preparedness to take moral risks to acquire money seen as being acquired through lack and influential networking.

These authors administered an extensive questionnaire to 277 participants recruited by a market research agency. Interestingly, the result showed that those with more overall self-reported '*money insanity*' (pathology) tended to believe in dishonesty and luck as important factors in making money, were more self denying about money and economically pessimistic in their outlook, had powerful more negative emotions around money (anger, anxiety, depression, distrust) and exhibited psychosomatic symptoms of behaviour consistent with depression.

Results of a multiple stepwise regression analysis revealed that age and sex (older males) were the only predictors of the gambling pathology type. However, the gambler typology did not show any correlations between Rubinstein's questionnaire factors, demographics or money pathology scale scores, including materialism, pessimism, extravagance, negative emotion, depression and risk. Taking into account all their analyses, these authors concluded that "*the gambler and spendthrift*

may confuse money with love and freedom in the sense that it buys time to pursue one's whims and interests, and frees one from daily routines"(p.1176).

However, it should be noted that the authors did not validate their gambler typology by reference to actual gambling behaviour, or form of gambling, and its intensity, frequency or duration. Therefore it could not be ascertained with any degree of confidence whether these findings can be validly and reliably extrapolated to the population of recreational or pathological gamblers. Moreover, the extent to which these typologies overlap in respect to their boundaries and features regarding attitudes to money and behaviours remains unclear as does the extent to which individual features that coalesce to influence gambling behaviour and the development of problem gambling.

Furnham's (1984) Money Beliefs and Behaviour Scale, despite its reported low reliability and lack of information on its general psychometric properties, and Yamauchi and Templer's (1982) Money Attitude Scale are the two most widely used by researchers to assess attitudes to money.

1.6 Technological changes in the management of money

Not only is attitude to money relevant in its own right in respect to gambling, but in the context of evolving technological advances, the forms of transaction and storage of money has changed dramatically in recent years toward electronic transfers, internet banking and credit, debit and smart cards. This may have important implications for how physical money is perceived as compared to notational money (representational, i.e., figures listed in accounts or displayed on screens). Money can be carried in wallets and purses in the physical form of coins and paper notes, stored in banks or credit societies, and transformed into electronic form on plastic credit cards and electronic tickets containing magnetic strips or embedded chips that are linked to bank or credit society accounts. The increased confidence in security and convenience of use of credit cards, internet banking, magnetic strip tickets, e-commerce and EFTPOS in shopping and transport has led to a substantial shift in consumer and business practices away from traditional modes of transaction; less physical exchange of money to more electronic-based transactions. The question remains how these changes impact on gambling behaviour.

One implication of technological changes is that individuals are becoming more and more removed from physically handling money: salaries are directly transferred electronically to employee bank accounts; daily purchases are undertaken via credit and debit cards at point of sale; and debts are paid through on-line banking facilities. Reliance on access to physical money is diminishing rapidly

and becoming relegated to the purchase of minor convenience items. For gambling, the introduction of smart cards, debit cards and internet banking can be seen as fostering this distancing of people from money. Under some proposed pre-commitment strategies (Dickerson & O'Connor, 2006) it is suggested that gamblers deposit pre-determined amounts of money on smart cards at agencies outside gaming venues. Such decisions, it is assumed, will be made in the context of 'cold emotions' within deliberate consideration of limiting amounts to affordable levels. The gambler then uses the smart cards to insert into gaming machines or to use these cards to obtain gaming chips. Under this procedure, the gambler is distancing him/herself from money at two levels: the initial transfer of funds to the smart card; and the use of smart cards to obtain tokens or to gamble. This has led to the oxymoronic concept of cashless gambling, a gross misnomer that perpetuates this distancing effect by suggesting that smart cards are either not equivalent to, or are devoid of, cash. For on-line gambling, money is again tokenized in the sense that gamblers are dealing with notional figures electronically transferred from bank to betting accounts.

Given the role of money as a secondary reinforcer, that is, the reinforcing qualities of money residing not in its inherent value as an object but rather in its capacity to allow access to other rewards, it is important to understand the psychology of money and the impact changes in technology have made. Will such changes affect perception of the value of money? Will the effect of diminishing the perceived value of money and increasing the distance between money and the individual result in the 'tokenization' of money leading to increased expenditure on gambling? To what extent do smart cards, credit cards and ticket-in-ticket-out forms of money management impact on gambling behaviour?

The findings of this project has relevance in informing policy-decision makers on the likely impact of technological changes to machines and use of smart card innovations that distance the perceived value of money from the act of gambling through 'tokenization'.

Of interest in this regard is the concept of money illusion and its relationship to tokenization. Money illusion refers to situation where individuals are influenced by the nominal rather than real value of a particular denomination. In their review, Lea & Webley (2006) drew attention to consumer money illusions in reference to the effects of price estimates in different currencies and charitable donations made in other currencies. In these cases, the nominal value of overseas denominations is often an underestimate of the true value of money as expressed in the domestic currency: goods purchased and tips given in overseas currencies are perceived to be obtained at a

lower cost. The same phenomenon occurs when cash is exchanged for tokens for use in purchasing items, usually recreational play on arcade games, amusement park rides and transport. Credit cards provide a similar tokenization effect, leading consumers to devalue the amount of purchases and to engage in impulsive purchases, or purchasing items that are not needed. The use of tokens, credit point displays and ticket-in-ticket-out facilities on gaming machines are further pertinent examples where the structural characteristics of a machine contribute to a potential devaluation of the value of money.

2.0 Smart Cards and Gambling

2.1 Smart cards, electronic gaming machines and attitudes to money

Since Charles Fey designed the original 'Liberty bell' mechanical three-reel slot machine featuring an automatic payout system in 1895, computer based technological advances have led to substantial changes to the structural characteristics and operations of these devices. The introduction of virtual reels, multi-line and multiple credits per line, free-spin and double-up features, interactive touch-screens and linked jackpots have contributed to the attractiveness of electronic gaming devices such as slots and video lottery terminals (VLTs), video draw poker, Keno and blackjack. Today, there is substantive evidence that electronic gaming machines are the primary form of gambling associated with excessive expenditure and the development of gambling-related problems (Productivity Commission, 1999). Experimental studies have demonstrated the capacity for players to become rapidly addicted to electronic gaming devices (Breen & Zimmerman, 2002), while epidemiological and clinical studies are consistent in reporting disproportionate numbers of community members and problem gamblers in treatment reporting excessive gambling on such machines (Productivity Commission, 1999).

There are a number of factors that contribute to the development of persistence in excessive levels of gambling on electronic gaming machines. These include technical aspects of the machines and player characteristics (Griffiths, 1999). The structural characteristics of electronic gaming machines allow for rapid continuous play over prolonged periods of time. Wins are delivered according to unpredictable random ratio schedules of reinforcement (winning), a schedule demonstrated in a range of experimental learning paradigms to be highly resistant to the effects of extinction. Players, having accumulated losses on a machine, are subjected to cognitive processes that contribute to persistence in play.

Attempts to understand problem gambling have appreciated the multiple internal and external factors (psychological, biological/genetic, emotional stresses), and environmental characteristics (availability and structural elements) in combination with the consequences of gambling (arousal, emotional escape, financial pressures) that are seen to act in a synergistic fashion to undermine a gambler's pre-gambling resolve to maintain limits on expenditure and time spent gambling. However, to date, no attention has been paid to the relationship between attitudes to money, use of smart cards and excessive gambling. The majority of studies and reviews have directed their attention to the evaluation of smartcard acceptance and take up rates by gamblers and problem

gamblers, and the utility and effectiveness of smart cards as a pre-commitment harm minimization initiative (Delfabbro, 2007).

The question remains as to the implications of the Tool and Drug Theories of Money for pre-commitment strategies and the use of smart cards. Are there attitudes to money that influence a player's perception of money value such that smart cards increase the likelihood of gambling more than originally intended? How do attitudes to money influence pre-commitment decisions? These are empirical questions that are yet to be addressed in the literature.

2.2 The concept of pre-commitment

In response to the negative impact of problem gambling, government have imposed regulatory frameworks designed to protect consumers and to minimise the potential harmful effects of excessive gambling. The primary objective of harm minimization, a concept extracted from the substance use field (MacCoun, 1998), is the reduction of the adverse health, social and economic consequences associated with gambling. MacCoun (1998) offers the truism that total harm equals average harm per use multiplied by total use. In this regard, therefore, the primary objective of harm minimization strategies is to reduce the rate of individual gambling expenditure to within affordable limits, by decreasing intensity of play. This objective is achieved through various means:

- Educational campaigns and information surrounding realistic probabilities of winning and likelihood of losses.
- Supply reduction limiting access to venues, reducing number of machines, imposing breaks in play, and closure times, and strategies to enhance control through budget management and pre-commitment
- Demand reduction through campaigns designed to reduce the attractiveness of gaming, lower prizes, and treatment and rehabilitation programs for problem gamblers.

Of interest to this project is pre-commitment. Pre-commitment refers to a decision-making process that involves establishing agreed boundaries that define the limits of a future course of action. Its primary purpose is to minimise the risk of engaging in behaviours to excess and suffering negative consequences by containing such behaviours within pre-determined acceptable parameters. Pre-commitment is a common strategy employed by individuals across a broad spectrum of activities. Typical exemplars include planning dietary schedules in weight loss programs and budgets for shopping, intentions to limit alcohol consumption to avoid exceeding 0.05 blood alcohol levels, and planning protected sexual practices.

Pre-commitment is neither a new or innovative strategy used to control impulsive behaviours. According to Ainslie (1975), Strotz (1956) suggested that the first unequivocal description of the concept of pre-commitment was contained in the Homer's historical epic, *The Odyssey*. In this mythical account, the Sirens were credited with the capacity to lure sailors to their wreckage on the rocks through the sound of their irresistible singing. Odysseus, confronted with the dilemma so characteristic of many appetitive disorders, exhibits an irresistible drive to satisfy his urge to listen to the sounds of the Sirens while simultaneously exposed to a conflictual desire to avoid suffering the negative consequences associated with its gratification.

In resolving his conflict, Odysseus embarks on a strategy of tying himself to the mast (eliminating the capacity to subsequently make impulsive decisions to behaviour otherwise) and waxing the ears of his sailors so that they do not hear the Sirens (stimulus control). In deconstructing the techniques used by Odysseus, Ainslie (1975) suggested that, to control future impulses a situation needs to be set up so that an individual:

- Makes a choice in a rational and non-emotional frame of mind prior to engaging in an activity.
- Will not alter his choice either prior to or during the activity.
- Is unable to pursue an alternative choice in response to a preferential shift in a decision.
- Will avoid or ignore cues that act to compromise existing choices already made.

Pre-commitment falls under the concept of supply reduction in that it has as its primary objective, the setting of a pre-determined expenditure limit which theoretically, the gambler is unable to exceed, or in attempting to exceed, will force a break in play to maximize the opportunity for a 'cooling off' period during which the gambler can reconsider decisions to continue play in a less emotionally charged frame of mind.

Dickerson and O'Connor (2006) have cogently advanced the argument that strong emotional/physiological responses during a session of play is a normal response but one that has the capacity to influence decision-making during emotionally charged periods of play. In support of their position, they referred to data demonstrating the range and strength of emotions evident during sequences of gaming choices and decision-making (Coventry & Hudson, 2001; Mellers, Schwartz, & Ritov, 1999; O'Connor, 2000) and cortical responses to expectation of winning (Breiter, Aharon, Kahneman, Dale, & Shizgal, 2001). A number of other studies have shown increases in arousal and

dissociative phenomenon during play that influences tracking behaviour and gambling more time and money than intended (Diskin & Hodgins, 1999; see Petry, 2005).

Taking into consideration the difficulty players have in forming and adhering to decisions limiting expenditure on gaming under conditions of emotional and physiological arousal, Dickerson (2006) applied a consumer-oriented perspective in offering the logical rationale of removing decisions related to expenditure from point of sale of the product, that is, the gaming venue. He reasonably suggested that such decisions should be made in a calm emotional state separate in point of time from and prior to, the commencement of a session, and at a place away from the venue. In this context, the introduction of electronic point-of-sales and card-based financial transactions and in particular smart cards, represent an ideal medium through which pre-commitment could be achieved.

2.3 Smart cards

The term *Smart Card* is generally used to describe any card containing a magnetic stripe, optical, memory, and microprocessor function that stores information that can be extracted or transferred in an electronic form. It is more precise, however to refer to memory and microprocessor cards as smart cards.

The concept that card-based technologies could be utilised within a responsible gambling framework to assist problem gamblers limit their spending was first proposed by Professor Mark Dickerson and further advanced in the Australian Productivity Commission's Report in 1999 and Independent Pricing & Regulatory Tribunal review of 2004. Dickerson and O'Connor (2006) argued that contemporary smart card designs have progressed to the point where they have the capacity to enable regular gamblers, whether they prefer TAB betting, electronic gaming devices or casino table games, to pre-set budgetary limits on expenditure resulting in the freedom to enjoy session, including the experience of losing control, without harmful impacts. Use of smart cards enables players to predetermine parameters that dictate duration and intensity of gambling sessions: length of a session or amount gambled over a set timeframe. Several jurisdictions have introduced the options of smart card play among gamblers on a voluntary basis (Nisbet, 2005).

Under the cognitive framework it is postulated that gamblers often express a 'genuine' intent to limit their gambling to set amounts prior to entering the gambling venue. It may be true that over-confidence and overestimated probability of winning may motivate them to gamble, the gambler is

prepared to risk an initial stake. Subject to their experience during the course of each session, that is winning or losing, decisions are then impulsively made that alter their adherence to their commitment.

In response to wins, certain cognitive schemas related to illusions of control, luck and erroneous beliefs about probabilities of winning may emerge to prolong sessions of play. The rationale that they are gambling winnings (the venue's money) rather than their own capital, or that they are on a winning streak may be used to justify continued play. Alternatively, the cognitive processes that contribute to chasing behaviour so eloquently described by Lesieur (1984), coupled with ready access to additional funds through ATM withdrawals, also results in breaches of commitment.

Pre-commitment, therefore, is a strategy designed to prevent decisions to gamble more than originally intended in the face of 'hot' emotional states driving the gambler to obtain further funds to continue a session. Of course, important factors such as who determines affordable limits, and who monitors affordability over time in response to changing domestic finances is yet to be determined.

As noted by Nisbet (2005) and Delfabbro (2007), there is little empirical evidence to support the effectiveness of card-based technologies limiting problem gambling behaviours. Nisbet states that while there is considerable supportive rhetoric arguing for the benefits of such technologies, gaming industry and others have raised questions about its effectiveness and player acceptance. Nisbet further notes that the potential to exacerbate the problem gambling has not really been acknowledged by many, pointing to the potential reduction in interaction with gaming staff and decline in handling money to cashier transactions due to credit management by direct account deposits and withdrawals. As Delfabbro (2007) comments, smart cards distance gamblers from the fact they are dealing with money and this, in combination with cards allowing rapid activation of play and ease of transferring play from one machine to another, may lead to increased impulsive gambling.

Nisbet (2005) conducted a two-stage qualitative study designed in eliciting data from key stakeholders, including manufacturers, community and social welfare groups, gaming venue managers and regulators on aspects related to the provision and acceptance of cashless gaming technologies, and subsequently administering a 23 item self-report questionnaire to 134 patrons of two large clubs in New South Wales implementing card-based technology. She used the

Technology Acceptance Model that postulates perceived usefulness and ease of use to have positive effects on attitude toward, and the intention to use, new technology. She did not however measure, the relationship between attitudes to money and the use of smart cards.

Of the two clubs included in the study, the usage rate of card-based gaming was 3.8% of 26,500 members and 0.02% of 38,000 in 2003, with the system made available to all members on an unrestricted basis in the latter part of that year (Nisbet, 2005). Based on responses to the survey, it appears that the actual benefits and take up rate of smart card-based gambling may in part be a function of familiarity and exposure to technology. However, based on some other surveys, for example, McDonnell-Phillips' (2006) telephone interview of 240 regular electronic gaming players, there may be a mismatch between people's estimates of the benefits of smart cards, as opposed to their actual usage. In McDonnell-Phillip's study, almost two thirds of respondents supported the scheme if it was voluntary, compared to a fifth if the scheme were introduced as a compulsory measure. A similar pattern was found for a sample of problem gamblers with the exception that a lower proportion (17%) supported a compulsory scheme. In addition, approximately half the sample indicated that gamblers should be able choose their own limits. This could be interpreted to suggest that gamblers prefer a system that allows them the flexibility to manage their gambling budget, rather than impose adherence to a strict pre-commitment level.

Pre-commitment is best presented under an ideal environment where certain conditions are met. This is exemplified in Norway where currently Nors Tipping has introduced an integrated smart card system linked to a central server. Within this gaming environment, all gaming machines are linked to and monitored by a central server. Each player must be registered and the registered player card must be inserted to activate a machine for a session of play. The central server has the capacity to track the number of machines played, duration of play, numbers of games played, wins, losses and actual net player expenditure irrespective of location or electronic gaming machine played. This structure allows preset limits, algorithms to detect atypical patterns of play compared against each player's and general population profiles. The effectiveness of detection of problem gamblers, self-exclusion programs and pre-commitment become maximized as player protection interventions. The situation cannot be implemented within the Australian context given the fragmented and competing gaming market sector within and between States.

Money is a great motivator and a source of contentment and anxiety and a commodity that can be both used and abused (Furnham, 1996). Therefore, it is reasonable to postulate that gamblers

motivated by desire to win money for prestige, power, and to overcome personal inadequacies or to enhance their wealth may exhibit different decision-making processes compared to gamblers seeking to gamble for purely entertainment purposes. The former may be more reluctant to limit opportunities to win by setting defined limits on their behaviour: they may elect to establish a 'buffer' that would allow them the option of accessing more money if they need to chase losses. Under the Tool Theory, such gamblers are motivated by the desire to win to increase their wealth, or at least to recoup losses. Under the Drug Theory, gamblers would be equally less likely to set realistic limits to allow greater flexibility in their attempts to regulate emotions and arousals. Accordingly, from the perspective of both theories, gamblers would prefer a smartcard system that allows greater flexibility in deciding expenditure levels.

However, from a clinical perspective, the motivation underlying the decision-making may differ significantly; the pursuit of money on the one hand, as opposed to the pursuit of arousal on the other. This has implications for treatment strategies. Whether or not the Tool and Drug Theories of Money have relevance to problem gambling is an empirical question that we would like to explore.

2.4 Aims and purpose of this study

Smart card technologies distance gamblers from the perceived value of playing with money. Little is known about attitudinal differences toward money between recreational and problem gamblers, and whether attitudes shift during play or vary if money as compared to 'tokens' (smart card or similar technologies) are used in gaming. Cognitive theories of gambling emphasize irrational beliefs but ignore the importance of attitudes to money in fostering impaired control. The aim of this study is to investigate attitudinal differences to money among gambling subgroups and to evaluate changes within, and functional relationships between, attitudes and persistence in gaming.

The primary purpose of the study is to advance the conceptual framework of pathological gambling underpinning cognitive theories. These theories focus on irrational beliefs and erroneous perceptions as explanatory factors. Using the Tool and Drug Theories of Money, it is hypothesized that some gamblers are motivated to acquire money to purchase goods while, for others, money acquires its incentive value because of its capacity to stimulate neural pathways associated with immediate rewards in a manner that mimics other psychoactive substances. This has implications for the theoretical conceptualisation of the addiction model of gambling consistent with the notion that pathological gambling forms the prototypical addiction (Ross, Sharp, Vuchinich, & Spurrett, 2008).

This is a preliminary descriptive study exploring putative relationships and differences in attitudes to money held by pathological and non-pathological gamblers, and the association between attitudes to money and attitudes and perceptions to the use of smart card technology. Accordingly, there are no specific hypotheses being tested. The results of this study will form the basis for future research should the findings reveal significant differences or relevant trends warranting further systematic research.

3.0 Method

3.1 Participants

Participants were drawn from four venues located in the Brisbane metropolitan area. These included the: Calamavale Hotel, Calamavale; Muddy Farmer Hotel, Annerley; Paddington Tavern, Paddington; and the Sandgate RSL, Sandgate. The assistance of these venue operators in supporting the study is greatly appreciated.

At each venue, one of two research assistants personally approached a series of patrons as they entered the gaming area and invited them to participate in the study. Two researchers were present during the recruitment phase of the study for reasons of personal safety. No venue employees were involved in recruiting patrons. Given the fact that some venues had multiple entry points to the gaming area with the venue (via the foyer, bar area, restaurant/bistro, or side/back entrance), the main entry point was selected as the recruitment site.

It is emphasised that it was not possible to recruit or count the number of consecutive patrons entering the gaming area because of the constraints of multiple entry points. Accordingly, the method of recruitment can be construed as representing a random selection of a series of patrons attending each venue, that is, the research assistant would approach a patron, invite her/him to participate, and once that person declined or completed the questionnaires would then approach the next person entering the venue's gaming area. It was not possible to calculate the proportion of participants as a percentage of the population of venue patrons since it was not possible to count the total number of patrons entering the gaming area via several entry points.

The nature and purpose of the study was verbally explained to participants and any questions asked responded to. Patrons agreeing to participate were given a written information sheet to read explaining the purpose of the study and what was required of them (Appendix 1). The information given verbally and in writing informed them that the purpose of the study was to determine if there are differences in attitude held toward money between subgroups of gamblers (recreational, regular, and problem) and if there is a relationship between attitudes and the use of smart card or similar 'cashless' technologies in gambling. After reading the information sheet, participants were then asked to sign a consent form. Each participant was then immediately taken to a table located in a quieter and private area near the entrance to the gaming area where they were asked to complete the

battery of questionnaires. On completion, they were thanked for their time and effort and were then free to resume their intended activity.

The data collection took place at variable blocks of two or more hours between midday and 10.00pm over Monday to Sunday (length of each data collection session was determined by the number of patrons in the venue). For safety reasons, researcher assistants were instructed not to remain in venues after 10.00pm and only to remain in the venue after 6.00pm if they deemed it was safe and if venue staff were available to escort them to the car park. The intent was to obtain a relative cross-section of patrons attending the venue at various times of each day and week given that the purpose of the study was not to obtain prevalence rates but to simply elicit attitudes to money held across the broad spectrum of gamblers.

It is important to state clearly and highlight the fact that the venues and participants who agreed to participate in the study do not form a representative sample of the general population of gamblers in Brisbane, and therefore the findings of this study should not be generalised to other populations. The obtained sample represents a convenience sample of a proportion of patrons attending these specific venues who agreed to participate in this study. Further replication is required across other independent populations to determine the validity and reliability of this study's findings.

Focus groups

One intended aspect of the study was to hold a series of focus groups to elicit more detailed attitudes to money and its implication for smart cards, and to construct a questionnaire based on their responses. The research assistants and the participant information sheet included an invitation for patrons to participate in a focus group at a later date and a mutually convenient venue to be arranged. Unfortunately, of the total sample of participants only four expressed any interest in participating in a focus group: all other participants declined. This was a disappointing outcome over which the research assistants had no control. Apart from the likelihood that participants were not highly motivated to inconvenience themselves to travel to another location to participate in a focus group (there was no provision to offer payment for focus group participation included in the ethics application), it is not clear why there was such a low acceptance rate. In future, to maximise focus group recruitment, consideration should be given to providing payment in the form of vouchers to participants and to holding the focus group immediately at recruitment and on premises to minimise inconvenience. Under the circumstances of the present study, given the unacceptable small number of volunteers, it was not considered viable to pursue the notion of focus groups:

saturation of themes would not be possible and the data derived from only four participants would not be valid or reliable for purposes of developing a questionnaire and interpreting or publishing data.

3.2 Measures:

3.2.1 Money Beliefs & Behaviour Scale (MBBS) (Furnham, 1984)

This scale was used to measure beliefs and behaviours to money. Furnham derived the items constituting his questionnaire from three sources: clinically oriented books on ‘money madness’ and ‘money pathology’; prior survey research; and from interviews conducted with a variety of individuals (Furnham & Argyle, 1998). Participants were required to respond to these statements on a seven point Likert scale ‘ranging from ‘Agree’ to ‘Disagree’. Items included, for example, “In making any purchase, for any purpose, my first consideration is cost” and “I often spend money on myself when I am depressed.” Following factor analysis, Furnham’s original 60-item inventory was reduced to 47 items measuring six defined factors:

1. Obsession (Valence)
2. Power/Spending
3. Retention
4. Security/Conservative
5. Inadequacy, and
6. Effort/Ability.

Valence refers to people who are highly concerned with and interested in all aspects of money. Power/Spending refers to the giving of money as a means of power. Retention applies to those who are very careful with money. Security/Conservative refers to what Furnham describes as an “old-fashioned approach” to money. Inadequacy is a bipolar factor, with high positive-loading items referring to the person feeling they haven’t got enough money. The final factor of Effort/Ability refers to how one obtains money. Furnham reported the scale to be a reliable instrument with a Cronbach alpha coefficient of 0.84.

It is acknowledged that this is not a measure that has been psychometrically validated to a substantive extent. However this instrument was selected in the absence of any other generally accepted reliable and valid instrument, and given that it is one of the more widely used instruments in the field to date.

3.2.2. Money Attitude Scale (MAS) (Yamouchi & Templer, 1982)

As the title suggests, this scale was used to assess attitudes to money. While there are many measures of money attitudes, this instrument specifically measures money attitudes rather than ethics, values or desires for money and was included to complement the Furnham scale. Yamauchi and Temper originally generated a 62 item Likert questionnaire to assess the three broad content areas, Security, Retention, and Power-prestige. This questionnaire was reduced to 34 items with a five factor solution following principal component factor analysis:

Power-Prestige subscale: Nine items. This scale measures the use of money as a tool of power, an index of success and to impress others. Those with elevated scores were considered to maintain attitudes that emphasized status seeking, competition and external recognition.

- Retention-Time: Seven items assessing dimensions of financial planning, monitoring and careful use of money. High scores reflected preparedness and focus on security in contrast to the attitude of present rather than future orientation of low scorers.
- Distrust: Seven items describing respondents with an attitude characterized by hesitancy, suspiciousness and doubt regarding situations involving money.
- Quality: Five items reflecting the tendency to focus on purchasing quality products, that is, purchasing the best or paying more for the desired quality.
- Anxiety: Six items assessing where money is considered a source of anxiety and money as a source of protection from anxiety with low scorers being described as less worrisome and anxious with money and in situations involving money.

Yamouchi and Templer (1982) partially validated these scales through a series of correlations with other related scales. On the basis of significant correlations of these factors with certain subscales of the Kincannon's (1968) Mini-Mult measure of psychopathology, Factors 3 and 5 were conceptualized as clinical factors of money attitude. The remaining Factors were seen as descriptive factors reflecting attitudes to money.

Alpha values for the total Money Attitudes Scale was 0.77 ranging from 0.69 to 0.95 for individual factors.

3.2.3 Canadian Problem Gambling Index (CPGI) (Ferris & Wynne, 2001)

The Canadian Problem Gambling Index was used as the measure to identify problem gamblers. The instrument is a 42 item self-report questionnaire consisting of four sections. The only section of

interest in the current study was the Problem Gambling Severity Index (PGSI) assessing two key areas of problem gambling: problem gambling behaviours and consequences within a twelve month timeframe. Individual items, derived essentially from the South Oaks Gambling Screen (SOGS) (Lesieur & Blume, 1987) and the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1987; 1994), include chasing losses, escalating to maintain excitement (postulated tolerance), feeling one might have a problem with gambling, borrowing/selling assets to obtain funds, betting more than affordable, guilt feelings, criticisms, and negative impacts on health and finances. The first five relate to behaviours, the remainder to consequences or harms.

Responses to each of the nine items are scored as follows: never (0), some of the time (1), most of the time (2) and almost always (3) resulting in possible scores ranging from 0-27. To avoid inflating the some of the time category, we decided to use modified anchor points used in an earlier study to ensure a clearer differentiation between individuals who never gambled (for example, for religious reasons) from those who engaged on negligible occasions, that is, rarely. Therefore, in this study, the anchor points were modified as follows: never and rarely (0), sometimes (1), often (2), and always (3) giving the same possible range of scores from 0-27 as specified in the CPGI.

Respondents are classified into five groups;

- Level 1: Non-gambling (have not gambled at all in the past 12 months) and non-problem gambling (score of 0)
- Level 2: Low risk gambling (score between 1 and 2.5)
- Level 3: Moderate risk gambling (score between 3 and 7.5)
- Level 4: Problem gambling (score between 8 and 27)

The CPGI has received extensive psychometric testing (Ferris & Wynne, 2001) with good reliability and sound internal consistency showing a Chronbach's alpha of 0.84, and test-retest reliability of 0.78, and good convergent validity correlating 0.83 with the SOGS and DSM-IV classifications of problem gambling.

3.3 Statistical analysis

All analyses were conducted using SPSS Version 15.0 for Windows. Bivariate tests (Pearson Chi-square, ANOVA, and ANCOVA) assessed the relationships between independent variables and problem gambling severity categories from the CPGI (non-problem, low-risk, moderate-risk, and problem). Variables included gender and age (demographics), gambling preferences (amount spent gambling, times gambled per month, favourite gambling form, reasons for playing machines), and

attitudes (limit-setting, smart cards, money). Logistic regression analyses were conducted using odds ratios to estimate the likelihood of membership in the problem gambling group versus other groups, based on sub-scale scores on the two money attitude scales. Age and gender served as control variables.

4.0 Results

4.1 Univariate analyses

4.1.1 Demographics

The sample (N=127) ranged in age from 18 to 81 years (M=39.91, SD=14.91). Men were overrepresented 71.4% (n=90) as compared to women, 28.6% (n=36). By gender, women were significantly older, ranging from 19 to 81 years with a mean age of 44 years (SD=16.31) in contrast to men, who ranged from 18 to 75 years with an average age of 38 years, $F(1,126) = 4.96, p = .028$.

One aim of the study was to recruit equal number of males and females. This was not achieved. There are several possible explanations for the obtained male gender bias. Males may be more attracted to attend gaming taverns/hotels. In Blaszczynski, Sharpe and Walker's (2001) study, patrons attending hotels as compared to clubs were more likely to be young males. Alternatively, males as compared to females were more willing to volunteer to participate in the study.

Participants were grouped according to the categorization scheme proposed by the CPGI: non-problem gamblers (n=62, 48.8%), low-risk gamblers (n=25, 19.7%), moderate-risk (n=20, 15.7%), and problem gamblers (n=20, 15.7%). There were no significant differences by gender, $\chi^2(3,124) = 4.32, p = 0.23$, or age, $F(3,124) = 1.59, p = 0.20$, across gambling groups.

Overall, participants reported spending an average of nearly \$71 (SD=130.25) each time they gambled, though there was wide disparity in the amount spent, ranging from \$0 to \$1,000, with the median amount gambled at \$20 per occasion. As illustrated in Table 1, that disparity is largely accounted for by the difference in expenditures between non-problem and problem gamblers. In contrast to non-problem gamblers, who reported spending an average of \$32 on electronic gaming machines an average of three times a month, problem gamblers reported spending an average of \$185 per occasion and playing an average of seven (7) times per month (Table 1).

Table 1: Demographic Characteristics of Non-Problem, Low-Risk, Moderate-Risk, and Problem Gamblers

Variable	Non-Problem Gamblers (n=61)		Low-Risk Gamblers (n=26)		Moderate-Risk Gamblers (n=20)		Problem Gamblers (n=19)	
	Mean ± SD	Median (Range)	Mean ± SD	Median (Range)	Mean ± SD	Median (Range)	Mean ± SD	Median (Range)
Age	42.6±16.5	40.0 (18-18)	39.4±14.0	38.0 (20-63)	34.8±9.6	32.0 (19-49)	37.2±14.2	34.5 (22-70)
Times Gamble per Month	2.6±4.3 ^a	1.00 (0-25)	5.0±4.5	4.0 (1-24)	5.1±3.8	4.0 (0-15)	7.1±7.3 ^a	5.0 (0-30)
Amt. Spent per Visit	31.7±56.4 ^a	20.0 (0-350)	74.2±106.6	40.0 (5-500)	87.2±102.0	50.0 (0-400)	185.1±259.2 ^a	100.0 (0-1000)
Gender	N (%)		N (%)		N (%)		N (%)	
Male	39 (62.9)		19 (76.0)		17 (85.0)		15 (75.0)	
Female	23 (37.1)		7 (24.0)		3 (15.0)		9 (25.0)	

a. Problem gamblers gambled more times per month ($p=0.007$) and spent more money per visit on machines ($p\leq 0.001$) than non-problem gamblers.

Participants reported attending venues about four times a month (Mean=4.11, SD=5.07). Though all differences were non-significant by gender, females on average took more money to spend on electronic gaming machines each time they gambled than men (\$92.14 versus \$62.05), though the median amount spent by women was \$30 and males, \$20. Women (Mean=3.46, SD=5.08) reported playing machines fewer times per month than men (Mean=4.45, SD=5.083).

Participants were asked to endorse their favourite form of gambling from a list of eight activities: Electronic gaming machines, video-card games (blackjack, poker, and keno), keno, betting on horses (dogs, trots), casino table games (roulette, blackjack, baccarat etc.), sports betting, lottery and scratch cards (Table 2).

Table 2: Preferred Gambling Activities by Gambling Group

	Non-Problem Gambler (n=58)		Low-Risk Gambler (n=25)		Moderate-Risk Gambler (n=20)		Problem Gambler (n=19)	
	No	%	No.	%	No.	%	No.	%
Electronic Gaming Machines	19	30.6*	14	56.0	12	60.0	13	65.0*
Video Card Games	0	0	0	0	0	0	1	5.0
Keno	11	17.7	5	20.0	2	10.0	2	10.0
Horse, Dogs, Trots	12	19.4	10	40.0	4	20.0	6	30.0
Table Games	10	16.1	4	16.0	3	15.0	3	15.0
Sports Betting	2	3.2	1	4.0	1	5.0	0	0
Lottery	20	32.3*	4	16.0	2	10.0	0	0*
Scratchcards	7	11.3	4	16.0	0	0	0	0

* Problem gamblers were more likely than non-problem gamblers to endorse machines ($p=0.006$) and less likely to endorse lottery play ($p=0.003$).

Both problem and moderate-risk gamblers endorsed preferences for electronic gaming machine play followed by betting on horses (dogs, trots) and table games. In contrast, low-risk gamblers

indicated a preference for electronic gaming machines, betting on horses (dogs, trots) and keno. Only non-problem gamblers reported that their first preference was lottery, followed by electronic gaming machines and betting on horses (dogs, trots). Overall, problem gamblers were more likely than non-problem gamblers to prefer electronic gaming machines $\chi^2(1, 82) = 7.50, p = 0.006$, and less likely to play the lottery $\chi^2(1, 82) = 8.53, p = 0.003$. Other between-group differences were non-significant.

4.1.2 Reasons for playing machines

Participants were asked to endorse their primary reasons for playing electronic gaming machines. Problem gamblers differed significantly from other groups regarding the motivations of excitement/entertainment, income generation, and escape (see Table 3). Compared to non-problem and moderate-risk gamblers, problem gamblers were more likely to report they played electronic gaming machines because it was exciting and entertaining, $F(3, 118) = 9.85, p < .0001$. Compared to non-problem gamblers, problem gamblers were more likely to report that electronic gaming machine play was a way to earn income, $F(3, 118) = 3.43, p = 0.02$, and to help them escape their problems, $F(3, 118) = 4.19, p = 0.007$. There were no between differences for any response category when controlling for age or gender.

Table 3: Primary Reasons for Gambling on Electronic Gaming Machines

	Non-Problem Gambler (n=58)		Low-Risk Gambler (n=25)		Moderate-Risk Gambler (n=20)		Problem Gambler (n=19)	
	No	%	No.	%	No.	%	No.	%
For fun & enjoyment	40	64.5	18	72.0	15	75	8	42.1
Because it's exciting and entertaining	1	1.6 ^a	6	24.0	3	15 ^a	9	47.4
To socialize with others	7	11.3	6	24.0	2	10	3	15.8
To earn additional income	2	3.2 ^b	3	12.0	1	5.0	5	26.3
To get away from daily hassles and problems	5	8.1 ^b	4	16.0	3	15.0	8	42.1

^a Problem gamblers vs. non-problem ($p < 0.001$) and moderate risk ($p < 0.001$).

^b Problem gamblers vs. non-problem ($p = 0.02$ and escape ($p = 0.007$)).

4.1.3 Attitudes toward expenditures and limit-setting

Participants were asked how or if they set limits for themselves before or during play when they played machines. As indicated in Table 4, problem gamblers differed from all other groups regarding their strategies for play, $F(3,120) = 12.93, p < .0001$.

Table 4: Pre-session Strategies toward Gambling Expenditure

	Non-Problem Gambler (n=57)		Low-Risk Gambler (n=25)		Moderate-Risk Gambler (n=19)		Problem Gambler (n=20)	
	No.	%	No.	%	No.	%	No.	%
Decide exactly how much and stick to it	26	42.6 ^a	11	44.0	3	15.8 ^a	2	10.0 ^a
Know roughly how much	12	19.7 ^b	6	24.0 ^b	11	57.9	1	5.0 ^b
Decide after start playing but stick to limit	9	14.8	1	4.0 ^d	2	10.5 ^d	1	5.0
Decide after start playing but don't set limits	2	3.3 ^c	4	16.0	1	5.3 ^c	10	50.0 ^c
Decide later depending on situation	2	3.3 ^e	0	0	1	5.3	4	20.0 ^e
Decide while playing, depending if are behind	2	3.3 ^e	2	8.0	1	5.3	4	20.0 ^e
None of the above (i.e. don't play regularly)	6	9.8	1	4.0	0	0	0	0

^a Non-problem vs. moderate risk ($p=0.008$) or problem gamblers ($p=0.034$).

^b Moderate-risk vs. all other groups (sig. levels reported in text).

^c Problem v. non-problem ($p < 0.001$) and moderate-risk gamblers ($p=0.002$).

^d Low-risk vs. moderate-risk gamblers ($p=0.047$).

^e Problem vs. non-problem gamblers ($p=0.013$).

Problem gamblers were less likely than all other groups to endorse any form of pre-commitment or limit-setting prior to play. They were significantly more likely than non-problem, $\chi^2(1, 81)$

=26.05, $p \leq 0.001$, and moderate-risk gamblers, $\chi^2(1, 39) = 9.63$, $p = 0.002$, to indicate they usually decided how much to play with when they started play but failed to set any limits. In addition, they were more likely than non-problem gamblers to report that they either let the situation dictate how much they would spend on play, $\chi^2(1, 81) = 6.14$, $p = 0.013$, or decided how much to spend based on how much they were behind (i.e. chasing motivation), $\chi^2(1, 81) = 6.14$, $p = 0.13$.

In contrast, significantly more non-problem as compared to moderate-risk, $\chi^2(1, 81) = 7.09$, $p = 0.008$, or problem gamblers, $\chi^2(1, 81) = 4.51$, $p = 0.034$, reported that they set specific money limits for play and stuck to those amounts. Low-risk gamblers were also more likely than moderate-risk gamblers to establish limits before play, $\chi^2(1, 44) = 3.97$, $p = 0.047$. Similarly, moderate-risk gamblers were more likely than all groups to indicate that they knew roughly how much they planned to spend at the start of play (non-problem: $\chi^2(1, 80) = 10.33$, $p = 0.001$; low-risk: $\chi^2(1, 44) = 5.23$, $p = 0.022$; problem: $\chi^2(1, 39) = 12.80$, $p \leq 0.001$).

There were no statistically significant between-group differences among participants who indicated they decided how much to spend after the start of play but set firm limits, $\chi^2(3, 122) = 2.97$, $p = 0.397$.

4.1.4 Perspectives on smart cards

Participants were provided with a general definition of a smart card that consisted of the following statement:

“Smart Cards are used in place of cash (coins or notes) when you are playing poker-machines. They are usually the size of credit cards and have a magnetic strip or chip that records an amount of money that is available to you, much like a pre-paid phone card. To use it, you insert the smart card into the electronic gaming machine, which then allows you to play the amount of money that you have on the card. Wins are automatically added, and losses taken away during play. Smart cards can be refillable, allowing you to add more cash, or sold in a non-refillable preset amount”.

Based on that description, participants were asked a series of questions, designed to identify their preferences regarding Smart Cards. Questions pertained to: (a) perceptions regarding the effectiveness of Smart Cards in limiting losses or assisting gamblers to set limits; (b) beliefs about

factors that influence losses (using cash and tokens or chips, losing track of money etc.); and (c) conditions which would dictate whether or not the participant would use a Smart Card.

They were asked to rate their agreement with a series of questions on a 7-point Likert scale, ranging from “Strongly Disagree” to “Strongly Agree.” Mean scores for questions with significant statistical between-group differences, controlling for age and gender, are reported in Table 5.

In contrast to other groups, problem gamblers expressed more reticence to using Smart Cards unless they were able to access additional funds. Problem gamblers were significantly more likely than both non-problem and low-risk gamblers to indicate that they would buy another smart card if they ran out of funds and wanted to chase a loss, $F(3,119) = 9.43, p < .0001$, or that they would only use a Smart Card if they had the option to buy another card if it ran out in order to continue gambling, $F(3,119) = 5.20, p = .002$.

In contrast to non-problem gamblers, problem gamblers were more likely to indicate they would prefer a refillable smart card, rather than one with a preset amount, $F(3,114) = 3.02, p = 0.033$. Problem gamblers were more likely than all other groups to indicate they lost track of money while gambling, $F(3,116) = 15.60, p < .0001$, and more likely than moderate-risk gamblers to indicate they were seldom aware whether they were winning or losing during a gambling session, $F(3,116) = 8.84, p = .012$, though they were reticent to endorse the use of Smart Cards as a means of setting limits or limiting losses.

Contrary to expectations and the concept of ‘tokenization’, there was no difference between non-problem and problem gamblers in respect to spending more money if they used tokens or chips compared to playing with cash. It can be speculated that the use of smart cards, therefore, would not be associated with a tendency to gamble more than they otherwise would if they were playing with cash.

Table 5: Attitudes toward Smart Cards

	Non-PG M(SD)	Low-Risk M(SD)	Moderate- Risk M(SD)	P G M(SD)
If I could only bet the amount I put on my SC, I would be likely to put more money on it just in case I needed extra to gamble.	2.64(2.03)	3.32(2.41)	3.50(2.26)	4.10(2.51)
Even if I had a SC, I would buy another one if I lost and wanted to try to win.	1.95(1.63)	2.08(1.78)	3.05(1.99)	4.35(2.37)
I usually spend more money when I'm using tokens or chips than when I'm playing with cash.	2.47(1.95)	2.88(2.23)	3.21(2.02)	3.58(2.43)
I would only use a SC if I had the option to buy another one to continue gambling if it ran out.	2.28(1.80)	2.36(1.73)	2.75(1.83)	4.15(2.35)
I often lose track of how much money I spend on play.	1.57(1.28)	2.16(1.55)	2.80(1.61)	4.32(2.14)
If I had a choice, I would buy a SC I could refill with more cash rather than one that is only good for one preset amount.	2.41(1.90)	3.00(2.30)	3.21(2.23)	4.05(2.37)
The display on electronic gaming machines showing the cash amount rather than credit points helps me stick to my limits.	4.70(2.28)	4.79(2.15)	4.05(2.48)	4.00(2.31)
I usually do not figure out if I am in front or behind while in the middle of a session when playing the machines.	2.66(1.94)	2.52(2.04)	2.05(1.28)	4.05(2.39)
Using SC would change how much I gambled on a electronic gaming machine.	2.12(1.82)	3.72(2.34)	3.20(1.99)	3.05(2.30)

ANCOVA, controlling for gender, age

Overall, by gender, women were less likely to endorse the use of any type of smart card than men. However, women also rated all questions lower than men and were underrepresented proportionately in the sample, so their answers should not be viewed as representative or able to be generalized.

4.1.5 Money attitudes

Problem gamblers were more likely than all other groups to view money as a symbol of influence and success and more interested in the prestige and power it conveys in contrast to the security it affords (see Table 6). They scored significantly higher on both the Power-Prestige subscale (MAS), $F(3,123) = 6.64, p < .0001$, and the Power/Spending subscale (Furnham), $F(3,122) = 7.00, p < .0001$ than all other groups. Both subscales measure the degree to which the person uses money to impress and influence others as a measure of success and power. Problem gamblers also had significantly higher rates of endorsement than the other groups on the Obsession (Money Valence) subscale (Furnham), which measures overall preoccupation with money, $F(3,123) = 6.64, p < .0001$.

They also reported significantly more anxiety, as measured by the MAS Anxiety subscale, than both non-problem and moderate-risk gamblers, $F(3,123) = 12.00, p < .0001$. The Anxiety subscale measures worry or concern over financial security and frugality.

However, problem gamblers had lower scores than non-problem and moderate-risk gamblers on the Inadequacy subscale (Furnham), measuring the degree to which participants believe they have insufficient money to meet their needs, $F(3,123) = 8.17, p < .0001$.

4.2 Multivariate analysis

Results of the logistic regression analyses are displayed in Table 6. Anxiety over money proved the best predictor of problem versus non-problem gamblers. In addition, viewing money as an instrument of influence and power was characteristic of problem versus moderate-risk gamblers.

Table 6: Money Attitude Scale Scores by Gambling Severity Group

Scale Score	Non-Problem M(SD)	Low-Risk M(SD)	Moderate-Risk M(SD)	Problem M(SD)	Odds Ratio (95% CI)†		
					PG vs. Non- PG	PG vs. Low- Risk	PG vs. Mod- Risk
Furnham Money Beliefs and Behaviour Scale (N=126)							
Obsession (Money Valence)	43.9(14.1) ^a	51.4(16.6) ^a	46.9(14.4) ^a	66.2(18.8)	NS	NS	1.23*
Power/Spending	19.2(5.7) ^a	19.8(5.7) ^a	20.5(4.6) ^a	26.1(7.2)	NS	NS	NS
Retention	15.1(6.3)	16.5(4.8)	15.0(4.7)	17.3(6.2)	NS	NS	NS
Security/Conservation	33.2(8.3)	35.6(6.0)	31.1(4.7)	29.3(7.5)	NS	NS	NS
Inadequacy	14.8(4.7) ^c	17.4(5.6)	18.7(4.9) ^c	20.5(4.4)	NS	NS	NS
Effort/Ability	12.6(3.9)	15.0(3.5)	13.8(3.0)	12.9(3.6)	NS	NS	NS
Money Attitudes Scale (n=127)							
Power	17.5(8.3) ^a	19.9(10.1) ^a	18.2(7.2) ^a	28.3(13.7)	NS	NS	1.24*
Quality	16.8(5.8)	18.1(6.2)	15.6(5.5)	19.1(6.3)	NS	NS	NS
Distrust	20.8(8.9)	24.0(8.7)	22.7(7.3)	26.4(10.4)	NS	NS	NS
Anxiety	17.2(6.1) ^b	21.5(7.4)	20.2(4.6) ^b	26.1(4.5)	1.24*	NS	NS
Retention/Time	31.8(9.7)	31.9(9.7)	28.5(9.9)	24.7(10.7)	NS	NS	NS

†All odds ratios were calculated adjusting for sex, race, and age effects.

a. PG higher than other groups; ANCOVA, controlling for gender, age, $p \leq 0.001$

b. PG higher than non-problem, moderate-risk; ANCOVA, controlling for gender, age, $p \leq 0.001$

c. PG lower than non-problem, moderate-risk; ANCOVA, controlling for gender, age, $p \leq 0.001$

* $p < .05$

5.0 Discussion

Gambling is about money irrespective of the underlying primary motivation for participation. The prospect of winning generates the thrill, excitement and reinforcing qualities associated with gambling. The various conceptual models offered in explanation of the attractiveness of gambling in general, and the persistence of problem/pathological gambling in particular, are all founded on some aspect of gaining money. The cognitive model emphasises irrational cognitions that lead to individuals overestimating probabilities of winning (Ladouceur, Sylvain, Boutin, & Doucet, 2002; Petry, 2005) while behavioural, addiction and related neurobiological frameworks highlight the reinforcing properties of arousal associated with winning acting in concert with neurochemical dysregulation within brain structures mediating reward/punishment (Goudriaan, 2005).

Cognitive oriented models can be interpreted as holding an underlying assumption that individuals are motivated by financial considerations: the desire to gain profit or alternatively, as eloquently described by Lesieur (1984), to chase losses and regain monies lost. In contrast, addiction models assume that financial considerations are less important and relegated to the role of providing opportunities to enhance and/or maintain various states of emotional arousal. On the one hand, gamblers are motivated to generate states of rewarding arousal (*action gamblers*), maintain comparable levels of excitement (tolerance) or to avoid aversive states of withdrawal (*addicted gamblers*), while on the other hand they pursue states of dissociation that fosters temporary escape from emotional distress (*emotionally vulnerable gamblers*) (Jacobs, 1986). This study is the first systematic attempt to explore the Tool and Drug Theory concepts of money as it pertains to gambling.

Consistent with other studies (Blaszczynski, Sharpe, & Walker, 2001), the rates of patrons meeting criteria for problem gambling in gambling-specific venues is in the vicinity of 15% with no significant difference between males and females. This is expected given there is a high base-rate of regular gamblers in populations of patrons attending gambling venues in contrast to the general population data where there are high base rates of non- and low-frequency gamblers. The preference for electronic gaming machine play in this population, and its over-representation among problem gamblers, is consistent with that expected of hotel patrons.

The findings of the present study supported the Drug Theory of Money developed by Lea and Webley (2006). Responses to the scale suggested that problem gamblers have an obsession with money and view money as an important variable reflecting prestige and power, and a means of acquiring wealth. Interestingly, while anxious over concerns related to financial security, problem gamblers appeared to be less concerned with the belief that they had insufficient money to meet needs.

The results of this study can be interpreted in the following manner. Problem gamblers are motivated by the desire to win money to enhance their self-image and confidence in an attempt to boost their egos and meet narcissistic demands. The types of responses to the attitude subscales in this study are suggested by Lakey, Rose, Campbell, and Goodie (2008) to indicate that respondents (in this case, problem gamblers) have a tendency to foster a fantasy life of fame, dominance and self-aggrandizement while downplaying failures. Responses suggest a desire to impress and influence others through the image of wealth and success rather than seeking to purchase goods and services for their or their family's consumption. The underlying issue is not so much the desire for personal gain but rather compensating for a sense of personal inadequacy and insecurity by portraying an image of success, prestige and importance. From the literature, those with narcissistic tendencies exhibit traits of overly positive self-concept, inherent sense of uniqueness, privilege, entitlement and willingness to exploit others for their own benefits (Lakey, Rose, Campbell, & Goodie, 2008). If problem gamblers are indeed narcissistic or self-centred (loading highly on anti-social personality traits), this may be taken to account for the preference evident in many problem gamblers for self-gratification irrespective of the cost, lack of concern for the impact of their behaviour on others, entitlement to use money for their own purposes rather than meeting obligations, and denying responsibility and externalizing blame for their predicament; a mixture of narcissistic and anti-social personality traits (Steel & Blaszczynski, 2002; Ledgerwood & Petry, 2006; Montalvo & Echeburua, 2006).

The findings of this study can be speculated to suggest that the lack of concern over sufficient money to meet needs reflects the narcissistic and self-centred anti-social traits that focus on self-gratification rather than a sense of responsibility and concern for financial obligation. In contrast, anxiety over money, a significant predictor of problem gambling status, is related to the drive to obtain sufficient funds to maintain habitual patterns of gambling that allow the prospect to win money that feeds narcissistic needs. Although gamblers may perceive gambling as a source of income, responses to the attitudes to money scale suggest that the income represents a means of

boosting self-image and fantasies of prestige rather than the potential acquisition of material goods and services for consumption.

Although there is a need to compare differences in attitudes to gambling according to preferred form of gambling, the present study supports the contention that psychological traits and ego needs reflected in narcissistic and anti-social personality types are important variables accounting for electronic gaming machine problem gambling, rather than perceiving money as a means of improving their quality of life through the consumption of goods and services.

It is important to draw attention to the need to restrict the present interpretation about personality traits and attitudes to money related to prestige and power to the population of electronic gaming machine players. As Brenner and Brenner (1999) note, lottery players are motivated by the desire for life-altering wins rather than the hedonistic pursuit of pleasure or emotional escape. Whether lottery players are also influenced by ego needs and personality traits is an empirical question to test but the fact that the majority of the population purchase tickets and that this form of gambling is not associated with problem gambling argues against these variables being of relevance or importance.

Findings in respect to differential motivations to gamble between problem and non-problem gamblers further supports for the contention that excitement/thrill, income, and emotional escape are the three predominant, but not mutually exclusive, reasons driving problem gamblers to gamble. Non-problem gamblers gamble for purposes of recreation; that is, playing for fun within a social context. Here, the old adage that non-problem gamblers, '*hope to win but expect to lose*' bears some merit. Problem gamblers maintain the belief that one can win at gambling, either in the short term as an immediate solution to current financial tensions, or in the long term as a means of changing their life-style. While the belief that one can win at gambling (at least some amount in the short term, or an occasional large prize pool) is not irrational but supported by media reports and anecdotal claims of occasional wins, the concepts that one can *regularly* win at gambling and that gambling represents *a source of income*, are erroneous and mistaken in all but the most unusual and extraordinary cases.

The notion that problem gamblers utilize this form of activity to escape states of emotional distress is supported by responses to measures. This is consistent with the hypothesised motivation manifested by the subgroup of problem gamblers within the emotionally vulnerable

category described in the pathway model (Blaszczynski & Nower, 2002) and empirically supported by recent data from Stewart, Zack, Collins, Klein, and Fragopoulos (2008). While it is contended that a proportion of emotionally vulnerable individuals may gamble to escape, it remains to be determined if this is unique to one subgroup of gamblers or a dynamic process found in others. It is possible that other gamblers, subsequent to or in the face of mounting losses within sessions, may experience a sense of learned helplessness, dissociate and gamble to escape. This is consistent with clinical accounts provided by gamblers in which they describe initial confidence and expectations of winning dissolving into regret, loss of excitement and continued gambling as a form of psychic masochism (Bergler, 1957).

The findings of the present study showed that non-problem gamblers are more likely to self-report that they would allocate a set amount (pre-commit) for the purposes of gambling. However, as found by Blaszczynski, Ladouceur and Moodie (2008), most gamblers often fail to adhere to these rules and gamble more time and money than originally intended. Given that problem gamblers maintain the attitude that gambling is a source of income, it is not surprising that they show a tendency not to set limits prior to or during sessions of play, also resulting in more expenditure of time and money than intended (Blaszczynski, Ladouceur, & Moodie, 2008). Although the emerging empirical evidence from other studies points to both non-problem and problem gamblers having a tendency to exceed pre-set limits, the relevant consideration is that problem gamblers, (a) engage in higher levels of expenditure exposing them to financial difficulties, and (b) manifest less interest in imposing constraints on their behaviour.

The present data suggests that non-problem gamblers self-report the intention to pre-commit gambling expenditure although not all may necessarily adhere to this when actually gambling. Nevertheless, taking these factors into consideration we can hypothesise that pre-commitment strategies can assist non-problem gamblers in restricting their expenditure according to pre-set limits. For problem gamblers, this strategy is less likely to be pursued since the motivation to gamble is linked to the attempt to generate income with the gambler wishing to retain the option to dictate the course of the session depending on outcomes. Based on findings in the literature, it is argued that the concept of cognitive regret in conjunction with the gambler's fallacy plays a significant role in determining decision-making in response to what happens during a session. While problem gamblers opt to extend their play to a minor extent to see if they can win back minor (expected) losses, problem gamblers are influenced more by the expectation that a series of losses will eventually be ended by winning outcomes. Having lost more, the problem gambler is

exposed to the risk and fear of missing out on the next play which may produce the desired win and ameliorate current financial difficulties. In this dynamic process, the problem gambler will avoid placing him/herself in situations where he/she is forced to cease play due to pre-commitment levels being reached but where there is the expectation of an imminent win. The emotional distress produced by the cognitive regret of having missed the win is highly aversive and counterproductive in that increasing the motivation of the gambler to avert similar future situations, that is, to avoid pre-commitment strategies. Assisting problem gamblers to manage emotional reactions to cognitive regret may represent a crucial pre-requisite to any participation in pre-commitment strategies.

Problem gamblers' responses to questionnaires items eliciting attitudes to smart cards are consistent with their preference to retain available options during sessions of play. The emerging themes pointed to a reticence to use smart cards unless the potential to 'top-up' or purchase supplementary cards that allowed continuation of play were made available. Thus, in contrast to non-problem gamblers, problem gamblers are motivated to maintain a buffer that allows the option to extend sessions of play under adverse situations and therefore are reluctant to submit to strategies that would remove such options.

In interpreting the data from this study, problem gamblers express a preference to retain options that allow them to dictate levels of expenditure subject to their performance within sessions. This of course is the very type of decision-making flexibility that combined with 'hot' emotional states results in poor choices that lead to persistence in play and gambling-related problems. Unless all machines are mandated to use smart cards and pre-commitment limits centrally monitored, pre-commitment strategies may be usefully employed by a segment of the gambling population but not for the majority meeting criteria for problem gambling.

Problem gamblers seeking treatment may effectively utilize smart card technologies in assisting them to achieve controlled gambling; however, the determining feature is their ready acceptance and motivation to reduce gambling behaviours. This applies to a small percentage of problem gamblers since the evidence suggests that only 10% of problem gamblers are in treatment at any one time and only half express an interest in treatment (Productivity Commission, 1999). For non help seeking problem gamblers, pre-commitment is seen as inherently ineffective in limiting excessive gambling. For regular recreational gamblers, pre-commitment can be effective in

reducing minor losses to more acceptable levels. For infrequent recreational gamblers, pre-commitment may eliminate minor losses.

Smart cards are ideal in the situation currently being introduced in Norway where all machines are mandated to operate centrally registered smart cards that are capable of tracking each and every player's level of expenditure and gambling pattern. Within such an environment, algorithms can be set up to monitor and identify patterns of play that either exceed pre-set parameters or exhibit uncharacteristic fluctuations that may flag emerging levels of excessive gambling. Appropriate steps could be taken to interview and review players displaying at-risk behaviours. In addition, the possibility of suspending or (self-) excluding at-risk players becomes a reality given that smart cards are centrally registered and monitor registered players irrespective of the location or electronic gaming machine played. In the absence of a choice of smart card use, attitudes toward such technologies are most likely to become accepted as part and parcel of the gambling scene.

Given that psychological factors related to personality traits and underlying concepts related to reinforcing self-images, drive for prestige and, fantasies of power rather than personal gain form a powerful motivator for problem gambling, the results of this study support the Drug Theory of Money. Electronic gaming machine problem gamblers appear to seek reinforcing psychological rewards rather than material goods and services that money can offer. This adds a new dimension to understanding the aetiology of problem gambling that complements the cognitive belief schemas, behavioural learning and addiction models of gambling: that is, attitudes to money represent a self-gratifying desire for power, prestige and satisfaction of personal needs related to self-image and fantasies of wealth that motivates the gambler to persist in the face of adverse consequences. While winning money represents the core of gambling, for problem gamblers money provides psychological satisfaction rather than material benefits.

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Appendix 1:



The University of Sydney

School of Psychology

ABN 15 211 513 464

Alex Blaszczynski BA MA Dip Psych PhD MAPs
Professor in Psychology

Clinical Psychology Unit
Transient Building F12
University of Sydney NSW 2006
AUSTRALIA
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PARTICIPANT INFORMATION STATEMENT Research Project

Title: RESEARCH STUDY INTO ATTITUDES TOWARD MONEY AMONG GAMBLERS

(1) What is the study about?

The purpose is to determine if there are differences in attitude held toward money between subgroups of gamblers (recreational, regular, and problem) and if there is a relationship between attitudes and the use of smart card or similar 'cashless' technologies in gambling.

(2) Who is carrying out the study?

The study is being conducted by Alex Blaszczynski, Professor in Psychology, The University of Sydney and Lia Nower, Associate Professor, Rutgers University, New Brunswick, USA.

(3) What does the study involve?

You will be asked to complete a number of self-report questionnaires about your gambling behaviour and attitudes you hold toward money. In addition, you may also be invited to participate in a focus group with up to eight other participants to discuss your views about 'smart cards' and related technologies used in electronic gaming machines.

(4) How much time will the study take?

It will take about twenty minutes to complete the questionnaire. The focus-group that will take about one and a half hours, and this will be held at one of the gaming venues.

(5) Can I withdraw from the study?

Being in this study is completely voluntary - you are not under any obligation to consent.

(6) Will anyone else know the results?

All aspects of the study, including results, will be strictly confidential and only the researchers will have access to information on participants. A report of the study may be submitted for publication, but individual participants will not be identifiable in such a report.

(7) Will the study benefit me?

The study will not benefit you directly but it will provide important information that may be useful in assisting problem gamblers and also in influencing policy decisions regarding the usefulness of smart card and related technologies in promoting responsible gambling.

(8) Can I tell other people about the study?

We encourage you to tell others about the study.

(9) What if I require further information?

When you have read this information, Professor Blaszczyński or his research assistant will discuss it with you further and answer any questions you may have. If you would like to know more at any stage, please feel free to contact Professor Alex Blaszczyński, Professor in Psychology on 9351 7612.

(10) What if I have a complaint or concerns?

Any person with concerns or complaints about the conduct of a research study can contact the Senior Ethics Officer, Ethics Administration, University of Sydney on (02) 9351 4811 (Telephone); (02) 9351 6706 (Facsimile) or gbriody@mail.usyd.edu.au (Email).

This information sheet is for you to keep

Appendix 2



The University of Sydney

School of Psychology

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PARTICIPANT CONSENT FORM

I,, give consent to my participation in the research project
Name (please print)

TITLE: RESEARCH STUDY INTO ATTITUDES TOWARD MONEY AMONG GAMBLERS

In giving my consent I acknowledge that:

- 1. The procedures required for the project and the time involved have been explained to me, and any questions I have about the project have been answered to my satisfaction.
2. I have read the Participant Information Statement and have been given the opportunity to discuss the information and my involvement in the project with the researcher/s.
3. I understand that I can withdraw from the study at any time, without affecting my relationship with the researcher(s) now or in the future.
4. I understand that my involvement is strictly confidential and no information about me will be used in any way that reveals my identity.

Signed:

Name:

Date:

Appendix 3

GAMBLING & MONEY ATTITUDES RESEARCH PROJECT

Thank you for participating in this University of Sydney research project funded by the Queensland Government Treasury. The purpose of this study is to explore attitudes that people generally hold toward money and to understand their attitudes toward the use of smart-cards when gambling.

Your responses to the questionnaires will remain strictly anonymous.

PLEASE DO NOT PUT YOUR NAME OR ANY OTHER PERSONAL INFORMATION THAT MAY IDENTIFY YOU ON ANY OF THE QUESTIONNAIRES.

Please answer each of the following questions as quickly and as honestly as you can.

Section 1: about you & your gambling

-
1. Age Years

 2. Gender Male
 Female

 3. What is your favourite form of gambling? Electronic gaming machines (pokies)
 Video-card games (blackjack, poker, keno)
 Keno
 Betting on horses, dogs, trots
 Casino table games (roulette, blackjack, baccarat)
 Sports betting
 Lottery
 Scratchcards

 4. How many times a month do you go to the hotel or club to play poker machines? _____ (times per month)

 5. People play poker machines for many reasons. Would you tick the main reasons you enjoy playing poker machines? (*Tick as many as you like*) For fun & enjoyment
 Because it is exciting & entertaining
 To socialize with others
 To earn additional income
 To get away from daily hassles & problems

 6. What is your usual or average amount of money that you take to play the poker machines? \$_____

7. Which of the following best describes how much money you intend to play with before you arrive at the club or hotel? Do you:
- Usually decide exactly how much money you will play with and stick to that amount
 - Know roughly how much you are prepared to play with
 - Usually decide how much to play with when you actually start playing but have a limit that you will not go over
 - Usually decide how much when you start playing but do not set any limits
 - Decide later how much you will play with depending on what happens when you are at the club or hotel, for example, others inviting you to play with them
 - Decide when you are playing depending on how much you are behind.
-

Section 2: Attitudes to Smart Cards:

What are SMART CARDS? Smart cards are used in place of cash (coins or notes) when you are playing the poker-machines. They are usually the size of credit cards and have a magnetic strip or chip that records an amount of money that is available to you, much like an EFTPOS or debit card that you use to buy things when shopping. You insert the smart card into the poker-machine which then allows you to play the amount of money that you have on the card. Wins are automatically added, and losses taken away during play.

Instructions

Please rate the extent to which you agree with each question by placing a tick (✓) in the appropriate numbered box, for example:

	Never		Sometimes			Always	
	1	2	3	4	5	6	7
I enjoy spending money.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Item	Scale							Sc
	Strongly Disagree					Strongly Agree		
	1	2	3	4	5	6	7	
1. If available, I would use the Smart card to make sure that I did not spend more than the amount I intended to play with in each session.....	<input type="checkbox"/>							
2. I think the Smart card system is a good way to make sure that you did not lose too much money on the machines.....	<input type="checkbox"/>							
3. I would use the Smart card all the time to set limits on exactly how much I would play with.....	<input type="checkbox"/>							
4. Smart cards would be very useful in helping problem gamblers play with what they can afford to lose.....	<input type="checkbox"/>							
5. I would most often purchase a Smart card with a set amount on it before I went to the venue to make sure that I gambled only what I could afford.....	<input type="checkbox"/>							
6. Even if I had a Smart card, I would purchase another one if I had lost and wanted to try to win back my money during a session of play.....	<input type="checkbox"/>							

7. I prefer to play with tokens or chips rather than cash.....	<input type="checkbox"/>						
8. I often lose track of how much money I play with.....	<input type="checkbox"/>						
9. The display on poker machines showing the cash amount rather than credit points helps me to stick to my limits	<input type="checkbox"/>						
10. Using Smart cards would change how much I gambled on a poker machine.....	<input type="checkbox"/>						
11. Smart cards would not change how much I gamble in any way.....	<input type="checkbox"/>						
12. I usually spend more money when I am using token or chips than when I play with cash.....	<input type="checkbox"/>						
13. I usually do not work out if I am in front or behind while in the middle of a session when playing the machines.....	<input type="checkbox"/>						

Appendix 4

Office use only:
 Venue code:
 Date:
 O =
 P =
 R =
 S =
 I =
 E =

FURNHAM MONEY ATTITUDE SCALE

Please do not write your name on this sheet.

Instructions

Please rate the extent to which you agree with each question by placing a tick (✓) in the appropriate numbered box, for example:

	Never		Sometimes		Always		
	1	2	3	4	5	6	7
I enjoy spending money.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Item	Scale							Sc
	Strongly Disagree					Strongly Agree		
	1	2	3	4	5	6	7	
1. I often buy things that I don't need or want because they are in a sale or reduced in a sale or reduced in price.....	<input type="checkbox"/>							
2. I put money ahead of pleasure.....	<input type="checkbox"/>							
3. I sometimes buy things that I don't need or want to impress people because they are the right things to have at the time.....	<input type="checkbox"/>							
4. Even when I have sufficient money I often feel guilty about spending money on necessities like clothes etc.....	<input type="checkbox"/>							
5. I often say "I can't afford it" whether I can or not.....	<input type="checkbox"/>							
6. I know almost to the cent how much money I have in my purse, wallet or pocket.....	<input type="checkbox"/>							
7. I often have difficulty in making decisions about money regardless of the amount.....	<input type="checkbox"/>							
8. I feel compelled to argue or bargain about the cost of almost everything that I buy.....	<input type="checkbox"/>							
9. I prefer to use money rather than credit cards.....	<input type="checkbox"/>							

Continue

	Never	sometimes					Always
	1	2	3	4	5	6	7
	<input type="checkbox"/>						
10. I am financially worse off than most of my friends think.....	<input type="checkbox"/>						
11. I always know how much I have in my savings account (bank or building society).....	<input type="checkbox"/>						
12. If I have money left over at the end of the month (week) I often feel uncomfortable until it is all spent.....	<input type="checkbox"/>						
13. I sometimes "buy" friendship by being very generous with those I want to like me.....	<input type="checkbox"/>						
14. I often feel inferior to others who have more money than myself, even when I know that they have done nothing of worth to get it.....	<input type="checkbox"/>						
15. I often use money as a weapon to control or intimidate those who frustrate me.....	<input type="checkbox"/>						
16. I sometimes feel superior to those who have less money than myself regardless of their ability and achievements.....	<input type="checkbox"/>						
17. I firmly believe that money can solve all of my problems.....	<input type="checkbox"/>						
18. I often feel anxious and defensive when asked about my personal finances.....	<input type="checkbox"/>						
19. In making any purchase, for any purpose, my first consideration is cost.....	<input type="checkbox"/>						
20. I believe that it is rude to enquire about a person's wage/salary.....	<input type="checkbox"/>						
21. I feel stupid if I pay a little more for something than a neighbour.....	<input type="checkbox"/>						
22. I often feel disdain for money and look down on those who have it.....	<input type="checkbox"/>						
23. I prefer to save money because I'm never sure when things will collapse and I'll need the cash.....	<input type="checkbox"/>						

Continue

	Never	sometimes					Always
	1	2	3	4	5	6	7
	<input type="checkbox"/>						
24. The amount of money that I have saved is never quite enough.....	<input type="checkbox"/>						
25. I feel that money is the only thing that I can really count on.....	<input type="checkbox"/>						
26. Compared to most other people that I know, I believe that I think about money much more than they do.....	<input type="checkbox"/>						
27. My attitude towards money is very similar to that of my parents.....	<input type="checkbox"/>						
28. I believe that the amount of money that a person earns is closely related to his/her ability and effort.....	<input type="checkbox"/>						
29. I always pay bills (phone, electricity, etc) promptly.....	<input type="checkbox"/>						
30. I often give large tips to waiters/waitresses that I like.....	<input type="checkbox"/>						
31. I believe that time not spent in making money is time wasted.....	<input type="checkbox"/>						
32. I often spend money on myself when I am depressed.....	<input type="checkbox"/>						
33. I prefer not to lend people money.....	<input type="checkbox"/>						
34. I am financially better off than most of my friends think.....	<input type="checkbox"/>						
35. I would do practically anything legal for money if it were enough.....	<input type="checkbox"/>						
36. I am proud of my financial victories – pay, riches, investments, etc – and let my friends know about them.....	<input type="checkbox"/>						
37. I often argue with my partner (spouse, lover, etc) about money.....	<input type="checkbox"/>						

Continue

	Never	sometimes					Always
	1	2	3	4	5	6	7
	<input type="checkbox"/>						
38. Most of my friends have more money than I do.	<input type="checkbox"/>						
39. I believe that my present income is far less than I deserve, given the job I do.....	<input type="checkbox"/>						
40. I believe that I have very little control over my financial situation in terms of my power to change it.	<input type="checkbox"/>						
41. I worry about my finances much of the time.....	<input type="checkbox"/>						
42. I often fantasise about money and what I could do with it.....	<input type="checkbox"/>						
43. I very rarely give beggars or drunks money when they ask for it.....	<input type="checkbox"/>						
44. I am proud of my ability to save money	<input type="checkbox"/>						
45. In Australia, money is how we compare each other.....	<input type="checkbox"/>						
46. I believe that my present income is about what I deserve, given the job I do.....	<input type="checkbox"/>						
47. I believe that a person's salary is very revealing in assessing their intelligence.....	<input type="checkbox"/>						

Appendix 5

Y&T MONEY ATTITUDE SCALE

Office use only:
 Venue code:
 Date:
 P-P =
 R-T =
 Q =
 D =
 Total =

Please do not write your name on this sheet.

Instructions

Please rate the extent to which you agree with each question by placing a tick (✓) in the appropriate numbered box, for example:

	Never		Sometimes		Always		
	1	2	3	4	5	6	7
I enjoy spending money.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Item	Scale							Sc
	Never	Sometimes			Always			
	1	2	3	4	5	6	7	
1. I use money to influence other people to do things for me.....	<input type="checkbox"/>	PP						
2. I pay more for something because I know I have to in order to get the best.....	<input type="checkbox"/>	Q						
3. I show worrisome behaviour when it comes to money.....	<input type="checkbox"/>	A						
4. I must admit that I sometimes boast about how much money I make.....	<input type="checkbox"/>	PP						
5. I am very prudent with money.....	<input type="checkbox"/>	RT						
6. I am bothered when I have to pass up a sale.....	<input type="checkbox"/>	A						
7. People I know tell me that I place too much emphasis on the amount of money person has as a sign of his success.....	<input type="checkbox"/>	PP						
8. I must admit that I purchase things because I know they will impress others.....	<input type="checkbox"/>	PP						
9. I do financial planning for the future.....	<input type="checkbox"/>	RT						

Continue

	Never		sometimes			Always		
	1	2	3	4	5	6	7	
	<input type="checkbox"/>							
10. I spend money to make myself feel better.....	<input type="checkbox"/>	A						
11. I put money aside on a regular basis for the future.....	<input type="checkbox"/>	RT						
12. Although I should judge the success of people by their deeds, I am more influenced by the amount of money they have.....	<input type="checkbox"/>	PP						
13. I save now to prepare for my old age.....	<input type="checkbox"/>	RT						
14. I spend more to get the very best.....	<input type="checkbox"/>	Q						
15. I keep track of my money.....	<input type="checkbox"/>	RT						
After buying something, I wonder if I could have gotten the same for less elsewhere.....	<input type="checkbox"/>	D						
I hesitate to spend money, even on necessities.....	<input type="checkbox"/>	D						
In all honesty, I own nice things in order to impress others.....	<input type="checkbox"/>	PP						
I follow a careful financial budget.....	<input type="checkbox"/>	RT						
I have money available in the event of another economic depression.....	<input type="checkbox"/>	RT						
I argue or complain about the cost of things I buy.....	<input type="checkbox"/>	D						
I worry that I will not be financially secure.....	<input type="checkbox"/>	A						
It bothers me when I discover I could have gotten something for less elsewhere.....	<input type="checkbox"/>	D						

Continue

	Never		sometimes			Always		
	1	2	3	4	5	6	7	
	<input type="checkbox"/>							
I buy the name brand products.....	<input type="checkbox"/>	Q						
I automatically say, "I can't afford it whether I can or not".....	<input type="checkbox"/>	D						
I often try to find out if other people make more money than I do.....	<input type="checkbox"/>	PP						
When I buy something, I complain about the price I paid.	<input type="checkbox"/>	D						
I seem to find that I show more respect to people with money than I have.....	<input type="checkbox"/>	PP						
When I make a major purchase, I have the suspicion that I have been taken advantage of.....	<input type="checkbox"/>	D						
I buy top-of -the line products.....	<input type="checkbox"/>	Q						
I behave as if money were the ultimate symbol of success.....	<input type="checkbox"/>	PP						
I buy the most expensive items available.....	<input type="checkbox"/>	Q						
It's hard for me to pass up a bargain.....	<input type="checkbox"/>	A						
I show signs of nervousness when I don't have enough money.....	<input type="checkbox"/>	A						

Appendix 6

CPGI

Office use only: Venue code: Date: Total =
--

Please do not write your name on this sheet.

Instructions

Please rate the extent to which you agree with each question by placing a tick (✓) in the appropriate numbered box, for example:

	Never	Rarely	Sometimes	Often	Always	Don't know/ can't recall
In the last 12 months, I gamble all the money I have.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input checked="" type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>

Item	Scale					
	Never	Rarely	Sometimes	Often	Always	Don't know/ can't recall
	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
16. In the last 12 months , have you bet more than you could really afford to lose, would you say never, rarely, sometimes, often or always?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
17. In the last 12 months , have you needed to gamble with larger amounts of money to get the same feeling of excitement, would you say never, rarely, sometimes, often or always?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
18. In the last 12 months , when you gambled, did you go back another day to try to win back the money you lost, would you say never, rarely, sometimes, often or always?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
19. In the last 12 months , have you borrowed money or sold anything to get money to gamble, would you say never, rarely, sometimes, often or always?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>

Continue next page

Item	Scale					
	Never	Rarely	Sometimes	Often	Always	Don't know/ can't recall
	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
20. In the last 12 months , have you felt that you might have a problem with gambling, would you say never, rarely, sometimes, often or always?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
21. In the last 12 months , has gambling caused you any health problems, including stress or anxiety, would you say never, rarely, sometimes, often or always?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
22. In the last 12 months , have people criticised your betting or told you that you had a gambling problem, regardless of whether or not you thought it was true, would you say never, rarely, sometimes, often or always?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
23. In the last 12 months , has your gambling caused any financial problems for you or your household, would you say never, rarely, sometimes, often or always?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
24. In the last 12 months , have you felt guilty about the way you gamble or what happens when you gamble, would you say never, rarely, sometimes, often or always?	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>

Appendix 7



The University of Sydney

The University of Sydney Gambling Research Unit

RESEARCH PROJECT ON ATTITUDES TO MONEY AND GAMBLING

The University of Sydney is currently conducting a research project funded by Queensland Government Treasury and supported by your {Venue}. The purpose of this research is to gain a better understanding of the relationship between levels of gambling behavior and people's attitudes towards money. We are also interested in people's attitudes towards the use of tokens or chips rather than money when playing gaming machines. The findings of the research will provide information that may influence policy is regarding smartcard technologies and responsible gambling initiatives.

We are seeking volunteers to answer a number of brief questionnaires regarding attitudes towards money and gambling. It will take approximately fifteen minutes of your time. All responses are anonymous – you do not have to give any personal information.

A small number of people will also be asked if they are interested in participating in a Focus Group at a later date.

If you are interested, please approach the research assistant for copies of the questionnaire and to indicate if you are willing to participate in the Focus Group.

We thank you for the time and effort you have given in supporting our research project.

*Chief Investigator
Professor Alex Blaszczynski*

Phone: 02) 9351 7612