



**INVESTIGATION INTO THE EFFECTS OF GAMBLING GAME  
CHARACTERISTICS, PIDS AND POP-UP TECHNOLOGY ON  
GAMBLING AND PROBLEM GAMBLING BEHAVIOUR IN  
NEW ZEALAND**

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## EXECUTIVE SUMMARY

### *Brief summary of main findings*

#### **Casino table games**

- Focus group results combined with survey findings showed that the social nature and perceived control over the games linked with casino table gambling were associated with loss of control over time and money spent gambling.
- Those for whom a croupier is important spent consistently more time gambling over the survey period.

#### **EGMs - game characteristics**

- Free spins and jackpots were both associated with loss of control over time and money spent gambling in the focus group and survey phases.
- Evidence across the focus group, observation and survey phases suggested that free spins, small frequent wins, low denominations and multiple lines operate together to disguise losses as wins and to encourage gamblers to continue to play beyond their intended time in anticipation of the highly desirable free spins.

#### **EGMs - PIDs**

- PIDs, as voluntary features, did not seem to impact on gambling enjoyment for the majority of gamblers in either the focus groups, observations or the survey phase.
- Survey and focus group results suggest that some gamblers may be using PIDs as part of analytic play strategies (linked to cognitive distortion and problem gambling), and so for a small number of gamblers there might be unintended consequences of PIDs.

#### **EGMs - pop-up messages**

- Pop-up messages were reported to aid control over time and expenditure by approximately one quarter of the gamblers surveyed who were aware of the messages.
- Reported impacts of pop-up messages in the survey (e.g. the reported likelihood that participants would read the information) generally had no effect on time spent gambling.
- Participants who reported they would likely stop gambling or consider their gambling in response to a pop-up message did, in fact, tend to spend less money gambling overall (however, as the sample size was very small these results are only indicative).
- Results from all three phases showed that the information presented in pop-up messages is attended to by gamblers and can, therefore, be used to support them in making an informed choice on whether to continue gambling.
- There was little or no evidence that the compulsory pop-up messages impacted on the gambling satisfaction of the majority of gamblers. The observations and survey results converged to suggest that where gamblers are exhibiting signs of annoyance or distress related to pop-up messages, this behaviour is not the norm and may be indicative of potential gambling problems.

## ***Background***

The identification of gambling harm as a public health issue in New Zealand has led to various initiatives aimed at preventing and minimising gambling harm. Given the strong association between electronic gaming machines (EGMs) and gambling-related harm, considerable attention has been focused on measures specific to this form of gambling with pop-up messages and player information display systems (PIDS) introduced to all EGMs in New Zealand. Pop-up messages are a brief compulsory break in play during which information on session length and expenditure is provided on screen to the gambler. PIDs are a voluntary feature, where gamblers can access similar information at any time. The present research sought to understand the impacts on gambler behaviour of these technologies as well as exploring the effects of EGM game characteristics and casino table game characteristics on gambler behaviour.

## ***Aims***

The primary objective of the project was twofold and was to explore the effect of the following on gambling and problem gambling behaviour in New Zealand:

- Gambling game characteristics of electronic gaming machines and casino table games
- Player information displays (PIDs) and pop-up messages on electronic gaming machines

## ***Methods***

This project took a mixed methods approach with three different phases of data collection, each of which informed the following phase(s). Phase One involved a literature review and focus groups to canvass gambler and industry staff opinions and observations in relation to the effects of game characteristics, PIDs and pop-up messages on gambler behaviour. Perspectives from Phase One were used to establish the practical and theoretical focus for the in-venue observational study of gambling behaviour in Phase Two. Both Phases One and Two directly informed the development of the survey instrument used for a prospective study of venue recruited gamblers in Phase Three. Findings from all three phases were triangulated and, therefore, it must be stressed from the outset that results from the three phases cannot be viewed in isolation but must be interpreted together in order to address the aims of the study. Where discrepancies were noted in the results between the phases, the sources have been documented and more weight was placed on the objective data source (i.e. the survey). A brief summary of the main findings is detailed overleaf.

## **Literature review**

The review of available literature indicated that while affected by risk factors relevant to the individual gambler, gambling and problem gambling behaviour is essentially a function of cognitive factors (distorted thinking about gambling) that are affected by the speed and frequency of rewards within the games (EGMs and casino table games). There is, in principle, good reason grounded in behavioural science to suggest that the combination of breaking play and providing information could reduce harmful gambling. As such, the PIDs and pop-up messages that have been introduced to EGMs in New Zealand are in alignment with measures the literature suggests as possibly efficacious. While the evidence is not as comprehensive as desired, there is evidence to suggest that particularly dynamic/moving pop-up messages that encourage reflection on gambling could reduce the incidence of problem gambling and perhaps assist some problem gamblers to control their gambling. However, the exact nature of the information that would be most effective to provide in pop-up messages remains less certain.

## **Focus groups**

Focus groups were held with gamblers (including one Māori group, general community recruited groups, and groups of current or former problem gamblers), specialist Pasifika and Asian problem gambling service staff, and gambling industry staff representatives. Forty gamblers took part in six focus groups. Three focus groups were conducted with gambling venue staff from pubs and casinos, and two focus groups were conducted with problem gambling service staff.

## **In-venue observational study**

An observational study of gambling behaviour in-situ was conducted at two casino venues and three non-casino (pub) venues. The procedure was based on an approach used previously by Delfabbro, Osborn, Nevile, Skelt and McMillen (2007). A pair of researchers each conducted approximately 12 hours of observations in casinos and 12 hours of observations in pubs.

## **Survey**

Gamblers (N=521) were recruited in the vicinity of casino and pub EGMs and casino table game areas using an intercept sampling methodology; they subsequently took part in a telephone survey. The survey included questions on a range of established scales and measures of gambling and problem gambling behaviour, attitudes towards and use of game characteristics, PIDs and pop-up messages, and measures of health and psychological wellbeing and coping. A sub-group of regular gamblers who gamble weekly or more often was followed up at three- and six- months after the baseline survey.

## **Results**

### **Focus groups**

#### Casino table games

Discussion of the attractive features of casino table games across all of the focus groups centred on the social aspects and notions of control, choice and skill involved when compared to gambling on EGMs. Participants discussed involvement with others (both other gamblers and the croupier) at the tables as setting the table game experience apart from the more solitary EGMs. Being in close proximity with others was discussed as increasing the entertainment value of the game (excitement, intensity and energy), as well as the desire to gamble more or to start gambling at a particular table.

One feature of casino table games was mentioned as aiding control over gambling. This was the break in a game caused by hand shuffling cards; however, most casino table games now use electronic shuffling machines. Additionally, within the problem gambling groups only, the faster pace of some table games (e.g. blackjack as opposed to roulette) was discussed as a factor in loss of control.

Higher frequency and problem gamblers discussed greater amounts of self-perceived skill and control over the outcome of the game (which was consistent with findings in relation to the EGMs). Many of the problem/ex-problem gamblers suggested that the tables (as well as EGMs) could be played strategically or mathematically and that they could out-play others in some competitive games. While the former has an element of truth, the discussions showed that some participants believed that the games could be influenced well beyond that which was actually possible.

## EGMs

There was considerable consistency across the social and problem gambler groups, both in terms of the main game characteristics discussed, and their relative importance. The findings were consistent with previous similar research, specifically in that winning small amounts, free spins, lights and sound features were all important to gambling satisfaction (e.g. Livingstone, Woolley, Zazryn, Bakacs, & Shami, 2008). The features identified as important were all discussed as contributing to gambling more intensely and for longer periods, sometimes longer than intended both by problem and social gamblers alike.

Free spins were discussed as the most attractive and important feature of EGM gambling, and were clearly associated with increased gambling. Many gamblers suggested they would continue to gamble until they had attained at least some free spins. Free spins were explicitly linked to the notion of getting 'value for money' which was attractive both to social and problem gamblers. However, social gamblers were focused on maximising the time they spent gambling, whereas higher frequency gamblers were more focused on potential returns. Their perception was that free spins facilitated both goals.

There was a clear preference across participants in all gambler groups for lower denomination machines and for mini-max betting style<sup>1</sup>. However, higher frequency and problem gamblers reported making higher bets on maximum lines and had more variability in the number of lines played. Lower frequency gamblers preferred a low betting amount and a more consistent approach. Gamblers generally seemed to realise that the perceived safety of low denomination machines actually led them to gamble more or for longer than they intended. They bet more lines and more on each play than the denomination of the machine, and rationalised this in that they were still wagering relatively little per spin, whilst increasing their chances of winning. Problem gamblers discussed sometimes making a change to a higher denomination machine without fully considering the implications, at the time at least.

Jackpots and large wins were a key feature for the high frequency and current/ex-problem gambler groups only. This was perhaps because the higher frequency gamblers are more likely to have had or observed very large wins of this type (given the level and frequency of their play), or they needed the larger win because of their level of gambling. It was clear that the jackpots and the possibility of much larger wins were a stronger motivation for these gamblers than for the lower frequency gamblers.

## Pop-up messages and PIDs

The overall indication from gambler and gambling industry participants was that pop-up messages seem to be working as intended; they enforce a break in play that breaks routine and could also encourage reflection on play. High frequency and problem/ex-problem gambler participants expressed views ranging from irritation through to acceptance/habituation. High frequency and problem/ex-problem gamblers discussed more stress and annoyance, particularly when pop-up messages occurred when they were gambling for a linked jackpot or similar feature. It was, however, evident that the pop-up messages were being read by these participants, with the information being processed in some way. Most commented on the content and perceived accuracy of the session information provided in the pop-up message. In contrast, low frequency players had either not seen the pop-up messages or found them confusing.

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<sup>1</sup> Minimum bets on maximum number of lines.

However, the expressed views were generally negative and a range of concerns was discussed. Pop-up messages were perceived by some gambler and gambling industry participants to be a breach of privacy, while avoidance behaviours by gamblers (e.g. moving machines frequently to avoid pop-up messages, not engaging with the information presented), were suggested by gambling industry participants to be very common (notably, gamblers did not mention this behaviour). Many of the behaviours the gambling industry participants discussed seeing were indicative of someone experiencing anger and frustration (e.g. gamblers swearing, shouting at staff, and smacking and slapping the EGM when a pop-up message occurred). The majority of gambling industry participants drew on notions of individual responsibility for gambling behaviour to suggest that both pop-up messages and PIDs are an unnecessary incursion into people's freedom which could have unintended effects. Such unintended effects included an increase in a problem gambler's expenditure by encouraging them to chase losses and deterring responsible gamblers from playing through annoyance.

While there was a distinct awareness of pop-up messages among frequent gamblers and gambling industry participants, clearly suggesting an effect on gamblers and the gambling environment, there was a lack of knowledge about the PIDs across the gambling groups. Of note was that some high frequency and problem gambler participants reported using PIDs and other machine information to support their 'strategic' approach to gambling.

### **In venue observational study**

During the in-venue observations, the importance of regular small wins and free spins, discussed in the focus groups, was highlighted. Hundreds of predominantly very small wins were observed while gamblers maintained a steady rate of gambling behaviour (usually with mini-max betting). These small credit wins were usually insufficient to 'pay' for the spin, and as such they were a 'loss disguised as a win'. Often no large wins were observed with patrons typically gambling their credits to zero. Very little reaction to these small wins (apart from continued gambling behaviour) was observed. More excitement/positive reaction was observed among gamblers in response to larger wins and or when a free spin feature was won.

Free spins were frequently observed in association with more intensive gambling, obvious excitement, interest and engagement with the EGM, even when the amount gambled to win them was far more than the amount won on the free spins. Indeed, it was difficult to track the relationship between the winnings and the amount of money inserted into the machine or cashed out over the time spent gambling. Larger wins were more likely to prompt comments and smiles from other gamblers, often due to the associated sounds attracting attention. Overall, the overwhelming observation was that once they begin a gambling session (usually by inserting one or two \$20 notes into the EGM) the majority of gamblers continued gambling at the same rate (minimum bet level and maximum number of lines) until no credits remained.

Most gamblers did not change the games on an EGM or the EGM they were playing while the researchers were observing them. This was in contrast to focus group venue staff reports of patrons frequently changing machines, in particular to avoid pop-up messages. Of the 100 instances of switching behaviour observed (including switching games within and between machines), most gamblers were observed switching during periods of losing or after a win suggesting that switching EGMs has more to do with patron perceptions of the likelihood of winning, as opposed to avoiding pop-up messages.

The researchers observed behaviour in relation to 22 pop-up messages appearing in casinos (while observing 18 gamblers) and 18 pop-up messages appearing in pubs (while observing 11 gamblers). Pop-up messages were infrequent relative to the occurrence of other potentially salient stimuli

affecting gambling behaviour. Most observed gamblers only had a pop-up message occur once before they changed to another activity (e.g. watched sport on television, drank alcohol or coffee).

In response to pop-up messages, the majority of gamblers appeared to read the information on screen and then used the break to watch other EGM gamblers. Overt displays of frustration or annoyance were rare with just two cases occurring in casinos and two in pubs. In two cases, based on verbalisations, the gamblers perceived the break in play was preventing them from winning a jackpot. In the other two other cases, gamblers were observed slapping the machine and pressing the spin button repeatedly. Venue staff members were not observed to approach these gamblers to engage them in conversation. Approximately half of the gamblers either pressed the “yes, continue” gambling option or waited for the pop-up message to disappear of its own accord before continuing to gamble in the same manner. When gamblers were seen cashing out following a pop-up message, two cashed out in order to change machines (casino) and two were seen to cash out and end their observed gambling session (by moving to the bar area of the pub).

Only one gambler was observed accessing PIDs information during gambling (immediately after a pop-up message occurred). Accessing this information did not appear to have any obvious effect on the gambling within that session (bet size, number of lines and the particular EGM game played remained the same).

## Survey

Five hundred and twenty one gamblers were recruited for the baseline survey. Regular gamblers (gambled once a week or more often) were followed up at three months (n=174) and six months (n=152) post recruitment. Participants at baseline were more likely to be male (56%), European (66%), in paid full time employment (56%), had obtained a secondary school qualification (38%), and were living with a partner (34%) or as part of a family with children at home (18%). The subsamples of regular and non-regular (gambled less than once a week) gamblers were alike in their demographic features.

The data were examined using univariate and multivariate analyses to identify the variables that significantly affected the time and/or money that participants reported they spent on gambling per month. Follow up data were examined using repeated measures General Linear Models to identify any statistically significant trends over time.

### Casino table game characteristics

#### *Time spent gambling on casino table games*

Reporting an Asian ethnicity, higher risk problem gambling (PGSI) category, and higher K-10 score for psychological distress were identified as factors that, when combined, had an association with longer time spent gambling on casino table games. Controlling for the influence of these factors statistically, some features of table games were also significantly associated with time spent gambling. If *player skill* and *control over the game* were important to their gambling satisfaction, gamblers spent more time gambling. If a *low minimum bet* was important to satisfaction, gamblers spent less time gambling. Related effects were seen for gamblers' intended time spent gambling. If gamblers reported that *player skill* and *control over the game* have an effect on the amount of time they spent gambling (either more or less time), those gamblers spent significantly more time gambling than others who reported that these two features would have no effect. The longitudinal analyses suggested that in the context of gambling satisfaction, reporting *control over the game* to be unimportant was associated with consistently less time spent gambling over time.

### *Money spent gambling on casino table games*

Reporting an Asian ethnicity, age group of less than 20 years or 65 years and older, higher risk PGSI category, and higher K-10 score predicted higher amounts spent on casino table gambling per month. When these factors were controlled for, the results were similar to those for time spent playing table games. *Player skill* and *control over the game* were associated with more money spent, and if a low minimum bet was important to gambler satisfaction they tended to spend less money. Additionally, valuing *social interaction at the table* as important for gambling satisfaction predicted higher expenditure. The results for the effects on the money gamblers intended to spend were also similar. When gamblers believed that *player skill* and *control over the game* had an impact, more money was spent gambling. Where gamblers reported that the *croupier* affects their money spent (either causing them to spend more or less money) this predicted increased expenditure when compared to gamblers for whom the *croupier* was not thought to have any effect. As with the results for time spent gambling, the longitudinal analyses suggested that reporting *control over the game* to be unimportant to gambling satisfaction was associated with consistently lower expenditure on gambling over time.

### EGM gambling - key features

#### *Time spent gambling on EGMs - EGM features*

More time spent gambling on EGMs each month was associated with age group (less than 20 years and 65 years and older), higher risk PGSI category, non-smoker/infrequent smoker, gambling on both pub and casino EGMs, and lower scores on the COPE subscale for mental disengagement (indicating lower disengagement from the goal that a stressful situation is interfering with) in the multivariate modelling procedure. Longer average EGM session length was significantly associated with identifying an Asian ethnicity, being a non-risky alcohol drinker and gambling on both pub and casino EGMs.

When these factors were controlled for, a significant relationship remained between EGM jackpots and time spent gambling: participants who perceived jackpots as important for their gambling satisfaction spent significantly more time gambling on EGMs. Participants who reported that *free spins*, *small frequent wins* and *jackpots* either extended or reduced their time spent gambling spent significantly more time gambling than other gamblers who reported that these features had no effect. Over time, those who reported *free spins* to be unimportant to gambling satisfaction spent less time gambling than those for whom this feature was important.

#### *Money spent gambling on EGMs - EGM features*

The factors significantly associated with higher expenditure on EGMs were Asian ethnicity, higher risk PGSI category, age group (less than 20 years and 65 years and older), gambling on both pub and casino EGMs, and a lower score on the COPE subscale for planning (indicating less planning in response to stressful situations). When these factors were controlled for, the perception that a *low minimum bet* was important for gambling satisfaction predicted lower expenditure. When intended expenditure was considered, the results were similar to the time data with *free spins*, *jackpots* and also the *number of playable lines* associated with higher gambling expenditure. From the longitudinal data, the importance of the *free spin* feature was noted to be associated with consistently more expenditure over time.

### EGM gambling - PIDs and pop-up messages

Descriptive results showed that most EGM gamblers were aware of PIDs (69%), with 46% of gamblers using PIDs. Approximately one third of gamblers who use PIDs reported that this feature helped them control their gambling to some degree (30% time gambling, 34% money spent gambling). This suggests that this feature is useful for gamblers and potentially working as intended

for at least a proportion of gamblers. Some gamblers reported that PIDs had an impact on them stopping gambling (7%), considering the level of their gambling (14%) and reducing gambling (15%). Although gamblers were unlikely to consider PIDs as a factor in changing their gambling behaviour, participants reported them to be accurate in the information they provided, and generally did not have any negative impacts on their gambling satisfaction (this finding was largely consistent with the earlier focus group discussions).

More than half (260/460) of participants who gamble on EGMs reported experiencing a pop-up message in the last three months. The majority of participants reported seeing pop-up messages rarely/sometimes (59%) or often/always (38%). Where participants reported seeing pop-up messages often or always, most (70%) reported seeing one or two in a typical gambling session; fewer participants (15%) reported seeing more than four pop-up messages per session. Four percent (4/98) of participants reported venue staff speaking to them about their gambling. Pop-up messages were reported to give accurate information by most participants. The majority of gamblers (63%) were neutral when asked about the impact of pop-up messages on their gambling satisfaction (9% reported a positive impact, 25% reported a negative impact).

#### *Time spent gambling on EGMs - PIDs*

Multivariate analyses showed that gamblers who were aware of PIDS spent significantly more time gambling than those who were unaware of this feature. Additionally, participants who reported that PIDs led them to increase their gambling spent significantly more time gambling than participants who reported the opposite or no effect of PIDs. Those who reported PIDs helped them control their time spent gambling in fact spent more time gambling. Over time, where gamblers reported that PIDs had an effect on their gambling satisfaction (either positive or negative) this was associated with reduced time gambling.

#### *Time spent gambling on EGMs - Pop-up messages*

Participants who had recently experienced pop-up messages on EGMs (in the last three months) spent significantly more time gambling than those who had not. Experiencing pop-up messages was also significantly associated with longer average gambling sessions. Any reported effect of pop-up messages on control over time spent gambling was not significantly associated with time spent gambling, nor was the perceived accuracy of pop-up messages. Not having seen a pop-up message in the last three months was associated with less time spent gambling over time.

#### *Money spent gambling on EGMs - PIDs*

Participants who were aware of PIDs reported spending more money gambling. Over time, PIDs awareness was associated with a small reduction in money spent on EGM gambling between baseline and three months, and a slight increase at the six month time point. Participants who were unaware of PIDs spent progressively less money on EGM gambling over time.

#### *Money spent gambling on EGMs - Pop-up messages*

Participants who reported that they were unlikely to stop gambling when they see a pop-up message spent more money gambling than participants who reported they were likely to stop gambling or who were neutral about pop-up messages. Over time, those who were likely to reduce their gambling in response to pop-up messages reduced the money they spent on gambling between baseline and three months, before increasing again at six months, though this was not back up to the baseline levels. The longitudinal results show variation across time points, suggesting that this impact is worthy of further investigation. It may be that the time period used in this study was too short to observe the impact of the pop-up message feature on player behaviour in detail.

## *Conclusions*

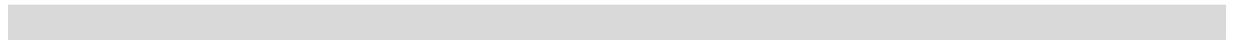
The social nature and perceived control over games associated with casino table gambling are highlighted by the present research as potentially risky features. Participants who reported they were influenced by social interaction at the table or by the croupier (in either deriving gambling satisfaction or impacting on their expenditure) spent more money gambling on table games than participants who were not attracted to these features. The results suggest that those for whom a croupier is an important feature spent consistently more time gambling over the study period. The perception that casino table games showcase player skill and allow control over the game was important to gambling satisfaction for gamblers who spent the most time and money gambling. Even gamblers who believe their level of skill and control cause them to spend less time gambling, actually spent consistently more time gambling than other gamblers. It seems likely that gambling at a sufficient level/frequency is important to developing these kinds of beliefs in skill and control, which in turn facilitate more gambling behaviour.

In relation to EGMs, the current study identified both free spins and jackpots to be associated with reduced control over time and money spent gambling. Jackpots were identified by this research as a particular enticement to begin and to continue a gambling session for some participants, while free spins were shown to be an inducement to spend more money gambling for participants who rated them to be important. These findings were also noted in the longitudinal analyses. Within a gambling session, free spins, small frequent wins, low denominations and multiple lines seem to operate together to disguise losses as wins and to encourage gamblers to continue to play beyond their intended time in anticipation of the highly desirable free spins. Contrary to their intuitive association with controlled play, small minimum bets work together with the number of playable lines available in the popular mini-max (minimum bet over maximum lines) betting strategy. This strategy increases the chances of winning on each spin while the chances of winning per gamble actually remain unaffected.

PIDs were unlikely to be considered by gamblers as a factor in behaviour change or consideration of the level of their gambling. They were consistently reported to be accurate with regard to the information provided and did not have negative impacts on gambling satisfaction. Thus PIDs, as voluntary features, do not seem to impact on enjoyment for the majority of gamblers and were also reported to be useful for a small proportion of those who use them. The present results suggest that some gamblers may be using PIDs as part of analytic play strategies (linked to cognitive distortion and problem gambling), and so for a small number of gamblers there might be unintended consequences of PIDs. Further research into the relationship between use of PIDs, session length and return visits is warranted. Despite existing efforts to make gamblers aware of how EGMs operate, gamblers' behaviour and, in particular, frequent gamblers' behaviour suggests misunderstandings are either present or develop with exposure to EGMs. Clarification via signage (in venues or on the EGM screen) in a manner explicitly understood by gamblers might be considered.

Overall, pop up messages had minimal impact on gambling satisfaction. Participants, who were not gambling in harmful or risky ways, seldom encountered them. Pop-up messages were reported to aid control over time and expenditure by approximately one quarter of the gamblers who were aware of them. A few gamblers indicated they would consider the impact of, reduce, or even stop their gambling after seeing a pop-up message. Although the numbers were small, this is indicative that pop-up messages can work in a way that minimises harm. The information presented seems to be attended to by gamblers and can be used to support them in making an informed choice on whether to continue gambling. Pop-up messages appeared to be successful in enforcing a break in play for gamblers who have been continuously gambling for a long period. At a minimum, they provide a short break that reduced gamblers' exposure to factors such as free spins and jackpots that could increase the risk of problem gambling.

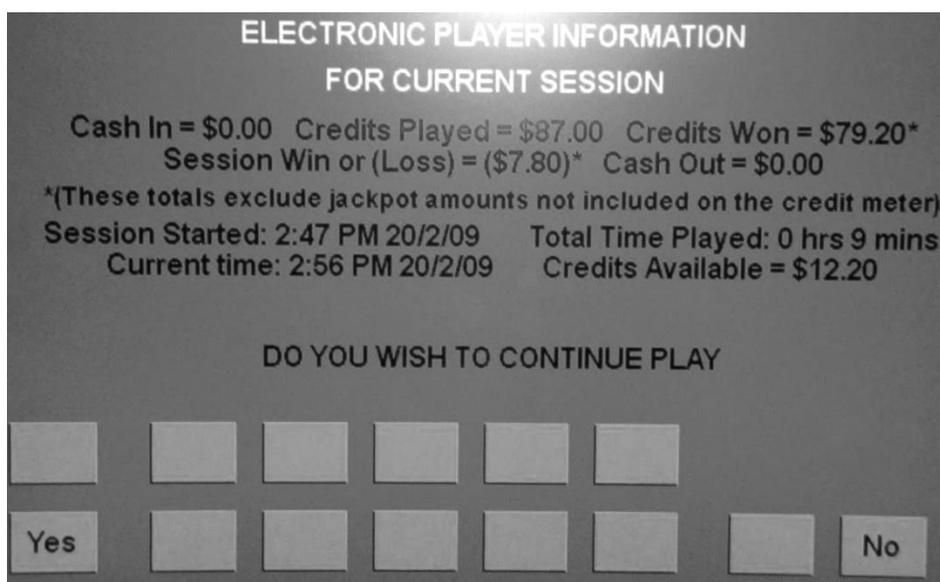
An important conclusion of the observational and survey components of this research is that there was little or no evidence that the compulsory pop-up messages impacted on the satisfaction of the majority of gamblers. Furthermore, consistent evidence for gambler engagement with pop-up messages was found. Modifications to this intervention and other alterations to EGMs to increase consumer safety could be considered in this light, as this was an intervention that was opposed on the basis of its possible impact on gambler enjoyment. The present study also suggests that where gamblers are exhibiting signs of annoyance or distress related to pop-up messages, this behaviour is not the norm and may be indicative of potential gambling problems, presenting an opportunity for a conversation about responsible gambling. Four gamblers were observed showing obvious signs of frustration and anger in response to pop-up messages. The survey results showed that 15% (15/99) of participants who reported experiencing pop-up messages often or always reported seeing more than four pop-up messages per session, indicating that they had been gambling for a minimum of about two hours. Just four percent (4/98) of respondents reported that venue staff had ever spoken to them about their gambling (two in pubs and two in casinos). Researchers did not observe any venue staff approach or speak with gamblers in the observational study. Thus, it appears there is room for some improvement in venue staff awareness of, and engagement with, gamblers in their venues, especially those who are gambling for long periods of time (experiencing multiple pop-up messages) and those who exhibit signs of distress or agitation in response to these messages.



## 1 BACKGROUND

Gambling has been a major growth industry during the past 20 to 30 years. In a number of jurisdictions including New Zealand, electronic gaming machines (EGMs) have become widely accessible in clubs, pubs and casinos. Typically in these jurisdictions, 15% to 30% of regular EGM participants (those who play weekly or more often) experience gambling-related problems. The large majority of people seeking specialist help for problem gambling cite EGMs as their only, or primary, problem gambling mode (Abbott & Volberg, 2006). Findings from the New Zealand 2012 National Gambling Study (the first nationally representative gambling survey since 1999) detail the prevalence of problem and moderate-risk gambling by participation in different gambling activities. Of the participants who had gambled on non-casino EGMs in the past year, 2.7% were problem gamblers and 8.7% were moderate-risk gamblers. For casino EGM past year gamblers, 2.5% were problem gamblers and 9.1% were moderate-risk gamblers (Abbott, Bellringer, Garrett, Mundy-McPherson, 2014). Help-seeking statistics for the 2011/2012 financial year indicated that of the 9,003 new clients who sought help from a Ministry of Health funded problem gambling service, just under two thirds (n=5,474) sought help in relation to EGM gambling - with 90% identifying Class 4 pub/club sector EGMs as problematic (Ministry of Health, 2013a). The wider social and public health significance of problem gambling has been assessed and recognised (Abbott, Volberg, Bellringer, & Reith, 2004; Korn, Gibbins, & Azmier, 2003; Korn & Shaffer, 1999). In New Zealand this has received explicit recognition by government with the Ministry of Health responsible for the development of public health policies and strategies to prevent and minimise gambling-related harms (Ministry of Health, 2005, 2010a, 2013b).

The identification of gambling harm as a public health issue has led to a range of initiatives aimed at preventing and minimising gambling harm. These initiatives include, among others, strategies and measures such as regulating gambling availability and marketing, public education campaigns and modifying venue and game characteristics. Given the strong association between EGMs and gambling-related harms, considerable attention has been focused on measures specific to this form of gambling. This includes pop-up messages and player information display systems (PIDs) which have been introduced on the machines in New Zealand and some other international jurisdictions. Pop-up messages are a brief compulsory break in play, during which information on session length and expenditure is provided on screen to the gambler. PIDs are a voluntary feature, where gamblers can access similar information at any time. An example of the kind of information provided by PIDs and pop-up messages appears below.



While there has been an increase in research to assess the likely impact or effectiveness of preventative measures, reviews of the relevant literature indicate that the evidence base is not yet strong (Abbott et al., 2004; Williams, Simpson, & West, 2007). One approach to reducing EGM-related harm involves modifying features of the machines. From their review, Williams et al. (2007) conclude that some of these modifications “appear to have some potential to reduce harm” (p.420). In this regard they mention slower speed of play, elimination of early big wins, reduction in frequency of near misses, the number of available betting lines and interactive features of EGMs, and the presentation of pop-up messages. With respect to other alterations that have been made or considered, Williams et al. conclude that there is conflicting or insufficient evidence regarding their impact or potential to reduce harm. For example, specifically in relation to pop-up messages, Schellink and Schrans (2002) suggested that long-term changes in behaviour may occur after repeated exposure, through gamblers avoiding seeing the message or by reducing play. This was demonstrated with a small effect found in decreasing gambling expenditure and duration, but only for high-risk players. This finding was further strengthened when it was reported that high-risk gamblers increased expenditure if they had not been exposed to a pop-up message. However, Schellink and Schrans also proposed that gamblers may become habituated to the pop-up messages and respond to them in a routine manner.

The Ministry of Health was interested in examining gambling behaviour in relation to PIDs and pop-up messages as well as in relation to gambling game characteristics on EGMs and casino table games. Thus, in June 2010, the Gambling and Addictions Research Centre at Auckland University of Technology was commissioned by the Ministry of Health to conduct the research project *Investigation into the effects of gambling game characteristics, PIDs and pop-up technology on gambling and problem gambling behaviour in New Zealand*.



### *Objectives*

The primary objective of the project was twofold and was to explore the effect of the following on gambling and problem gambling behaviour in New Zealand:

- Gambling game characteristics of electronic gaming machines and casino table games
- Player information displays (PIDs) and pop-up messages on electronic gaming machines

Secondary objectives, developed in consultation with the Ministry of Health were to:

- Consult with gamblers and industry staff around the experienced and observed effects of gambling game characteristics, PIDs and pop-up messages on gambling and problem gambling behaviour in New Zealand.
- Document the behavioural responses of gamblers to EGM characteristics, pop-up messages and PIDs.
- Produce a baseline of: demographics including problem severity; game participation; and awareness, preference and use of game characteristics, pop-up messages and PIDs with a general population sample of gamblers.
- Assess the effects of gambling game characteristics, pop-up messages and PIDs on gambling behaviour over time.

The research involved the collection of data in three phases:

#### **Phase One**

- Literature review
- Focus groups with gamblers and industry staff.

#### **Phase Two**

- Observational study of gamblers in-situ within venues.

#### **Phase Three**

- Survey and prospective study of general population gamblers.

The information obtained in Phase One was used to establish a practical and theoretical focus for the observational study in Phase Two. Phases One and Two directly informed the development of the survey instrument used in Phase Three.

### *Phase One*

#### **Literature review**

Relevant national and international literature pertaining to the influence of game characteristics, PIDs and pop-up messages on gambling behaviour was reviewed and summarised. The scope of the review included methodologies used to assess such influence; gambler and problem gamblers' views of game attractiveness; and awareness and views on PIDs and pop-up messages in the context of wider harm minimisation measures.

## **Focus groups**

Focus groups were held with gamblers (including one Māori-specific and facilitated group, general community recruited groups, and groups of current or former problem gamblers), specialist Pasifika and Asian problem gambling service staff, and gambling industry staff representatives. The purpose of the focus groups was to collect information from gamblers, key informants and industry staff that would add to the understanding of game characteristics, pop-up messages and PIDs through the documentation of different population group perspectives. The information produced was also informative in developing and conducting the later observational component and the gambler survey.

## ***Phase Two***

### **In-venue observational study**

An observational study of EGM gambling behaviour in-situ was carried out at two casino venues and across three non-casino (pub) venues. The purpose of the observational study was to document observable responses to key game characteristics identified in the Phase One focus groups as well as responses to, and observable use of, PIDs and pop-up messages in a natural setting. The protocol and guide for the observational study was developed in consultation with venue managers and was based on the observable behaviours identified in Phase One, including scope for noting behaviours not previously identified.

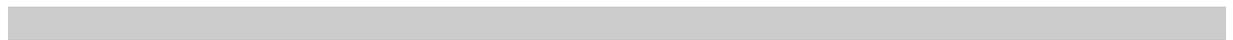
## ***Phase Three***

### **Survey baseline**

The third phase of the project involved surveying general population gamblers. Gamblers (N=521) were recruited in the vicinity of casino and pub EGM and casino table game areas using an intercept sampling methodology. They then took part in a telephone survey. This survey included a range of established scales and measures of: gambling and problem gambling behaviour, attitudes towards and use of game characteristics, PIDs and pop-up messages, and measures of health and psychological wellbeing and coping. Questions related to game characteristics, PIDs and pop-up messages were informed by the earlier focus group work and the observational study component.

### **Prospective extension**

A sub-group of regular gamblers (those who gambled weekly or more often) was followed up at three- and six- months after the baseline survey.



## **3 RESEARCH METHODS**

### **3.1 Ethics approval**

Ethics applications for Phases One, Two and Three were submitted to the AUT Ethics Committee (AUTEK) which is a Health Research Council accredited human ethics committee. AUTEK considers the ethical implications of proposals for research projects with human participants. All participant materials (i.e. information sheet and consent form), data collection processes and other relevant documents were submitted. AUT is committed to ensuring a high level of ethical research and AUTEK uses the following principles in its decision making in order to enable this to happen:

Key principles:

- Informed and voluntary consent
- Respect for rights of privacy and confidentiality
- Minimisation of risk
- Truthfulness, including limitation of deception
- Social and cultural sensitivity including commitment to the principles of the Treaty of Waitangi/Te Tiriti O Waitangi
- Research adequacy
- Avoidance of conflict of interest.

Other relevant principles:

- Respect for vulnerability of some participants
- Respect for property (including University property and intellectual property rights).

The ethics approval for Phase One was granted on 2 May 2011 for the focus groups with gamblers and on 1 July 2011 for the focus groups with gambling industry staff. The ethics approval for the Phase Two in-venue observational study was granted on 28 November 2011. The ethics approval for the Phase Three survey was granted on 16 July 2012 (letters of approval for all three phases are detailed in Appendix 1).

During the research the following measures were taken to protect the identity of the participants:

- All participants were allocated a code by the research team to protect their identities
- No personal identifying information has been reported.

In addition:

- Participants who took part either in focus groups or the survey were informed that participation in the research was voluntary and that they could withdraw at any time, prior to the completion of data collection.
- The observational study protocol was developed to ensure that the anonymity and privacy of gamblers was respected without interfering with their enjoyment of a chosen leisure/entertainment activity.

### **3.2 Consultation**

Cultural safety, integrity and appropriateness of the research process were key considerations in each of the three phases, particularly in regard to the participation of Māori. Ruth Herd (Te Ara Poutama and Taupua Waiora Centre for Māori Health Research, AUT) provided advice on research design as

well as practical support in facilitating a Māori-only focus group comprising Māori community participants and problem gambling service clients. Hāpai te Hauora Tapui was also involved in the development of the research design and recruitment methodology. Additionally, Problem Gambling Foundation managers of the mainstream, Pasifika and Asian services were consulted on the research design and recruitment methodology.

Industry representatives from two New Zealand casinos and two Class 4 (pub EGM venue) trusts were also consulted and took part in Phase One focus groups, allowed access to gambling venues for the Phase Two observational study, and assisted with in-venue recruitment of participants for the Phase Three survey.

### **3.3 Literature review**

The literature review was conducted through the following means:

- Electronic bibliographic indexes accessed via on-line database searches
- Specialist libraries accessed via web-based searches and searches through personal collections.

#### *Electronic bibliographic indexes*

A search of on-line databases accessible through the Auckland University of Technology library system was conducted to locate potentially relevant literature. Each literature search on each database accessed varying numbers of articles. There were varying degrees of overlap between the databases. For titles or abstracts that appeared to be relevant to this project, full text publications were accessed electronically and reviewed.

#### *Specialist libraries*

Various gambling-related organisations and government departments have websites which include searchable databases and/or libraries, or which detail gambling-related publications and reports. These websites were searched for literature relevant to the project. Any material that appeared to be relevant was downloaded and reviewed.

The research team also has access to substantial personal libraries in relation to gambling. These collections contain reports and articles that have not been published in mainstream literature (grey literature) plus publications that are difficult to obtain. They also include pre-publication reports and articles from a variety of sources. Where relevant, these materials were utilised for this project.

### **3.4 Focus groups**

Eleven focus groups were conducted with gamblers, key informants (for cultural perspectives) and gambling industry staff to discuss how game characteristics, pop-up messages and player information displays (PIDs) relate to gambling behaviour. The purpose of the focus groups was to collect information that would provide insights into, and add to, the understanding of game characteristics, pop-up messages and PIDs. Related purposes were the documentation of different population group perspectives on these technologies and to gather information to assist in the development and conduct of the in-venue observational phase and the patron survey. Thus, the gambler and key informant groups had game characteristics as their primary focus (pop-up messages and PIDs were discussed in

this context), while the gambling industry groups were focused more towards behavioural impacts of pop-up messages and PIDs.

### 3.4.1 Sample characteristics and recruitment

Forty gamblers took part in six focus groups held between the beginning of August and the end of October 2011. The participants were recruited from several sources and were given a \$50 petrol or supermarket voucher in recognition of their time. A sample of low and higher frequency gamblers who had not sought help for any gambling-related harm was recruited from the general community (a convenience sample loosely categorised by gambling frequency). This was achieved through advertisements placed in public spaces such as libraries, shopping malls, community notice-boards, universities, gambling venues, and articles in community newspapers. These community volunteers were allocated into three groups via brief telephone questionnaire according to their self-reported gambling frequency (those gambling less than once a week were categorised as low frequency gamblers whereas those gambling once a week or more often were considered to be regular or high frequency gamblers). No formal measure of their problem gambling status was undertaken. However, immediately after each focus group all participants were provided with information on the range of help services available to them.

Two of the focus groups were held with current or former problem gamblers<sup>2</sup> who had sought help or were currently undergoing treatment for their gambling problems. These participants were recruited in partnership with the Problem Gambling Foundation of New Zealand (PGF) from their client base. Two focus groups were held with these participants.

A dedicated Māori focus group was facilitated by a Māori researcher with participants recruited for that group in collaboration with Hāpai te Hauora Tapui and Māori consumer networks. A summary of the groups conducted with gamblers is shown in the table below.

#### Structure of the focus groups conducted with gamblers

Recruitment source	Gambling frequency/status				Total groups
	Low (gamble < once a week)	High (gamble once a week or more)	Mixed (low and high)	Current/ex problem gambler	
Community	1	1	1		3
PGF client base				2	2
Hāpai te Hauora Tapui and Māori consumer networks			1		1
<i>Total</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>6</i>

Due to language and cultural differences across Asian and Pasifika groups it was not possible to conduct dedicated focus groups with gamblers from these populations (although Māori, Asian and Pasifika gamblers were invited to, and attended, the general and problem gambler groups as indicated above). To ensure Asian and Pasifika perspectives were documented, and after consultation with subject-matter experts, additional focus groups were held with Asian and Pacific problem gambling clinical and public health staff and invited members of their professional networks to discuss cultural issues pertaining to game characteristics.

<sup>2</sup> All had previously been categorised as problem gamblers using the Problem Gambling Severity Index, although that categorisation was not necessarily current at the time of the research.

Additionally, three focus groups were conducted with gambling venue staff who operate in close proximity to electronic gaming machines and have observed player behaviours. Two groups were held with pub staff and one group was conducted with casino staff.

### **3.4.2 Focus group procedure**

The approach used was a flexibly applied Nominal Group Technique (NGT) (Delbecq, Van de Ven, & Gustafson, 1975) which was less structured than a standard NGT approach. Thus, the key benefit of the NGT approach that all participants were explicitly encouraged to participate was maintained, but the rigid structure which might have constrained discussions was adapted after consultation with key collaborators from the Problem Gambling Foundation of New Zealand (PGF) and Hāpai te Hauora Tapui.

The NGT explicitly encourages participation from all group members, prevents the group from being dominated by one or more individuals, generates many ideas, and can result in a clear outcome reflective of group opinion (while minimising researcher bias).

A NGT meeting is moderated by an individual who is knowledgeable in the subject area, and typically consists of the following steps carried out in response to each question:

1. **Idea generation:** Participants silently and independently write down their views regarding the topic in question.
2. **Reporting:** Participants take turns sharing their ideas with the wider group; the ideas are recorded on a flipchart/whiteboard and similar suggestions are grouped together.
3. **Discussion:** Each recorded idea is discussed in turn and clarification sought when required.
4. **Rating/Ranking:** Participants privately rate and/or rank each idea based on a specified set of criteria; the rating/ranking of each item is then tabulated and overall results presented to the group. The results are discussed and a second round of rating/ranking may be carried out.

In practice, following the steps outlined above, it was found that participants in each focus group effectively engaged in a structured brainstorming and discussion session in response to the research questions. As outlined earlier, the process followed was more fluid than is generally prescribed which worked well with the participants. Data generated by this approach provided a wealth of information in response to the research questions. It was noted that whilst consensus on some game features became apparent, multiple interpretations of, and experience with, both the gambling environment and game features meant there was not always an agreed list of prioritised game features for each question within each of the groups. In most cases more open discussion was required in order to draw out the different preferences and tensions to inform our understanding of this variability in responses generated by each group. In this way, the data were produced to suit our purpose and were of an exploratory nature, deriving multiple ideas and laying the foundations for further testing and validation (Jones & Hunter, 1995; Van de Ven & Delbecq, 1972).

Once responses had been generated, reported and discussed (Steps 1 to 3) in each focus group, participants were asked to rate each item on a 10-point scale (0 = not important to 10 = very important), then to identify the five items they considered most important and to rank them first to fifth. At the conclusion of each focus group, charts showing the identified characteristics were prepared for the group. Scores for each item were presented (based on the sum total of rating scores). Recordings of the group discussions were transcribed by a member of the AUT team.

### 3.4.3 Data analysis

The analysis of data from the NGT focus groups and reporting of results was carried out mainly using a qualitative approach, taking as a starting point the lists of game features/points generated across the groups and the ranking applied. Inductive content analysis (Patton, 1990) of the focus group transcripts enabled verification of information collected and ranked in the meeting process. Individual comments from participants were checked against their individual response sheets (participant written comments) and information on the charts (facilitator recorded).

All transcripts were read several times by two members of the research team who independently grouped items into similar themes. Some examples of the kinds of questions returned to during analysis were:

- What features of the games seem to encourage gambling? And how?
- What features of the games seem to discourage gambling? And how?
- What features seem to affect control over gambling? And how?
- What are people's responses (e.g. cognitive, behavioural, emotional) to the pop-up messages and PIDs technology?
- What are some Māori cultural framings of game features and their impact on behaviour?

The researchers then met to compare and agree upon themes, resolving disagreements by consensus of opinion or by the creation of new, mutually agreeable, themes. Following this process the themed items and their respective ratings/rankings were further examined across focus groups. Quotes from participants were extracted from the transcripts to help explain both individual and group thinking. This provides improved clarity and depth in the explanation of results. The aim was to provide "a rich thematic description of [the] entire data set" for all participant groups (gamblers, service provider staff, gambling industry staff) in relation to the questions asked of them (Braun & Clarke, 2006, p. 83). A related aim, specifically in the treatment of data generated with gamblers and industry staff, was to explicitly search for game features and the meaning of these features in terms of behaviour to inform the survey and observational components of the study.

## 3.5 In-venue observational study

The second phase of the project involved an observational study of EGM gambling behaviour within venues. This occurred at two casino venues and three non-casino (pub) venues. The purpose of the observational study was to document observable responses to key game characteristics identified in the Phase One focus groups as well as response to, and observable use of, PIDs and pop-up messages in a natural setting. A protocol and guide for the observational study was developed based on the observable behaviours identified in the focus groups, including scope for noting behaviours not previously identified.

A pair of researchers each conducted approximately 12 hours of observations in the two casino venues, and 12 hours of observations in the non-casino venues. This roughly equated to a total of 48 hours. Observations were recorded by each researcher approximately every 15 minutes in each venue and individual gamblers were observed for between 15 and 135 minutes.

### 3.5.1 Procedure

The procedure adopted for this phase was based on an approach used successfully in Australia by Delfabbro et al. (2007). Similar approaches have also been used effectively in the United States of

America (Bennis, 2004; Cotte, 1997) and the United Kingdom (Fisher, 1993; Griffiths, 1991; Parke & Griffiths, 2008). In the Australian study, the aim was to develop methods to identify problem gamblers in venues. As the purpose of the present study was a descriptive account of the common responses to pop-up messages and PIDs, our methodology was most similar to that used by Delfabbro et al. (2007). The other referenced studies focused on obtaining a better understanding of gamblers' perspectives and experiences and were used in designing the in-venue observation protocols for the current study (Appendix Two).

The observational study procedure was guided by several general principles developed in consultation with gambling industry collaborators:

- Observations must be of naturally occurring behaviours in-situ - authenticity.
- Observations must be unobtrusive - to avoid any influence or impact on the gamblers in terms of their gambling or their experience of the venue.
- Privacy of gamblers and venue staff is of fundamental importance.

The overall aim of the procedure was to ensure that the research activity had no effect on gamblers, venue staff or venues. In pubs, two cent machines were standard (the only available machines in the venues that researchers accessed). In casinos, observations focused on the highly popular one and two cent machines to enable comparison with pub observational data. Observations focused on patrons gambling on these machines as participants across all focus groups with gamblers reported preferences for lower denomination EGMs. A small pilot study was initially conducted in a casino which involved discussions with casino staff to ensure observers blended into the gambling environment.

Researchers entered venues in pairs and participated in gambling activities as regular patrons. Observations were conducted at different times each day (including mornings [10.00 am - 12.00 pm], lunchtimes [12.00 pm - 2.00 pm], afternoons [3.00 pm - 5.00 pm] and evenings [6.00 pm - 8.00 pm and 9.00 pm - 12.00 am]). Observers did not announce themselves or their purpose to other patrons, staff or venue management. However, where appropriate, venue security staff were aware that observations could be occurring. Observations were noted in a smart phone email application which gave the appearance of 'texting' behaviour (noted to be a common practice of EGM players by our industry advisers).

Following Delfabbro et al.'s. (2007) methodology, observations were made continuously, in 15 minute blocks, for as long as a gambler could reasonable be observed (i.e. until they left the gambling area or could no longer be unobtrusively observed). A total of 126 observations was made of 66 different gamblers in the two casinos. These casino gamblers were observed for between 15 and 90 minutes each, with the average observation lasting 30 minutes. In the non-casino venues, 113 observations were made of 57 different gamblers. These non-casino gamblers were observed for between 15 and 135 minutes each, with the average observation also lasting 30 minutes.

### **3.5.2 Analysis**

Observational data were entered into NVivo (software for organising and classifying qualitative data) and coded for primarily quantitative (identifying and counting behaviours observed) and some high level descriptive (describing patterns of play in the context of game characteristics, PIDs and pop-up messages) analysis.

### 3.6.1 Design

The third phase of the project involved a survey of gamblers. The aim of this survey component was to assess demographics; problem gambling severity; game participation; and awareness, preference and use of game characteristics, pop-up messages and player information displays in a general population sample of gamblers. A sub-group of regular gamblers (gambled weekly or more often) was re-interviewed at three- and six-months so that the effects of gambling game characteristics, pop-up messages and player information displays on gambling behaviour could be assessed over time, and potential interaction with other variables (measures of health and wellbeing and coping) could be examined. The survey instrument was informed by the first and second phases of the research.

Screens used included:

- Problem Gambling Severity Index (PGSI)
- K-10
- COPE (selected subscales)
- NEO-PI (impulsiveness)
- The Gambling Related Cognition Scale (GRCS)
- AUDIT-C

The *Problem Gambling Severity Index (PGSI)* includes nine scored items and assesses problem gambling in a past 12-month time frame (Ferris & Wynne, 2001). For the current study, a past three-month time frame was used. From their scores, participants are categorised as non-problem gambler, low-risk gambler, moderate-risk gambler or high-risk gambler.

The *Kessler Psychological Distress Scale (K10)* is validated for screening populations for psychological distress (Kessler & Mroczek, 1994). The instrument comprises 10 questions on non-specific psychological distress focusing on the level of anxiety and depressive symptoms that a person may have experienced in the previous four weeks.

Selected subscales from the *COPE Inventory* provided a measure of stable coping styles (active coping, planning, seeking emotional or instrumental social support, behavioural disengagement and mental disengagement<sup>3</sup>) used in response to stressful life events (Carver, Scheier & Weintraub, 1989). This inventory assesses coping responses that are expected to be dysfunctional when relied upon in a cross-situational manner, as well as responses that are expected to be functional most of the time. The subscales used were: mental disengagement, use of instrumental social support, active coping, denial, behavioural disengagement, use of emotional social support, substance use, and planning.

The *NEO-PI impulsiveness subscale* measures the tendency to act on cravings and urges rather than reining them in and delaying gratification (Costa & McCrae, 2008). Participants are presented with eight statements that may describe them such as ‘I have trouble resisting my cravings’ and ‘I am

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<sup>3</sup> *Active coping* and *planning* along with seeking *social support for instrumental reasons* are regarded as problem focused coping styles. Briefly, active coping is the process of taking active steps to remove or reduce a stressor, planning is coming up with action strategies about how to cope with a stressor and to access instrumental social support is to seek advice, assistance or information about how to cope with the problem. Seeking *social support for emotional reasons* is thought to represent an emotion-focused coping style where sympathy and understanding is sought. Coping tendencies that rely on disengagement are thought to be potentially dysfunctional if used in inappropriate settings or as a primary coping style. *Behavioural disengagement* involves reducing one’s efforts to deal with a stressor, giving up the goal the stressor is interfering with. *Mental disengagement* involves distracting the self from the stressor, e.g. taking on alternative activities as a form of escape.

always able to keep my feelings under control’ to which they rate their level of agreement on a five point scale from ‘strongly disagree’ to ‘strongly agree’.

The *Gambling Related Cognition Scale (GRCS)* screens gamblers for a range of gambling-related cognitions that are common among gamblers in treatment (Raylu & Oei, 2004). This is a 23-item scale, measured from 1 (strongly disagree) to 7 (strongly agree). Sample items include: ‘Specific numbers and colours can help increase my chances of winning’, ‘Losses when gambling, are bound to be followed by a series of wins’.

The *AUDIT-C* is a three-item alcohol screen that can help identify people who whose alcohol consumption has become hazardous or harmful to their health. The AUDIT-C is a modified version of the 10-item screen developed by the World Health Organisation (Babor et al., 1989). Cut-off scores indicate risky drinking among women and men.

### **3.6.2 Recruitment**

Recruitment of participants occurred over a four-month period from August to early December 2012. They were recruited by AUT research assistants outside casino and non-casino (pub) gambling venues using an intercept approach (with permission from venue operators). Pub venues were selected and approached for permission based on their having the maximum number of gaming machines (18) and a high turnover<sup>4</sup> as a basic proxy for a high level of engagement with the machines. Intercept guidelines (Appendix Five) were developed based on successful techniques used previously by the research team. Well-presented and trained research assistants approached and invited patrons to participate in the study as they were exiting a venue. The research assistants worked closely with venue management at each venue to ensure that neither on-going business nor patron enjoyment was disrupted. To ensure their own safety, research assistants worked in pairs, remained in sight of each other, and were in mobile phone contact with each other and the project supervisor.

Participants were also sought via advertisement. Brief advertisements encouraging patrons who gamble on EGMs (pub and casino) and/or casino table games to contact the researchers and take part in the study were disseminated through general community outlets (e.g. libraries, community notice boards).

At the initial contact either in person or over the telephone, consent to participate, as many contact details as possible and some key demographic and gambling behaviour information (gambling type and frequency of gambling) was collected. To be eligible for inclusion, participants were required to have played EGMs or casino table games at least once during the past six months. Through the informed consent process participants were made aware that a small koha (\$20 petrol voucher) would be provided following each telephone assessment.

Māori and Pacific participation was monitored throughout the recruitment process. Researcher matching (involving Māori, Pacific and Asian research assistants in the recruitment teams) was employed to help ensure participation of these population groups. Targeted recruitment took place outside venues in areas of known predominance of certain population groups (based on census data) in central, south and eastern suburbs of Auckland.

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<sup>4</sup> Obtained from the Department of Internal Affairs.

The numbers of participants presented below were those expected to be recruited:

- Baseline survey (Appendix Three)
  - Between 500 and 600 gamblers in total recruited in the vicinity of EGM/casino table game areas (minimum 300 from a casino and 200 from selected pubs).
  - To include between 100 and 200 players of casino table games.
- Follow-up surveys (Appendix Four)
  - Two hundred regular EGM and casino table game gamblers (those who gamble weekly or more often).
  - Re-interviewed at three- and six- months following their baseline interview.

### **3.6.3 Process**

All survey interviews were carried out over the telephone by AUT research assistants. A Mandarin/Cantonese speaking interviewer was available to conduct interviews with Chinese participants.

### **3.6.4 Participation**

#### **Baseline survey**

Seven hundred and one participants were recruited at participating venues. From that group, a total of 521 participants (74%) was successfully contacted and interviewed at baseline.

#### **Follow-up surveys**

Within the baseline sample, 228 participants indicated that they gambled regularly (once a week or more often). Follow-up interviews were attempted for all regular gamblers three months after their baseline survey; 176 participants (77%) were successfully interviewed at this point. Participants who were interviewed at three months were also re-contacted six months post-baseline; 153 participants (67%) were successfully interviewed at this point.

### **3.6.5 Data analysis**

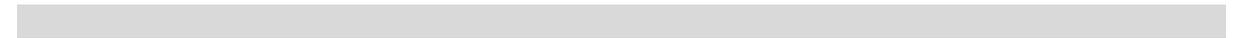
All survey responses were recorded by the interviewers on paper. The data were entered into the SPSS 20.0 statistical package and then exported to SAS version 9.2 for statistical analysis. Key outcome measures were identified as time spent gambling (minutes per month) for EGMs and table games, money spent gambling (dollars per month) for EGMs and table games, and length of EGM gambling sessions.

Estimates of time and money spent gambling per month on casino table games, casino EGMs and pub/club EGMs were calculated by multiplying average time spent gambling per day or dollars per day by the mid-point of frequency categories for that activity (i.e. less than monthly = 0.5, monthly = 1, 2 - 3 times per month = 2.5, weekly = 4, 2 - 3 times per week = 10, more than 4 times per week = 16). Therefore, measures equate to average time spent gambling per month and average dollars spent per month.

From the outset, examination of the distributions of the outcome measures demonstrated the need for log transformation for all the outcome measures in order to adjust for the skewed distributions with long tails. Therefore, all analyses use the log transformed measures.

For each of the separate casino table game and EGM gambling analyses, initially univariate analyses (General Linear Models [GLMs]) were conducted to identify the demographic, problem gambling and psychological measures with significant impact on each of the main outcome measures (time and money spent on gambling per month). All factors with an association resulting in a p-value of 0.2 or less were then included in the multivariate modelling procedure. The results of this multivariate modelling procedure identified the confounding factors which maintained a significant association with the outcome measures when adjusted in conjunction with all other factors. The multivariate models incorporating the significant confounders were then used to examine the associations between the outcome measures and game characteristics. This ensured that the statistical results were adjusted by the key confounders.

Rather than undertaking separate analyses for the PGSI groups, PGSI was included as one of the factors of interest. As frequency of gambling was used to both calculate the outcome variables and to classify participants as regular or non-regular gamblers, it was not appropriate to include frequency or regular gamblers as a factor in the analyses. Regular gamblers completed additional follow-up surveys at three months and six months post-recruitment. These data were examined using repeated measures GLMs to identify any statistically significant trends over time. Covariate measures of problem gambling severity (PGSI), psychological distress (K-10) and other psychological measures generally remained consistent across each of the time points and did not demonstrate any time trends. Therefore, only baseline measures of the covariates are in the trend models.



## 4 LITERATURE REVIEW

This chapter presents findings from the review of literature that has considered game characteristics and the linkages with player behaviour, and the effectiveness and design of player information displays (PIDs) and pop-up messages. The main focus of this review is on the characteristics of games and their bearing on the kinds of interaction gamblers will have with the games. Research describing the powerful effects of structural characteristics of EGMs on acquisition, development and maintenance of gambling and problem gambling behaviour is presented. Available research on aspects of table games affecting gambling behaviour is also discussed. This review argues that while affected by individual susceptibility and risk factors relevant to the individual gambler, gambling behaviour (and problem gambling behaviour) is essentially a function of cognitive factors combined with the speed and frequency of rewards within the games that are available during play.

### 4.1 Table game characteristics

The perception of pure skill involved in some forms of table games (most notably poker) is cited as a factor in their popularity; however, in reality, most available games involve various measures of both chance and skill (Meyer, von Meduna, Brosowski, & Hayer, 2012). The relative mix of chance and skill is important for harm minimisation due to the role of cognitive distortions in problem gambling development and maintenance (Blaszczynski & Nower, 2002). A recent study specifically compared “average” and “expert” poker players to determine whether individual skill outweighed card distribution (luck) in poker outcomes (Meyer et al., 2012). In Meyer et al.’s (2012) study “expert” and “average” players were differentiated using a 27-item questionnaire, developed by the authors, with the main emphasis on prior poker experience and success. Three hundred individuals recruited from the community (253 male) took part (three experts and three average players per game). Sixty hands of “Texas Hold’em” were played with monetary stakes via individual separated computers in the same room. Hands were controlled with a balance of expert and average players receiving: a) better than average cards, b) average cards, c) worse than average cards. Results showed that expertise was not important, at least in terms of winning. Experts did not significantly outperform average players in terms of final cash balance; however, expert players were better able to minimise losses from worse than average cards.

In chance games, the tendency to categorise certain losses as more valuable or predictive of wins has been termed the near-miss effect. Previous research has noted the potential for these types of outcomes to promote problem gambling (Griffiths, 1991) as well as generate specific neurological arousal, usually only occurring in pathological gamblers during wins (Habib & Dixon, 2010). Dixon (2010) found that participants playing simulated (electronic) roulette rated losing outcomes as closer to winning when they were close in location and close numerically to the winning number. Sundali et al. (2012) extended this research and examined how almost winning in electronic rapid roulette affects subsequent betting behaviour. The authors analysed printouts of real play data from electronic roulette terminals in a casino. They defined a near miss as a bet on a number immediately adjacent to the winning number. There was variety in gambler behaviour with some gamblers less likely to bet on numbers that were near misses on the prior spin and other gamblers more likely to bet on near miss numbers. However, the authors found no evidence that near misses led to gamblers extending the time spent gambling or to the placing of more bets.

Research has shed some light on the possible differential impact of certain game features on the attractiveness of EGMs and table games. For example, in New Zealand, it is well established that Asian clients seeking help for their gambling cite casino based gambling and more particularly, table games, as the primary mode of problematic gambling (see Ministry of Health problem gambling

service user data<sup>5</sup>). A recent study conducted in Macau (Liu & Wan, 2011) specifically examined the factors that discourage Chinese gamblers in Macau from playing EGMs. Liu and Wan (2011) first arranged focus groups with gamblers followed by a survey to assess what the relevant features might be. Previous research with Chinese casino patrons suggested that they take high risks while gambling (Ozorio & KaChio, 2004; Vong, 2007) and have a tendency to seek excitement and the opportunity to make money. If these are pre-existing characteristics, then the fit with table games seems appropriate, as they can be considered to be more stimulating and sensitive to experience and skill, and perhaps a better option for those interested in risk taking and profits. While this seems intuitively sensible, it remains unclear whether these supposed traits are a cultural component of Chinese gamblers or a result of participating in games in which large wagers are made, or indeed some feature of a particular socio-economic group.

Liu and Wan's (2011) results suggested that Chinese gamblers viewed EGMs as less fair, less honourable, less likely to pay out large amounts and more likely to result in quick losses. Additionally, Chinese gamblers suggested that they had little knowledge of the rules by which EGMs operated and this knowledge was important in terms of choosing their gambling activities. The survey suggested the five main reasons for not playing EGMs were features of the games themselves: the difficulty in winning large amounts of money, the lack of challenge and excitement, overly fast losses, and the relatively small jackpots. Service dimensions were also important, with gamblers citing the poor service and lack of assistance available in EGM areas. The participants also mentioned the need for socialisation as a major reason for the lack of popularity of EGMs. Lam (2012) has suggested that the strong desire to win large amounts of money is to some extent related to the sudden financial prosperity for many in China and the unequal distribution of wealth. Gambling is often viewed as a fast-track to financial prosperity (Walker, 1992) and the fundamental motivation of risking money to win more money is perhaps enhanced among Chinese. This, Lam (2012) suggests, leads to an unusually strong desire to win, and a choice of gambling mode that offers the highest perceived value and/or the highest perceived chances of winning.

## 4.2 EGM characteristics

There is a range of factors that individually and collectively exert effects on gambler behaviour. These range from social, cultural and demographic factors to individual characteristics on one spectrum, and on another include gambling industry, venue and game characteristics. It is clear that both structural and situational characteristics of gambling activities (e.g. accessibility to gambling; location and type of gambling establishment; and arrangement, size and number of prizes) are important factors involved in the maintenance of gambling behaviour (Abbott, 2007). Developing a better understanding of how these various factors individually affect gambling behaviour, and how they interact with each other is a substantial challenge for researchers and policy makers alike.

With specific reference to EGMs, the core feature underlying their operation is a sophisticated variation on a basic schedule of reinforcement, a variable or random-ratio schedule (Ferster & Skinner, 1957; Skinner, 1953). In their standard form, variable-ratio schedules specify that a reinforcer (payout) is delivered after an average number of responses (plays). It is well established that these schedules result in a constant high rate of behaviour that is very resistant to extinction or any other intervention including punishment for responding (Ferster & Skinner, 1957). By extrapolating this simplest version of the variable-ratio schedule to the gambling situation, one would expect a high rate of behaviour that is extremely resistant to change. However, the schedules underlying EGMs are more complex, with the magnitude of the payouts being variable and smaller more frequent payouts such as free spins also occurring. That is, EGMs actually arrange variations

<sup>5</sup> <http://www.moh.govt.nz/moh.nsf/indexmh/problemgambling-userdata>.

along a number of dimensions of reinforcement important in maintaining behaviour, most obviously the frequency, magnitude and quality of reinforcement (Davison & McCarthy, 1988). Together, this makes these schedules even more likely to maintain a high rate of behaviour that is very resistant to any intervention, and in the gambling context, likely to result in more time and money being spent in any given session than was initially intended.

Some behaviour analysts have considered the issue of gambling behaviour more closely and highlighted other empirical findings that are relevant. A question often asked is why one continues to spend money in expectation of a win, when the pattern of gambling is resulting in substantial losses. Usually this is discussed in terms of faulty cognitions around gambling; however, the sunk-cost effect has been shown (in humans and animals) as a more parsimonious means to understanding this behaviour (Navarro & Fantino, 2005b). In a purely experimental situation, Navarro and Fantino showed the sunk-cost effect to be a robust finding; in essence, the sunk-cost effect shows that the more a person invests (in their study, simply number of responses and amount of time) without a payout, the less likely they are to abandon the behaviour; in fact, the expectation of a payout seems to be enhanced. The link to gambling is obvious, with Navarro and Fantino's findings suggesting that the time spent gambling is a key variable, the longer a patron gambles the less likely they are to cut their losses and stop playing. This is consistent with the experiences of gamblers, and provides an insight into the function and effect of EGMs as well as other forms of gambling in which payouts are variable and uncertain. The variability and uncertainty of payouts is, in a behavioural sense, the fundamental feature responsible for extended play, which in the longer term necessitates increased expenditure.

Goltz (1992) also showed that uncertainty and variability increased gambling persistence. His experiment focused on predictable and unpredictable gambling histories and how they affected gambling persistence. One hundred and sixty-four participants were recruited from an undergraduate psychology course and randomly assigned to one of five conditions with varying levels of reward predictability. Participants were informed that they had been entrusted with a \$10,000 investment and had to decide how to invest the money on a computer programme. Participants could invest or withhold any amount of money and could cash in their investment at any point. Participants were shown all changes in the worth of the investment and all changes were recorded in terms of each \$100 invested. For example, if the investment became more profitable it was increased by \$10 or \$30 per \$100 investment. The rewards given were based upon which group the participant was in, and the predictability of those rewards was shown by the consistency of increase or decrease in investment value. Goltz found that participants in those groups which had more consistent increases, and thus more predictable pay out rates, were much quicker to cash in their investments than those who had more varied rates of increase and decrease of investment value.

It is clear from these studies that in a range of experimental situations, people will abandon maladaptive patterns of behaviour quickly if the value of persisting versus abandoning the strategy is made relatively salient. Adding variability or uncertainty to the contingencies makes determining the relative profitability of a strategy more difficult, whilst maintaining the salience of potential wins. While not often cited as such, studies such as this firmly established the principle that salient information could well be effective in terms of assisting gamblers to gamble in a controlled manner, as could clarifying (in an accessible manner for gamblers) the nature of various gambling products.

Direct extrapolation from basic behavioural research suggests that features such as the variable nature of the reward schedule, the immediacy of the rewards, the variable nature of the reward magnitude, the extraneous rewards available, and the rapid or continuous nature of many products (most notably EGMs) are all important factors in the development of excessive gambling, loss of control and ultimately, problem gambling. This is generally consistent both with observations from those in the gambling field and the empirical research that exists. Although there is a vast amount of basic laboratory research into the effects of a range of reinforcement schedules on behaviour (see e.g. *The*

*Journal of the Experimental Analysis of Behavior*), translational and real-world studies of this nature remain relatively rare and where they have been conducted they are viewed with caution due to concerns over external validity. However, it is arguable that they are sometimes too cautiously interpreted given the substantial experimental literature that underpins them.

While real-world studies remain somewhat rare, several have been reported. For example, Dickerson, Hinchy, England, Fabre, and Cunningham (1992) undertook an early investigation of 12 high-frequency poker machine players gambling with their own money in venues in the Australian Capital Territory. Response rates and outcomes were recorded by observers; the machines were 20 cent machines with pull handles. The results suggested that behaviour was sensitive to machine events and consistent with the basic research outlined previously; specifically, players increased their play rates in periods between small wins, and slowed their response rate immediately after large wins. However, the study was confounded by observers asking questions of the gamblers after large wins and thus interrupting their on-going gambling session.

Delfabbro and Winefield (1999) used a similar methodology to observe a sample of approximately 60 regular gamblers in a more modern setting. Data (on-screen events and button presses) were recorded using a small video camera located next to machines. Dickerson and colleagues' (1992) results were confirmed with play-rates decreasing after large wins, although this was mainly because players tended to stop for a short period and admire their winnings, rather than any on-going slowing of play rates. What was also evident and fundamentally important was that almost every minute of play contained at least one small reward (e.g. two to five credits). These small regular rewards maintain a high and consistent rate of responding and slightly lengthen the gambling session as they were not sufficiently large for the gambler to consider cashing out (ending their session). Also interesting was the finding that regular players had more stereotyped or patterned betting behaviour. They increased their bets after winning and decreased them during periods of losing, whereas no clear pattern of betting was evident in non-regular gamblers. Thus, regular gamblers seemed to attribute some meaning and respond to what were essentially chance local events.

In addition to these underlying schedules, there is a range of characteristics of the EGMs themselves that are also likely to increase their appeal and their use. These include the themes, music, colours, lighting, bonus features, ease of use, and salience of wins/jackpots. Machines can also differ in terms of the number of playable lines (which can also be varied bet-by-bet), maximum bets, how credits are obtained and so on. Approaches to investigating these features can vary from observational work in live gambling environments (e.g. Dickerson et al., 1992, Delfabbro & Winefield, 1999) through to controlled laboratory studies manipulating game variables (e.g. Delfabbro, Falzon, & Ingram, 2005). The former may be criticised for their lack of control and precision and the latter for questions over the extent to which they can be generalised.

Delfabbro, Falzon, and Ingram (2005) used simulated EGMs in a laboratory study and systematically varied lighting, play speed, sound, betting options and reinforcement schedules. Player preferences were measured using both self-report and objective measures including the relative amount of time spent, number of plays and return to player on each machine. The results showed that players tended to prefer machines that were faster, provided more betting lines and sounds. Analyses indicated that a greater number of lines, faster play speed and lower illumination increased either the number of plays or time spent on each machine. The results confirmed that frequency of reward is fundamental in maintaining behaviour (see Davison & McCarthy, 1988 for a review), at least within a reasonable range of variations of magnitude. In summary, Delfabbro and colleagues (2005) concluded their results supported a preference by gamblers for a relatively steady stream of small immediate rewards and a fast play speed. The larger number of betting lines provides an additional mechanism via which the gambler can ensure there is a steady stream of small rewards. The balance between smaller bets and multiple play lines provided relatively frequent small rewards and in doing so it extended play time on a machine.

Other research has supported these conclusions, for example Chóliz (2010) manipulated the immediacy of reward in an EGM simulation with ten pathological gamblers who played two versions of an EGM, one with an immediate (after two seconds) payout after a win, and the other with a delayed payout (10 seconds). Participants had to complete 30 games on each machine before they were allowed to stop playing. Chóliz (2010) found that participants played an average of 56 games on the immediate version of the EGM, compared to an average of 38.5 games on the delayed version. That is, delays to reinforcement (payouts) reduce their effectiveness in maintaining behaviour. In terms of EGM design, a small delay such as that used by Chóliz would not necessarily impact on enjoyment (although this too remains an empirical question) but in principle could reduce session length and ultimately gambling-related harm.

While the research is relatively rare, there are consistencies in the findings. An earlier study examined the effects of manipulations of features of video lottery terminals (VLTs) on pathological and non-pathological gamblers (Loba, Stewart, Klein, & Blackburn, 2001). The researchers looked specifically at cash counters, speed of music, and stopping devices on VLTs. The aim of the research was to identify features which would negatively impact on enjoyment by pathological gamblers but have no effect on non-pathological gamblers. The participants were randomly assigned to one of three groups in which they would play four twenty-minute sets of VLTs with different combinations of adjusted features (i.e. slow/no sound, fast/sound, control, and counter present). Participants completed a seven-item survey detailing their subjective reactions to the VLT manipulations including their enjoyment of the game, excitement, tension-reduction and difficulty in stopping play. Loba et al. (2001) found that slowed sound and no sound settings decreased enjoyment, excitement and tension for pathological gamblers, but had no effect on non-pathological gamblers. In the faster sound settings and the control setting, pathological gamblers found it more difficult to stop playing the VLT than non-pathological gamblers. Perhaps the most interesting result came from the running counter setting wherein pathological gamblers were very resistant to playing VLTs with running counters and their rates of play were slowed, whereas non-pathological gamblers were not significantly affected by this feature change (Loba et al., 2001). Aesthetic and auditory features of the machines were of secondary importance in Delfabbro and colleagues' (2005) study but still had noticeable effects. Loba et al.'s results further suggest that these effects might change somewhat, or be differential, dependent on gambling experience.

Unfortunately, studies such as that reported by Delfabbro et al. (2005) are not as numerous as might be expected. This is likely to be due to concerns over the external validity of experimental findings, difficulty in accessing gambling venues, and ethical concerns over research in venues and its effects on the venues' operation and patrons. Some researchers have been more speculative in their approach. For example, Griffiths (1993) has discussed the role of structural characteristics of EGMs (with specific reference to the British variants of EGMs) in the development of problem, pathological and excessive gambling. He mentions situational characteristics which make initial gambling behaviour attractive such as positive marketing for casinos, the availability of gambling outlets, and the social pressure to gamble created by those around them. He also creates a separation between so called 'soft' and 'hard' kinds of gambling, with 'soft' gambling referring to activities such as lotteries and sports betting which Griffiths infers are lower arousal events, whereas the 'hard' gambling activities are those which he says are higher arousal events such as roulette, blackjack, slot machines and dog racing events. He suggests cognitive arousal as being a main risk factor when it comes to gambling of any sort. Recent studies have focused on measurable physiological arousal and this is an area where technology will facilitate relatively rapid developments in our understanding (e.g. Coates & Blaszczynski, 2013; Harrigan & Dixon, 2010).

Nonetheless, it remains clear that the single most important feature of EGMs is the payout schedules they use (Griffiths & Auer, 2012). These schedules exert reliable and well understood effects on behaviour which are also supported by qualitative research with gamblers. For example, in a study that specifically examined the relationship between game technology and problem gambling,

Livingstone and Woolley (2008) found an overwhelming majority of problem gamblers reported gambling small amounts on multiple or the maximum number of lines.

The Independent Gaming Authority (IGA) commissioned the Australian Institute for Primary Care, La Trobe University to examine aspects of the relationship between gaming machine technology and problem gambling (Livingstone & Woolley, 2008). The authors reviewed the existing literature and concluded that a large range of structural characteristics impact on gambling behaviour. The most relevant primary structural characteristics included the core technology of the EGM, the payout schedule which determines the number and scale of prizes and, in a behavioural sense, conditions player behaviour, and the actual operation of the game. Other primary characteristics of EGMs include the configuration of line betting, credit value, the reel symbol ratio, fitment of bank note acceptors and spin speed. Secondary characteristics include artwork, lighting and sound effects. The authors argued the complex inter-relationships between these structural characteristics produce interactive effects that shape gambling behaviour and cause problem gambling. This conclusion is logically correct; the issue for research is whether it is appropriate to use a reductionist approach to break down the characteristics and assess their relative importance or to study gambling behaviour in 'natural' settings and attempt to understand the relationships from that perspective.

As part of their report, Livingstone and Woolley (2008) conducted a series of focus groups and individual interviews with 64 problem gamblers who had contacted South Australian gambling services. Their first research question was: "Do particular gaming machine games feature more commonly in the play of problem gamblers as compared to recreational gamblers?" The authors analysed the data from the top 250 performing South Australian EGM games. They found the four most 'successful' games were *Shogun*, *Shogun 2*, *Dolphin Treasure* and *Indian Dreaming* (expenditure was highest for these machines). The next research question was: "Whether there are particular characteristics of those games that distinguish them from other games?" The authors found the extremely common free spin feature of EGM games was very attractive to gamblers. They stated that this feature appears to be the most important secondary reinforcement technique, resulting in relatively high average bet sizes, particularly in combination with the multi-line (or in the case of the *Indian Dreaming*, the ReelPower™) betting arrangement which allows EGM users to cover all possible winning combinations.

Livingstone and Woolley (2008) identified three key structural characteristics as increasing the risk associated with gamblers' consumption of EGM gambling:

- High credit value games produce high average bet levels. Minimum bets on high credit value games are larger than actual average bets on low credit value games, and small multiples of the minimum bet on high credit value machines lead to very large bets (specific examples were *Shogun* and *Shogun 2*).
- Multiple or maximum line betting on small credit value games leads to increased average bet sizes of between 20 and 50 times the minimum bet (the specific example was *Dolphin Treasure*).
- Reel betting extends the options of line betting on small credit value machines leading to increased actual average bet sizes exceeding those made on comparable credit value machines that only allow line betting (the example is *Indian Dreaming* incorporating ReelPower™ technology).

These more sophisticated structural characteristics operate as inducements to increase stake and coverage. A range of factors including 'insuring' against supposed near misses, anticipating free spin features and taking up opportunities to gamble reels as well as lines, facilitate higher average bets. These characteristics were suggested to be the fundamental elements underlying increase in both time on device and expenditure per customer (Livingstone & Woolley, 2008). According to Livingstone and Woolley (2008), these features substantially increase the risk of excessive gambling and could

play an important role in gamblers' transitioning from non-problem or low risk to moderate risk and high risk sectors of the gambler population. At a minimum it seems that these factors promote a tendency for EGM gamblers to see 'raising, increasing and expanding' their bets as normal.

As previously mentioned, Ladouceur and Sévigny (2005) studied the effects of stopping devices (which allow gamblers to voluntarily stop the virtual reels and see the end result of the round more quickly) in video lottery terminals. The authors conducted two studies, the first to determine whether participants thought that the stopping device affected the game at all, and the second to test whether a stopping device increased the number of games played in a single session. All participants scored four or less on the South Oaks Gambling Screen and were unfamiliar with the VLT game '*The Swinging Bells*' which was used in the study. In both experiments, participants played at least 40 free rounds of the VLT before they were allowed to use the stopping device. The first experiment showed that those who used the stopping device reported greater illusions of control and believed the outcome of the game would be affected by the time they chose to stop the reels. The second experiment showed that those participants who used the stopping device played for longer periods of time and, on average, spent more money than those who played without using the stopping device. Ladouceur and Sévigny suggested that illusion of control, which was reported in the first experiment, is likely to be a factor in the extended play time and increase the amount of money spent by the participants who had access to the stopping device in the second experiment.

Nearly 60 years ago, Skinner (1953) discussed how schedules of reinforcement could be designed to ensure an optimal patronage and profit to the house (gambling venue). The suggestion is that a machine that has a high return to player percentage will increase patronage, extend sessions and, in the longer term, return a greater profit to the house. Recently, Harrigan and Dixon (2013) obtained access to the design documents (PAR sheets) used to programme different versions of the same EGMs in Ontario, Canada (in Ontario, multiple versions of the same game are often licensed). The PAR sheets they used had the characteristics of a single game (*Lucky Larry's Lobstermania*) which had pay back percentages of 85% and 98%. That is, the machines return 85 or 98 cents of every dollar wagered to the gamblers, with the remaining 'hold' being the house profit. At first glance, it seems intuitive that the 98% version is the fairest and most beneficial for gamblers, as it has the largest return. Harrigan and Dixon wrote a computer programme to analyse all 259,440,000 possible outcomes (there were five reels with 47, 46, 48, 50, 50 symbols per reel). To illustrate the differences between the two designs they used a 'gambler's ruin' scenario to simulate 2,000 first time players arriving with \$100 to gamble and making the maximum wager on each spin until they had no funds remaining.

In addition to measures of amount of time spent and number of spins and wins across 85% payback and 98% payback simulations, Harrigan and Dixon (2010) recorded simulated 'peak balances' and the number of 'big wins' (defined as accruing a balance of more than \$1,000 on the \$100 bankroll). It was evident that the gambling experience differed little for the average (median) gambler regardless of the pay back percentage. The mean values showed evidence of a difference in peak balance (\$188 in the 85% condition compared to \$314 in the 98% condition); however, mean values are affected by outliers, whereas medians are not (\$128 in the 85% condition and \$145 in the 98% condition).

In Harrigan and Dixon's (2010) more detailed analyses, they found that players at the upper tail of the distribution had very different experiences. In the 98% version of the game, those at the upper tail (in a peak balance of more than \$1,000) had substantially more spins, hours playing, winning spins, bonus mode entries and hand pays. Additionally, in the 85% version there were five simulated players (from 1,000) that had a peak balance of more than \$1,000; this rose more than ten-fold to 54 players for the 98% version. Harrigan and Dixon discussed the results in terms of the importance of early wins and frequent payouts in the development of problem gambling. At the very least they showed that the higher pay back machines which at face value seem 'fairer' to the player, are quite likely a more dangerous product and of more concern in terms of the development of problem

gambling. At the very least, they have the potential to encourage longer sessions, and return visits due to their increased ‘volatility’ (win frequency).

Studies investigating gamblers’ preference for playing EGMs based on differences in return rates have presented participants with a choice between two or more machines that differ in regard to pay pack percentage and/or win frequency (volatility). Discrimination of rate of payout is inferred from different betting patterns on the machines. Coates and Blaszczynski (2013) recently extended research on player preference by examining both slot machine and player characteristics (e.g. prior slot machine experience, impulsivity and illusions of control) as factors influencing successful discrimination of pay back and volatility. A related aim was to examine multi-line/credit betting options that make pay back and volatility discrimination even more difficult. Forty-eight first year psychology students (32 male) each were invited to play on two simulated EGMs for what they were told was a “practise” 40 spins on each, and then for a “study proper” 10 minute session where they could choose how to divide their time between the two machines. The two EGMs available were pre-programmed with spin results derived from the same 91% pay back percentage and 56% volatility; however, because multi-line and credit betting was enabled, each participant’s session resulted in a different pay back and volatility for each machine at the end of the practise phase. Participants were asked to estimate the pay back and volatility of each machine after the study.

Participants with more accurate estimates placed more bets on the machines with low volatility and pay back. This was interpreted as a “gambler’s fallacy” approach; the participants seemed to anticipate that the lower pay back machine would eventually result in high pay back outcomes. There was no difference between experienced and non-experienced players’ accuracy in estimating pay back. The most commonly reported strategy to maximise winnings was “I switched from a machine when I felt I was ahead or had recouped my losses from that machine” and the most common rule reported to determine when to switch was “I switched after a win of sufficient size”. The authors highlighted that accuracy of pay back estimates, but not prior experience or knowledge of gambling strategy, influenced the degree to which participants negatively discriminated pay back (chose to place more bets on machines with low pay back). They commented that future research could observe which machine events precede switches or decisions to stop gambling in order to further explore the role of decision making heuristics like gamblers fallacy on slot machine play.

The little research that has been conducted into the potential motivating influence of EGM jackpots on gambling behaviour was reviewed by Rockloff and Hing (2014). The review draws from a few studies of EGM jackpots as well as literature around lottery products (similar magnitude of possible reward in comparison to amount wagered) to theorise possible influences. The authors suggested that whether theory characterises the motivating influence as rational (to do with cost/benefit of play), biased (overweighting the remote possibility of a win in judgement on value of play) or irrational (faulty cognition, e.g. superstition, gamblers fallacy, illusion of control), the expectation is that the availability of EGM jackpots should motivate additional consumption on those EGMs in comparison to those without such features. Rockloff and Hing noted that the largest prizes are seldom won. While, as described, the impact of modest wins (in terms of increased excitement and desire to continue gambling) has been shown, experimental evidence of the effects of large wins on gambling involvement is scant. The authors commented that much more research is needed to fully understand how the structural features of jackpots such as progressive, deterministic, hidden, mystery, linked and wide-area jackpots might differentially appeal to rational, biased and irrational motivations to engage in gambling on these EGMs.

### 4.3 Venue and social facilitation effects

#### *Electronic gaming machines*

The arrangement of EGMs within venues and social interaction among gamblers can also affect play in ways that may interact with the game characteristics already described. For example, Finlay et al. (2010) found that low information load micro-features such as low and constant lighting, symmetrical gambling layouts and clustering of machines by type, were rated the most restorative (providing a break from daily life). In this study, pleasure was also increased by these aesthetic features. A measure of ‘problem gambling intention’<sup>6</sup> yielded interesting results, with women reporting greater problem gambling intention at the prospect of isolated machines, and a lower problem gambling intention with a greater number of clustered machines. This result contrasts somewhat with results from Rockloff, Greer, and Fay’s (2011) study on the social effect of gambling. Rockloff et al. showed that the greater the number of peers surrounding a gambler, the more time and money they will spend gambling. Finlay et al. (2010) asserted that in order to decrease at-risk gambling intentions without a decrease in restoration or pleasure, the gaming design should feature static lighting, a varied colour scheme, clustering of machines by theme, or a symmetrical layout. It is important to note that this study focused on imagined behavioural intentions as opposed to behaviours themselves. In contrast, Rockloff et al.’s general finding that decreased isolation led to more gambling was based on observations of gamblers.

The ‘Social Facilitation Effect’ (a general phenomenon which shows that performance of simple tasks is enhanced by onlookers and others performing the same activity) has relevance for gambling from a harm minimisation perspective. Rockloff and Dyer (2007) showed that the presence of others and the ability to watch others’ machines encourages gambling. They recruited 116 participants who were split into three groups. Each of these groups was presented with varying levels of information about the plays and wins of other players. The first group received no information about other players, the second group was exposed to the noise of winning bells permeating the walls of the room in which they were gambling, and the third group received both noises and an instant message from the supposed other gamblers after they had ‘won’. The participants were put into isolation in a room with a computer-simulated EGM. The EGM’s rate of winning was controlled and the effects of the different environmental stimuli assessed by measuring the intensity of gambling behaviour via the final payout of each player, average bet size, number of trials played, and the speed at which each trial was played. They found that participants who received both visual and auditory information placed more bets and lost more money than either of the other two groups. They concluded that EGM betting behaviour is intensified by the belief that others are gambling and winning money.

This same highly controlled environment was used in Rockloff et al.’s (2011) study in which three groups of participants played a computer-simulated three-reel electronic game which produced one win for every three minutes of play and where players could cash-out at their discretion. The three groups varied as follows: 1) The participant was isolated during the experiment, 2) The participant was exposed to five people gambling via video conference and one confederate, 3) The participant was exposed to 25 people via video conference and one confederate. Participants in the first (isolated) group gambled with smaller amounts of money, gambled more slowly, and cashed out more quickly and with more money than the other two groups. The second group cashed out with the least amount of money of all of the groups, but the difference in the amount of money cashed out by the second and third group was not significant. The third group had the highest rate of play. The strategy of play used by the third group allowed them a greater number of plays on the machine; it could also have allowed them a longer play time and a longer term engagement with the machine. The presence of

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<sup>6</sup> Assessing self-reported likelihood of gambling beyond intended levels, for example “I would probably bet or play more than I wanted to at this place”.

confederates (in person and on the video) was of key importance; more confederates were associated with a higher number and rate of play and more wins (although not more money when cashing out).

Rockloff et al.'s most recent study (2012) hypothesised that intensification of gambling observed earlier may partly result from arousal caused by the mere presence of others in the gambling environment, for example moving through the casino floor to other amenities. In that study, participants gambled on a laptop simulated EGM either alone, or in the presence of six or 26 others (blindfolded and said to be engaging in another study task). Participants were categorised for analysis, using the Problem Gambling Severity Index, as having "no problems" with gambling or having "some problems". There was no uniform effect of increasing the number of present others on gambling intensity in the study (speed of betting, bet size). However, players with pre-existing problems with gambling, showed more persistence while losing money in both mere-presence conditions than in the alone condition. In contrast, players without problems tended to bet larger amounts but quit early when losses mounted.

### *Casino table games*

Several other studies have indicated that social variables (presence and behaviour of other gamblers) also influence table gambling behaviour. Blascovich, Ginsberg, and Howe (1975) showed participants playing the card game blackjack would bet more credits when in groups of three than when playing alone, a result that replicated that of a previous study that had employed similar procedures (Blascovich, Veach, & Ginsburg, 1973). Blascovich and Ginsburg (1974) employed confederates to play blackjack along with participants. Confederates consistently bet a low (10 cents), moderate (30 cents) or high (50 cents) amount. Results showed that participants' betting was influenced by the wagering of the confederates and also that wagering tended to increase across time for all participants, even those playing alone. More recently, McDougall et al. (2011) sought to replicate these findings as well as explore whether confederate play accuracy (as determined by adherence to the basic successful strategy for blackjack proposed by Braun (1980)) would influence the gambling behaviour of participants. Participants played blackjack either alone or in the presence of a confederate. The confederate either quit early in the session or played for the entire session. Across sessions in which the confederate played for the entire session, how much the confederate bet per hand and the accuracy of play were manipulated. Participants gambled significantly more money across a session when a confederate played the entire session than when a confederate left early in the session. During sessions in which the confederate played for the entire session, the number of hands participants played and their total amount bet varied directly with the confederate's bet size. The confederate's bet size clearly influenced participants' behaviour, with participants risking more money when the confederate consistently placed the maximum bet than when they played the minimum. Participant's gambling was not influenced by the accuracy of confederate's play. Taken together, these results point to a social effect on table gambling, that can facilitate (but also inhibit) gambling behaviour.

## **4.4 Cognitive aspects**

A range of cognitive distortions and dissociative states has been shown to result from exposure to gambling and the development of gambling problems (Toneatto, 1999). Rockloff et al.'s studies (Harrigan & Dixon, 2010; Rockloff & Dyer, 2007) on the interactions between physiological arousal and affect also showed that the way in which a gambler interprets physiological arousal can affect the choices they make. The differences between probable problem gamblers and those with no gambling problems within the positive affect and high arousal group indicate that there are cognitive differences between the two groups. Gamblers begin justifying outcomes of EGMs, anthropomorphising

machines, and generally becoming less and less aware of the difference between games of chance and games of skill, while asserting themselves as a factor into the outcome of the game despite having no influence over it (Navarro & Fantino, 2005a).

Delfabbro and Winefield (2005a) observed 20 gamblers throughout a 15-minute gambling session on EGMs during which they were asked to verbalise thoughts. The thoughts were categorised as being either gambling related or non-gambling related. The gambling-related cognitions were categorised as being either rational, in that they were based upon truths of the machines, or irrational in that they were untrue statements about the machines. Delfabbro and Winefield found that 75% of gambling-related cognitions could be categorised as irrational; many of these were related to a gambler's control over the outcomes of the game, anthropomorphising the machine, or appealing to the machine to allow them to win. The amount of irrational cognitions was not significantly impacted by wins or losses. The severity of these participants' gambling was assessed using a short questionnaire constructed by the researchers which suggested that none were pathological gamblers. Regardless, the participants' cognitions at this point in their gambling history had already begun to distort from reality.

Myrseth, Brunborg, and Eidem (1963) examined how cognitive distortions differ between pathological and non-pathological gamblers in games of chance and games of skill. One hundred and sixty-six participants recruited from race-tracks, off-course betting facilities and online problem-gambling treatment programmes were administered the South Oaks Gambling Screen (SOGS) on entrance into the study; 73 participants were determined to be pathological gamblers and the remaining 93 participants were classed as non-pathological gamblers. Non-pathological gamblers had a preference toward skill based games with 40 participants preferring them over games of chance, 33 preferred both types and 20 preferred chance based games. The opposite was true of pathological gamblers with 36 participants preferring chance based games, 11 preferring both types of games and 26 preferring skill-based games.

Along with the SOGS, Myrseth et al. (2010) asked their participants to complete a 21-item questionnaire to determine their attribution of luck to gambling and illusion of control to the gambling scenario. They found that pathological gamblers who preferred games of chance scored higher on the 'luck' subsection of the questionnaire which addressed cognitive distortions. This was not true of skill-based gamblers who had similar scores irrespective of their level of gambling problem. However, this might be due to the measure of cognitive distortions used, as some control is possible in skill-based games whereas it is not in games of chance. Gamblers who had a preference for both skill and chance games had higher illusions of control than other groups; this may be due to some generalisation from skill-based games to chance-based games and may result in such people being more at risk than either of the two separate groups, though it is difficult to determine which type of gambling they were referring to when answering questions.

Moodie (2013) reported further research into the cognitions of social and pathological gamblers for chance-based EGM gambling. Ten participants completed the SOGS; five were found to be pathological gamblers and five were considered social gamblers. Participants were observed in a naturalistic setting and asked to verbalise any thoughts that entered their heads, no matter how relevant or whether it was a complete thought. Verbalisations were recorded and coded as: "Inadequate" (predictions which were incorrect or skill based), "Adequate" (understanding of lack of personal control over the outcome of the game), "Descriptive" (describing some aspect of the game), or "Other" (all unclassified verbalisations). Several days after the observed gambling stage, participants completed a Gambling Beliefs Questionnaire; three weeks later they received questions which were to be asked in a semi-structured interview which took place one week later. The interview was an attempt to determine how persistent the irrational cognitions were in gamblers, whether the participants had early gambling experiences, and their gambling strategies. Consistent with Myrseth et al. (1963), Moodie (2013) found that pathological gamblers had higher rates of

irrational cognitions than social gamblers. Pathological gamblers were noted to make frequent references to skill but not to having more skill than social gamblers. This lends itself to the theory that some gamblers' focus is on the machine and not with the gamblers around them.

Similar results were found in a much larger scale study by Lund (2011) into the irrational beliefs of different types of gamblers. Participants were drawn at random from the 2002 Norwegian National Survey on gambling habits and gambling problems. Of 10,000 surveys sent to possible participants, 4,963 responses were considered viable as the respondents had a history of gambling behaviour. The submitted surveys included an irrationality measure of five statements, for example 'in the long run I will win more than I will lose', which could be agreed or disagreed with on a five-point Likert scale. Nine gambling categories were included ranging from sports betting to EGM playing to lotteries, and the participant was asked to write the frequencies with which they bet on each type of game. The DSM-IV based NODS screen was used to classify each participant as either no risk (score of 0), at risk (score 1-2) or problem gambler (score 3 or higher).

Lund (2011) found that a high rate of gambling behaviour was a predictor for irrational gambling beliefs irrespective of the type of gambling; the results also indicated that irrational beliefs increased rapidly alongside gambling rates. Lund failed to identify a causal relationship but there is certainly a link between the two factors. What is interesting to note is that EGM users had some of the highest rates of irrational beliefs among the different types of gamblers. This may be due to the chance-based nature of these games. The rate at which irrational beliefs increased compared to gambling frequency supports the idea that gambling featuring EGMs encourages a level of dissociation from the reality of how the machines work and the likelihood of winning.

Some other cognitive distortions were examined in Ayton and Fischer's (2004) study of the hot hand fallacy and the gambler's fallacy. The hot hand fallacy is the attribution of experiencing positive recent events in a series of fluctuations in human performance as being on a winning streak, whereas the gambler's fallacy is the attribution of a series of negative natural events reflecting upon the subject's skill or likelihood of success in the future. Ayton and Fischer recruited 32 undergraduate students of unknown age or gambling history and asked them to complete 200 trials of a simplified and computerised game of roulette. Half of the roulette wheel was red, the other half was black and the participants were asked to predict which colour would win. Participants were randomly assigned to either forecasting (predicting which would win) or gambling (betting 'money' on which colour would win). After each bet and before the results participants were required to indicate, on a bar below the virtual roulette wheel, how confident they were in their choice from the extremes of 'no confidence' to 'total confidence'. All outcomes were randomised and not affected in any way by the actions of participants. As predicted by the hot hand fallacy, participants who experienced earlier multiple successes attributed their success to their own actions and their confidence in their ability to succeed was substantially higher than participants who had early losses (explained by the gambler's fallacy).

While it seems evident that cognitions are an integral aspect of problematic gambling, information has been mounting about a potential disconnect which severe problem gamblers sometimes experience in relation to their cognitions. Specifically, sometimes the gambler seems to become unaware of their surroundings, of time passing or even their own physical needs. The troubling aspect of this is that it seems akin to the self-medication or escapism enabled by drug abuse, at this stage of gambling dysfunction the EGM is not so much entertaining as it is a need-based form of escape (e.g. Anglin, 1994).

Schull (1987) describes experiences which have been relayed to her from interviews with severe problem gamblers in Las Vegas. She describes phenomena such as 'The Zone', a trance-like state wherein all external stimuli such as noise or sight are nullified; at an extreme it is sometimes described as the sensation of having one's body disappear. Previous explanations of gambling

behaviour such as a desire to win money are seen as a punishment in this state as the break caused by the win takes the gambler out of 'The Zone'. In this state, gamblers are not taking part in gambling behaviour in order to gain some kind of measurable external reward; instead they seem to be taking part in gambling to shut down their senses and their thoughts.

These self-reported experiences are partly corroborated by Griffiths (2011) who conducted a study very similar to that of Moodie (Coates & Blaszczynski, 2013). Sixty participants, 30 regular gamblers and 30 non-regular gamblers, were asked to speak aloud all thoughts which came into their mind whilst they were gambling on an EGM. As with Moodie (2013), cognitions pertaining to gambling were classified as being either rational or irrational. Regular gamblers were noted to have more irrational thoughts than non-regular gamblers and although non-regular gamblers often expressed that they could not think of anything to say or that their minds had 'gone blank', regular gamblers had the longest periods of time without any speech whatsoever. At some points, these breaks in speech were more than thirty seconds in length and resulted in regular gamblers saying less overall, having the greatest number of irrational cognitions, and potentially having long periods of time without cognition or without compulsion to express cognition. Griffiths stated that this may be due to regular gamblers shutting down into a kind of auto-pilot, or perhaps a 'Zone' as it was described Schull (1987). Whether this lessening of cognition increases with severity of gambling problem, as has been seen with irrational cognitions or whether it defines a more severe form of problem gambling is unclear. It does, however, seem to dramatically impact upon player experience and the type of reinforcement that gaming machines offer.

#### **4.5 Physiology and arousal**

Autonomic nervous system arousal is characterised by elevated heart-rate, galvanic skin response and heightened senses. These physiological changes can be interpreted positively as excitement or negatively as anxiety or fear, by the subject, but increase susceptibility to the effects of conditioning irrespective of the subject's interpretation. Arousal is not dependent upon the originating stimulus in that it generalises to any stimuli presented to the subject during the state of heightened arousal. This pairing of heightened arousal with a stimulus can result in an unconscious conditioned response, wherein the presentation of the stimulus results in arousal, emotional responses or urges/cravings. This is known as respondent conditioning, a basic behavioural process established by Pavlov (2008).

Respondent conditioning is an important factor to consider when examining gambling behaviour because it gives an insight into the basic biological factors which influence the behaviour. The thrill and enjoyment which is characteristic of gaming machines is evident physiologically as elevated heart-rate and increased skin conductance. Constant pairings of arousal with gambling can establish a resilient linkage between environmental events and physiological states. Increased arousal may result in the subject reporting cravings for gambling environments which are measurable physiologically, or becoming increasingly aroused in gambling environments. This can occur irrespective of gender and age, and there are many factors involved which can strengthen the bond between gambling behaviour and physiological response.

The pathways model for the development of problem and pathological gambling presented by Blaszczynski and Nower (2002) highlighted that there are multiple types of gamblers, and a range of possible pathways leading to the development of gambling problems. Blaszczynski and Nower presented three different gambling pathways for the development of gambling problems all of which begin with conditioning as outlined above. The first pathway describes a downward spiral of problematic gambling behaviour initiated by this conditioned arousal/excitement response in the presence of gambling stimuli. This behaviour is then supported by cognitive distortions and financial debt which can trigger the chasing of losses (a sunk cost effect) in the gambler. The gambling behaviour, as well as being physiologically arousing, is used in order to fix the issue of debt caused by

previous gambling and as that is an unlikely result of the gambling, the cycle continues to progress with the association between arousal and gambling strengthening, and the external pressure for the gambler to win enough to resolve financial issues increasing.

The second pathway presented by Blaszczynski and Nower (2002) included emotional vulnerability and the use of gambling as an escape from the gambler's emotional issues such as mental illness, poor emotional environments, neurochemical imbalances and poor coping capabilities. Adding this issue into the previously described process is hypothesised to create a much more detrimental cycle wherein not only are financial issues exacerbated by the gambler's addiction, but their emotional issues and vulnerabilities are increased as they begin to use gambling as a means of escaping from their problems. The gambler's problems are then increased by the amount of time and money they spend gambling and so the need for escape becomes more desirable and feeds into the cycle of addiction.

The third pathway includes the variable of some neuropsychological dysfunction such as attention deficit hyperactivity disorder, which increases the likelihood of impulsivity, and substance abuse behaviours. This impulsive behaviour reduces the gambler's resistance to the aforementioned cognitive distortions and environmental pressures making gamblers who fit this model even more likely to develop problematic gambling behaviours or pathological gambling as it is defined by the DSM-IV-TR.

Arousal is also significant in Brown's (2012) model of the development of problematic gambling behaviours. Brown suggested that although schedules of reinforcement were significant in the development of problematic gambling behaviours and gambling addictions, they were secondary to the association between arousal and gambling. This model is contingent on the role of arousal in conditioning, wherein Brown suggests that individuals have an optimal level of arousal at which conditioning occurs, and the closer the subject is to this optimal level of conditioning, the more vulnerable they are to stimuli within a gambling environment and its effect on arousal. Brown suggests that even when the stimulus is not present, the association can be strengthened by the gambler reaching the same level of cognitive arousal which occurs in the presence of the gambling stimuli.

Coventry and Hudson (2008) attempted to assess whether there was a significant difference between male and female EGM players in terms of their level of arousal before, during, and after gambling as well as the effects of gambling on sustained levels of arousal. Participants were recruited from a gambling arcade based upon previous experience with EGMs and were excluded if they had been gambling, drinking or smoking when approached. Arousal was measured using an electrocardiogram. No gender differences were evident but the results showed that heart-rate increased during play irrespective of whether the participant won or lost more often throughout the gambling session. However, the increases were significantly larger in participants who won more often than they lost. These 'winning' participants reached a higher and more sustained peak of heart rate than those who lost more often than they won and this effect was sustained for longer after the gambling session. For all participants, the heart rate measurement after the gambling session was significantly higher than the baseline measurement showing that the effect of a gambling session, whether it is monetarily successful or not, is that of long lasting arousal.

The role of physiological arousal and our cognitive and behavioural interpretation of it, has been long established in psychology (e.g. Monaghan & Blaszczynski, 2010). Briefly, it seems that physiological arousal is interpreted based on the context in which it occurs (Monaghan & Blaszczynski, 2010). Arousal may provide different signals to gamblers with few versus many problems. Gamblers with many problems may interpret their arousal as a sign that they will soon lose money, while gamblers with few or no problems may associate feelings of arousal exclusively with winning (Munoz, Chebat, & Suissa, 2010). Rockloff and Greer (2010) conducted a study on the subjective effects of physiological arousal as well as the level of arousal on gamblers. One-hundred and three participants were recruited outside Koorana Saltwater Crocodile Farm in Central Queensland, Australia. Their

problem gambling status was assessed using the Problem Gambling Severity Index and they were randomly assigned to one of two groups; the first played a laptop-simulated EGM before entering the saltwater crocodile farm, and the second played the EGM after holding a one metre long saltwater crocodile. Arousal was measured via galvanic skin response. After the trials were completed, the participants completed the Positive and Negative Affect Schedule which enabled the researchers to distinguish between participants' interpretations of their states of physiological arousal. The EGM was a laptop based three-reel slot machine game, with four pictured fruits on each reel, and had typical noises associated with EGM play. Outcomes were controlled and participants could choose to bet either 25, 50 or 100 cents on each reel in each round; the number of trials played, bet size, speed of betting and final payouts were used to determine the effect of the interaction between arousal and participants' scores on the Positive and Negative Affect Schedule.

Rockloff and Greer (2010) showed that the interaction between affect and arousal was an important indicator of how long a participant would play an EGM, the amount of money they would bet, the speed of betting, and the perceived enjoyment of betting behaviour. At-risk gamblers with few self-reported negative emotions placed higher average bets after holding the crocodile; in contrast, at-risk gamblers with many self-reported negative emotions placed lower bets. Low level arousal paired with negative affect resulted in the most intense and long lasting betting behaviour (with lower bets), which the researchers suggested was a result of attempts to ameliorate feelings of boredom and low level anxiety. The low bet size enabled them to continue gambling for long periods of time with much less risk involved in each round than higher betting groups. Participants with high levels of arousal and positive affect, for example, had the highest betting size and perceived their high arousal to be an indicator of future gambling success. However, this effect was not present in participants classed as non-problematic gamblers who also had high arousal and positive mood.

These studies (Rockloff et al., 2007; Rockloff & Greer, 2010) provide a much clearer indication of how affect and arousal interact with one another, and how the gambler's interpretation of physiological arousal affects their perception of likelihood of winning and their interaction with the gambling environment. However, these studies were simulations and so it is difficult to determine how the participants' surroundings may have affected their gambling behaviour or whether gambling environments would foster a more or less positive affect in gamblers. Recent biological evidence, again in simulated conditions, points to the potential neural reward value of gambling itself during betting and in anticipation phases. For example, neuro-imaging studies of the brain show that the expectation of winning and making a risky bet are rewarding and are more so for a problem gambler than for a non-problem gambler (Miedl, Peters, & Büchel, 2012; Power, Goodyear, & Crockford, 2012; van Holst, Veltman, Büchel, van Den Brink, & Goudriaan, 2012).

#### **4.6 Pop-up messages and player information displays**

In order to break the zone-like state which problem gamblers seem to enter and to interrupt the payout schedules which can facilitate harmful levels of gambling behaviour, compulsory breaks in play have been suggested as a harm minimisation measure. For this reason, pop-up messages which interrupt continuous play on EGMs for 15 seconds have been introduced into the New Zealand gambling environment; they occur randomly after every 20 to 30 minutes of continuous play. In addition to enforcing a break in play, the pop-up message provides information about the current gambling session (money spent and won as well as time spent playing). The notion is rather simple and designed to interrupt the high and constant rate of behaviour (and the aforementioned 'zone') associated with the schedules underlying EGMs and provide the gambler with information to assist in making an informed decision to continue or cease gambling. As a result, a small number of studies have assessed the effectiveness of player information displays such as pop-up messages, and both dynamic and constant/static displays have been tested.

Schellink and Schrans (2002) collected data about interrupted play caused by pop-up messages and other factors from 222 gamblers using a pseudo-diary approach. The participants included gamblers not at risk, low risk, moderate risk and problem gamblers. They found that based on the participants' last time playing video lottery machines, exposure to pop-up messages increased markedly with risk for problem gambling. Problem gamblers were statistically significantly twice as likely to experience pop-up messages as gamblers not at risk. However, the difference was not significant between players at any level of risk and exposure to pop-up messages when gamblers had 90-minutes of continuous play. The only significant difference found after 90-minutes of continuous play was that gamblers not at risk were less likely to recall/record having seen a pop-up message.

Schellink and Schrans (2002) also found that problem gamblers were more likely to interrupt continuous play by running credits to zero before putting in more money, thus resetting the timing mechanism for pop-up messages. This increased the losses reported by problem gamblers and reduced the chance of being exposed to pop-up interventions for playing periods longer than 90-minutes. They suggested that long-term changes in behaviour may occur after repeated exposure to pop-up messages, through gamblers avoiding seeing the message or by reducing play. They found a small effect in decreasing gambling expenditure and duration, but only for high-risk players. This finding was further strengthened by increased expenditure for high risk gamblers if they had not been exposed to a pop-up message. However, Schellink and Schrans also proposed that gamblers may become habituated to the pop-up messages and respond to them in a routine manner.

Monaghan and Blaszczynski (2010) found that while harm-minimisation strategies aim to reduce gambling-related risks, static warning signs in gambling venues and on EGMs have little impact on gamblers' within-session thoughts and behaviours. It has been suggested that to be effective, warning signs must engage the gambler's cognitive, emotional and motivational faculties in a way that will make the gambler more likely to evaluate the intensity and duration of their play (Rockloff, 2014). Some harm minimisation strategies have been based on the premise that messages informing players of odds and probabilities will be enough to influence responsible gambling decision making. However, research suggests that effectively communicated knowledge does not change irrational beliefs or erroneous estimations of the chances of winning (Rockloff & Hing, 2013).

Monaghan and Blaszczynski (2010) evaluated the differential effect of dynamic pop-up messages (similar to those used in computer software programmes) compared to static signs and the content of messages on participants' recall, thoughts and behaviours. In their first study, 127 regular EGM players in a laboratory situation were randomly assigned to pop-up or static messages. Their second study used an identical methodology but with 124 regular EGM players in an actual gambling setting. The researchers found that pop-up messages encouraging self-appraisal such as: "Do you know how long you have been playing?" "Do you need to think about a break?" resulted in significantly greater effect on self-reported thoughts and behaviours, presumably because they drew the gambler's attention to their current situation. There was also evidence that these messages encouraged appropriate behaviour modification. Moving, 'dynamic' signs scrolling across the screen of an EGM, or pop-up boxes represented the best method of attracting attention to responsible gambling messages during actual play. There were no significant differences between problem and non-problem gamblers in these results, though the researchers suggested that this may be due to the low numbers of problem gamblers included in the study.

Munoz, Chebat and Suissa (2010) also examined the impact of warnings on gamblers who play video lottery terminals but from a different perspective than Monaghan and Blaszczynski (2010). Munoz et al. looked at cognitive processing of fear appeals (or threats) in warning labels to promote responsible gambling. A sample of 258 adult VLT gamblers was screened using the Canadian Problem Gambling Index. Twelve percent of the participants were classified as non-problem gamblers, 51% were moderate-risk gamblers and 37% were problem gamblers. This high level of moderate-risk and problem gamblers in the study was in contrast to the sample in Monaghan and Blaszczynski's study. Their results showed that both higher threat warnings and warnings associated with a medical source

were most effective in enhancing depth of information processing. Depth of processing is likely to influence positive attitude change and, in theory, increase the likelihood of gambler compliance. Threats included such things as family disruption, financial failures and suicide. Strong threats were most effective with highly involved VLT gamblers. However, threats did not generate fear for less-involved gamblers. Munoz et al. emphasised the step-wise nature of this effect, that is, the effect occurred between the moderate and strong threat range; less threats had no effect as opposed to a small effect.

More recently, Munoz, Chebat and Borges (2012) investigated the effects of a graphic warning picture and threat messages (involving financial or family disruption conditions) on depth of information processing, attitudes to gambling and intended behaviour. A community and service provider recruited sample of 103 individuals (78% problem gamblers, screened with the Canadian Problem Gambling Index) took part in a simulated (forced exposure) session using 2 x 2 factorial design to test: content of threat (financial and family disruption) x graphic picture (presence vs. absence). Participants were administered measures of information processing, attitudes and intended behaviour afterwards. The presence of a graphic enhanced both cognitive appraisal and fear and had positive effects on the depth of information processing. In addition, graphic content combined with the family disruptions threat was more effective for changing attitudes and intention to comply with the warning than other combinations of the manipulated variables. The authors suggest that both format and content and any potential interaction must be considered in messages warning gamblers, for example, the financial disruption threat content did not require an image to be effective, but family disruption warnings did.

Whether or not any effects will be sustained in the long-term was assessed in part by Monaghan (2008) in an extensive literature review of pop-up messages and related harm minimisation messages in EGMs. Monaghan (2008) examined alcohol and tobacco health warning labels. She found that while research suggests these may increase consumer awareness of labels, this awareness does not change perception of risks of hazards involved, nor does it change consumer behaviour, at least not on its own. With tobacco where considerable progress has been made, the effects are likely due to interventions at multiple levels. The nature of gambling perhaps suggests that gamblers might respond to this type of intervention in a more efficient manner. This is because the interruption of play from the message both prevents the player from continuing play for a period of time and also provides information on their gambling session, perhaps confronting some distorted cognition. Thus, these interruptions are fundamentally different from warning labels on consumable products and might be effective even if other warning labels have not been.

Whether threatening messages are necessary was brought into question by Jardin and Wulfert (2011). Although high-risk threats have been shown to be effective in reducing gambling behaviour both in non-problematic and problematic gamblers (Munoz et al., 2010) they do not assess the issue of cognitive distortions which are characteristic of problem gamblers. They also seem to have a greater effect on non-problematic gamblers and as such may not be targeting the issues inherent in gambling problems. Targeting non-problematic gamblers in this way may be effective in terms of harm prevention. Thus, as a harm-minimisation intervention they might be beneficial but have less impact on established problem gamblers. Jardin and Wulfert recruited 108 undergraduate psychology students, 69% of whom had previous gambling experience though it was not known whether any of the participants were problem gamblers. Participants were randomly assigned to one of three groups: the first received occasional pop-up messages which described game characteristics (reminding participants that they have no control over the outcome of the game); the second group received occasional pop-up messages which were unrelated to game contingencies; and the third did not receive pop-up messages.

The participants played a computerised 'lucky wheel' allowing them to bet on one of eight wedges of the wheel which could result in them either winning or losing equal, double, triple or quadruple the

amount of money bet. All participants started with \$500 and could bet one dollar, five dollars, ten dollars, or twenty dollars per turn. The game was controlled by the experimenters who distributed reward in line with eight phases of trials across which wins occurred at varying frequency, with one trial in which participants could not win. Both the ‘descriptive’ pop-up group, and the ‘unrelated’ pop-up group received a pop-up message every three trials. Jardin and Wulfert (2009) found that participants exposed to descriptive messages about the game spent less money, played fewer trials, were more likely to stop playing the game while they had money remaining, and exited the game much more quickly than the other two groups when the eighth phase was in effect. The depth of processing effect discussed by Munoz et al. (2010) was evident, in that the only effect found in this study was related to the content information rather than a simple interruption of game play. Whether this type of pop-up message would be effective for problem or pathological gamblers with more severe cognitive distortions has yet to be seen.

Alterations to features of EGMs beyond pop-up messages or with information that can be included in pop-up messages have also been investigated. Feature changes such as implementation of clocks, on-going money tallies and features commonly intrinsic to EGMs (such as the speed of music) have been assessed. Ladouceur and Sévigny (2009) evaluated the effectiveness of two game characteristics already in place in Canadian EGMs: clocks and cash displays. Thirty-eight gamblers from twelve different gambling sites were approached when they were seen to first sit down at an EGM. Those who agreed to participate in the research completed the South Oaks Gambling Screen. Twenty-four of the thirty-eight participants were non-problem gamblers, seven were considered at-risk and seven were problem gamblers. After the gambling session, the participants were asked to complete a survey about their perceptions of the displays. The time display appeared to have little effect on participants’ control of their gambling behaviour although 89% of participants stated that they had noticed the clock; however, 73% of participants stated that time was not an important factor in their enjoyment of gambling. In contrast, the cash display did have a perceived effect on gambling behaviour. The majority of participants (86%) reported that they preferred the cash display more than the credit display because it was easier for them to keep track of the amount of money that they had left to gamble with. Over half of the participants (58%) believed that the cash display helped them control their gambling. However, the effectiveness of these measures is questionable as the results referred to the gamblers’ perceptions, rather than direct measures of gambling behaviour.

A recent study canvassed 300 gamblers and their self-reported experience of the responsible gambling features of a machine type called *Blue Gum* that they had been observed playing in Queensland, Australia (Blaszczynski, Gainsbury, & Karlov, 2013). The specific features evaluated were: responsible gambling messages (animated signs displayed on the gaming machine advocating affordable play but did not interrupt play), a “bank winnings” option to prevent wins being re-gambled, an alarm clock to voluntarily pre-set session length with notification when time was up, a demonstrator mode (feature allowing continued play without inserting money) and charity donations (the ability to donate residual funds to charity rather than continue gambling). The results indicated that although most patrons were aware of the responsible gambling features of *Blue Gum*, few elected to use them. The alarm clock was particularly unpopular and responsible gambling messages were not displayed in a prominent enough place to allow easy reading and comprehension of message. However, at-risk or problem gamblers were more likely to find these messages impacted negatively on their enjoyment of play than recreational gamblers. Demonstrator mode was the only mechanism considered by the authors to be potentially useful in harm reduction (though they acknowledged the potential impact of a lack of publicity and explanation of the responsible gambling features might have had on their findings). The demonstrator mode encouraged a break in play and provided a way to participate in the games with others socially without spending money. However the notion of social participation as protective in some way must be considered in light of the aforementioned social facilitation effect and potential effect of the mere presence of others on gambling intensity.

The focus of feature manipulation and pop-up messages in EGMs is to deter problem gamblers from continuing to gamble and to prevent transitions from non-problem to problem gambling. In order to do this, without too harshly impacting upon the experiences and enjoyment of non-problem gamblers, features which impact directly on problem gambling have generally been the focus of evaluation efforts, and are likely to have differential effects on problem or at-risk gamblers. These manipulations have included:

- Game play pauses as the result of a pop-up display which break a period of continuous gambling.
- Pop-up messages displaying information about the odds of winning when playing EGMs, an overview of the current session (time and expenditure) and the potential health risks associated with problem gambling behaviour.
- Continuous running counters which display the amount of money a player has remaining or the amount of money they have spent so far.

While the evidence is not as comprehensive as desired, there is evidence to suggest that interventions of this type could reduce the incidence of problem gambling and perhaps assist some problem gamblers to control their gambling. The exact nature of the information that would be most effective, however, remains less certain. There is, in principle, good reason grounded in behavioural science to suggest that the combination of breaking play and providing information could reduce harmful gambling. It remains unclear if there are specific gamblers for whom this will be more effective, what information will be effective and how that information should be delivered. The review presented here indicates that dynamic (moving) messaging bringing to attention the amount of money spent and remaining, while also incorporating some threat elements from a medical/health perspective, is a reasonable place to start.



## 5 RESULTS: FOCUS GROUPS

Eleven focus groups were conducted with gamblers, Asian and Pasifika gambling treatment services staff, and gambling industry staff to discuss how game characteristics, pop-up messages and player information displays (PIDS) relate to gambling behaviour. The gambler groups and Asian and Pasifika gambling treatment services staff (cultural perspectives) groups had game characteristics as their primary focus (pop-up messages and PIDS were discussed in this context), while the gambling industry groups were focused more towards behavioural impacts of pop-up messages and PIDS. Findings from the focus groups were used to inform the subsequent in-venue observational phase and survey.

### 5.1 Participant characteristics

The self-reported demographic features of the gambler participants in the focus groups are shown in Table 1. There was a relatively equal distribution of male and female participants and self-reported ethnicity was satisfactorily representative of gambling populations. Approximately half of the participants self-identified their ethnicity as NZ European. Four participants did not disclose their ethnicity. Seven of the 11 Māori participants took part in the dedicated Māori focus group, the remaining four took part across the other focus groups. The age distribution of the participants was satisfactory and consistent with population level research; the majority of participants were aged between 30 and 50 years. In New Zealand, problem gambling is most common among those aged 35 to 44 years (Ministry of Health, 2008).

**Table 1. Demographic characteristics of focus group gambler participants**

Demographic variable	N
<b>Gender</b>	
Male	18
Female	22
<b>Ethnicity</b>	
NZ European	19
Māori	11
Indian	4
Pacific	2
Undisclosed	4
<b>Age range</b>	
20 - 29 years	4
30 - 39 years	13
40 - 49 years	12
50 - 59 years	5
60 - 69 years	5
Undisclosed	1
<i>Total</i>	<i>40</i>

Additional characteristics of the participants in each of the focus groups are detailed overleaf.

### **5.1.1 Gambler focus groups**

#### **Community low frequency gamblers**

The nine participants comprised four males and five females who gamble less than once per week. Their estimated ages were between 20 and 30 years, and 60 and 70 years. Participants reported a mix of gambling preferences: exclusively casino table games (n=2), exclusively pub EGMs (n=3), both casino EGMs and table games (n=4).

#### **Community high frequency gamblers**

The six participants comprised four males and two females who gamble once a week or more often. Their estimated ages were between 20 and 30 years, and 40 and 50 years. Participants reported a mix of gambling preferences: exclusively casino table games (n=2), exclusively pub EGMs (n=2), both casino EGMs and pub EGMs (n=2).

#### **Community mixed frequency gamblers**

Five participants comprised three males and two females who gamble once a week or more often (n=3) or less than once a week (n=2). Their estimated ages were between 30 and 40 years, and 60 and 70 years. Participants reported gambling preferences as follows: exclusively casino EGMs (n=3), both casino EGMs and table games (n=2).

#### **Current or ex-problem gamblers, group one**

Six participants comprised five males and one female who currently or previously had been categorised as a problem gambler via the PGSI. Their estimated ages were between 20 and 30 years, and 40 and 50 years. Participants reported current or previous gambling preferences as follows: exclusively casino table games (n=1), both casino and pub EGMs and casino table games (n=3), exclusively pub EGMs (n=2).

#### **Current or ex-problem gamblers, group two**

Six participants comprised two males and four females who currently or previously had been categorised as a problem gambler via the PGSI. Their estimated ages were between 40 and 60 years. Participants reported current or previous play preferences as follows: a mix of casino and pub EGMs and casino table games (n=1), exclusively pub EGMs (n=5).

#### **Māori dedicated gambler group**

Eight participants (four males and four females) chose to take part in a Māori dedicated and run focus group. Frequency of gambling varied. Their estimated ages were between 30 and 40 years, and 60 and 70 years. Participants reported pub and casino EGM play.

### 5.1.2 Professional stakeholder focus groups

#### Pasifika problem gambling services

This group comprised three participants from two Pasifika oriented problem gambling clinical and public health services. Two participants were counsellors; one was a clinical team leader.

#### Asian problem gambling services

Seven staff from a dedicated Asian problem gambling clinical and public health service took part. Participants were experienced in both clinical work and health promotion.

#### Pub staff, group one

Four staff who work in pub venues took part. These participants comprised bar managers and bar staff.

#### Pub staff, group two

Six staff who work in pub venues took part. These participants comprised bar managers, bar staff and Class 4 (non-casino EGM) Society staff.

#### Casino staff group

This group comprised seven casino staff members including representatives from host responsibility management, operations management and EGM floor attendants.

## 5.2 Focus group themes

The results presented here represent a thematic analysis of the data focused on the key effects on gambler behaviour of game characteristics, pop-up messages and PIDS. As such, the main focus is on the game characteristics which gamblers discussed as leading to increased gambling and loss of control, and those features that seemed to facilitate greater control. Perspectives given in the Asian and Pasifika problem gambling service groups were taken into account when interpreting the conversations held with gamblers; particularly those gamblers who were current or past problem gamblers. Themes around pop-up messages and PIDS are presented within the context of their intended relationship with control over gambling, and the results of the gambling industry groups focus on how participants observed behavioural responses to pop-up messages in the casino and Class 4 (non-casino EGM) gambling environments. Brief results of the ethnic-specific issues that do not relate specifically to the above are presented as well as results in relation to casino table games.

When discussing specific features of EGMs that were attractive, there was considerable consistency across the groups, both in terms of the main features and their rankings. These features have been divided into two primary themes; those features associated with *winning*, and those associated with *betting*. Features that can be observed unobtrusively in venues were focused on given the nature of the following observational study; however, there were no features commonly mentioned by gamblers that did not fit this criterion. The features the participants associated with increasing the

attractiveness of gambling were also all associated with gambling more intensely and for longer, sometimes longer than intended. These issues are presented with each feature and any variations from this are noted.

Additional themes (not included under winning and betting) and information collected specifically around pop-up messages and PIDs are then discussed, followed by insight gained into how features of table games were talked about. Lastly, additional issues raised by the Māori consumer group, Pasifika and Asian problem gambling services groups are reported.

### **5.2.1 Winning**

With EGMs, and other forms of gambling, gamblers unsurprisingly talked about winning as an attractive feature of gambling. Sometimes this was in the context of personally winning:

*“...it’s all about winning.” - J, male, mixed frequency group*

Other times it was just observing someone winning. As would be expected, a primary motivation for gambling and an attractive feature of gambling, regardless of the gambling mode, was winning money.

*“...it was attractive because I saw people winning hundreds and hundreds of dollars from it...” - T, female, Māori group*

### **Free spins on EGMs**

The feature most commonly reported as attractive and important across all groups of gamblers, irrespective of frequency of gambling or problem gambling status, was free spins on EGMs. Gamblers talked about this feature in a variety of ways, including the notion of getting something for nothing and a sign of better luck, or simply boosting one’s spirits.

*“One feels one’s got a present or a prize you get the feeling of ‘Oh! I got something!!’ Even though, it’s not money, you got something. It picks you up after a losing streak \*laughs\*” - A, female, low frequency group*

*“You’re not moving ‘til you get something, and the free spinning thing ... that was almost like it was telling you that you weren’t wasting your money when you were getting those free spins” - E, male, Māori group*

Participants in all gambler groups also suggested that the free spin feature encouraged people to gamble more lines or more credits, as gamblers reported that the games occurring during free spins replicated the bets being made immediately prior. So free spins won with fewer lines or lower credits bet were less valued. Gamblers reported maximising credits in the expectation of free spins, or varying the credits bet in some predetermined way to try and ensure their free spins were maximised.

*“Well the idea is that you’re on maximum credits... You know, you put in your \$20 and you have, have a couple of go’s and then you’re on maximum credits and you win free spins and then you just sit back, put your feet up - now if you drink, take a drink and watch the credits just roll on.” - M, male, current/ex-problem gambler group*

There was a clear consensus among gambler participants and problem gambling service providers that the free spin features encouraged more gambling, gambling for longer and, in some cases, contributed to some loss of control even in low frequency gamblers. As previously noted, gamblers in all groups were focused on winning something, even if they realised the free spins were relatively minor. The free spins also seemed to foster the hope of much larger wins.

*“If I hadn’t of got the free spins one, I’d spend more money by putting money into it, to try and get the free spins.” - S, female, low frequency group*

Others made it very clear that without the free spins, the EGMs might be a much less attractive proposition as a gambling alternative.

*“So if they didn’t have the 15 free games, whatever, then that turned me off because I thought, where’s my chance to get a bit of excitement in the game or to get a bigger win?” - D, male, current/ex-problem gambler group.*

### **Small wins on EGMs**

The second most highly ranked attractive feature of EGMs was the relatively frequent small wins, usually in the form of credits. This was again the case irrespective of gambling frequency or problem gambling status. The participants highlighted that, like the aforementioned free spins, small credit wins promoted enjoyment and fun, and extended the time spent on the EGMs. There were some differences between infrequent social gamblers and current or ex-problem gamblers, but the differences were quite subtle. Both groups were interested in getting ‘value for money’ though the social gamblers were more concerned with maximising the time they spent gambling.

*“I don’t bet or win big money. So I’m restricted by betting amount... I do it for entertainment so the longer that I can make it last, the better it is...” - N, female, low frequency group*

The current or ex-problem gamblers were more focused on management of the money they were wagering.

*“I’d rather have a whole lot of small wins and have it paying every second or third spin than have something which pays every 50 spins and pays 50 times your bet. And it’s a simple reason - it’s bankroll management.” - D, male, current/ex-problem gambler group.*

The latter quote also highlights the increasingly ‘analytic’ approach that problem and ex-problem gamblers perceived themselves as taking. This, with their increased perception of their own skill and strategies related to gambling, including EGM play, is consistent with the existing literature on problem gamblers.

As with the free spins, it was clear from the discussions that a main effect of the small wins was to encourage or motivate gamblers to gamble for longer and, in some cases, for longer than they initially intended. It is clear that these smaller wins keep the possibility of winning further salient in the minds of gamblers, even for low frequency gamblers who might never have had a large win.

*“Well when they pay out a bit you think they are going to pay out again, so you keep going” - G, male, low frequency group*

## Lights, sounds and graphics on EGMs

This category encompasses a relatively broad array of features. Gamblers noted a range of game-specific lights, sounds and graphics. Gamblers were variously drawn to features they had not seen before or favourite machines identifiable through key features. What was most clear was that the modern, relatively sophisticated range of graphics and sounds were very attractive compared to older EGMs. The sounds were frequently related to winning and free spins, and acted to build excitement among gamblers and onlookers and encourage use of machines among both the frequent and infrequent gamblers.

*“I like to be in the area where the features are going off and everybody’s in such a good mood it’s not even funny, and they’re saying “come and sit over here!” - B, female, high frequency group*

*“You could see the gold dollars floating all over the... you know, especially when you won, like a burst of dollars all over the screen... So yup, that was really enticing.” - G, male, Māori group*

The most exciting features were clearly related to winning and free spins, and gamblers (even high frequency and problem/ex-problem gamblers) spoke of the excitement they generated, even with small wins.

*“Some machines, the symbol for the free spins when they come up give a gong or a bell - you know, so it’s BONG, BONG, BONG! And it just lifts your adrenaline as you’re watching them drop down.” - M, male, current/ex-problem gambler group*

*“I get up and dance when I win” - AE, male, high frequency group*

It is clear from numerous comments that the range of auditory and visual features built into modern EGMs generally add to the excitement for gamblers, and also add to the reward of a win or free spin.

*“...sometimes the music is like a positive reinforcement (others “mmmmm, yep”) you know when you win something, if it’s big or small and that, the music sort of reinforces the win” - J, female, high frequency group*

Unlike the free spins and small wins, there were some gamblers who were less positive about the sounds. These views tended to be expressed in the high frequency and current/ex-problem gambler groups. The views were largely related to taking attention away from the game, disrupting the gambler’s concentration, or attracting unwanted attention from others in the venue.

*“I don’t like um the sound of the reels... like I just don’t like, especially the older ones, like they just sound...tacky... it’s just real annoying coz you hear it so many times” - J, male, high frequency group*

## Jackpots on EGMs

Jackpots and large wins were not commonly listed as among the most attractive features of EGM games. In fact, they were only a significant feature of the high frequency and current/ex-problem gambler groups. This is perhaps because the higher frequency gamblers are the only ones likely to have had large wins of this type or perhaps *need* wins of this magnitude. So for most gamblers the reality is very small wins and extended sessions with a hope of a larger win at some stage.

*“You still go there for that jackpot at the end of the day ‘cause really that’s why we’re gambling, you know” - B, female, high frequency group*

For the high frequency gamblers and the current/ex-problem gamblers it was clear that the jackpots and the possibility of much larger wins were a stronger motivation than for the lower frequency gamblers. Many of these gamblers have had wins of this sort before and seemed to believe that their pattern of play had some impact on their winning, although the views expressed were quite disparate.

*“I like the fuller machines, because of the jackpot, if there’s (sic) heaps of people around, then it’s going to go off faster... Yeah, yeah, because everyone is feeding the machines money, so it will go up and up. And I always pick one like where the jackpot’s high, like it’s around the amount when it’s going to go.” - S, female, low frequency group*

*“Oh I think it’s attractive when like the room’s empty but the jackpot’s kinda high, but no one’s there and you just feel like the chances are going to be better” - J, male, high frequency group*

With respect to the jackpots, the participants talked about more social aspects of gambling, in that linked jackpots draw more of a crowd and EGM play becomes less solitary in a sense. More interaction was reported with other gamblers with references to team play and competition. This was all linked to increased intensity of play during these periods.

While the game characteristics discussed earlier (free spins, small wins and auditory/visual features) all encouraged increased gambling (in both time and intensity) and perhaps a loss of control, the perceptions around the effects of jackpots were different. An advertised jackpot that was arranged to pay out before it reached a certain value clearly encouraged increased attention and increased gambling. However, the jackpot paying out to the gambler in question, or to someone else, resulted in mixed comments from participants. For some low frequency gamblers, a jackpot paying out seemed to aid control and the decision to stop gambling. However, for most participants, winning a jackpot or seeing someone else win a jackpot encouraged more gambling, either in the current session or future sessions.

*“If they [jackpots] pay out, I’m out” - C, male, low frequency group*

*“I’ve won \$2,500 at the casino once and I walked out with about \$1,500 because I kept putting money in” - S, female, low frequency group*

*“Definitely, when you have that first Jackpot hit of \$800 like at the ten pin bowling for the first time, you keep on coming back and then before you know it you’re spending more than you are getting” - B, female, high frequency group*

### **5.2.2 Betting**

The second group of game characteristics commonly discussed was linked to the betting aspect, as distinct (in as far as that is possible) from winning. Betting and the excitement of uncertain outcomes were mentioned as influencing gamblers’ behaviour.

*“Every time you push that button, what’s... you know, what are you going to get, you know? If, if you don’t, if you don’t get your free spins, it’s like oh, you still don’t know exactly how much is going to pay out. Sometimes it’s going to be your best friend, and next time it’s going to be your enemy. And it’s like, gosh, I’ve put all this into it, and only received this” - K, female, current/ex-problem gambler group*

## Denomination of machines

Across all gambler groups, the participants reported preferences for lower denomination EGMs. This was linked to getting value for money and maximising the amount of time spent gambling within their predetermined budget (where appropriate), thus having more perceived control. The more frequent gamblers reported more variability in how they played (such as varying number of lines and bet amount in response to, or the expectation of, specific outcomes) and discussed more strategy in their approaches. However, all gambler participants generally expressed preferences for lower denomination EGMs; they were seen as the sensible choice for the average player in contrast to higher denomination machines which were seen as the playground of high-rollers only.

*“I just like the pretty pictures and everything, and the music, and unfortunately it doesn’t sing for me mostly, that’s why I sort of umm, stay with the one cent machines ‘cause you have more for your money” - M, male, mixed frequency group*

*“You get more for your money don’t you?” - H, female, low frequency group*

*“But I do it for entertainment, so the longer that I can make it last, the better it is”- N, female, low frequency group*

Across the gambler groups, participants seemed to realise that the perceived safety of low denomination machines actually led them to gamble more than they perhaps intended. They bet more lines and more on each play than the denomination of the machine, and rationalised this in that they were still wagering relatively little per spin, whilst increasing their chances of winning. Thus, they seemed to understand the hidden nature of this increased expenditure but this understanding was not sufficient for them to change their behaviour accordingly.

*“The machine says one cent ... but to get a reasonable chance you’ve got to play five lines minimum... say you play a five cent machine, what’s five cents? Nothing! But each turn is a quarter of a dollar and it mounts up” - T, male, mixed frequency group*

Among high frequency and current/ex problem gamblers the low denomination machines also provided an opportunity to gamble within a constrained budget.

*“And then you have different machines with different start points like one cent, one dollar, so even if some day you’re low on money you’re like I won’t go, but then you say okay fine, I’ll play the one cent machines, because you are addicted” - A, male, high frequency group*

Moreover, the playing of low denomination machines sometimes blended seamlessly into higher denomination machines. Current/ex problem gamblers reported sometimes making a change to a higher denomination machine without fully considering the implications, at the time at least.

*“You’re playing the one and two cents, and then you go to a 10 ... you can still be betting a dollar or two or three dollars a spin without really remembering oh it’s a 10 cents machine – gosh what the heck am I doing? A hundred spins is 300 bucks” - D, male, current/ex-problem gambler group*

## Number of lines on EGMs

The number of lines played relates to several of the previously mentioned features, predominantly via betting amount and denomination of machines. Betting amount increases with the number of lines played and the cost of each line played obviously changes depending on the denomination of the machine. There was a clear preference across participants in all gambler groups to make minimum

bets on multiple or maximum lines. However, the higher frequency and current/ex-problem gamblers reported making higher bets on maximum lines and had more variability in the number of lines played, while the lower frequency groups preferred a low betting amount and a more consistent approach. It was suggested by gamblers across the groups that the low betting amount allowed them to play for longer with expenditure accumulating in a less noticeable, albeit more controlled, way.

The number of lines played was frequently associated by all gambler groups with strategies to maximise both small and large wins and free spins.

*“I’ve been into pubs like where the jackpot’s been pretty close to going off, so automatically I’d go in there and I just max it and I get it, and it just sort of cuts everybody off. But it works though, I mean for some reason it works. You go to max bets and then you win the jackpot and it sort of cuts everybody out.” - F, male, current/ex-problem gambling group*

The gambler participants in all groups were very clear that winning free spins after betting on only one line was not a desirable outcome. They also talked in terms of their perceived likelihood of a free spin influencing them to play more lines.

*“That’s it, yeah, and you wanna be on ‘max bet’ when it [free spin] hits, because that’s when you get all the best returns” - M, male, current/ex-problem gambling group*

Moreover, the notion that one’s chances of winning increased with the number of lines played was also expressed across the gambler groups.

*“...because there is more lines, like the winning seems to, like when I win on it, I’m like oh yup, so I want to keep winning on it, even though I haven’t won more than I’ve spent...the amount of lines, like if it’s like 50 lines then I’m like yeah I’ll just, I’ll just stay on this, I’ll just carry on staying because I must win, just ‘cause it’s, it seems like it’s more, it’s gonna pay out like, sooner or later...I always play all of the lines” - J, male, high frequency group*

As just outlined, the participants in all gambler groups discussed the attractiveness of playing more lines in the expectation of favourable outcomes and, in the case of more frequent gamblers, varying their strategies based on these perceived outcomes. Nonetheless, they also talked about their understanding of the harm of betting on all possible lines. Once again, this awareness did not necessarily transfer to any behavioural change.

*“You know once upon a time, you had a limited amount of lines that you could play. Now you can play, you know, they’ve changed it so that you can play 100 lines... on one, one machine, and if you’re not aware of it, and you accidentally push that button, there goes all your money.” - J, male, current/ex-problem gambling group*

### **5.2.3 Control over gambling - EGMs**

Across all groups, the desired features of the EGMs (e.g. free spins, denomination, number of lines played, sounds and lights) were associated with more gambling and quite possibly some loss of control. The only feature of EGMs that was reported by gamblers as helping to control gambling was the presence of a clock on the screen of the EGM, noted only by high frequency gamblers. External factors such as needing to attend appointments or go to work were also mentioned; these are obviously not features of the EGMs and thus are not discussed further here.

Free spins, or a lack thereof, appeared to have the greatest effect on control. This obvious inconsistency is evident in the emphasis gambler participants put on the ‘value for money’ of receiving free spins, while at the same time many suggested that they would continue to gamble until they had attained at least some (or more) free spins. Again, winning jackpots produced divergent views. Low frequency participants often reported a jackpot or large win helped their control, whereas high frequency and current/ex-problem participants felt it was ineffective in aiding control.

*“I think in a way, that you don’t win because if you win you think oh good, I’ve got some money to play with, if you lose, you want to chase it so you really don’t win, either way because once you’ve got a bit of money oh right, well I’ll go for the bigger amount, I’ll still try for the bigger amount, I’ll still try for the jackpot and... then if you lose, you’ll try to get it back” - MC, female, current/ex-problem gambling group*

Nearly all of the gambler and problem gambling service staff participants expressed views that the EGMs are not designed to help players attain control over their gambling. Although this view was expressed very frequently, again it was not sufficient for them to change their behaviour accordingly.

*“(Be)cause the games - why do they want you to have control? They want you out of control. So the games basically do nothing. Having a friend with you, having a sober driver, all those types of things can help you, but that’s not a game feature, it’s a feature of how you keep yourself safe.” - D, male, current/ex-problem gambling group*

*“There really wasn’t [anything], as I said, it was only if you ran out of money or needed to go to the toilet or you were hungry. Nothing in the game itself, unless it was a boring game, then you’d find another one anyway” - G, male, Māori Group*

#### **5.2.4 Unattractive features of EGMs**

When discussing specific unattractive features of EGMs, opinions were again relatively consistent across gambler participants. Two principal clusters emerged: those features associated with *poorly maintained machines* and those features associated with *venue characteristics*. In both cases these could be argued to be more features of the venues than the games themselves as, at one stage, the participants all seemed to enjoy playing EGMs.

*Poorly maintained machines* tended to be associated with avoidance behaviours; participants would simply choose EGMs in better physical condition or alternative venues. Thus, there was no apparent link to gambling behaviour, as participants would still gamble but on alternative machines or at a different venue. *Venue characteristics* were associated both with reduced and increased gambling behaviour.

#### **Poorly maintained machines**

Participants in nearly all of the groups commented on how an unmaintained EGM negatively impacts on their decision to play that machine. EGMs with broken buttons, lights, sound and slow rotation were reported by the majority of participants to cause frustration. Most participants would not start or continue to play a machine that was poorly maintained. The participants’ views suggested that when a machine is poorly maintained, a component of the entertainment associated with EGM play is missing, leading to a decrease in the amount of excitement, satisfaction or reward experienced.

*“And the frustration when not all your buttons are going on the machine. Um and also sometimes your lights are out or your sound’s not coming and it’s rotating very slow to turnover... You don’t get*

*that, that same adrenaline when you see everything popping up...” - K, female, current/ex-problem gambling group*

*“Um I don’t like poor visibility on the display too, some, some pokie machines have like a light failing or something and there, yeah so I’d leave those ones as well... I don’t like no sound, if the machine’s not making any sound or not doing anything it’s boring... sometimes the music is like a positive reinforcement... you know when you win something, if it’s big or small and that, the music just sort of reinforces the win” - J, female, high frequency group*

### **Venue characteristics**

As mentioned previously, it was difficult for the participants to separate the venue characteristics from the features of the game as both are intertwined in their experiences. The majority of participants conveyed a dislike of crowds or groups of people around or near the EGM they were playing. The need for setting or maintaining boundaries with others was discussed. Two major reasons for this were a belief around their luck or chances of winning changing with the presence of another person/people, and a lack of privacy.

*“Um their luck might mess your luck... It’s superstitious but I mean... if you know somebody is lucky for you, you want them standing next to you otherwise, unknown people... you know” - A, female, low frequency group*

The need for privacy was largely an issue raised by women but was important across all of the groups.

*“I just see it as a personal thing you know, I don’t want anybody to know what I’m doing or how much I’m spending or... or how much I’m winning” - N, female, low frequency group*

*“Well I feel uncomfortable, like on the unattractive side there, if I’m playing the machine and someone is standing over me shoulder, looking at me. No, I don’t like that” - G, male, low frequency group*

Additionally, some of the participants reported that they played a machine for longer and often longer than they intended, if there was a person standing behind them waiting to get onto a machine. This was common across both low frequency and high frequency gamblers. The reasons participants most often provided for this were to annoy the person waiting, a sense of competition with the other players, and to avoid the feeling of anger and disappointment experienced if the person who plays the same EGM wins immediately after they have vacated that machine.

*“[People standing behind you] makes you wanna put more in eh, once your money runs out, you’re like nah... I’m going to play slower \*laughs\*” - C, male, low frequency group*

*“And the worse thing is if you get off a machine and somebody gets on and wins you sort of glare at them, it’s not their fault! But they’ve taken my money out of the machine” - M, female, current/ex-problem gambler group*

#### **5.2.5 Pop-up messages and player information display systems**

When considering the comments both of the gambler and industry participants, the initial conclusion is that pop-up messages seem to be working as intended; they enforce a break in play that may simply break routine and could also encourage reflection on play. The high frequency and current/ex-

problem participants expressed views ranging from irritation through to acceptance/habituation over the forced break in play. It was evident that the pop-up messages were being read by these participants (from comments on the accuracy or otherwise of the information), with the information being processed in some way; they commented on the content and perceived accuracy of the session information provided in the pop-up message. Low frequency players had either not seen the pop-up messages (they may not have played EGMs consistently for the approximately 20-30 minutes required to receive one) or found them only mildly annoying.

*“But I think they are working. I know there is (sic) a lot of people out there that it’s helped... the pop ups... Some of them were shocked when they realised how much they had won and spent” - M, female, Māori group*

*“They tell you how long you’ve been there, which is probably useful if you’re drunk and you’ve forgotten what day it is. But I mean if you’re a gambler, you know, you know basically what you’ve lost because your brain - well for me anyway - is always ticking. You know how many credits are in the machine, so you know if you’ve won or you’ve lost.” - D, male, current/ex-problem gambling group*

*“Ah, they are just resigned to it now, those are, those that use it as their social outlet, they um, um, they just resigned to it... Just another... I don’t know, imposition... hindrance to the person that’s trying to entertain themselves” - J, male, Industry group*

Overall, the pop-up messages were not a feature of EGMs viewed positively. For the most part, high frequency and current/ex-problem gamblers felt they experienced an unfair disadvantage when the pop-up messages occurred while they were playing for a linked jackpot; occurrences of this nature were very distressing or annoying for participants. Additionally, they were perceived by some gambling and industry participants to be a breach of privacy, while avoidance behaviours by gamblers (e.g. moving machines frequently to avoid pop-up messages, not engaging with the information presented, moving machines in response to a pop-up message and thus resetting the session counter), were suggested by industry participants.

*“What it does is, for any passer-by who just happens to be walking by, they then know what you’ve won or lost on that machine as well. Because they can see it on the screen you know...It’s a breach of privacy.” - D, male, current/ex-problem gambling group.*

*“They just don’t look at it, they avoid it by just not looking at it” - M, Industry group*

*“You know, they might get something out of their bag or text someone” - T, Industry group*

*“Just walk away, go and have a cigarette and come back... after three minutes” - G, Industry group*

*“They move round more, because of the fact that they don’t want the machines to stop.” - A, Industry group*

*“I find lots of them think that when the pop-up comes up, that it changes the behaviour of the game, like if it’s been spinning they think that the machine’s turned bad, it’s not going to spin, they get up and they move onto another machine” - P, male, Industry group*

Additionally, it was reported by the industry group participants that the elderly and overseas gamblers were more likely to be confused by the pop-up messages. This was mainly due to pop-up messages not being installed in EGMs overseas, language barriers and familiarity with older machines.

*“They confuse the elderly... They really do \*laughs\* they are sort of like “oh this screen came up and I pushed a button” and then I couldn’t...” - C, Industry group*

*“Um I’d say the older clients probably get, you know, more frustrated with the gear as another restriction, compared to what they have been used to in the past. I’d say the younger clients are like, okay this is how it is, I’ll deal with it” - N, Industry group*

*“[Referring to overseas patrons] Yup, because they’re used to, they’re used to playing a machine for it being a machine... you have this pop-up now or you have to sign this you know piece of paper or you can’t stay this amount of time or it’s all these restrictions that they’re not used to when their thing is, you know, they’ve come to play... It’s not business, they’ve come here for pleasure, you know” - N, Industry group*

Many of the behaviours the industry group participants noticed were indicative of someone experiencing anger and frustration. A high level of irritation was usually displayed by a gambler through swearing, shouting at staff, and smacking and slapping the EGM when a pop-up message prevented them from playing the EGM around the time a jackpot was due to be won.

*“And the one thing that frustrates them the most is when they’re playing on the high jackpot, on a mystery one, it pops up they can’t win the jackpot, and they try to push the buttons to get rid of it... They don’t care about it, they don’t care about the pop-up because they want to play for the jackpot but it’s just an inconvenience for them because, it advantages the other guy” - D, male, Industry group*

*“Some, some will sit back and others will bang a button without looking, whether that becomes a cancel credit or they’ll press the ‘take win’ button and it won’t do anything for 20 seconds anyway and they’ll just keep doing that until it goes away... or they move on” - P, male, Industry group*

The majority of the participants in the industry groups tended have a negative and unsupportive perspective of the pop-up messages. There was one participant who felt that they were having the desired effect and enabled the staff to be more attuned to those patrons who could potentially develop problems with gambling in the future.

*“But I think that is what it’s done though, hasn’t it. It’s stopped people from sitting there, in their trance, going like that \*taps table\* for hours on end, it’s stopped people from doing that and that’s why it’s an inconvenience, we don’t see that as an inconvenience, we’ve had behaviour changes because of that because people are more likely to get frustrated whereas before we didn’t really notice them because they just sat there for hours” - B, Industry group*

However, the majority of members of the industry group participants expressed quite a different perspective. These participants drew on notions of individual responsibility for gambling behaviour, and the legality and legitimacy of gambling as a leisure activity to suggest that pop-up messages and PIDs are an unnecessary incursion into people’s freedom which could very well have unintended effects (increase a problem gambler’s expenditure by encouraging them to chase losses, deter responsible gamblers from playing through annoyance caused). They stressed a lack of clearly communicated unequivocal research available to support the harm minimising effects of pop-up messages. Another view commonly expressed was that the while the information provided in pop-up messages and PIDs may be of use to a very small proportion of problem gamblers (who may be unaware of their session activity), it does not justify the discomfort and perceived insult caused to gamblers who are not experiencing problems and who are fully aware of their time and money spent pursuing their chosen entertainment activity, especially in the context of a lack of supporting research.

*“Yup, so it makes them spend more money really... It does, so it’s really good, in one respect” - R, Industry group*

*“Yeah, the whole idea is they think that gamblers get into a trance-like state and don’t know what they are doing. It’s a load of shit, they know what they’re doing” - P, Industry group*

*“You put them in, these, these, these PIDs and PODS and, and things like that, and ahh... you’re trying to help what the three percent? ... Otherwise it’s just another thing... going into people’s lives, nannying...” - J, Industry group*

Nevertheless, self-reported evidence for the effectiveness of the pop-up messages was obtained from two of the current/ex-problem gambler participants reporting that the break in play and information displayed was a factor in their help-seeking.

*“Sometimes I see it and it’s like Oh! Have I been here for an hour?... I used to read it and sometimes I’d think I don’t want to be here so I would go, but not always... they used to make me think, is that right? Gosh that’s a long time, or, I don’t want to spend that amount” - R, female, current/ex-problem gambling group*

While there was a distinct awareness of pop-up messages among frequent gamblers and industry representatives, clearly suggesting an effect on gamblers and the gambling environment, there was a lack of knowledge about the PIDS across the gambling groups. The exception was some male participants in the high frequency and current/ex-problem gambling groups who demonstrated the most knowledge of the feature. However, these participants used the PIDS as part of their gambling strategy to choose high percentage pay back machines. Although such machines appear to be fairer/better for gamblers, careful simulations have suggested that they are likely to be a more harmful product (Harrigan & Dixon, 2010). The notions expressed about the PIDS by high frequency and current/ex-problem gamblers seemed to emphasise an increased ability to win, with the idea that by using the PIDS, gamblers had a better advantage and could play the EGMs more strategically than those gamblers who did not use them. Thus, PIDS were often seen in a more positive light by the participants compared to the pop-up messages.

*“It’s good, especially for hard-out gamblers, if they use it to their advantage...” - J, male, high frequency group*

*“So a bad percentage payout instantly turns me off because I play them mathematically, and with the player information displays you press the little ‘I’ button and find out instantly what it’s paying back at. So if I saw a machine with 87%, I’d leave it alone if there was one with 92% next to it, because I played them as a mathematical game.” - D, male, current/ex-problem gambling group*

*“I just look at the percent payout value, I don’t care what [the game itself] looks like, so nothing else puts me off pokie machines” - AE, male, high frequency group*

### **5.2.6 Behavioural responses to pop-up messages on EGMs**

An important part of the industry groups was to obtain their observations and expert opinions on the typography of behaviours that might be observable in venues following the occurrence of pop-up messages. On the basis of their comments, and further discussions with industry collaborators, an in-venue protocol was developed for use in the observational component of the study. The design of the observational study was descriptive, rather than a checklist type observational approach; however

research staff were made familiar with the following list of behaviours produced by industry staff, and the contexts in which they are likely to occur.

- a) Anger, frustration and confusion - often associated with a jackpot nearing its limit or the belief the gambler themselves had made a mistake
  - *“People get angry and pissed off, they want... the thing I hear most is um, ‘can’t you just put it back” - Pub staff member*
  - *“They don’t care about it, they don’t care about the pop-up because they want to play for the jackpot, but it’s just an inconvenience for them because it advantages the other guy” - Casino staff member*
  - *“Smack the machine” - Casino staff member*
  - *“I’d say the older clients probably get, you know, more frustrated with the gear as another restriction compared to what they have been used to in the past. I’d say the younger clients are like, okay this is how it is, I’ll deal with it” - Casino staff member*
  
- b) Necessary and unnecessary button pushing
  - *“Yeah, try to get rid of it, because behaviourally they have machines that they go to, and they go to them all the time and they know as soon as that screen pops up, what button to push. So it will pop up, and they won’t even bother looking at it, they’ll just \*tapping\* do this \*tapping\* so they can get back to spinning” - Casino staff member*
  - *“Nine times out of ten they push the wrong button... While they are waiting for you to do the cancel credit, they will be on another machine, just so they are still in the play for the jackpot” - Non-casino staff member*
  - *Some will sit back, and others will bang a button without looking...” - Non-casino staff member*
  
- c) Cashing out - intentional and unintentional (accompanied by audible/visible frustration)
  - *“And I can’t think of any time where someone has said they pressed the no button on purpose to cash out, so they could go home. Everyone’s just like shouting ‘I did it by mistake!’” - Casino staff member*
  
- d) Changing machines
  - *“The number one thing I have observed is that we don’t have people staying on one machine for hours and hours anymore. That they are far more likely to change machines more often” - Casino staff member*
  - *“Yup, yeah, those are when the jackpot’s high, one of those clients will just whack \$20 in the next machine” - Non-casino staff member*
  
- e) Texting/checking messages
  - *“You know, they might get something out of their bag or text someone” - T, Industry group*
  
- f) Break (bathroom, cigarette, drink) then return to machine
  - *“Just walk away, go and have a cigarette and come back after three minutes” - Non-casino staff member*
  
- g) Waiting and watching other gamblers (ignoring message)
  - *“If they press the, you know, continue to play one, they’ll just wait until the time goes and then the machine will start again” - Casino staff member*

### 5.2.7 Casino table games

When discussing specific features of casino table games that were attractive, the participants who played table games noted relatively consistent features. Discussion across all of the groups ensued around the *social aspects*, the *pace*, the idea of *control, choice and skill* involved in the table games, and the *movement and physicality* of the games when compared to playing EGMs. The majority of these features were voiced by all table game gamblers regardless of the frequency of gambling or problem gambling status.

#### Social aspects

Most notably, the feature commonly reported as important, regardless of frequency of gambling or problem gambling status was the social aspect of table games. This feature of table games focuses on the involvement with others in close proximity and sets table games apart from the more solitary EGMs. Participants discussed this feature in a number of ways citing a heightened level of excitement, intensity and energy, a desire to gamble more or to start gambling on that particular table and an increase in entertainment value.

*“...it’s a bit like watching a football game... if you get a full table it’s a bit, is almost like watching a football game, there’s high fives and all sorts of things, when, when good stuff happens on the table it’s a bit like when your team is winning, same sort of thing” - M, male, current/ex-problem gambler*

*“I also like at the casino, it’s a lot, yeah, if the like if the morale’s up on some of the tables yeah like, they were saying, you like kind of want to go over there and maybe chuck a few bets in...” - J, male, high frequency group*

*“Yeah, and you get the involvement with what other people are doing and so that’s an attraction... that adds to the entertainment value, what are the other people doing? Hoping they’re losing \*laughs\*” - N, female, low frequency group*

#### Control, choice and skill

An equally important feature of casino table games referred to by participants was the notion of a greater amount of control and choice compared to EGMs. Participants commented on the attractiveness of the self-perceived ability to influence the game, either how it plays out (e.g. by taking an additional card or not) or the outcome itself (e.g. using a strategy to win). Consistent with the EGMs, the higher the frequency of gambling, the greater the amount of self-perceived skill and control was conveyed by participants. These views were expressed by participants in both the low frequency and current/ex-problem gambler groups.

*“Yes, there’s more choice in it, that you can think about what you want to do, with a pokie machine you can’t, you just press the button or pull the handle and that’s the end of it... Yeah, yeah you can bet very wide or very precisely [in roulette], so you have a choice, once again it’s a choice.” - N, female, low frequency group*

*“If one way doesn’t work for you, you can just do it another way or stay up ‘til three in the morning just writing [strategies] down at home. Yeah. It can be a kind of, yeah an intellectual thing or a luck thing - either way, how -, whichever way you feel” - A, male, current/ex-problem gambler*

*“Because with the pokies, you just choose your bet and amount and it’s just random, but then with the blackjack, you can see what cards you’ve got and you decide if you’re going to have another one or not or what you’re going to do” - W, male, low frequency group*

### **Movement and physicality of the game**

The attractiveness of the physical movement involved with casino table games was voiced by low frequency player participants through to current/ex-problem gambler participants. This feature suggests that these gamblers preferred a more engaging form of gambling. They specifically mentioned the use of hand movements such as placing chips on a roulette table. These kinds of comments were indicative of the general feeling of a greater ‘involvement’ in the game when playing casino table games (as compared to EGMs).

*“Like and you’re sitting there with other people, like with blackjack and some people have lucky things they do or you know... and you get to use your hands like, fold and \*bangs table\* hit, yup, your body language involved... And being able to put heaps of chips down, because they are only like two dollars a pop aren’t they?” - S, female, current/ex-problem gambler*

*“Oh just the ball going around and the, you know, the anticipation of it landing where you might have placed your bet” - N, female, low frequency group*

*“When the ball spins and I see that there is a chance that it will land on the number that I bet on, it motivates me to bet more, so... the spinning of the ball and by the time it lands, the 30 seconds or 40 second time frame in between, that’s a real anxious moment and at the same time it’s motivating too” - R, male, high frequency group*

### **Pace**

The increased pace of casino table games, such as blackjack and electronic roulette, was reported by gambling participants who gamble on these forms to be an attractive feature. The new electronic roulette reduces the time between games and the need to cash in each game. This set-up is also more independent with each player having their own screen which is similar to EGM play. There was some suggestion that the electronic versions could serve as a gateway or testing ground for gamblers who were nervous about the broader aspects of casino table games. Conversely, traditional roulette is slower and, for this reason, has been reported as attractive by other gamblers in the low frequency and problem groups.

*“Well um, for, for roulette, um you know you might have one spin and depending on how many people are on the table and how many pay offs there are, you might be sitting there for five or 10 minutes before the next spin. Whereas with say blackjack, you’re sitting at that table and you’re playing a hundred hands in about 15 minutes, um compared to three hands in 15 minutes on the thing. So they’re a different speed of a game.” - J, male, current/ex-problem gambler*

Some gamblers preferred electronic roulette as they did not like the restriction of space that occurs with traditional roulette.

*“I don’t like the crowds at the tables um... you’re trying to bet and people are sitting down and they, they won’t let you move and you, you’ve got to, it’s very rude really, because you’ve got to lean right over everybody and nobody moves out of your way... [Referring to electronic roulette] You’re all by yourself, you’ve got no one else around you to push and shove with you and you um... you play, you play on the screen, I think it’s quite good actually” - I, female, mixed frequency group*

### 5.2.8 Control over gambling for casino table games

Table games, like EGMs, appeared to participants across the gambler groups not to have many features that aided gamblers in having control over the amount of money or time spent gambling. Across the problem/ex-problem group, the fast pace of table games was associated with more gambling and quite possibly, a loss of control. The only feature mentioned as helping to maintain control over gambling was the breaks in the game caused by *hand-shuffling*; however, most table games now use electronic-shuffling machines. Moreover, participants from low frequency through to problem/ ex-problem gamblers commented on a sense of dissociation experienced when their money is cashed in for *chips* and the *ease of access* of changing money into chips compared to cashing in chips.

#### Hand-shuffling

Hand-shuffling was suggested by participants to help control the amount of money or time spent gambling as it enabled them to reflect on how much money had been won or lost, due to the natural break in the game. Participants reported that they were able to have more control over whether or not they continued to gamble.

*“Yeah the shuffle is a natural break in the game where you sorta had a chance to \*breathes in sharply\* Whooh, how much have I, you know, how am I doing? And of course now the machines, they just keep, the games just keeps going. Does not stop.” - MD, male, current/ex-problem gambling group.*

#### Chips

The participants discussed their experiences of dissociating the chips from the money they cashed them in for. For example, losing the value of the chips and how this subsequently increased the amount of time and money spent gambling. For one participant, the chips were no longer symbolic of the money he was placing on the table; he stated that the chips could represent nothing more than a bit of plastic, rather than the large amount of money that they are supposed to. Therefore, it becomes harder to track the amount of money that is being spent, as a person may be less willing to risk losing \$500 in cash but not think as carefully about it when it is represented by a plastic token. This theme was identified across all gambler groups.

*“Well it’s you’re converting your money into things you can - you can have a lot of fun with chips but it’s... it disassociates. You stick a, you stick a stack of green things out there and it doesn’t look like it’s \$500, it just looks like a stack of green things... Yeah, like you wouldn’t fold up a wad of 20s and put a wad of 20s on a... you know, a big stack” - M, male, current/ex-problem gambling group*

*“The chips, because like when you’ve got a little yellow chip you don’t think of it as \$10, it’s just a piece of plastic” - W, male, low frequency group*

#### Ease of access

The ease of buying chips was also suggested as a factor that harms a gambler’s control over the amount of time and money spent. The participants noted that it was easier to buy chips than to cash chips in at the end of a night due to decreased accessibility and long queues for the cashiers. It

appeared that these factors would deter gamblers from cashing in earlier, thus in some cases they might play for longer than they initially intended.

*“When you’re at the table, you can put cash on the table and turn it into chips but when you have to take the chips up to the cashier you have to join a queue to turn them into cash so it’s easy to get rid of the money, but it’s hard to get it back” - W, male, low frequency group.*

### **Skill and control**

As expected, and consistent with EGM players, those participants who gambled more frequently or were current/ex-problem gamblers had greater perceptions of control over the outcome of their gambling. Many of the current/ex-problem gamblers suggested that casino tables could be played strategically or mathematically, and that they could out-play others in some competitive games. While the former is somewhat true through betting according to probabilities, discussions around this showed that some participants believed that the games could be influenced well beyond this and fundamental misunderstandings of probability theory, which is consistent with existing literature.

*“Um, financially bullying is a good way of doing it like, that thing with roulette... if you just bet x amount of dollars on the easier, the most likely that is to come up which is either black or red, right? \$5 on black, if you miss \$10 on black, if you miss \$20, sooner or later it’s going to come up black, you get all your money, plus \$5, you’ve just won \$5 go back to \$5 again, but this time go on red it stops the machine or the crew there or whoever’s involved from seeing your system so easily so you go red, just keep doubling up, until it pays out, in an hour with \$5 increments, you can end up making about \$1,000 that’s not chump change, you know, I’ve done it” - J, male, mixed frequency group*

### **5.2.9 Unattractive features of casino table games**

Of the participants who played casino table games, there was reasonable consistency across the groups when discussing specific features of the games that were unattractive. Three main features emerged at this initial stage: *unfriendly croupiers*, *losing vibes* and *higher stakes*. Two themes are quite subjective in nature and linked to features of the gambling environment and, most likely, characteristics of the gambler themselves. The features the participants associated with decreasing the attractiveness of gambling were all associated with gambling less.

#### **Unfriendly croupiers**

Participants from the low to high frequency groups had the perception that a croupier could affect their luck or the outcome of the game. This influenced whether or not they decided to gamble at that table. This apparently superstitious behaviour is particularly interesting as it transcends frequency of gambling and suggests that external factors in the gambling environment can have a strong effect on whether or not someone will gamble or how lucky they feel.

*“Some of the croupiers are really miserable people and I’ll go along all of the tables until I find someone I like the look of \*laughing\*” - I, female, mixed frequency group*

*“The look of the operator and if the operator sounds welcoming that means that the chances of you having a good day on the table are bright but if the operator has a sad face or a tired look, your chances are that they will do their job but, just do their job” - R, male, high frequency group*

## **Losing vibe**

A commonly reported unattractive feature of the casino table games was the sense of a ‘losing vibe’ or a losing table. However, it was mainly high frequency participants who said that they would avoid tables that appeared to show this characteristic, which was suggested to be displayed through the behaviour of the gamblers at that table or the croupier.

*“Yeah, or like it’s a, looks like a table you’re going to lose on, everyone’s walking away from it or something” - AC, male, high frequency group*

## **Higher stakes**

The majority of participants who played casino table games preferred small denomination tables, similar to EGM players. Reasons for this included affordability and being able to make their money last longer, adding to the ‘value for money’ notion by maximising the amount of time spent gambling. Therefore, higher stakes tables tended to be avoided overall, due to the associated larger amounts of money that could be lost.

*“I think a lot of the tables are far too expensive... they don’t have enough \$2.50 tables, they just have mainly, you know \$5’s up, a lot of people just can’t afford to do that” - I, female, mixed frequency group*

*“I think at \*casino name\* earlier they used to have lots of \$2.50 tables, but yeah, I think they decision had an impact on them too, so they reduced the number of tables which were the minimum bet two fifty and um I can find a number of \$5 tables and the \$2.50 tables have now gone down to maybe five or six” - R, male, high frequency group*

### **5.2.10 Māori consumer focus group**

The Māori consumer focus group participants expressed views very similar to the others with respect to the features of games (EGMs and casino table games) that were attractive and unattractive. Several quotes from Māori participants have been used above, and given the degree of concordance, separate analyses of game characteristics was not warranted. However, there were two issues that the Māori participants raised that were distinct from the general view; only one of these was a game feature but both seem important and thus are summarised here. They include involvement in EGM play and whānau or community involvement.

## **Involvement in EGM gambling**

An EGM feature Māori participants spoke fondly of is the lever on the older style ‘one armed bandit’ machines. These features are no longer part of modern machines but the participants in the Māori group enjoyed the physicality of it and the feeling that they were actually part of the game.

*“When they took away the pull-down arm, it got a bit boring, it was really attractive having that, yeah” - G, male, Māori group*

*“The whole thing with the lever action, and the lever thing made you feel like you were a part of it, like the whole psychology behind it was like, they get you holding onto that lever and it was hard to take your hand off it” - E, male, Māori group*

While this feature is not part of modern machines Māori participants, like others, noted the free spins, sounds and graphics as being very attractive features of modern EGMs. One feature they discussed in more depth and as being more important than other groups was the growing sophistication of the narratives or storylines that are now part of EGMs.

*“The games had a story and you wanted to watch the entire story playing \*murmurs of agreement\*... the game had a story building... so there was a purpose of trying to get to the top, cause you want to get there, and you’re like, yeah, yeah, I’m almost there, put some more money in” - G, male, Māori group*

## **Community/whānau**

Broadly speaking this theme is an emergent feature of gambling environments. Thus, the category is somewhat tangential to the focus on game characteristics but as discussed, participants found it difficult to separate out these aspects as discrete entities.

Māori participants discussed the movie-star glitz and glamour associated with casino environments and the more low key seclusion of non-casino environments as being attractive, dependent on one’s mood and current context.

*“I like both environments, as you know with the casino it’s highlighted, makes a certain movie star sort of thing that attracted me was all the lights and the fun and hustle and bustle... but there are certain times when I am feeling a little bit covert, I’d rather go to a nice dingy place and then you can hide, you know, depending on how I felt. So, both of them worked, one minute you had the high-lights, next minute the dingy places, so they worked” - G, male, Māori group*

Within a casino environment, Māori participants discussed the hierarchy, status and inspirational notions linked to the various levels of loyalty cards. The excerpt below traces one such discussion.

*“The other part that I liked was the loyalty cards, you can get different colours, at one stage I had all the different colours” - G, male, Māori group*

*“But now they have a VIP, a Gold Card” - D, female, Māori group*

*“I got up to Platinum” - G, male, Māori group*

*“Wow!” - D, female, Māori group*

*“And then you’ve got Pacific above Platinum, it’s Platinum Pacific” - M, female, Māori group*

This notion of improving one’s status within a community seemed quite attractive among the Māori participants. More broadly, the notion of community was discussed and how gamblers with common interests or perspectives would sometimes collaborate in a competitive way to maximise their chances of winning large jackpots.

*“The car jackpots, we’d try to keep them [Asian patrons] - once they got on they’d never get off. They’d wait till \$9,500 all the chairs would be taken, and if we were lucky enough to get on and you’re running out you’d put your hand up and you’d look for someone that wasn’t an Asian to get on your seat, we tried to band together to try to get them off” - M, female, Māori group*

Overall, these sentiments seem to be linked to a sense of loss, or searching for a sense of whānau as eloquently described by one of the participants.

*I've worked in a few bars and stuff, and it's the camaraderie that gamblers have... but we always seem to come back to those really fun, those emotions that have been brought out through the sounds and the graphics and the machines and being aware that a lot of Māori whānau are needing to somehow identify back with whānau, and they're finding that whānau within pokie bars and areas, and it's the wrong kind of whānau" - A, male, Māori group*

### **5.2.11 Pasifika and Asian problem gambling service provider groups**

Perspectives from both the Pasifika and Asian problem gambling services groups have informed the analysis above. There was broad agreement within these groups with the characteristics of the games themselves and effects on gambler behaviour identified above, particularly in regard to problem gambler clients. Both groups discussed the importance of key features of the machines that emphasise winning (e.g. free spins, wins, multiple line capabilities, bet multipliers) in communicating to the gambler that the gambling activity is productive and ultimately capable of conferring status. For example, this was discussed in terms of winning money that can be used to show care for friends and family in the case of the Pacific perspective. Both groups mentioned the lure of the VIP status which is seen as earned through patience, by investing both time and money. Participants suggested that problem gamblers from migrant groups were often heavily invested in notions of success, achievement and a better life which conflicted with slow progress towards acceptance and establishment in New Zealand. A key feature of both EGMs and casino table games mentioned in both groups was that neither requires a high level of spoken English to take part.

## 6 RESULTS: IN-VENUE OBSERVATIONAL STUDY

The second phase of the project involved an observational study of EGM gambling behaviour in two casino and three non-casino (pub) venues. The purpose of the observational study was to document observable responses to key game characteristics identified in the Phase One focus groups as well as responses to, and observable use of, PIDs and pop-up messages in a natural setting. Two AUT researchers each conducted 12 hours of observations in the casino venues and 12 hours of observations in the pub venues. Thus a total of 24 hours of observations was carried out in casinos and 24 hours in pubs. Observations were focused on gamblers playing the highly popular one and two cent machines (casino settings) and two cent machines (standard in pubs). Observations were recorded by each researcher approximately every 15 minutes in each venue with 123 individual gamblers observed for between 15 and 135 minutes each. Eight gamblers were observed gambling for upwards of 60 minutes in a single session. Table 2 shows the researchers' rough estimations of the basic demographic characteristics of the gambler participants.

**Table 2. Estimated demographic characteristics of observed gamblers**

Age (years)	Casino gamblers			Non-casino gamblers		
	Male	Female	Total	Male	Female	Total
20 - 29	5	5	10	7	3	10
30 - 39	0	9	9	4	6	10
40 - 49	7	7	14	6	4	10
50 - 59	1	6	7	4	5	9
60+	6	20	26	12	6	18
<i>Total</i>	<i>19</i>	<i>47</i>	<i>66</i>	<i>33</i>	<i>24</i>	<i>57</i>

Results are discussed in relation to key EGM features identified in the Phase One focus groups. Overall, gambling behaviours observed within casino and pub settings was very similar. Any differences noted between the two settings are discussed within the relevant feature sections below.

### 6.1 Winning

Hundreds of credit wins (predominantly very small wins or, more correctly, losses disguised as wins) were observed. Within each observation, credit wins per spin were coded roughly for size: small or under 100 credits (1c machine = less than \$1, 2c machine = less than \$2), medium or 100 to 400 credits (1c machine = \$1-\$4, 2c machine = \$2-\$8) and large or over 400 credits (1c machine = more than \$4, 2c machine = more than \$8). Observed gambler behaviour relating to the different sized credit wins is summarised below.

#### 6.1.1 Small credit wins

Small credit wins were very frequent and were invariably followed by more gambling. Small credit wins were often observed with an increase in the speed of play (shown by increased rate of spin button pressing; no longer waiting for music accompanying the small win to finish). The researchers also observed patrons increasing credits bet after a small win. An example of researcher observation notes follows:

*Long pauses, watches neighbour play, 60 credit win, music and floating coins animation, cuts it short by pressing 'take win' button, increases bet to 3 credits on 1 line. Continues playing slowly and chatting. Female, 20s, Asian, casino.*

Small credit wins were usually insufficient to 'pay' for the spin, technically resulting in a loss. They frequently occurred immediately before patrons played their available credits down to nothing. Occasionally gamblers would leave the gambling area at this point; however, more often more money was inserted into the same machine or into a different one.

*2x 80c wins, plays on, plays until nothing left. Moves two machines down, same. Inserts \$2, bets 1 credit/s 10 lines, plays until nothing left. Female, elderly, Asian, casino.*

There was evidence of frustration with small credit wins, particularly after long periods of losing.

*Small credit win of 15. Increases bet to 2 credits per 30 max, slapping buttons really hard. Female, elderly, Pakeha/European, casino.*

*Betting 3 credit, max 15 lines on a 2c machine. 215 c win. Plays on. 15c win. Breathes out "huff". Inserts \$20. Plays on. Inserts \$20. Male, 40s, Pakeha/European, pub.*

*Plays on several spins, quickly 50 credit win, 22c, 27c, 20c, 40c, 10c, 22c. Nearly out of credit, hard angry button press to change game. Looks unhappy. Female, 40s, Pakeha/European, pub.*

### **6.1.2 Medium credit wins**

As with small credit wins, medium credit wins were observed both before and after gamblers increased their lines or credits bet. Gamblers were frequently observed to play on at a faster speed after wins of this size. These larger wins were also often associated with feature wins or the beginning of free spins.

*Magic hats feature plus 250 credit/s win. Faster play. 3 spins. Hats feature again. Plays on. Wins dolphin feature. 195 credit/s win. Stops and stares to watch animation. Several spins. Female, elderly, Pakeha/European, casino.*

*250 credit win, presses spin button to cut music off midstream. Increases bet, 2 credits, 20 lines. 4 rapid spins then back to back to 1 credit per line. Begins alternating 1 credit per line with 2 credits per line for 20 lines. Small wins, 15 credits, 2 credits. Changes game within same machine. Female, elderly, Pakeha/European, pub.*

These wins were far more likely to prompt comments and smiles from other gamblers, often due to the associated sounds attracting attention. Most patrons responded positively to this attention from other gamblers. There was more excitement/positive reaction observed among gamblers in response to medium credit wins; more so if there was an associated free spin feature (which was often seen to occur alongside wins of this size).

*300c win. Smiles at lady next to her. Plays on. Female, 40s, Māori, casino.*

*200 credit win plus 10 free spins. Jiggles excitedly on chair, watches screen and drinks coffee. Female, 40s, Pakeha/European, casino.*

Twenty gamblers were observed pausing play after these medium credit wins to watch credits roll or

to look around the room at other gamblers. In 11 instances, patrons changed games within their machine after moderate wins. Two pub gamblers were observed cashing out (\$10 and \$40 respectively) and leaving the gambling area after a win of this size.

### 6.1.3 Large credit wins

Unsurprisingly, those patrons who won larger amounts had generally spent more money in their observed session than those who won less. Patrons were observed betting more credits (upwards of two credits) per line, generally on the maximum number of lines available when they won. Larger wins were observed more frequently in the pub environments (80 instances compared to 65 instances in casinos) where patrons were required to bet a minimum of two cents per line played (there were no one cent machines available in these venues).

There was more evidence of superstitious behaviour among patrons who won larger amounts (e.g. touching winning symbols, patterns of button pressing). Participants who won larger amounts were observed changing machines and games within machines more frequently. Most looked pleased after the win (exclaimed, smiled at others or to self); however, there were also a few patrons who showed no reaction. Larger credit wins often preceded positive interactions with other patrons, sometimes these other patrons were obviously known to the gambler, and sometimes they seemed to be strangers.

A common response to larger credit wins observed in casinos was to cash out the win, resulting in a pause in play, before continuing to gamble by gradually inserting coins. Researchers observed three separate groups of patrons in casinos (groups of three or four women socialising) who would cash out and share each of their larger wins among themselves; presumably to keep group members gambling for longer. This kind of coordinated group activity was not observed in pubs.

Patrons were also likely to stop gambling and watch credits rolling for longer, listen to music played with the win and in pubs, to look around for a coin cup, catching the eyes of fellow gamblers as they did so.

*Won \$13, plays on quickly, \$5 win, sits back admiringly, lets music play, plays on, 40c, 100c, adjusts position, plays on. Brief pause, looks for coin cup, smiles at other gamblers. Male, 40s, Asian, casino.*

Almost all participants continued to gamble whether or not they chose to cash out first (only one person was observed cashing out and immediately leaving gambling area). Five of 71 patrons observed having a large credit win increased their betting following the win. The rest continued to play at the same rate until no (or very little) credit remained.

*1c machine. Pink panther bank. 3,000 credits in at start of observation. Betting 1 credit, max lines 25. Feature (panthers dancing and music on his screen), sighs, smiles and stretches (panthers light up, magic hats appear and "minor jackpot won"), wins \$100. Sounds pleased says "mmm!". Looks up then around at others behind who are looking towards the sound and smile back, someone says "well done". Plays on - increases bet to 5 credits, 25 max lines. 25 credit/s win. Several spins, 2 more small 25 credit wins. Faster play, quick button press. Several spins. Cashes out \$90. Inserts \$2 in, bets 1 credit, 25 lines max, several spins, wins free spins, crosses arms, sits back while watching animated dolphins swim on screen. 125 credit/s win plus music. Cashes out \$8. Leaves casino. Male, 40s, Pakeha/European, casino.*

*Wins free spins, 545 credits off these. Watches spins and jiggles in time to the music played. Plays on down to \$4 credit remaining, couple of small credit wins. Cashes out \$4. Goes to bathroom, then gets more coffee. Female, 40s, Pakeha/European, casino.*

*2c machine. \$165 in credit at start of observation. Playing 2 credit, max 25 lines. Wins 10 free spins. Sits back and stares. 1,200 credit win. Increases bet to 4 credit/s, 25 lines. 15 credit/s win. Decreases bet to 3 credits per max 25 lines. Several spins, 20c win. 75c win. 495c win. Looks up to side at people moving past his row of machines. Plays on. Decreases line number down to 20 lines. Plays on. Small credit wins 20, 30. 10, 100. Plays maximum lines possible until out of credit. Gets up and goes to bar. Male, 40s, Pakeha/European, casino.*

## 6.2 EGM switching behaviour

Most people did not change the games played on a machine or the machine they were playing while the researchers were observing them (Table 3). Twenty-two people (39%) observed in pubs changed games within the machine at least once, compared with just nine (14%) in the casino environment. Sixteen people (28%) changed the EGM machine they were playing at least once while researchers observed them in the pub settings, compared to 12 (18%) in casinos. This finding was in marked contrast to venue staff reports of casino patrons changing machines frequently to avoid pop-up messages and in response to the array of machines available to them in that environment. Of the 100 instances of switching behavior observed (including switching games within machine and between machines), most gamblers switched during periods of losing (72% of instances) or after a win (26%). This suggests that switching EGMs has more to do with patron perceptions of the reward frequencies arranged by the machine than with avoiding pop-up messages, although three gamblers were observed switching machines after receiving a pop-up message. It was also interesting that in the environment where a greater range and number of machines was available (casinos), less switching was observed.

**Table 3. EGM switching behaviour**

Behaviour	Pub participants	Pub (%)	Casino participants	Casino (%)
	n		n	
Does not change game within EGM	35	(61)	57	(86)
Does not change EGM machine	41	(72)	54	(82)
Changes game within EGM at least once	22	(39)	9	(14)
Changes EGM machine at least once	16	(28)	12	(18)

Sessions involving multiple game or machine changes were examined in terms of the game features observed within each session. Free spins were the most commonly observed preceding feature in sessions with multiple game or machine changes in both casino and pub settings (10 and six sessions respectively), followed by feature wins (themed animation plus medium-large win) (in four casino sessions, two pub sessions). Three patrons were observed changing machines directly after the appearance of a pop-up message (one casino session, two pub sessions). Sessions where gamblers frequently changed machine or game within a machine also seemed to be related to a jackpot feature being available or 'due' to be won (indicated by the jackpot being close to its advertised maximum) (five pub sessions, three casino sessions). A common pattern of play observed in these situations was to play for a short time on a range of machines linked to the jackpot feature.

### 6.3 Free spins and features

Free spins were frequently observed with more intensive gambling, obvious excitement, interest and engagement with the machine (e.g. watching the spins play, rubbing winning symbols, placing a finger on the spinning reel to stop it). Gamblers were often heard discussing free spins and the prospect of winning them among themselves.

*Laughs with friend next to her. Wins free spins, smiles, points to symbols she wants while games play. Wins \$10. Plays on.... Friend calls over to her from four machines away - "Got free spin put it up a bit higher and got it again!" "Tin bum" another friend calls out. All laugh. Inserts \$4, plays on at the same rate. Female, elderly, Pakeha/European, casino.*

Gamblers seemed to expect to win free spins and were pleased when they did, even when the amount gambled to win them was far more than the amount won on the free spins. Indeed, in analysis of these observations it was often difficult even for an independent observer to keep track of whether a gambler was ahead or losing in terms of the relationship between their winnings and the amount of money inserted into the machine or cashed out over the time spent playing.

*Gambler is betting max 20 lines, 1 credit. \$20 note inserted, play on, 6c, 98c win, another \$20 note inserted, increases bet to 2 credit/s. Several spins, decreases bet down to 1 credit/s bet, 50c win, plays on, no reaction, cashes out when \$10 remaining. Inserts \$2 back in, plays on, 5c win, another \$4 inserted, plays on quickly, another \$4 inserted, plays on, wins \$8 plus 15 free spins, sits back watches, interrupts music by pressing take win button each time, won \$13, plays on quickly, \$5 win, sits back admiringly, lets music play, plays on, 40c, 100c, adjusts position, plays on. Brief pause, looks for coin cup. Male, 40s, Asian, casino.*

Given the expectation that they should win the free spins, in contrast to jackpots and larger win features, some patrons seemed relieved rather than excited when they won free spins and showed behaviour that suggested a release of tension.

*Wins 20 free spins, turns, says to no one in particular "thank god, that took forever!" Watches older lady next to her play, while her free spins roll, looks back at end of free spins to see last couple of spins and result. Puts up her finger strokes the screen to 'hold' reel on symbols she wants. Female, 40s, Pakeha/European, casino.*

*Same fast rate of play as usual... Moderate win. Moves to sitting more forward on chair, no longer reclining. Seems tense... Is drinking very slowly. Small wins and losses. Wins 25 free spins, reclines and breathes out heavily. Leaves his machine whilst it's playing out it's free spins. Goes outside for a smoke. Returns in less than one minute. Wins approx. \$30 on the free spins. Male, 40s, Māori, pub.*

Behaviour observed immediately following free spins is detailed in Table 4. In most instances gamblers behaved exactly as predicted by variable schedule of reinforcement; they continued gambling at the same rate. Free spins were also followed by a change in game or machine and either an increase or decrease in credits bet per line. It was not uncommon to observe gamblers leaving their machines or watching another's machine while their free spins played out, particularly in pubs. Gamblers also used this break to use the bathroom, talk to a friend, order a drink or smoke a cigarette.

**Table 4. Behaviour observed following free spins in casinos and pubs**

Behaviours observed following free spins	Total coded instances
Plays on at same rate	40
Shows excitement, animation and/or social interaction	22
Changes game or machine	16
Plays on and increases credits bet	14
Plays on and decreases credits bet	13
Cashes out then plays on	12
Cashes out and leaves	11
Plays on and increases speed of play	11
Leaves machine while spins play	9
Plays on and decreases speed of play	3
Noticeable increase in coverage of lines or credits bet leading up to free spins	3
Plays on and increases coverage of lines	2
Plays on and decreases coverage of lines	1

Free spins were also seen to have some impact on play if observed by a patron on another's machine from a distance. Three gamblers were observed to take notice of free spins won on another's machine (to look over at the other gambler's machine and watch the spins play out) and were seen increasing their bet, speed of play (spin button pressing) and/or inserting more money into the machine shortly after. These observations link with the reports of gamblers in focus groups who consistently reiterated the importance of winning free spins to their gambling experience as well as social facilitation effects reported in the literature.

Large credit wins on free spins were generally seen in sessions where it was possible to observe gamblers for longer periods of time (45 to 135 minutes uninterrupted gambling). Gambling generally continued unless the win was very large and, in most cases, even then. If gambling continued without significant wins, a decrease in credits bet or coverage was often observed. After time, or immediately following the insertion of more money into the machine if credit had run out, gamblers were observed to increase coverage and/or credits bet again, seemingly in anticipation of the next win.

#### 6.4 Jackpots

In pubs, the researchers noted specific discussions among patrons about jackpot amounts, the likelihood of winning (whether and when the jackpot was due to 'go off') and the need to 'stay in to win' among customers. No such conversations were heard in casinos, possibly due to the more social atmosphere observed in pubs and the availability of only one jackpot. Where there were discussions of a jackpot being 'due', a common practice observed among pub patrons was to visit the EGM area two to three times during a drinking/socialising session, insert \$20 into the machine and play maximum lines/minimum bet until no credits remained. Generally this practice resulted in a gambling session of 20 to 30 minutes. Patrons communicated strategies for winning the jackpot to each other and one expressed frustration when a pop-up message interrupted their play for the jackpot.

*Observed gambler says "Are you keeping track on that? [indicating jackpot amount] we need to stay in for the jackpot - it's up over 940 tonight". Female, 50s, Pakeha/European, pub.*

*Observed gambler says to gambler next to him "Money bags is the right game to win it", chooses money bags game option. Male, 20s, Pakeha/European, pub.*

*Looks around, says to lady next to her “Waste of time this [indicating pop-up message]. Every time I want to play for jackpot. Blocks it.” Lady next to her smiles sympathetically at her. Female, 60s, Pakeha/European, pub.*

Both in pubs and casinos, jackpot signs indicated that winning a jackpot was possible (due to the jackpot amount reaching a designated range). In these situations, researchers observed behaviour that was seen less frequently on machines that did not have the jackpot feature advertised (i.e. frequent game or machine changes and systematic alternating of the number of credits bet on maximum lines). This behaviour is listed in Table 5.

**Table 5. Behaviour observed when jackpot available to be won in casinos and pubs**

Behaviour	Observed sessions
Changes machine often or changes game within machine	8
Alternating number of credits bet on maximum lines	5
Low credits bet over maximum lines	4
Alternating coverage of lines	1
Low credits bet on low coverage of lines	1

A popular pattern of gambling particular to themed bays of casino machines with a linked jackpot was for a gambler to insert \$2 and play one credit on the maximum number of lines until no credit remained. The gambler would then move along the bay to the next (similarly themed and linked jackpot machine) and again insert \$2 following the same pattern of play, frequently continuing until no coins remained in their coin cup. This pattern of gambling was particularly evident among elderly gamblers.

Another strategy observed was a form of group gambling on a linked jackpot bay of machines at casinos. Gamblers would take up a row of machines with each gambler betting one credit on one line (occasionally increasing the number of lines), enabling them to play slowly over a long period of time. These gamblers would be very social, talking and laughing among themselves, with one group member taking frequent breaks to get food and drinks for the group. This observation links with comments made in the focus group phase (gamblers expressing annoyance at certain groups of people hogging machines while playing for jackpots).

The researchers observed just three gamblers winning ‘minor jackpots’ of roughly \$50, \$100 and \$200; two were won in casinos and one in a pub. Both gamblers who won the larger amounts continued to play the same machine but increasing the number of credits bet per line, for five to 10 spins before cashing out and leaving the gambling area. The gambler who won the smaller jackpot cashed out the win and continued to play the same machine, gradually inserting coins and playing maximum lines (varying the credits bet per line) until no coins or credit remained.

Lights and sounds associated with winning a ‘minor jackpot’ were noticed by others in pubs who congratulated the gambler on their win, making comments such as “good on you mate!”.

## **6.5 Lights, sounds and graphics**

The very frequent small wins were accompanied by a variety of sounds including small bright chirps through to a few seconds of music while the won credits rolled up on screen. The responses of gamblers suggested that the music and sounds associated with wins were enjoyable or at least added to the experience of winning.

*A pop-up occurs. Presses 'yes continue', waits watching the machine next to her. Inserts \$20 into the machine. Plays gently and slowly. 150c win, music tinkles, she leans back closes her eyes and smiles, plays on. 20c win. Increases lines to 30 max lines. Female, 40s, Pacific Island, casino.*

These sounds and credit rolls for small wins could be skipped by pressing the 'take win' button. Some gamblers (n=21) in both pubs and casinos were observed choosing to skip the sounds made by small wins, moving more quickly to the next spin.

Loud music, flashing lights, special symbols and animations were clearly associated with larger credit wins and also with winning features, particularly free spins. Gamblers seemed highly engaged in the animations for their own sake, for example staring at dolphins moving over the screen, or commenting on a wolf animation evolving through the phases of the moon as "cool". These features also drew the attention of other gamblers encouraging comment and/or interaction.

There was an interactive element to some animations associated with features or 'games within the game'. This could involve a choice of animated 'character' as part of this extra game and, therefore, some level of control over the type of animation available to the gambler. In some cases, there was a choice of reward associated with the feature (e.g. the gambler could be offered a choice between various winnings multipliers which would be combined with a various number of free spins). Gamblers tended to sustain their choice of animated figure and spin combination (generally preferring more free spins over higher prize multipliers).

Many positive reactions from gamblers were observed in response to sounds of winning on other people's machines in pubs. Other gamblers sometimes made comments expressing approval or congratulating the gambler who had won (e.g. "good on you!") and sometimes the reaction was simply craning one's neck to have a look at the machine making the noise or surreptitiously watching the winning gambler following the win. In fact, three gamblers were then seen to emulate that winning person's betting style (number of lines and credits bet) or to increase their own number of credits bet or lines covered, presumably in order to increase their chances of achieving a similar result.

The researchers also observed gamblers both in casino and pub environments touching desired winning icons and responding both negatively and wistfully to 'near misses' with feature icons.

## **6.6 Pop-up messages and player information display systems**

The researchers were able to observe behaviour in relation to 22 pop-up messages appearing in casinos (while observing 18 gamblers) and 18 pop-up messages appearing in pubs (while observing 11 gamblers). To place the occurrence of pop-up messages in context of the frequency of other events occurring on the machines, there were 156 instances of small wins observed and documented across the pubs and casinos, 136 instances of free spins and 109 instances where distinctive light or sound events were noted. This shows the relative infrequency of pop-up messages in relation to other potentially salient stimuli. Most gamblers who were observed having their gambling interrupted by a pop-up message only had this occur once in the observational period before they changed to another activity (e.g. watching sport on television, drinking alcohol or coffee). Three gamblers were observed receiving more than one pop-up message in a single gambling session in casinos (with one gambler receiving three pop-up messages). Four gamblers were observed receiving more than one pop-up message in pubs (with one gambler receiving four pop-up messages).

When presented with a pop-up message (detailing the length of time spent playing, amount of money spent and won during their current session of play), around half of the gamblers either pressed the

‘yes, continue’ gambling option or waited for the pop-up message to disappear of its own accord before continuing to play on at the same rate as they had been immediately prior (speed, number of lines, credits bet per line). Behaviour observed following pop-up messages in each of the settings is listed in Table 6. The remaining gamblers for whom there was a change in behaviour following a pop-up message were observed to increase the number of credits bet per line, cash out, change machines or games, insert more money into the machine, adjust their speed of play or access PIDs.

**Table 6. Behaviour observed following pop-ups messages by setting**

<b>Behaviour</b>	<b>Pub instances</b>	<b>Casino instances</b>
Continues playing at same rate (credits/lines bet)	9 (50%)	12 (54%)
Increases credits bet	3	2
Cashes out	2	2
Changes machines or games	2	1
Inserts money into machine	1	2
Increases speed of play (spin button pushing)	1	2
Decreases speed of play (spin button pushing)	0	2
Accesses Player Information Display (PID) screen	0	1

Of the gamblers who increased the number of credits they were betting after receiving a pop-up message, this was seen with general frequent bet increases (not obviously related to any event on the machine) for two gamblers. One gambler was observed checking PIDs information immediately after the pop-up message disappeared. For another two gamblers, increasing credits bet following a pop-up message was observed with some agitation (slapping EGM buttons, appearing unsettled and/or fidgety) and superstitious behaviour (rubbing winning symbols). The remaining gambler who increased their credits bet after having seen a pop-up message ran out of credit and finished their gambling session, leaving the venue shortly after.

While acknowledging the small number of observations where gamblers were seen cashing out following a pop-up message, two cashed out in order to change machines (casinos) and two were seen to cash out and end their observed gambling session (by moving to the bar area of the pub).

The most common behaviours observed while the pop-up messages were on screen was the gambler appearing to read the information on screen (providing some evidence of gamblers engaging with the information provided), and using the time to watch other gamblers and their machines (Table 7).

**Table 7. Behaviour observed while pop-up messages occurred by setting**

<b>Behaviour</b>	<b>Pub instances</b>	<b>Casino instances</b>
Appears to read the information	10	5
Watches other gamblers and their machines	6	10
Shows frustration	2	2
Removes loyalty card	0	2
Checks cell phone	0	2
Leaves EGM momentarily while pop-up occurs	0	1

In a few instances there was some evidence of frustration (verbal and physical) in response to pop-up messages (two in casinos and two in pubs). In two cases, based on comments the gamblers made, this frustration could be attributed to the perception that the pop-up message and break in play prevented a chance to win a jackpot.

*Pop-up message. Looks around, says to lady next to her “Waste of time this. Every time I want to play for the jackpot it blocks it!” Lady next to her smiles sympathetically at her. Female, 60s, Pakeha/European, pub.*

In two other cases, gamblers were observed slapping the machine and pressing the spin button repeatedly in apparent frustration with the break in play.

## 6.7 Stake and coverage

Just over half of all the gamblers observed by the researchers (across casinos and pubs) maintained consistent relatively unchanging gambling behaviour, simply maximising coverage of lines and minimising credits bet, that is one credit wagered for the maximum number of lines available on the machine they were playing (generally 20 or 25). This popular strategy was discussed in the focus groups as maximising time spent on the machine, chances of winning something on each spin, while minimising expenditure. In this situation, the total cost per spin (not factoring in winnings) is readily apparent to the gambler and does not change (20 or 25 cents per spin in the case of the one cent machines, 40 or 50 cents per spin in the case of the two cent machines).

Just under half of the gamblers observed (45% casinos, 44% pubs) increased the number of credits bet per line during their observed session. Generally, an increase in credits bet was observed in the context of a losing streak for gamblers (a period of no significant wins which could recover amounts spent per spin). These periods included very small credit wins (losses disguised as wins) where overall the gambler was losing, and losing quite obviously in the sense that more money was frequently inserted in order to be able to continue play. In the context of this losing streak, gamblers would also increase their wager after inserting more money into the machine, changing games within the machine or after a pop-up message occurred. As Table 8 details, there was some evidence of frustration (gamblers slapping buttons, swearing at the machine) during these losing streaks. Several gamblers were observed to increase their betting following a significant win. Two gamblers (one gambler in each of the casino and pub settings) were observed increasing credits bet in the context of watching a win on a nearby gambler’s machine (both gamblers were also losing at the time).

**Table 8. Contextual factors observed with increase in credits bet by setting**

Contextual factors	Pub observations	Casino observations
	n	n
During period of losing	20	22
A significant win	5	6
More money inserted into the machine	4	4
Evidence of frustration	5	3
Pop-up message occurs	1	2
Changes game within machine	2	0

A number of gamblers (seven in casinos, five in pubs) were observed varying credits and lines bet in a consistent and systematic way. This generally took the form of alternating between one credit bet over maximum lines, and two or three credits bet over fewer lines (generally 10 lines). The pattern could also involve cashing out at intervals, feeding money back in to the same or a different machine, before resuming the play pattern.

This chapter details the statistical analysis of the entire survey sample recruited at baseline and the sample of regular gamblers who were re-surveyed at three and six months post-recruitment. Univariate analyses, multivariate models, analyses adjusted for confounders and longitudinal analyses are presented in two sections in this chapter, separating the results for casino table gambling and EGM gambling. Results within each of the sections on casino table gambling and EGM gambling are further grouped by the two outcome measures (time and money spent gambling). Significant changes in the relationship between outcome measures and key covariates affecting these measures over time are highlighted in this chapter. The results show where the impact of effects on the outcome variables, have changed over time in a way that is statistically significant.

For clarity (and to address the unwieldy and often complex nature of the findings) additional descriptive results have been included as Appendices 6-8<sup>7</sup>. As covariate measures of problem gambling severity (PGSI), psychological distress (K-10) and other psychological measures generally remained consistent across each of the time points and did not demonstrate any time trends, tables showing time trends for these measures are included in Appendix 9.

## **7.1 Demographics**

Demographic data for the entire baseline sample (N=519), recruited in and around pub venues and casinos is presented in Table 9. Only regular gamblers (those who reported gambling once a week or more often) were followed up at three months (n=174) and six months (n=152) post-recruitment. Participants at baseline tended to be male (56%), Pakeha/European (66%), in paid full time employment (56%), have obtained a secondary school qualification (38%) and be living with a partner (34%) or as part of a family with children at home (18%). These demographic characteristics were generally seen in both subsamples of regular and non-regular gamblers. However, the regular gamblers were more likely to be older, have lower educational qualifications, live without dependents, and not be in full time employment, in comparison to non-regular gamblers.

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<sup>7</sup> These appended descriptive results include baseline gambling activity, problem gambling, psychological distress, other psychological measures, alcohol use and smoking, ratings of table game and EGM features as well as engagement with PIDs and pop-ups.

**Table 9. Participant demographics and recruitment site at baseline by gambling frequency**

Demographic variables	Non-regular (n=292)		Regular (n=227)		Total (N=519)	
	N	(%)	N	(%)	N	(%)
<b>Recruitment site</b>						
Casino	196	(67.1)	149	(65.6)	345	(66.5)
Pub	96	(32.9)	78	(34.4)	174	(33.5)
<b>Gender</b>						
Male	157	(53.8)	134	(59.0)	291	(56.1)
Female	135	(46.2)	93	(41.0)	228	(43.9)
<b>Age group (years)</b>						
< 20	3	(1.0)	6	(2.7)	9	(1.8)
20 - 24	54	(18.7)	22	(9.8)	76	(14.8)
25 - 44	82	(28.4)	57	(25.3)	139	(27.0)
45 - 64	108	(37.4)	69	(30.7)	177	(34.4)
65+	42	(14.5)	71	(31.6)	113	(22.0)
<b>Ethnic group (prioritised)</b>						
Māori	33	(11.4)	16	(7.1)	49	(9.5)
Pacific	16	(5.5)	14	(6.2)	30	(5.8)
Asian	21	(7.2)	29	(12.8)	50	(9.7)
European	198	(68.3)	141	(62.4)	339	(65.7)
Other	22	(7.6)	26	(11.5)	48	(9.3)
<b>Qualification</b>						
None or below secondary school	46	(15.9)	47	(21.1)	93	(18.2)
Secondary school qualification	105	(36.3)	88	(39.5)	193	(37.7)
Trade or technical certificate	39	(13.5)	28	(12.6)	67	(13.1)
Tertiary diploma	44	(15.2)	27	(12.1)	71	(13.9)
Bachelor degree	55	(19.0)	32	(14.3)	87	(17.0)
Other	-	-	1	(0.4)	1	(0.2)
<b>Living situation</b>						
Single adult living alone	35	(12.1)	47	(20.8)	82	(15.9)
Single adult with other adults only	54	(18.6)	31	(13.7)	85	(16.5)
Single adult with child/children at home	10	(3.4)	4	(1.8)	14	(2.7)
Married/de-facto couple	86	(29.7)	89	(39.4)	175	(33.9)
Family with adults only	39	(13.4)	20	(8.8)	59	(11.4)
Family with children at home	62	(21.4)	31	(13.7)	93	(18.0)
Other	4	(1.4)	4	(1.8)	8	(1.6)
<b>Employment status</b>						
Working in paid full time employment	184	(63.4)	107	(47.1)	291	(56.3)
Working in paid part time employment	33	(11.4)	28	(12.3)	61	(11.8)
Unemployed	16	(5.5)	27	(11.9)	43	(8.3)
Full time student	22	(7.6)	9	(4.0)	31	(6.0)
Retired	34	(11.7)	56	(24.7)	90	(17.4)
Other	1	(0.3)	-	-	1	(0.2)
<b>Income</b>						
Less than \$20,000	32	(11.0)	28	(12.3)	60	(11.6)
\$20,001 - \$40,000	39	(13.4)	36	(15.9)	75	(14.5)
\$40,001 - \$60,000	59	(20.2)	27	(11.9)	86	(16.6)
\$60,001 - \$80,000	22	(7.5)	21	(9.3)	43	(8.3)
More than \$80,000	42	(14.4)	19	(8.4)	61	(11.8)
Not reported	98	(33.6)	96	(42.3)	194	(37.4)
<b>Income support</b>						
None	203	(69.5)	131	(57.7)	334	(64.4)
NZ superannuation	37	(12.7)	62	(27.3)	99	(19.1)
Working for families	10	(3.4)	2	(0.9)	12	(2.3)
Unemployment benefit	4	(1.4)	5	(2.2)	9	(1.7)
Domestic purposes benefit	2	(0.7)	5	(2.2)	7	(1.4)
Sickness benefit	4	(1.4)	5	(2.2)	9	(1.7)
Invalid benefit	2	(0.7)	9	(4.0)	11	(2.1)
Student allowance	15	(5.1)	6	(2.6)	21	(4.1)
Disability	2	(0.7)	2	(0.9)	4	(0.8)
ACC	2	(0.7)	3	(1.3)	5	(1.0)
Other income support	2	(0.7)	1	(0.4)	3	(0.6)
Accommodation supplement	2	(0.7)	2	(0.9)	4	(0.8)
Overseas pension	3	(1.0)	3	(1.3)	6	(1.2)
Superannuation/pension	41	(14.0)	62	(27.3)	103	(19.9)
Working for families/Welfare benefits	26	(8.9)	25	(11.0)	51	(9.8)

As only regular gamblers were re-surveyed at three and six months post-recruitment, key demographic information for these participants at baseline and at the two follow-up time points is shown in Table 10. The samples followed-up at three and six months did not differ markedly from the baseline sample in relation to the key demographics measured. However, there was greater attrition in the age groups of 45 years or less, and in the Māori and Asian ethnic groups.

**Table 10. Key demographics and retention rates for regular gamblers across follow-up points**

Demographic variables	Baseline (n=227)	3 months (n=174)	6 months (n=152)		
	N	N	Retention Rate (%)	Retention Rate (%)	
<b>Gender</b>					
Male	134	100	(75)	85	(63)
Female	93	74	(80)	67	(72)
<b>Age group (years)</b>					
< 20	6	4	(67)	4	(67)
20 - 24	22	12	(55)	10	(45)
25 - 44	57	40	(70)	31	(54)
45 - 64	69	54	(78)	51	(74)
65+	71	64	(90)	56	(79)
Refused	2	-	-	-	-
<b>Ethnic group (prioritised)</b>					
Māori	16	10	(63)	7	(44)
Pacific	14	12	(86)	12	(86)
Asian	29	17	(59)	14	(48)
NZ European	141	113	(80)	99	(70)
Other	26	21	(81)	19	(73)
Missing	1	1	(100)	1	(100)
<b>Qualification</b>					
None or below secondary school	47	36	(77)	29	(62)
Secondary school qualification	88	63	(72)	56	(64)
Trade or technical certificate	28	23	(82)	19	(68)
Tertiary diploma	27	19	(70)	18	(67)
Bachelor degree	32	28	(88)	26	(81)
Other	1	1	(100)	-	-
Refused	3	3	(100)	3	(100)
Missing	1	1	(100)	1	(100)

Descriptive tables of the covariate risk factors by gambling frequency status (regular versus non-regular) are presented in Appendix 6 for reference.

## 7.2 Outcome variables

As mentioned in section 3.6.5, it was evident from the summary statistics for outcome variables (Table 11) that the distributions were strongly skewed; therefore, after testing for normality, log transformed data were used in the subsequent analyses.

As can be seen in Table 11, the range and standard deviations for time and money spent across pub/club and casino settings were very large, whilst median figures remained much lower. This indicates large amounts of time and money were spent by a few gamblers across each of the gambling settings. Focusing on the median figures (as they are unaffected by the extreme values), it appears that participants reported spending more time gambling on casino EGMs (median 120 minutes per month) compared to gambling on pub or club EGMs (median 80 minutes), and reported spending a similar amount of money (median \$75 per month for casino EGMs, and \$80 on pub/club EGMs).

**Table 11. Calculated variables for time and money spent gambling**

Variable <sup>#</sup>	N	Mean	SD	Median	Min. - Max.
<b>Casino table games</b>					
Time spent gambling per month (minutes)	177	344.80	628.97	90	5 - 4,800
Money spent gambling per month (dollars)	181	785.25	3685.78	100	5 - 48,000
<b>Pub or club EGMs</b>					
Time spent gambling per month (minutes)	263	205.57	330.20	80	2.5 - 2,880
Money spent gambling per month (dollars)	271	189.56	344.66	80	2.5 - 3,000
<b>Casino EGMs</b>					
Time spent gambling per month (minutes)	331	364.38	559.51	120	2.5 - 3,840
Money spent gambling per month (dollars)	362	271.06	560.50	75	2 - 4,800
<b>Casino and pub/club EGMs</b>					
Time spent gambling per month (minutes)	421	411.84	568.30	240	2.5 - 3,840
Money spent gambling per month (dollars)	456	322.80	573.62	100	2 - 4,800
Time spent gambling on EGMs in a typical session (minutes)	424	33.60	33.31	20	3 - 240

<sup>#</sup> Mid-range values from participants' self-reported gambling frequency were combined with self-reports of average length of, or expenditure per, gambling session to provide an estimate of time and money spent gambling per month.

## 7.3 Casino table game gambling

This section details the results of gambling on casino table games. These results are separately grouped in relation to each of the two outcome measures (time and money spent gambling). The results of univariate analyses, multivariate modelling and multivariate analyses adjusted for confounders are reported, followed by the longitudinal analyses. Only participants who reported casino table gambling are included in this section. Results in relation to EGM gambling appear in the following section.

### 7.3.1 Time gambling on casino table games

#### Time spent gambling on casino table games - univariate results

Univariate analyses indicate significant effects on time spent gambling on casino table games per month by ethnicity (Asian and Other ethnicities gambled for longer) and PGSI category (problem gamblers spent more time gambling per month) (Table 12).

**Table 12. Univariate analyses for Log (time) casino table gambling - demographic variables**

Demographic variable	Estimated mean	(95% CI)	p-value
<b>Gender</b>			
Male	4.77	(4.49, 5.06)	
Female	4.41	(3.98, 4.85)	0.17
<b>Age group (years)</b>			
<20	5.01	(1.87, 8.15)	
20 - 24	4.85	(4.28, 5.41)	
25 - 44	4.68	(4.29, 5.07)	
45 - 64	4.25	(3.82, 4.67)	
65+	5.37	(4.68, 6.06)	0.08
<b>Ethnic group (prioritised)</b>			
Māori	4.10	(3.24, 4.96)	
Pacific	4.94	(3.99, 5.88)	
Asian	5.79	(5.22, 6.37)	
European	4.29	(3.99, 4.58)	
Other	5.29	(4.67, 5.92)	<0.0001
<b>Qualification</b>			
None or below secondary school	5.03	(4.24, 5.81)	
Secondary school qualification	4.54	(4.15, 4.93)	
Trade or technical certificate	4.37	(3.71, 5.02)	
Tertiary diploma	4.74	(4.10, 5.38)	
Bachelor degree	4.58	(4.11, 5.04)	
Other	6.40	(3.26, 9.54)	0.67
<b>Living situation</b>			
Single adult living alone	5.39	(4.70, 6.08)	
Single adult with other adults only	4.71	(4.19, 5.23)	
Single adult with child/children at home	4.00	(2.17, 5.82)	
Married/de-facto couple	4.53	(4.12, 4.95)	
Family with adults only	4.47	(3.78, 5.16)	
Family with children at home	4.43	(3.85, 5.00)	
Other	5.42	(4.00, 6.83)	0.30
<b>Employment status</b>			
Working in paid full time employment	4.53	(4.24, 4.83)	
Working in paid part time employment	4.79	(3.99, 5.58)	
Unemployed	4.99	(4.22, 5.76)	
Full time student	4.34	(3.04, 5.64)	
Retired	5.17	(4.39, 5.94)	
Other	4.50	(1.31, 7.69)	0.63
<b>Income support</b>			
Pension/superannuation	5.20	(4.40, 6.00)	
Welfare/working for families	4.47	(3.70, 5.25)	
Student allowance	4.84	(3.24, 6.44)	
None	4.62	(4.34, 4.89)	0.54
<b>Income</b>			
Less than \$20,000	4.44	(3.67, 5.210)	
\$20,001 - \$40,000	4.50	(3.83, 5.16)	
\$40,001 - \$60,000	4.47	(3.91, 5.03)	
\$60,001 - \$80,000	4.90	(4.17, 5.63)	
More than \$80,000	4.33	(3.73, 4.93)	
Not reported	5.00	(4.58, 5.41)	0.40
<b>Problem gambling status (PGSI)</b>			
Non-problem gambler	4.34	(4.03, 4.66)	
Low-risk gambler	4.94	(4.39, 5.49)	
Moderate-risk gambler	4.81	(4.25, 5.37)	
Problem gambler	5.58	(4.87, 6.29)	0.01
<b>Psychological distress (K-10)</b>			
Low	4.71	(4.43, 4.98)	
Moderate	4.34	(3.80, 4.88)	
High	4.17	(2.88, 5.45)	
Very high	6.04	(4.76, 7.33)	0.09
<b>Alcohol risk (AUDIT-C)</b>			
Non-risky drinker	4.64	(4.22, 5.05)	
Risky drinker	4.71	(4.35, 5.07)	0.78
<b>Tobacco use</b>			
Non-smoker	4.72	(4.30, 5.15)	
Ex-smoker	4.51	(4.11, 4.92)	
Infrequent smoker	4.00	(2.56, 5.44)	
Once a day smoker	4.89	(4.30, 5.48)	0.58

Two subscales of the COPE instrument indicating use of social support were significantly related to time spent gambling on casino table games (Table 13). Where participants used more instrumental and emotional social support to cope with stressful situations, they reported spending significantly less time gambling on casino table games.

**Table 13. Univariate analyses for Log (time) casino table gambling - continuous variables**

COPE and NEO-PI subscales	Estimate	Standard Error	t statistic	p-value
COPE (Mental disengagement)	-0.0426	0.0518	-0.82	0.41
<b>COPE (Use of instrumental social support)</b>	<b>-0.0686</b>	<b>0.0351</b>	<b>-1.95</b>	<b>0.05</b>
COPE (Active coping)	-0.0724	0.0400	-1.81	0.07
COPE (Denial)	0.0050	0.0597	0.08	0.93
COPE (Behavioural disengagement)	0.0441	0.0623	0.71	0.48
<b>COPE (Use of emotional social support)</b>	<b>-0.0623</b>	<b>0.0321</b>	<b>-1.94</b>	<b>0.05</b>
COPE (Substance use)	0.0182	0.0370	0.49	0.62
COPE (Planning)	-0.0684	0.0385	-1.78	0.08
NEO-PI (Impulsiveness)	-0.0241	0.0270	-0.89	0.37

### Time spent gambling on casino table games - multivariate model

All factors with an indicative association ( $p < 0.2$ ) on time spent gambling on casino table games were included in the multivariate modelling procedure. This procedure identified factors which maintained a significant relationship with time spent gambling on casino table games when operating in combination. Factors that retained a significant association with time spent gambling on casino table games became part of the model shown in Table 14. Increased time spent gambling was noted for Asian ethnicity, PGSI category (problem gambler) and K-10 score (low and very high psychological distress categories). These sets of factors were collated so that their combined effects could be adjusted for in subsequent analyses.

**Table 14. Multivariate model for (log transformed) time (minutes) spent gambling on casino table games**

	Least square means estimate	(95% CI)	p-value
<b>Ethnicity-Asian</b>			
No	4.47	(3.96, 4.99)	0.002
Yes	5.48	(4.84, 6.11)	
<b>Problem gambling status (PGSI)</b>			
Non-problem gambler	4.42	(3.81, 5.03)	0.03
Low-risk gambler	4.91	(4.16, 5.66)	
Moderate-risk gambler	4.89	(4.19, 5.59)	
Problem gambler	5.67	(4.97, 6.37)	
<b>Psychological distress (K-10)</b>			
Low	5.41	(5.02, 5.80)	0.04
Moderate	4.78	(4.22, 5.34)	
High	4.02	(2.78, 5.26)	
Very high	5.69	(4.41, 6.96)	

## Results adjusted for confounders for time spent gambling on casino table games

Using the model described above as a base model, multivariate analyses were conducted to explore the relationships between key casino table game features and time spent on gambling while controlling for the variables that were shown to have a relationship with time spent on casino table gambling (Asian ethnicity, PGSI, K-10). Descriptive tables presenting the frequency of responses for the casino table gambling features have been provided in Appendix 7 for reference.

### Casino table game features and time spent gambling

Detailed in Table 15 is gambling satisfaction with casino table game features and association with time spent gambling (as previously, time spent gambling is a composite of both average session length and number of sessions per month). Results indicate that participants who rated *games where a low minimum bet is possible* as ‘important/very important’ to their satisfaction with gambling spent less time gambling than those rating this feature as ‘slightly/moderately important’ or ‘unimportant’ ( $p = 0.04$ ). The more important participants felt that *player skill* was to their satisfaction, the more time they spent gambling ( $p = 0.0003$ ). Likewise, where participants felt *having some control over the game* was important to their satisfaction they tended to spend significantly more time gambling ( $p = 0.0006$ ).

**Table 15. Gambling satisfaction with casino table game features and time spent gambling**

Feature	Not important (95% CI)	Slightly/ Moderately important (95% CI)	Important/Very important (95% CI)	p-value
<b>Games where a low minimum bet is possible</b>	<b>5.36 (4.53, 6.19)</b>	<b>5.34 (4.75, 5.93)</b>	<b>4.75 (4.24, 5.26)</b>	<b>0.04</b>
<b>Player skill</b>	<b>4.05 (3.39, 4.70)</b>	<b>4.91 (4.32, 5.51)</b>	<b>5.22 (4.72, 5.72)</b>	<b>0.0003</b>
A small number of players at the table	4.92 (4.33, 5.50)	4.95 (4.35, 5.54)	5.05 (4.47, 5.63)	0.88
Social interaction at the table	4.67 (4.05, 5.29)	4.93 (4.34, 5.51)	5.20 (4.65, 5.75)	0.18
A faster game	4.83 (4.24, 5.41)	5.15 (4.54, 5.75)	4.99 (4.42, 5.56)	0.51
<b>Having some control over the game</b>	<b>4.33 (3.72, 4.94)</b>	<b>5.13 (4.46, 5.80)</b>	<b>5.18 (4.67, 5.68)</b>	<b>0.006</b>
Croupier/dealer (if present at table)	4.96 (4.27, 5.64)	4.74 (4.00, 5.47)	5.01 (4.50, 5.52)	0.71

Adjusted by baseline PGSI, K-10 and Asian ethnicity.

The impact of casino table games features on intended time spent and reported time spent gambling is shown in Table 16. Participants who reported that *player skill* would lead them to intend to spend either more time gambling or less time gambling actually reported spending more time gambling than those who reported this feature would have no effect ( $p = 0.04$ ). Participants who reported that *having some control over the game* would lead them to intend to spend less time gambling in fact reported spending more time gambling than those who reported this feature had no effect; this trend was also present but less marked for those who reported that this feature would lead them to spend more time than intended ( $p = 0.03$ ).

**Table 16. Intended time spent by casino table game features and actual time spent gambling**

Feature	Spend less time (95% CI)	No effect (95% CI)	Spend more time (95% CI)	p-value
Games where a low minimum bet is possible	4.94 (4.08, 5.8)	4.72 (4.14, 5.30)	4.89 (4.31, 5.47)	0.74
<b>Player skill</b>	<b>4.80 (3.95, 5.64)</b>	<b>4.59 (4.06, 5.13)</b>	<b>5.22 (4.64, 5.80)</b>	<b>0.04</b>
A small number of players at the table	4.54 (3.78, 5.31)	4.82 (4.27, 5.36)	4.90 (4.29, 5.51)	0.60
Social interaction at the table	4.26 (3.24, 5.28)	4.69 (4.13, 5.25)	5.00 (4.44, 5.55)	0.21
A faster game	4.69 (4.08, 5.30)	4.80 (4.23, 5.37)	5.09 (4.41, 5.77)	0.49
<b>Having some control over the game</b>	<b>5.63 (4.53, 6.73)</b>	<b>4.52 (3.96, 5.09)</b>	<b>5.03 (4.48, 5.59)</b>	<b>0.03</b>
Croupier/dealer (if present at table)	5.56 (4.25, 6.87)	4.67 (4.13, 5.21)	4.97 (4.39, 5.54)	0.22

Adjusted by baseline PGSI, K-10 and Asian ethnicity.

### Longitudinal analyses of time spent gambling on casino table games<sup>8</sup>

Data across the three time points (baseline, three and six months) were compared to produce longitudinal results for the sub-sample of regular casino table game gamblers. These data were examined using repeated measures General Linear Models to identify any statistically significant trends over time. No significant time effects were identified for any of the confounders in the multivariate model; therefore, only baseline confounder effects were used in the longitudinal models. Descriptive tables showing the time trends for the confounders are presented in Appendix 8.

#### Time spent gambling on casino table games over six months

Average time spent gambling on casino table games (per month) was not significantly different between baseline and the three and six month time points ( $p = 0.10$ ), adjusting for baseline PGSI, K-10 and Asian ethnicity (Table 17).

**Table 17. Change in time spent gambling on casino table games (minutes per month) from baseline to three and six months**

	Baseline	3 months	Change (3 months - baseline)	6 months	Change (6 months - 3 months)	Change (6 months - baseline)
n	79	55	45	39	32	31
Mean (minutes)	619.0	516.3	-136.1	630.3	192.7	23.5
SD	851.4	759.3	842.7	1,295.1	1,399.9	1,028.5
Median	240	225	-60	225	0	-60
Min.	5	0	-3,120	0	-2175	-975
Max.	4,800	3,600	3,120	7,680	7,200	5,280

#### Importance of control over the game on gambling satisfaction and effect on time spent gambling over six months

The importance of having some control over the game on gambling satisfaction had an effect on time spent gambling which changed significantly over time. While participants who rated control over the

<sup>8</sup> The number of participants (n) varies across the time points in the results presented in this section. This is because gamblers' participation in different gambling forms varies at each time point. Therefore, change is not necessarily equal to the difference between the assessment points.

game as unimportant consistently spent less time gambling over the three time points, there was some variation in the other ratings with the most amount of time spent gambling varying between ‘slightly/moderately important’ and ‘important/very important’ over the three time points (Table 18).

**Table 18. Importance of control over the game on gambling satisfaction and effect on time spent gambling from baseline to three and six months**

Effect		Not important		Slightly/Moderately important		Important/Very important		p-value
		Estimated mean	Standard Error	Estimated mean	Standard Error	Estimated mean	Standard Error	
Time	Baseline	5.14	0.34	5.67	0.32	5.90	0.27	0.006
	3 months	5.09	0.35	6.15	0.33	5.28	0.27	
	6 months	5.23	0.47	4.92	0.41	6.04	0.33	

Adjusted for baseline PGSI, K-10 and Asian ethnicity.

Importance of the croupier/dealer on gambling satisfaction and effect on time spent gambling over six months

As with control over the game, there was consistency across time points for time spent gambling for those rating the croupier/dealer as unimportant to satisfaction. More variability in time spent was seen over time where participants rated this feature as important; in some cases these participants spent less time gambling and in some cases more time gambling (Table 19).

**Table 19. The effect of gambling satisfaction due to croupier/dealer on time spent gambling from baseline to three and six months**

Effect		Not important		Slightly/Moderately important		Important/Very important		p-value
		Estimated mean	Standard Error	Estimated mean	Standard Error	Estimated mean	Standard Error	
Time	Baseline	5.73	0.33	4.60	0.47	5.76	0.27	0.04
	3 months	5.58	0.48	5.40	0.33	5.36	0.27	
	6 months	5.78	0.58	4.96	0.38	6.14	0.34	

Adjusted for baseline PGSI, K-10 and Asian ethnicity.

### 7.3.2 Money spent gambling on casino table games

Results related to money spent gambling on casino table games are presented in this section. The results of univariate analyses, multivariate modelling and multivariate analyses adjusted for confounders are given, followed by the longitudinal analyses. Note that only participants who reported casino table gambling activity are included in this section.

#### Money spent gambling on casino table games - univariate results

Statistically significant effects on casino table game expenditure were found for age (those in 65 years and older group spent more), ethnicity (Asian, Pacific and Other groups spent more), PGSI (problem gamblers spent more money) and K-10 (higher distress associated with higher expenditure) (Table 20).

**Table 20. Univariate analyses for Log (dollars spent) casino table gambling - demographic variables**

Demographic variable	Estimated mean	(95% CI)	p-value
<b>Gender</b>			
Male	5.07	(4.76, 5.38)	
Female	4.55	(4.09, 5.02)	0.07
<b>Age group (years)</b>			
<20	4.61	(1.17, 8.04)	
20 - 24	5.00	(4.39, 5.60)	
25 - 44	4.97	(4.55, 5.38)	
45 - 64	4.41	(3.95, 4.87)	
65+	5.85	(5.10, 6.60)	<b>0.03</b>
<b>Ethnic group (prioritised)</b>			
Māori	5.04	(4.12, 5.95)	
Pacific	5.56	(4.61, 6.51)	
Asian	6.31	(5.73, 6.88)	
European	4.35	(4.04, 4.66)	
Other	5.43	(4.75, 6.10)	<b>&lt;0.0001</b>
<b>Qualification</b>			
None or below secondary school	5.55	(4.69, 6.42)	
Secondary school qualification	4.93	(4.50, 5.36)	
Trade or technical certificate	4.78	(4.07, 5.49)	
Tertiary diploma	4.63	(3.96, 5.29)	
Bachelor degree	4.69	(4.17, 5.21)	
Other	6.91	(3.44, 10.37)	0.43
<b>Living situation</b>			
Single adult living alone	5.92	(5.19, 6.65)	
Single adult with other adults only	5.02	(4.46, 5.57)	
Single adult with child/children at home	3.82	(1.84, 5.80)	
Married/de-facto couple	4.62	(4.17, 5.07)	
Family with adults only	4.85	(4.10, 5.60)	
Family with children at home	4.62	(4.01, 5.22)	
Other	5.65	(4.12, 7.19)	0.06
<b>Employment status</b>			
Working in paid full time employment	4.75	(4.43, 5.06)	
Working in paid part time employment	4.95	(4.08, 5.82)	
Unemployed	5.33	(4.51, 6.15)	
Full time student	4.84	(3.52, 6.15)	
Retired	5.53	(4.68, 6.37)	
Other	6.21	(2.73, 9.70)	0.46
<b>Income support</b>			
Pension/superannuation	5.65	(4.81, 6.49)	
Welfare/working for families	4.80	(3.95, 5.64)	
Student allowance	4.97	(3.42, 6.53)	
None	4.86	(4.56, 5.16)	0.37
<b>Income</b>			
Less than \$20,000	4.76	(3.92, 5.60)	
\$20,001 - \$40,000	4.48	(3.75, 5.20)	
\$40,001 - \$60,000	4.56	(3.96, 5.16)	
\$60,001 - \$80,000	5.11	(4.33, 5.88)	
More than \$80,000	4.80	(4.13, 5.47)	
Not reported	5.30	(4.86, 5.74)	0.29
<b>Problem gambling status (PGSI)</b>			
Non-problem gambler	4.43	(4.10, 4.76)	
Low-risk gambler	5.15	(4.57, 5.72)	
Moderate-risk gambler	5.22	(4.65, 5.80)	
Problem gambler	6.51	(5.76, 7.25)	<b>&lt;0.0001</b>
<b>Psychological distress (K-10)</b>			
Low	4.87	(4.57, 5.16)	
Moderate	4.65	(4.08, 5.22)	
High	4.90	(3.71, 6.09)	
Very high	7.53	(6.16, 8.90)	<b>0.002</b>
<b>Alcohol risk (AUDIT-C)</b>			
Non-risky drinker	4.83	(4.38, 5.28)	
Risky drinker	4.95	(4.56, 5.33)	0.69
<b>Tobacco use</b>			
Non-smoker	4.93	(4.47, 5.39)	
Ex-smoker	4.53	(4.10, 4.97)	
Infrequent smoker	4.39	(2.82, 5.96)	
Once a day smoker	5.42	(4.79, 6.06)	0.13

The use of the two COPE subscales emotional social support and planning were associated with less money spent on casino table gambling (Table 21).

**Table 21. Univariate analyses for Log (dollars spent) casino table gambling - continuous variables**

<b>COPE and NEO-PI subscales</b>	<b>Estimate</b>	<b>Standard Error</b>	<b>t statistic</b>	<b>p-value</b>
COPE (Mental disengagement)	-0.0525	0.0558	-0.94	0.35
COPE (Use of instrumental social support)	-0.0636	0.0384	-1.65	0.10
COPE (Active coping)	-0.0602	0.0438	-1.37	0.17
COPE (Denial)	0.0751	0.0647	1.16	0.25
COPE (Behavioural disengagement)	0.1120	0.0674	1.66	0.10
<b>COPE (Use of emotional social support)</b>	<b>-0.0705</b>	<b>0.0348</b>	<b>-2.02</b>	<b>0.04</b>
COPE (Substance use)	0.0541	0.0398	1.36	0.18
<b>COPE (Planning)</b>	<b>-0.0880</b>	<b>0.0414</b>	<b>-2.12</b>	<b>0.04</b>
NEO-PI (Impulsiveness)	-0.0068	0.0295	-0.23	0.82

### Money spent gambling on casino table games - multivariate model

All factors with an indicative association ( $p < 0.20$ ) with money spent gambling on casino table games were included in the multivariate modelling procedure. Factors retaining a significant impact when operating in combination are shown in Table 22. Increased money spent gambling was noted for ethnicity (Pacific, Asian or Other), age group (less than 20 years and 65 years and older), PGSI category (problem gambler) and K-10 score (low and very high psychological distress).

**Table 22. Multivariate model for (log transformed) dollars spent gambling on casino table games**

	<b>Least square means estimate</b>	<b>(95% CI)</b>	<b>p-value</b>
<b>Ethnicity (prioritised)</b>			
Māori	5.59	(4.48, 6.71)	
Pacific	6.38	(5.25, 7.52)	
Asian	6.59	(5.73, 7.45)	
European	5.06	(4.29, 5.83)	
Other	6.11	(5.12, 7.09)	<0.0001
<b>Age group (years)</b>			
<20	6.20	(3.24, 9.15)	
20 - 24	5.72	(5.07, 6.37)	
25 - 44	5.66	(5.13, 6.18)	
45 - 64	5.36	(4.77, 5.95)	
65+	6.80	(6.01, 7.59)	0.008
<b>Problem gambling status (PGSI)</b>			
Non-problem gambler	5.16	(4.35, 5.97)	
Low risk gambler	5.72	(4.78, 6.67)	
Moderate risk gambler	5.94	(5.04, 6.84)	
Problem gambler	6.97	(6.04, 7.89)	0.0002
<b>Psychological distress (K-10)</b>			
Low	6.03	(5.32, 6.75)	
Moderate	5.35	(4.56, 6.15)	
High	5.24	(4.00, 6.47)	
Very high	7.16	(5.78, 8.55)	0.01

## Results adjusted for confounders for money spent gambling on casino table games

Using the model described above as the base model, multivariate analyses were conducted to explore the relationships between key table game features and money spent on gambling while controlling for the variables that were shown to have a relationship with money spent on gambling (ethnicity, age group, PGSI, K-10). Descriptive tables presenting the frequency of responses for the casino table game features have been provided in Appendix 7 for reference.

### Casino table game features and money spent gambling

Satisfaction with casino table games features and association with money spent gambling is presented in Table 23. Similar to the relationship with time spent gambling, participants who rated *player skill* as important/very important spent more money gambling than those who rated this feature as slightly/moderately important; both groups spent more money than those who rated *player skill* as unimportant to their satisfaction ( $p = 0.008$ ). A similar finding was noted for *having some control over the game*, where participants who felt this feature was important for satisfaction spent more money on gambling ( $p = 0.01$ ). The more important participants reported that *social interaction at the table* was for satisfaction, the more money they spent on gambling with those viewing this feature as important/very important spending the most ( $p = 0.04$ ). Conversely, participants who rated *games where a low minimum bet is possible* as important/very important spent less money than those who reported this feature as not important or only slightly/moderately important ( $p = 0.0001$ ).

**Table 23. Gambling satisfaction with casino table game features and money spent gambling**

Feature	Not important (95% CI)	Slightly/ Moderately important	Important/Very important	p-value
		(95% CI)	(95% CI)	
<b>Games where a low minimum bet is possible</b>	<b>6.54 (5.52, 7.55)</b>	<b>6.55 (5.73, 7.36)</b>	<b>5.71 (4.97, 6.45)</b>	<b>0.001</b>
<b>Player skill</b>	<b>5.28 (4.41, 6.16)</b>	<b>5.74 (4.91, 6.57)</b>	<b>6.16 (5.40, 6.92)</b>	<b>0.008</b>
A small number of players at the table	5.64 (4.81, 6.47)	6.05 (5.24, 6.85)	6.14 (5.31, 6.96)	0.18
<b>Social interaction at the table</b>	<b>5.41 (4.56, 6.27)</b>	<b>6.04 (5.20, 6.87)</b>	<b>6.11 (5.34, 6.88)</b>	<b>0.04</b>
A faster game	5.85 (5.00, 6.71)	6.30 (5.44, 7.15)	5.88 (5.09, 6.66)	0.19
<b>Having some control over the game</b>	<b>5.22 (4.37, 6.07)</b>	<b>6.02 (5.11, 6.92)</b>	<b>6.00 (5.24, 6.75)</b>	<b>0.01</b>
Croupier/dealer (if present at table)	5.89 (4.99, 6.79)	5.85 (4.95, 6.75)	5.95 (5.17, 6.74)	0.94

Adjusted by baseline ethnicity, age group, PGSI and K-10.

The impact of casino table games features on intended money spent and reported money spent gambling is detailed in Table 24. Participants who reported that *player skill* would affect their expenditure tended to spend more than those who reported that this feature would have no affect; this was particularly noticeable for participants who reported that this feature would lead them to spend less than intended ( $p = 0.01$ ). A similar finding was noted for those who reported that *having some control over the game* would affect their spending with these participants also tended to spend more ( $p = 0.02$ ). Participants who reported that the *croupier/dealer* would affect their spending tended to spend more than those who rated this feature as having no affect, particularly when they reported that a croupier would lead them to spend less than intended ( $p = 0.007$ ).

**Table 24. Intended expenditure by casino table game features and actual money spent on gambling**

Feature	Spend less money (95% CI)	No effect (95% CI)	Spend more money (95% CI)	p-value
Games where a low minimum bet is possible	5.73 (4.77, 6.69)	5.79 (4.96, 6.63)	5.98 (5.13, 6.83)	0.76
<b>Player skill</b>	<b>6.69 (5.71, 7.66)</b>	<b>5.69 (4.88, 6.51)</b>	<b>5.89 (5.07, 6.72)</b>	<b>0.01</b>
A small number of players at the table	6.03 (5.13, 6.92)	5.69 (4.87, 6.52)	6.09 (5.16, 7.03)	0.33
Social interaction at the table	5.95 (4.97, 6.93)	5.74 (4.89, 6.59)	5.85 (5.00, 6.70)	0.83
A faster game	5.64 (4.70, 6.57)	5.80 (4.96, 6.63)	6.06 (5.18, 6.93)	0.51
<b>Having some control over the game</b>	<b>5.87 (4.89, 6.85)</b>	<b>5.58 (4.78, 6.38)</b>	<b>6.40 (5.54, 7.25)</b>	<b>0.02</b>
<b>Croupier/dealer (if present at table)</b>	<b>6.87 (5.50, 8.24)</b>	<b>5.55 (4.77, 6.34)</b>	<b>6.24 (5.41, 7.08)</b>	<b>0.007</b>

Adjusted by baseline ethnicity, age group, PGSI and K-10.

### Longitudinal analyses of money spent gambling on casino table games<sup>9</sup>

Data across the three time points (baseline, three and six months) were compared to produce longitudinal results for the sub-sample of regular casino table game gamblers. These data were examined using repeated measures General Linear Models to identify any statistically significant trends over time. No significant money effects were identified for any of the confounders in the multivariate model; therefore, only baseline confounder effects were used in the longitudinal models. Descriptive tables showing the time trends for the confounders are presented in Appendix 8.

#### Money spent gambling on casino table games over six months

Average expenditure on casino table game gambling remained consistent over time ( $p = 0.09$ ), adjusting for baseline PGSI, K-10, ethnic group and age group (Table 25).

**Table 25. Change in money spent (dollars per month) gambling on casino table games from baseline to three and six months**

	Baseline	3 months	Change (3 months - baseline)	6 months	Change (6 months - 3 months)	Change (6 months - baseline)
n	79	54	44	33	29	28
Mean (\$)	1,589.5	1,474.0	-140.6	1,214.9	-876.6	-88.8
SD	5,483.6	5,473.6	1,034.2	2,887.5	4,652.2	1,025.8
Median	400	225	-5	375	0	-250
Min.	5	10	-2,600	25	-24,000	-1,500
Max.	48,000	40,000	3,200	16,000	3,600	4,000

<sup>9</sup> The number of participants (n) varies across the time points in the results presented in this section. This is because gamblers' participation in different gambling forms varies at each time point. Therefore, change is not necessarily equal to the difference between the assessment points.

Importance of control over the game on gambling satisfaction and effect on money spent gambling over six months

When participants rated having some control over the game as being not important for gambling satisfaction, they reported spending less money gambling on casino table games over time. In contrast, rating this feature as important was associated with more variable and higher expenditure (Table 26).

**Table 26. Importance of control over the game on gambling satisfaction and effect on money spent gambling from baseline to three and six months**

Effect		Not important		Slightly/Moderately important		Important/Very important		p-value
		Estimated mean	Standard Error	Estimated mean	Standard Error	Estimated mean	Standard Error	
		Baseline	5.83	0.38	5.74	0.37	6.19	
Time	3 months	5.22	0.38	6.53	0.36	5.58	0.31	
	6 months	4.94	0.49	5.13	0.44	6.22	0.36	0.0004

Adjusted by baseline ethnicity, age group, PGSI and K-10.

## 7.4 EGM gambling

Results related to time spent gambling on EGMs are presented in this section which follows the same format set as the earlier section on casino table game gambling. The results of univariate analyses, multivariate modelling and multivariate analyses adjusted for confounders are reported, followed by the longitudinal analyses. Two outcome variables are relevant for time spent gambling on EGMs: time spent gambling on EGMs per month and average EGM gambling session length. Note that only participants who reported EGM gambling activity are included in this section.

### 7.4.1 Time spent gambling on EGMs

#### EGM time measures - univariate results

Results are presented separately for time spent gambling on EGMs per month and average EGM gambling session length.

#### Time spent gambling on EGMs

Age, living situation, employment status, income support, income, venue group, PGSI, alcohol risk and tobacco use were all significantly associated with time spent gambling on EGMs (Table 27). Participants who spent more time gambling on EGMs were aged 65 years and older, married or single living alone, retired, receiving a benefit, in the \$20,001 - \$40,000 and \$60,001 - \$80,000 income brackets, non-risky alcohol drinker, non or ex-smoker, or gambled on both pub/club and casino EGMs.

**Table 27. Univariate analyses for Log (time) EGM gambling - demographic variables**

Demographic variable	Estimated mean	(95% CI)	p-value
<b>Gender</b>			
Male	5.04	(4.84, 5.24)	
Female	5.22	(5.01, 5.44)	0.21
<b>Age group (years)</b>			
<20	4.94	(3.92, 5.95)	
20 - 24	4.46	(4.07, 4.85)	
25 - 44	4.67	(4.39, 4.94)	
45 - 64	5.26	(5.03, 5.50)	
65+	5.78	(5.50, 6.07)	<0.0001
<b>Ethnic group (prioritised)</b>			
Māori	4.72	(4.26, 5.19)	
Pacific	5.55	(4.98, 6.11)	
Asian	5.53	(5.02, 6.04)	
European	5.09	(4.91, 5.27)	
Other	5.13	(4.63, 5.62)	0.11
<b>Qualification</b>			
None or below secondary school	5.18	(4.85, 5.51)	
Secondary school qualification	5.31	(5.07, 5.54)	
Trade or technical certificate	5.01	(4.61, 5.41)	
Tertiary diploma	4.95	(4.55, 5.35)	
Bachelor degree	4.85	(4.46, 5.24)	
Other	6.29	(3.30, 9.28)	0.30
<b>Living situation</b>			
Single adult living alone	5.59	(5.24, 5.94)	
Single adult with other adults only	4.75	(4.39, 5.12)	
Single adult with child/children at home	4.89	(4.04, 5.73)	
Married/de-facto couple	5.31	(5.07, 5.55)	
Family with adults only	4.84	(4.40, 5.28)	
Family with children at home	4.86	(4.52, 5.20)	
Other	6.05	(4.74, 7.36)	0.004
<b>Employment status</b>			
Working in paid full time employment	4.98	(4.79, 5.17)	
Working in paid part time employment	5.30	(4.89, 5.70)	
Unemployed	5.31	(4.81, 5.81)	
Full time student	4.02	(3.46, 4.58)	
Retired	5.76	(5.43, 6.09)	<0.0001
<b>Income support</b>			
Pension/superannuation	5.82	(5.52, 6.13)	
Welfare/working for families	5.24	(4.79, 5.68)	
Student allowance	4.12	(3.46, 4.79)	
None	4.95	(4.77, 5.13)	<0.0001
<b>Income</b>			
Less than \$20,000	4.92	(4.51, 5.34)	
\$20,001 - \$40,000	5.53	(5.14, 5.92)	
\$40,001 - \$60,000	4.81	(4.45, 5.17)	
\$60,001 - \$80,000	5.59	(5.06, 6.13)	
More than \$80,000	4.94	(4.53, 5.36)	
Not reported	5.14	(4.91, 5.38)	0.04
<b>EGM venue</b>			
Casino EGM only	5.15	(4.94, 5.37)	
Both pub/club and casino EGM	5.65	(5.42, 5.87)	
Pub/club EGM only	4.17	(3.87, 4.46)	<0.0001
<b>Problem gambling status (PGSI)</b>			
Non-problem gambler	4.74	(4.55, 4.93)	
Low-risk gambler	5.35	(5.05, 5.65)	
Moderate-risk gambler	5.76	(5.42, 6.09)	
Problem gambler	5.82	(5.27, 6.38)	<0.0001
<b>Psychological distress (K-10)</b>			
Low	5.10	(4.92, 5.27)	
Moderate	5.04	(4.69, 5.40)	
High	5.43	(4.83, 6.03)	
Very high	5.57	(4.82, 6.32)	0.45
<b>Alcohol risk (AUDIT-C)</b>			
Non-risky drinker	5.41	(5.19, 5.63)	
Risky drinker	4.94	(4.71, 5.16)	0.004

Demographic variable	Estimated mean	(95% CI)	p-value
<b>Tobacco use</b>			
Non-smoker	5.32	(5.06, 5.58)	
Ex-smoker	5.19	(4.93, 5.44)	
Infrequent smoker	3.55	(2.67, 4.44)	
Once a day smoker	4.98	(4.67, 5.30)	<b>0.002</b>

As was the case for time spent gambling on casino table games, the two COPE subscales reflecting the use of social support were also associated with time spent gambling on EGMs (Table 28). Where participants reported using more instrumental and emotional social support to cope with stressful situations, they reported spending significantly less time gambling on EGMs. Additionally, the use of planning was also statistically significantly associated with less time gambling on EGMs.

**Table 28. Univariate analyses for Log (time) EGM gambling - continuous variables**

COPE and NEO-PI subscales	Estimate	Standard Error	t statistic	p-value
COPE (Mental disengagement)	-0.0486	0.0311	-1.56	0.12
<b>COPE (Use of instrumental social support)</b>	<b>-0.0756</b>	<b>0.0225</b>	<b>-3.36</b>	<b>0.001</b>
COPE (Active coping)	-0.0283	0.0248	-1.14	0.25
COPE (Denial)	0.0315	0.0384	0.82	0.41
COPE (Behavioural disengagement)	0.0090	0.0349	0.26	0.80
<b>COPE (Use of emotional social support)</b>	<b>-0.0540</b>	<b>0.0211</b>	<b>-2.56</b>	<b>0.01</b>
COPE (Substance use)	-0.0423	0.0266	-1.59	0.11
<b>COPE (Planning)</b>	<b>-0.0486</b>	<b>0.0230</b>	<b>-2.11</b>	<b>0.04</b>
NEO-PI (Impulsiveness)	-0.0145	0.0168	-0.86	0.39

#### Length of sessions gambling on EGMs

Gender, ethnicity, living situation, income support, venue group, PGSI and alcohol risk were all significantly associated with length of session gambling on EGMs (Table 29). Similar to time spent gambling on EGMs per month, longer sessions of gambling on EGMs were noted for females, single people living alone, receiving a welfare benefit, at-risk gamblers (PGSI), or non-risky alcohol drinker. Europeans and participants who only gambled on pub/club EGMs reported shorter gambling sessions than other ethnic groups.

**Table 29. Univariate analyses for Log (session length) EGM gambling - demographic variables**

Demographic variable	Estimated mean	(95% CI)	p-value
<b>Gender</b>			
Male	3.02	(2.91, 3.13)	
Female	3.30	(3.19, 3.42)	<b>0.0005</b>
<b>Age group (years)</b>			
<20	2.95	(2.37, 3.54)	
20 - 24	3.00	(2.79, 3.21)	
25 - 44	3.10	(2.95, 3.26)	
45 - 64	3.23	(3.09, 3.37)	
65+	3.21	(3.04, 3.38)	0.36
<b>Ethnic group (prioritised)</b>			
Māori	3.30	(3.05, 3.55)	
Pacific	3.22	(2.91, 3.54)	
Asian	3.46	(3.19, 3.73)	
European	3.06	(2.96, 3.16)	
Other	3.32	(3.05, 3.60)	<b>0.02</b>

Demographic variable	Estimated mean	(95% CI)	p-value
<b>Qualification</b>			
None or below secondary school	3.23	(3.05, 3.42)	
Secondary school qualification	3.10	(2.97, 3.23)	
Trade or technical certificate	3.06	(2.84, 3.28)	
Tertiary diploma	3.20	(2.98, 3.43)	
Bachelor degree	3.18	(2.97, 3.39)	
Other	4.32	(2.65, 5.98)	0.53
<b>Living situation</b>			
Single adult living alone	3.55	(3.35, 3.74)	
Single adult with other adults only	3.10	(2.90, 3.29)	
Single adult with child/children at home	3.32	(2.84, 3.79)	
Married/de-facto couple	3.02	(2.88, 3.16)	
Family with adults only	3.07	(2.84, 3.30)	
Family with children at home	3.14	(2.96, 3.33)	
Other	3.03	(2.37, 3.70)	<b>0.003</b>
<b>Employment status</b>			
Working in paid full time employment	3.10	(2.99, 3.20)	
Working in paid part time employment	3.20	(2.98, 3.42)	
Unemployed	3.26	(2.98, 3.54)	
Full time student	2.96	(2.65, 3.28)	
Retired	3.30	(3.10, 3.50)	0.25
<b>Income support</b>			
Pension/superannuation	3.15	(2.97, 3.33)	
Welfare/working for families	3.49	(3.24, 3.74)	
Student allowance	2.92	(2.54, 3.30)	
None	3.11	(3.01, 3.21)	<b>0.03</b>
<b>Income</b>			
Less than \$20,000	3.40	(3.17, 3.63)	
\$20,001 - \$40,000	3.24	(3.04, 3.45)	
\$40,001 - \$60,000	3.07	(2.87, 3.27)	
\$60,001 - \$80,000	3.29	(3.01, 3.57)	
More than \$80,000	3.02	(2.79, 3.25)	
Not reported	3.07	(2.93, 3.20)	0.08
<b>EGM venue</b>			
Casino EGM only	3.15	(3.02, 3.29)	
Both pub/club and Casino EGM	3.34	(3.21, 3.48)	
Pub/club EGM only	2.91	(2.73, 3.09)	<b>0.0007</b>
<b>Problem gambling status (PGSI)</b>			
Non-problem gambler	3.00	(2.89, 3.11)	
Low-risk gambler	3.21	(3.04, 3.38)	
Moderate-risk gambler	3.37	(3.18, 3.56)	
Problem gambler	3.47	(3.18, 3.75)	<b>0.0007</b>
<b>Psychological distress (K-10)</b>			
Low	3.12	(3.03, 3.22)	
Moderate	3.13	(2.94, 3.33)	
High	3.43	(3.10, 3.76)	
Very high	3.28	(2.88, 3.69)	0.32
<b>Alcohol risk (AUDIT-C)</b>			
Non-risky drinker	3.26	(3.13, 3.38)	
Risky drinker	3.00	(2.87, 3.13)	<b>0.005</b>
<b>Tobacco use</b>			
Non-smoker	3.14	(3.00, 3.29)	
Ex-smoker	3.15	(3.01, 3.29)	
Infrequent smoker	2.86	(2.36, 3.36)	
Once a day smoker	3.13	(2.95, 3.30)	0.74

None of the COPE subscales or NEO-PI impulsiveness subscale were associated with length of sessions gambling on EGMs (Table 30).

**Table 30. Univariate analyses for Log (session length) EGM gambling - continuous variables**

COPE and NEO-PI subscales	Estimate	Standard Error	t statistic	p-value
COPE (Mental disengagement)	-0.0040	0.0169	-0.23	0.82
COPE (Use of instrumental social support)	-0.0169	0.0123	-1.37	0.17
COPE (Active coping)	-0.0025	0.0132	-0.19	0.85
COPE (Denial)	0.0297	0.0195	1.52	0.13
COPE (Behavioural disengagement)	0.0159	0.0187	0.85	0.40
COPE (Use of emotional social support)	-0.0218	0.0114	-1.92	0.06
COPE (Substance use)	-0.0055	0.0143	-0.39	0.70
COPE (Planning)	-0.0133	0.0123	-1.08	0.28
NEO-PI (Impulsiveness)	0.0071	0.0090	0.79	0.43

**EGM time measures - multivariate model**

Two outcome variables are related to time spent gambling on EGMs: time spent gambling on EGMs per month and average session length. Known influencing factors identified from univariate analyses were included in the multivariate modelling procedure.

Time spent gambling on EGMs

Factors retaining a significant impact ( $p < 0.20$ ) on time spent gambling on EGMs are shown in Table 31. More time was spent gambling by participants in the youngest and oldest age groups, and problem gamblers. Less time was spent gambling by infrequent smokers, those who only gambled on pub/club EGMs, and those who scored highly on the COPE subscale for mental disengagement.

**Table 31. Multivariate model for (log transformed) time (minutes) spent gambling on EGMS**

	Least square means estimate	(95% CI)	p-value
<b>Age group (years)</b>			
<20	5.64	(4.53, 6.75)	
20 - 24	4.71	(4.29, 5.12)	
25 - 44	4.93	(4.58, 5.28)	
45 - 64	5.19	(4.85, 5.52)	
65+	5.84	(5.46, 6.22)	<0.0001
<b>EGM venue</b>			
Casino EGM only	5.20	(4.79, 5.61)	
Both pub/club and casino EGM	5.86	(5.47, 6.24)	
Pub/club EGM only	4.73	(4.35, 5.11)	<0.0001
<b>Problem gambling status (PGSI)</b>			
Non-problem gambler	4.33	(3.99, 4.68)	
Low-risk gambler	5.10	(4.73, 5.47)	
Moderate-risk gambler	5.47	(5.05, 5.90)	
Problem gambler	6.14	(5.50, 6.78)	<0.0001
<b>Tobacco use</b>			
Non-smoker	5.69	(5.36, 6.02)	
Ex-smoker	5.38	(5.06, 5.70)	
Infrequent smoker	4.44	(3.60, 5.27)	
Once a day smoker	5.53	(5.16, 5.90)	0.0147
<b>COPE (Mental disengagement)</b>	<b>-0.082</b>	<b>(-0.14, -0.020)</b>	<b>0.0103</b>

### Length of session gambling on EGMs

Factors with an indicative association on length of session when gambling on EGMS were considered for inclusion in the multivariate model. The final model as shown in Table 32 included the following factors associated with longer gambling session length: Asian ethnicity, non-risky alcohol use, and EGM venue (only gamble on pub/club EGMs only).

**Table 32. Multivariate model for (log transformed) session length (minutes) spent gambling on EGMS**

	Least square means estimate	(95% CI)	p-value
<b>Ethnicity-Asian</b>			
No	3.09	(2.98, 3.19)	
Yes	3.51	(3.16, 3.85)	0.02
<b>Alcohol risk (AUDIT-C)</b>			
Non-risky drinker	3.42	(3.22, 3.62)	
Risky drinker	3.17	(2.96, 3.38)	0.01
<b>EGM venue</b>			
Casino EGM only	3.27	(3.06, 3.47)	
Both pub/club and casino EGM	3.51	(3.30, 3.73)	
Pub/club EGM only	3.11	(2.84, 3.37)	0.005

### **Results adjusted for confounders for time spent gambling on EGMs**

Using the model for time spent gambling as a base model, multivariate analyses were conducted to explore the relationships between key EGM features and time spent on gambling. These relationships were explored while controlling for the variables that were shown to have a relationship with either time spent on gambling (age group, PGSI, tobacco use, EGM venue, and the COPE subscale for mental disengagement) or average session length (ethnicity, AUDIT-C, EGM venue). Descriptive tables presenting the frequency of responses for the EGM gambling features have been provided in Appendix 9 for reference.

### EGM features and reported time spent gambling

The importance of EGM features on satisfaction with gambling and association with time spent gambling is presented in Table 33. Those participants who reported jackpots to be important to their satisfaction spent more time gambling than those who reported this feature as unimportant ( $p = 0.02$ ).

**Table 33. Gambling satisfaction with EGM features and time spent gambling**

Feature	Not important	Slightly/Moderately important	Important/Very important	p-value
	(95% CI)	(95% CI)	(95% CI)	
Free spins	4.82 (4.07, 5.56)	5.07 (4.58, 5.55)	5.22 (4.87, 5.56)	0.42
Small frequent wins	4.79 (4.26, 5.32)	5.17 (4.79, 5.55)	5.24 (4.88, 5.60)	0.15
<b>Jackpots</b>	<b>4.60 (4.06, 5.14)</b>	<b>5.27 (4.83, 5.72)</b>	<b>5.25 (4.91, 5.59)</b>	<b>0.02</b>
Low minimum bets	5.43 (5.00, 5.86)	5.15 (4.75, 5.55)	5.08 (4.71, 5.44)	0.17
Number of playable lines	5.08 (4.65, 5.50)	5.20 (4.81, 5.59)	5.19 (4.81, 5.56)	0.77
Themed graphics and sounds	5.05 (4.64, 5.45)	5.28 (4.89, 5.68)	5.20 (4.82, 5.57)	0.41

Adjusted by COPE mental disengagement, age group, PGSI, tobacco use and EGM venue.

In regard to the effect of EGM features and intended gambling time on reported time spent gambling (Table 34), those who reported that *free spins*, *small frequent wins* and *jackpots* affected their intended time, reported spending more time than those who reported those features would have no effect (*free spins*  $p = 0.01$ , *small frequent wins*  $p = 0.05$ , *jackpots*  $p = 0.02$ ).

**Table 34. Intended time spent gambling due to EGM features and actual time spent gambling**

Features	Spend less time (95% CI)	No effect (95% CI)	Spend more time (95% CI)	p-value
<b>Free spins</b>	<b>5.18 (4.47, 5.88)</b>	<b>4.84 (4.43, 5.25)</b>	<b>5.29 (4.94, 5.63)</b>	<b>0.01</b>
<b>Small frequent wins</b>	<b>5.09 (4.55, 5.63)</b>	<b>4.98 (4.58, 5.37)</b>	<b>5.34 (4.97, 5.7)</b>	<b>0.05</b>
<b>Jackpots</b>	<b>5.5 (4.96, 6.04)</b>	<b>4.96 (4.59, 5.34)</b>	<b>5.31 (4.95, 5.67)</b>	<b>0.02</b>
Low minimum bets	5.13 (4.58, 5.68)	5.03 (4.66, 5.41)	5.36 (4.98, 5.74)	0.12
Number of playable lines	5.22 (4.74, 5.71)	5.03 (4.67, 5.4)	5.41 (5, 5.82)	0.08
Themed graphics and sounds	5.48 (4.9, 6.07)	5.07 (4.71, 5.43)	5.33 (4.93, 5.73)	0.12

Adjusted by COPE mental disengagement, age group, PGSI, tobacco use and EGM venue.

### Player information displays and time spent gambling

Participants who were aware of PIDS spent significantly more time gambling ( $p < 0.0001$ ) than those who were unaware of this feature. Participants were asked about the likelihood of taking various actions in relation to PIDs. Those who reported that on viewing PIDs they would be likely to increase their gambling spent significantly more time gambling ( $p = 0.02$ ), whereas those who reported they were unlikely to increase their gambling spent less time gambling (Table 35).

**Table 35. Effect of behaviour response to PIDs on time spent gambling**

Behaviour	Unlikely (95% CI)	Neutral (95% CI)	Likely (95% CI)	p-value
Stop gambling in that visit	5.25 (4.77, 5.73)	4.93 (4.20, 5.67)	5.30 (4.30, 6.29)	0.64
Reduce your gambling	4.88 (4.30, 5.47)	5.52 (4.63, 6.41)	4.92 (4.29, 5.56)	0.27
<b>Increase your gambling</b>	<b>4.83 (4.31, 5.35)</b>	<b>5.69 (4.72, 6.67)</b>	<b>5.91 (4.86, 6.96)</b>	<b>0.02</b>
Change machines	4.81 (4.25, 5.37)	5.12 (4.31, 5.94)	5.11 (4.51, 5.71)	0.40
Consider the overall level of your gambling	4.92 (4.32, 5.52)	4.53 (3.71, 5.45)	5.06 (4.34, 5.78)	0.50
Consider seeking help about your gambling	4.86 (4.32, 5.39)	5.05 (3.79, 6.31)	5.64 (4.23, 7.04)	0.54

Adjusted by COPE mental disengagement, age group, PGSI, tobacco use and EGM venue.

Table 36 shows that participants who reported that PIDs help them control their time spent gambling in fact spent more time gambling, and those who reported this feature only slightly/somewhat helped in this regard spent the most time gambling ( $p = 0.02$ ). Accuracy of PIDs information regarding time spent gambling and satisfaction with PIDs were not significantly linked to time spent gambling.

**Table 36. PIDs and time spent gambling**

	Not at all (95% CI)	Slightly/ Somewhat (95% CI)	Moderately/ Very much or Extremely (95% CI)	p-value
<b>Do PIDs help control time spent gambling?</b>	<b>4.76 (4.22, 5.29)</b>	<b>5.67 (4.90, 6.45)</b>	<b>5.18 (4.47, 5.88)</b>	<b>0.02</b>
Accuracy of PIDs for time spent gambling	5.39 (4.64, 6.15)	5.13 (4.53, 5.72)	4.93 (4.32, 5.53)	0.27
How PIDs affect satisfaction with gambling	5.10 (4.36, 5.83)	4.90 (4.36, 5.44)	5.16 (4.32, 6.01)	0.66

Adjusted by COPE mental disengagement, age group, PGSI, tobacco use and EGM venue.

### Player information displays and average length of gambling sessions

PIDs awareness ( $p = 0.29$ ) and frequency of use ( $p = 0.49$ ) were not significantly associated with session length. Neither were PIDs impact on gambling satisfaction ( $p = 0.13$ ), control over time spent gambling ( $p = 0.90$ ), or the perceived accuracy of the information provided by PIDs ( $p = 0.87$ ). Participants who reported that on viewing PIDs they would be likely to increase their gambling in fact did spend longer gambling per session than those who reported they were unlikely to do this or who were neutral in relation to this feature ( $p = 0.04$ ) (Table 37).

**Table 37. Behaviour change on viewing PIDs by average length of gambling sessions**

Behaviour	Unlikely (95% CI)	Neutral (95% CI)	Likely (95% CI)	p-value
Stop gambling in that visit	3.30 (3.00, 3.60)	3.10 (2.59, 3.62)	3.36 (2.79, 3.93)	0.69
Reduce your gambling	3.24 (2.93, 3.55)	3.73 (3.19, 4.28)	3.24 (2.85, 3.64)	0.18
<b>Increase your gambling</b>	<b>3.17 (2.88, 3.46)</b>	<b>3.65 (3.05, 4.26)</b>	<b>4.01 (3.23, 4.78)</b>	<b>0.04</b>
Change machines	3.34 (3.03, 3.66)	3.57 (3.09, 4.06)	3.08 (2.73, 3.43)	0.12
Consider the overall level of your gambling	3.20 (2.88, 3.52)	3.15 (2.55, 3.74)	3.37 (2.90, 3.83)	0.74
Consider seeking help about your gambling	3.24 (2.93, 3.54)	3.27 (2.38, 4.16)	3.64 (2.78, 4.50)	0.67

Adjusted by COPE mental disengagement, age group, PGSI, tobacco use and EGM venue.

### **Pop-up messages and time spent gambling**

Participants who gambled on EGMs were asked to indicate whether they had experienced pop-up messages and, if so, about their experience of, and behaviour, in relation to these. As shown in Table 38, those who had experienced pop-up messages recently (in the last three months) spent significantly more time gambling than those who had not ( $p = 0.0001$ ).

**Table 38. Effect of pop-up message on time spent gambling**

	Yes (95% CI)	No (95% CI)	p-value
Experienced pop-up messages in last 3 months	5.79 (5.46, 6.12)	4.64 (4.32, 5.00)	<0.0001

Adjusted by COPE mental disengagement, age group, PGSI, tobacco use and EGM venue.

Perceived effect of pop-up messages on control over time spent gambling, perceived accuracy of pop-up messages, and effect of pop-up messages on gambling satisfaction were not significantly linked with time spent gambling (Table 39).

**Table 39. Effect of pop-up message on control and satisfaction, and accuracy of message on time spent gambling**

	Not at all (95% CI)	Slightly/ Somewhat (95% CI)	Moderately/ Very much or Extremely (95% CI)	p-value
Pop-up messages help control time spent gambling	5.60 (5.08, 6.13)	5.45 (4.79, 6.12)	5.99 (5.32, 6.65)	0.28
Accuracy of pop-up messages	5.98 (5.34, 6.62)	5.82 (5.22, 6.42)	5.53 (4.98, 6.08)	0.10
How pop-up messages affect satisfaction with gambling	5.69 (5.10, 6.27)	5.79 (5.24, 6.34)	5.53 (4.89, 6.17)	0.61

Adjusted by COPE mental disengagement, age group, PGSI, tobacco use and EGM venue.

Participants who reported that pop-up messages would be likely to influence them to change their gambling behaviour did not spend significantly less time gambling than those who were neutral or unlikely to change their gambling behaviour in response to a pop-up message (Table 40).

**Table 40. Effect of pop-up message on behaviour and time spent gambling**

Behaviour	Unlikely (95% CI)	Neutral (95% CI)	Likely (95% CI)	p-value
Read the information	5.50 (4.94, 6.06)	5.80 (5.13, 6.47)	5.71 (5.19, 6.23)	0.34
Stop gambling in that visit	5.88 (5.34, 6.42)	5.89 (5.16, 6.61)	5.12 (4.42, 5.82)	0.09
Reduce your gambling	5.75 (5.22, 6.29)	6.12 (5.37, 6.87)	5.28 (4.63, 5.93)	0.10
Increase your gambling	5.65 (5.15, 6.16)	5.88 (4.91, 6.86)	5.65 (3.49, 7.82)	0.87
Change machines	5.64 (5.13, 6.15)	6.00 (5.34, 6.67)	5.59 (4.97, 6.20)	0.29
Consider the overall level of your gambling	5.68 (5.17, 6.20)	5.95 (5.18, 6.73)	5.28 (4.58, 5.98)	0.19
Consider seeking help about your gambling	5.74 (5.23, 6.27)	5.95 (4.97, 6.94)	4.90 (3.88, 5.91)	0.20

Adjusted by COPE mental disengagement, age group, PGSI, tobacco use and EGM venue.

#### Pop-up messages and average length of gambling sessions

As was to be expected, experiencing pop-up messages was significantly associated with longer average gambling sessions ( $p < 0.0001$ ), as shown in Table 41.

**Table 41. Experiencing pop-up messages by average length of gambling sessions**

	Yes (95% CI)	No (95% CI)	p-value
Experienced pop-up messages in last 3 months	3.56 (3.35, 3.77)	3.16 (2.94, 3.38)	<0.0001

Adjusted by COPE mental disengagement, age group, PGSI, tobacco use and EGM venue.

The impact of pop-up messages on control over time spent gambling, accuracy of the message information, and impact of pop-up messages on gambling satisfaction were not statistically significantly associated with session length (Table 42).

**Table 42. Effect of pop-up message on control and satisfaction, and accuracy of message on length of gambling sessions**

	Not at all (95% CI)	Slightly/ Somewhat (95% CI)	Moderately/ Very much or Extremely (95% CI)	p-value
Pop-up messages help control time spent gambling	3.34 (2.90, 3.78)	3.30 (2.78, 3.83)	3.59 (3.10, 4.08)	0.51
Accuracy of pop-up messages	3.45 (2.94, 3.97)	3.43 (2.96, 3.90)	3.43 (3.00, 3.86)	0.99
How pop-up messages affect satisfaction with gambling	3.48 (3.01, 3.95)	3.47 (3.02, 3.92)	3.42 (2.93, 3.90)	0.96

Adjusted by COPE mental disengagement, age group, PGSI, tobacco use and EGM venue.

Participants who reported that pop-up messages would be likely to influence them to change their gambling behaviour did not report significantly different average length of gambling sessions than those who were neutral or unlikely to change their gambling behaviour in response to a pop-up message (Table 43).

**Table 43. Effect of pop-up message on behaviour and average length of gambling sessions**

Behaviour	Unlikely (95% CI)	Neutral (95% CI)	Likely (95% CI)	p-value
Read the information	3.37 (2.92, 3.82)	3.61 (3.07, 4.16)	3.46 (3.04, 3.88)	0.54
Stop gambling in that visit	3.44 (2.97, 3.91)	3.58 (3.01, 4.15)	3.43 (2.92, 3.95)	0.80
Reduce your gambling	3.38 (2.94, 3.83)	3.37 (2.77, 3.97)	3.52 (3.03, 4.01)	0.82
Increase your gambling	3.43 (3.01, 3.85)	3.59 (2.89, 4.29)	3.54 (1.71, 5.36)	0.87
Change machines	3.53 (3.11, 3.95)	3.43 (2.89, 3.96)	3.31 (2.85, 3.78)	0.41
Consider the overall level of your gambling	3.33 (2.90, 3.75)	3.66 (3.05, 4.26)	3.56 (3.04, 4.08)	0.26
Consider seeking help about your gambling	3.45 (3.04, 3.88)	3.63 (2.93, 4.34)	2.92 (2.07, 3.77)	0.35

Adjusted by COPE mental disengagement, age group, PGSI, tobacco use and EGM venue.

### Longitudinal analyses of time spent gambling on EGMs<sup>10</sup>

Data across the three time points (baseline, three and six months) were compared to produce longitudinal results for the sub-sample of regular EGM gamblers. These data were examined using repeated measures General Linear Models to identify any statistically significant trends over time in relation to time spent gambling. Data are considered in relation to each of the two time-related outcome measures: time spent gambling on EGMs per month and average EGM session length. No significant time effects were identified for any of the confounders that were part of the multivariate model, therefore only baseline confounder effects were used in the longitudinal models. Descriptive tables showing the time trends for the confounders are presented in Appendix 9.

#### Time spent gambling on EGMS over six months

Average time spent gambling on EGMs per month is detailed in Table 44. A decrease at three months (median 307.5 minutes vs. 505 minutes at baseline) was followed by an increase at six months (median 450 minutes). This change over time was statistically significant ( $p < 0.001$ ) after adjusting for baseline PGSI, age group, Asian ethnicity, COPE planning subscale and EGM venue. Adjusted means of the log (time spent) ranged from baseline 5.88 (SE = 0.14), to 5.29 (SE = 0.13) at three months, and 5.52 (SE = 0.14) at six months.

**Table 44. Change in time spent gambling on EGMs (minutes per month) from baseline to three and six months**

	Baseline	3 months	Change (3 months - baseline)	6 months	Change (6 months- 3 months)	Change (6 months - baseline)
n	196	154	144	121	111	117
Mean (minutes)	722.3	515.7	-153.6	674.2	119.8	-88.3
SD	688.9	653.1	638.4	742.4	664.9	737.0
Median	505	307.5	-157.5	450	15	-97.5
Min.	25	5	-2,520	2.5	-1,920	-2,880
Max.	3,840	4,800	2,580	3,600	3,556	2,640

<sup>10</sup> The number of participants (n) varies across the time points in the results presented in this section. This is because gamblers' participation in different gambling forms varies at each time point. Therefore change is not necessarily equal to the difference between the assessment points.

### EGM features and time spent gambling over six months

Reporting free spins as not important to gambling satisfaction was associated with reduced time spent gambling over time (Table 45). Gambling satisfaction attributed to this feature was not associated with time spent gambling. Therefore, those who found free spins unimportant appear to have reduced their gambling time over six months, whereas the other participants continued at similar levels.

**Table 45. Effect of free spins on gambling satisfaction by time spent gambling from baseline to three and six months**

Effect		Not important		Slightly/Moderately important		Important/Very important		p-value
		Estimated mean	Standard Error	Estimated mean	Standard Error	Estimated mean	Standard Error	
Time	Baseline	6.07	0.41	5.66	0.24	5.83	0.14	
	3 months	4.38	0.54	4.97	0.22	5.31	0.14	
	6 months	1.63	0.93	5.52	0.25	5.49	0.14	0.001

Adjusted for baseline PGSI, COPE planning subscale, age group, Asian ethnicity and EGM venue.

Participants who reported that number of playable lines would lead them to intended more time spent gambling actually reported a decrease in time spent gambling at three months (estimated mean 5.13 vs. 5.95 at baseline) which was maintained at six months (estimated mean 5.13), whereas the opposite perception (that number of lines leads to a decrease in time spent gambling) was associated with the most time spent gambling at the 6 month time point (estimated mean 6.47) (Table 46).

**Table 46. Intended time spent gambling due to number of playable lines by actual time spent gambling from baseline to three and six months**

Effect		Spend less time		No effect		Spend more time		p-value
		Estimated mean	Standard Error	Estimated mean	Standard Error	Estimated mean	Standard Error	
Time	Baseline	6.04	0.25	5.62	0.16	5.95	0.20	
	3 months	5.05	0.30	5.24	0.15	5.13	0.22	
	6 months	6.47	0.57	5.47	0.17	5.13	0.21	0.04

Adjusted for baseline PGSI, COPE planning subscale, age group, Asian ethnicity and EGM venue.

### Player information displays and time spent gambling over six months

PIDs effect on gambling satisfaction (either positive, enhancing satisfaction or negative, decreasing satisfaction) was associated with reduced time gambling at the three and six month time points (Table 47). Reporting PIDs as unrelated to satisfaction (neutral) was associated with similar time spent gambling across the three time points.

**Table 47. Effect of PIDs satisfaction on time spent gambling from baseline to three and six months**

Effect		Negative		Neutral		Positive		p-value
		Estimated mean	Standard Error	Estimated mean	Standard Error	Estimated mean	Standard Error	
Time	Baseline	6.27	0.31	5.78	0.24	5.87	0.37	
	3 months	4.91	0.45	5.23	0.22	4.08	0.47	
	6 months	4.81	0.68	5.65	0.28	2.08	0.68	0.003

Adjusted for baseline PGSI, COPE planning subscale, age group, Asian ethnicity and EGM venue.

### Pop-up messages and time spent gambling over six months

Having seen a pop-up message in the last three months was associated with decreased time spent gambling between baseline (estimated mean 5.99) and three months (estimated mean 5.61), with a slight increase at the six month time point (estimated mean 5.80). Not having seen a pop-up message in the last three months was also associated with a similar pattern of decrease in time spent gambling at three months with a slight increase at six months (Table 48).

**Table 48. Effect of pop-up messages on time spent gambling from baseline to three and six months**

Effect		No		Yes		p-value
		Estimated mean	Standard Error	Estimated mean	Standard Error	
	Baseline	5.85	0.18	5.99	0.14	
<b>Time</b>	3 months	4.58	0.18	5.61	0.14	
	6 months	5.07	0.19	5.80	0.15	0.001

Adjusted for baseline PGSI, COPE planning subscale, age group, Asian ethnicity and EGM venue.

### EGM session length over six months over six months

Average session length remained consistent across the three time points (Table 49). There was no statistically significant change over time ( $p = 0.22$ ) adjusting for baseline confounders.

**Table 49. Change in average EGM session length from baseline to three and six months**

	Baseline	Change		6 months	Change	
		3 months	(3 months - baseline)		(6 months - 3 months)	(6 months - baseline)
n	192	147	132	112	97	104
Mean (minutes)	39.5	36.9	-0.3	34.6	-3.6	-6.6
SD	38.5	36.1	35.8	40.0	37.7	38.7
Median	30	25	0	20	0	-2.25
Min.	3	0	-150	0	-150	-230
Max.	240	180	150	180	142.5	142.5

### Player information displays and average length of gambling sessions over six months

Awareness of PIDs was associated with consistent average gambling session lengths over time, while those unaware of PIDs spent less time gambling on average per session at six months compared with baseline (Table 50).

**Table 50. Effect of PIDs awareness on average session length from baseline to three and six months**

PIDs awareness		No		Yes		p-value
		Estimated mean	Standard Error	Estimated mean	Standard Error	
<b>Time</b>	Baseline	3.37	0.16	3.34	0.12	
	3 months	3.56	0.19	3.25	0.12	
	6 months	2.83	0.27	3.23	0.13	0.04

Adjusted for baseline PGSI, COPE planning subscale, age group, Asian ethnicity and EGM venue.

#### 7.4.2 Money spent gambling on EGMs

Results related to money spent whilst gambling on EGMs are reported in this section. The results of univariate analyses, multivariate modelling and multivariate analyses adjusted for confounders are presented, followed by the longitudinal analyses. Note that only participants who reported EGM gambling activity are included in this section.

#### Money spent gambling on EGMs – univariate results

Age, ethnicity, employment status, income support, venue group and PGSI category were all associated with money spent gambling on EGMs (Table 51). Participants who spent more money gambling on EGMs were aged 65 years and older, were Asian or Pacific, were retired, receiving a pension or superannuation, gambled at both pub/club and casino venues, and were problem gamblers.

**Table 51. Univariate analyses for Log (dollars spent) EGM gambling - demographic variables**

Demographic variable	Estimated mean	(95% CI)	p-value
<b>Gender</b>			
Male	4.69	4.49, 4.89	
Female	4.60	4.39, 4.82	0.56
<b>Age group (years)</b>			
<20	4.81	3.72, 5.90	
20 - 24	4.23	3.84, 4.62	
25 - 44	4.49	4.20, 4.77	
45 - 64	4.62	4.38, 4.86	
65+	5.11	4.80, 5.41	<b>0.01</b>
<b>Ethnic group (prioritised)</b>			
Māori	4.52	4.07, 4.98	
Pacific	5.15	4.58, 5.72	
Asian	5.42	4.93, 5.92	
European	4.50	4.32, 4.68	
Other	4.86	4.36, 5.35	<b>0.003</b>
<b>Qualification</b>			
None or below secondary school	4.55	4.21, 4.89	
Secondary school qualification	4.83	4.60, 5.07	
Trade or technical certificate	4.49	4.10, 4.87	
Tertiary diploma	4.70	4.31, 5.10	
Bachelor degree	4.43	4.06, 4.80	
Other	6.80	3.69, 9.91	0.25
<b>Living situation</b>			
Single adult living alone	5.06	4.70, 5.41	
Single adult with other adults only	4.48	4.12, 4.85	
Single adult with child/children at home	4.39	3.50, 5.28	
Married/de-facto couple	4.72	4.47, 4.97	
Family with adults only	4.25	3.82, 4.69	
Family with children at home	4.58	4.24, 4.92	
Other	5.20	4.03, 6.37	0.10

Demographic variable	Estimated mean	(95% CI)	p-value
<b>Employment status</b>			
Working in paid full time employment	4.55	4.36, 4.75	
Working in paid part time employment	4.53	4.13, 4.94	
Unemployed	4.94	4.42, 5.45	
Full time student	4.00	3.42, 4.58	
Retired	5.16	4.82, 5.51	<b>0.003</b>
<b>Income support</b>			
Pension/superannuation	5.13	4.81, 5.45	
Welfare/working for families	4.71	4.26, 5.17	
Student allowance	4.04	3.33, 4.75	
None	4.55	4.37, 4.73	<b>0.01</b>
<b>Income</b>			
Less than \$20,000	4.52	4.10, 4.94	
\$20,001 - \$40,000	4.74	4.36, 5.12	
\$40,001 - \$60,000	4.34	3.98, 4.71	
\$60,001 - \$80,000	5.20	4.69, 5.72	
More than \$80,000	4.54	4.12, 4.97	
Not reported	4.70	4.46, 4.94	0.15
<b>EGM venue</b>			
Casino EGM only	4.63	4.39, 4.86	
Both pub/club and casino EGM	5.19	4.94, 5.43	
Pub/club EGM only	4.08	3.76, 4.40	<b>&lt;0.0001</b>
<b>Problem gambling status (PGSI)</b>			
Non-problem gambler	4.23	4.05, 4.42	
Low-risk gambler	4.97	4.67, 5.26	
Moderate-risk gambler	5.36	5.02, 5.70	
Problem gambler	5.46	4.92, 6.00	<b>&lt;0.0001</b>
<b>Psychological distress (K-10)</b>			
Low	4.59	4.42, 4.76	
Moderate	4.63	4.27, 4.99	
High	5.05	4.46, 5.65	
Very high	5.31	4.55, 6.06	0.16
<b>Alcohol risk (AUDIT-C)</b>			
Non-risky drinker	4.67	4.44, 4.89	
Risky drinker	4.65	4.41, 4.88	0.91
<b>Tobacco use</b>			
Non-smoker	4.71	4.45, 4.97	
Ex-smoker	4.58	4.32, 4.84	
Infrequent smoker	3.58	2.65, 4.51	
Once a day smoker	4.73	4.42, 5.05	0.12

Four COPE subscales were statistically significantly associated with spending less money gambling on EGMs. These were the use of social and emotional support, active coping, and planning (Table 52).

**Table 52. Univariate analyses for Log (dollars spent) EGM gambling - continuous variables**

COPE and NEO-PI subscales	Estimate	Standard Error	t statistic	p-value
COPE (Mental disengagement)	-0.0311	0.0312	-1	0.32
<b>COPE (Use of instrumental social support)</b>	<b>-0.0811</b>	<b>0.0225</b>	<b>-3.61</b>	<b>0.0003</b>
<b>COPE (Active coping)</b>	<b>-0.0558</b>	<b>0.0244</b>	<b>-2.29</b>	<b>0.02</b>
COPE (Denial)	0.0464	0.0364	1.27	0.20
COPE (Behavioural disengagement)	0.0657	0.0347	1.9	0.06
<b>COPE (Use of emotional social support)</b>	<b>-0.0671</b>	<b>0.0206</b>	<b>-3.26</b>	<b>0.001</b>
COPE (Substance use)	-0.0131	0.0268	-0.49	0.62
<b>COPE (Planning)</b>	<b>-0.0733</b>	<b>0.0225</b>	<b>-3.26</b>	<b>0.001</b>
NEO-PI (Impulsiveness)	0.0132	0.0164	0.8	0.42

## Money spent gambling on EGMs - Multivariate model

All factors with an indicative association ( $p < 0.20$ ) with money spent gambling on EGMs were included in the multivariate modelling procedure. Factors retaining a significant impact on money spent gambling on EGMs when operating in combination are shown in Table 53. Asian ethnicity and PGSI category (at-risk groups) were associated with greater expenditure whilst age group (20-24 years), EGM venue (gamble only on pub/club EGMs) and the COPE subscale for planning were associated with less money spent gambling on EGMs.

**Table 53. Multivariate model for (log transformed) money (\$) spent gambling on EGMs**

	Least square means estimate	(95% CI)	p-value
<b>Ethnicity-Asian</b>			
No	4.91	(4.64, 5.17)	
Yes	5.63	(5.10, 6.16)	0.008
<b>Age group (years)</b>			
<20	5.38	(4.34, 6.41)	
20 - 24	4.78	(4.34, 5.21)	
25 - 44	5.03	(4.70, 5.36)	
45 - 64	5.26	(4.91, 5.62)	
65+	5.89	(5.47, 6.32)	0.0002
<b>Problem gambling status (PGSI)</b>			
Non-problem gambler	4.49	(4.11, 4.86)	
Low-risk gambler	5.37	(4.97, 5.77)	
Moderate-risk gambler	5.53	(5.12, 5.95)	
Problem gambler	5.68	(5.06, 6.31)	<0.0001
<b>EGM venue</b>			
Casino EGM only	5.12	(4.74, 5.51)	
Both pub/club and casino EGM	5.80	(5.42, 6.19)	
Pub/club EGM only	4.88	(4.46, 5.29)	<0.0001
<b>COPE (Planning)</b>	-0.069	(-0.11, -0.026)	0.0016

## Results adjusted for confounders for money spent gambling on EGMs

The multivariate model detailed above was used to examine key EGM game features which retained a significant relationship with outcome variables (time, money spent gambling and length of EGM sessions) while taking influencing demographic factors into account. Descriptive tables presenting the frequency of responses for the EGM gambling features have been provided in Appendix 9 for reference.

### EGM features and money spent on gambling

The importance of EGM features on satisfaction with gambling and association with money spent on gambling is presented in Table 54. Participants who reported that low minimum bets were unimportant to their satisfaction tended to spend more money on gambling, whereas those who reported this feature as important/very important spent less ( $p = 0.0001$ ).

**Table 54. Gambling satisfaction with EGM features and money spent on gambling**

Feature	Not important (95% CI)	Slightly/ Moderately important (95% CI)	Important/Very important (95% CI)	p-value
Free spins	4.99 (4.31, 5.67)	5.11 (4.64, 5.58)	5.29 (4.94, 5.64)	0.49
Small frequent wins	5.33 (4.83, 5.83)	5.23 (4.84, 5.62)	5.16 (4.80, 5.51)	0.71
Jackpots	4.91 (4.34, 5.47)	5.35 (4.88, 5.82)	5.25 (4.92, 5.59)	0.30
<b>Low minimum bets</b>	<b>5.72 (5.28, 6.16)</b>	<b>5.54 (5.16, 5.92)</b>	<b>4.88 (4.53, 5.23)</b>	<b>&lt;0.0001</b>
Number of playable lines	5.19 (4.75, 5.62)	5.34 (4.94, 5.73)	5.20 (4.84, 5.56)	0.67
Themed graphics and sounds	5.06 (4.65, 5.47)	5.28 (4.88, 5.67)	5.30 (4.93, 5.67)	0.36

Adjusted for baseline PGSI, COPE planning subscale, age group, Asian ethnicity and EGM venue.

The effect of EGM features on intended money spent and actual reported money spent on gambling is detailed in Table 55. Those participants who reported that *free spins*, *jackpots* and *number of playable lines* either increased or decreased their intended expenditure reported spending more money gambling than those who reported that these features would have no effect (*free spins*  $p = 0.005$ , *jackpots*  $p = 0.03$ , *number of playable lines*  $p = 0.02$ ).

**Table 55. Intended money spent due to EGM features and actual money spent on gambling**

Features	Spend less money (95% CI)	No effect (95% CI)	Spend more money (95% CI)	p-value
<b>Free spins</b>	<b>5.71 (5.16, 6.26)</b>	<b>4.97 (4.59, 5.36)</b>	<b>5.36 (5.00, 5.72)</b>	<b>0.005</b>
Small frequent wins	5.59 (5.12, 6.07)	5.26 (4.88, 5.64)	5.12 (4.74, 5.50)	0.13
<b>Jackpots</b>	<b>5.39 (4.85, 5.93)</b>	<b>5.01 (4.63, 5.39)</b>	<b>5.42 (5.06, 5.78)</b>	<b>0.03</b>
Low minimum bets	5.63 (5.17, 6.09)	5.15 (4.77, 5.52)	5.16 (4.75, 5.57)	0.07
<b>Number of playable lines</b>	<b>5.55 (5.02, 6.09)</b>	<b>5.06 (4.69, 5.43)</b>	<b>5.41 (5.02, 5.81)</b>	<b>0.05</b>
Themed graphics and sounds	5.45 (4.87, 6.03)	5.11 (4.75, 5.47)	5.47 (5.05, 5.89)	0.10

Adjusted for baseline PGSI, COPE planning subscale, age group, Asian ethnicity and EGM venue.

### Player information displays and money spent gambling

Satisfaction with PIDs was not significantly associated with money spent gambling (Table 56) although participants who were aware of PIDS reported greater expenditure ( $p = 0.003$ ). There were no significant associations between frequency of use of PIDS, likely behavioural response to PIDS, or effect on gambling control or money spent gambling.

**Table 56. Effect of PIDs satisfaction on money spent gambling**

	Negative (95% CI)	Neutral (95% CI)	Positive (95% CI)	p-value
How PIDs affect satisfaction with gambling	4.67 (3.97, 5.36)	5.25 (4.81, 5.68)	5.65 (4.91, 6.39)	0.09

Adjusted for baseline PGSI, COPE planning subscale, age group, Asian ethnicity and EGM venue.

### Pop-up messages and money spent gambling

As detailed in Table 57, awareness of pop-up messages on EGMs was associated with spending more money on gambling ( $p < 0.0001$ ).

**Table 57. Awareness of pop-up messages on money spent on gambling**

	Yes (95% CI)	No (95% CI)	p-value
Aware of pop-up messages on EGMs	5.70 (5.36, 6.05)	4.69 (4.33, 5.04)	<0.0001

Adjusted for baseline PGSI, COPE planning subscale, age group, Asian ethnicity and EGM venue.

Perceived effect of pop-up messages on control over time spent gambling, perceived accuracy of pop-up messages, and effect of pop-up messages on gambling satisfaction were not significantly linked with money spent gambling (Table 58).

**Table 58. Effect of pop-up message on control and satisfaction, and accuracy of message on money spent gambling**

	Not at all (95% CI)	Slightly/ Somewhat (95% CI)	Moderately/ Very much or Extremely (95% CI)	p-value
Pop-up messages help control money spent gambling	5.84 (5.17, 6.51)	5.78 (4.99, 6.56)	5.48 (4.76, 6.20)	0.56
Accuracy of pop-up messages	5.38 (4.60, 6.16)	5.96 (5.26, 6.66)	5.50 (4.86, 6.15)	0.10
How pop-up messages affect satisfaction with gambling	5.71 (5.03, 6.40)	5.93 (5.28, 6.58)	5.43 (4.72, 6.14)	0.20

Adjusted for baseline PGSI, COPE planning subscale, age group, Asian ethnicity and EGM venue.

Participants who reported they were unlikely to stop gambling on seeing a pop-up message spent more money gambling than those who reported they would likely stop gambling or who were neutral ( $p = 0.04$ ) (Table 59).

**Table 59. Effect of pop-up message on behaviour and money spent on gambling**

Behaviour	Unlikely (95% CI)	Neutral (95% CI)	Likely (95% CI)	p-value
Read the information	5.54 (4.88, 6.20)	6.18 (5.39, 6.97)	5.68 (5.07, 6.30)	0.14
<b>Stop gambling in that visit</b>	<b>6.13 (5.45, 6.82)</b>	<b>6.09 (5.26, 6.92)</b>	<b>5.11 (4.35, 5.86)</b>	<b>0.04</b>
Reduce your gambling	5.90 (5.24, 6.57)	6.24 (5.37, 7.11)	5.35 (4.61, 6.08)	0.11
Increase your gambling	5.63 (5.01, 6.24)	6.27 (5.29, 7.25)	6.11 (3.14, 8.78)	0.31
Change machines	5.81 (5.19, 6.44)	5.82 (5.03, 6.61)	5.50 (4.81, 6.19)	0.43
Consider the overall level of your gambling	5.81 (5.18, 6.44)	6.00 (5.10, 6.91)	5.20 (4.43, 5.97)	0.09
Consider seeking help about your gambling	5.81 (5.19, 6.43)	5.54 (4.49, 6.59)	4.55 (3.28, 5.82)	0.12

Adjusted for baseline PGSI, COPE planning subscale, age group, Asian ethnicity and EGM venue.

### Longitudinal analyses of money spent gambling on EGMs <sup>11</sup>

Data across the three time points (baseline, three and six months) were compared to produce longitudinal results in relation to money spent gambling on EGMs by the sub-sample of regular EGM gamblers. These data were examined using repeated measures General Linear Models to identify any statistically significant trends over the six month time period. No significant time effects were

<sup>11</sup> The number of participants (n) varies across the time points in the results presented in this section. This is because gamblers' participation in different gambling forms varies at each time point. Therefore change is not necessarily equal to the difference between the assessment points.

identified for any of the confounders that were part of the multivariate model; therefore, only baseline confounder effects were used in the longitudinal models. Descriptive tables showing the time trends for the confounders are presented in Appendix 9.

#### Money spent gambling on EGMS over six months

Data in relation to money spent on EGMs is skewed and, therefore, should be viewed with some caution (Table 60). Average expenditure decreased between baseline and the three month time point (median \$160 vs. \$300 at baseline) then was followed by an increase at six months (median \$200). The change over time was statistically significant ( $p < 0.001$ ) adjusting for baseline PGSI, age group, Asian ethnicity, COPE planning subscale and EGM venue. Adjusted means of the log (money spent) ranged from baseline 5.85 (SE = 0.15), to 5.15 (SE = 0.16) at three months, and 5.15 (SE = 0.17) at six months.

**Table 60. Change in money spent gambling on EGMs (dollars per month) from baseline to three and six months**

	Baseline	3 months	Change (3 months - baseline)	6 months	Change (6 months - 3 months)	Change (6 months - baseline)
n	206	156	150	130	119	127
Mean (\$)	587.5	463.6	-251.6	615.7	120.1	-225.2
SD	731.5	1941.1	588.2	2863.3	972.1	664.1
Median	300	160	-100	200	0	-150
Min.	8	5	-3,200	2.5	-2,000	-3,100
Max.	4,800	24,000	940	32,000	8,000	3,800

#### EGM features and money spent gambling over six months

Reporting free spins as not important to gambling satisfaction was associated with reduced expenditure on EGM gambling over time (Table 61). Gambling satisfaction attributed to this feature was not associated with more money spent gambling. Therefore, those who found free spins unimportant appear to have reduced their gambling expenditure over six months, whereas the other participants continued at similar levels.

**Table 61. Effect of free spins on gambling satisfaction by money spent on gambling from baseline to three and six months**

Effect	Not important		Slightly/Moderately important		Important/Very important		p-value
	Estimated mean	Standard Error	Estimated mean	Standard Error	Estimated mean	Standard Error	
Baseline	6.20	0.38	5.58	0.25	5.82	0.16	
Time 3 months	5.24	0.60	4.81	0.24	5.17	0.16	
6 months	1.64	1.03	5.50	0.28	5.07	0.17	0.001

Adjusted for baseline PGSI, COPE planning subscale, age group, Asian ethnicity and EGM venue.

### Player information displays and money spent gambling over six months

Over time, PIDs awareness was associated with a small reduction in money spent on EGM gambling between baseline and three months, followed by a slight increase in expenditure at the six month time point (Table 62). Participants who were unaware of PIDs spent progressively less money on EGM gambling over time.

**Table 62. Effect of PIDs awareness on money spent on gambling from baseline to three and six months**

Awareness	Time	No		Yes		p-value
		Estimated mean	Standard Error	Estimated mean	Standard Error	
	Baseline	5.87	0.22	5.84	0.16	
	3 months	4.99	0.25	5.17	0.16	
	6 months	4.26	0.36	5.24	0.17	0.04

Adjusted for baseline PGSI, COPE planning subscale, age group, Asian ethnicity and EGM venue.

### Pop-up messages and money spent gambling over six months

Participants who reported that on seeing a pop-up message they would likely reduce their gambling showed reduced expenditure at the three month time point (estimated mean 4.35 vs. 6.29 at baseline); however, expenditure increased again at the six month time point (estimated mean 5.82). Neutrality in relation to reducing gambling in response to pop-up messages was associated with decreased expenditure over time. Participants who reported that they would be unlikely to reduce gambling in response to pop-up messages also slightly reduced gambling expenditure over time (Table 63).

**Table 63. Effect of pop-up messages on gambling expenditure from baseline to three and six months**

Effect	Time	Unlikely		Neutral		Likely		p-value
		Estimated mean	Standard Error	Estimated mean	Standard Error	Estimated mean	Standard Error	
	Baseline	5.92	0.24	5.91	0.34	6.29	0.42	
	3 months	5.40	0.24	5.15	0.39	4.35	0.40	
	6 months	5.33	0.25	4.33	0.47	5.82	0.53	0.02

Adjusted for baseline PGSI, COPE planning subscale, age group, Asian ethnicity and EGM venue.



This research was a broad investigation of the perceived and actual effects of casino table game and electronic gaming machine characteristics, and the impact of player information displays (PIDs) and pop-up messages<sup>12</sup> on electronic gaming machines (EGMs) on gambling and problem gambling behaviour in New Zealand. Three phases of research were designed and implemented. Each related to the other phases and informed the design of subsequent phases but equally, each provided standalone data.

The first phase involved discussions (in a focus group setting) with gamblers (low and high frequency gambling) and current or former problem gamblers, gambling industry representatives, and problem gambling service providers. This phase was designed to collect information on attitudes towards various game features and their perceived effects. Gambler and service provider groups identified and discussed the impact and attractiveness of a range of key features both of EGMs (including PIDs and pop-up messages) and casino table games, while industry groups focused mainly on issues relating to PIDs and pop-up messages and gambler behaviour and experience.

The second phase was an observational study in which researchers entered venues and posed as patrons whilst observing other patrons gambling on EGMs. The focus group phases provided information on the type of EGMs that should be observed, and the game features and behaviours related to PIDs and pop-up messages that would be of primary interest. Of particular note, are the consistencies and inconsistencies between the views expressed in the focus groups and what was observed among patrons in venues.

The final phase was a six month longitudinal survey of patrons recruited at venues. The focus of the survey was driven both by previous research and by information obtained in the earlier phases of this research. The game features highlighted in earlier phases as likely to be linked to important aspects of gambler behaviour were examined further, along with gamblers' exposure to, and use of, PIDs and pop-up messages.

## **8.1 Focus groups**

### **8.1.1 Casino table game characteristics**

Focus group participants frequently discussed social aspects as being primary to their enjoyment of casino table games; this was not so important amongst participant discussions of EGM characteristics. The attractive social aspects of casino table games were highlighted by participants irrespective of their level of gambling, or problem gambling status. Participants discussed energy levels at tables and taking enjoyment from other people winning and having fun. The croupier (if appropriate) was a key component, both in terms of developing and facilitating the social aspects at the table. If the croupier was perceived as unfriendly or unlucky (through observation of the social interaction or 'energy' at the table) they could also be viewed as an unattractive feature.

Other features of table games discussed as being important were the sense of control over the game, choice over how to proceed within the game, and the increased (relative to EGMs) perceived skill involved. Gamblers discussed these features as connected to their greater involvement in the table games (e.g. choosing whether to draw another card, physically placing chips on a roulette table).

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<sup>12</sup> PIDs are static features which can be voluntarily accessed by gamblers. Pop-up messages freeze the electronic gaming machine for 15 seconds on a random schedule, between every 20 and 30 minutes of gambling. Both provide information regarding time and money spent in the gambling session.

More frequent casino table gamblers also discussed having greater self-perceived skill and control over the games, which resulted in a higher probability of them winning. As other studies have linked active physical involvement with games to increases in risky betting (Davis, Sundahl, & Lesbo, 2000; Fernandez-Duque & Wifall, 2007; Martinez, Bonnefon, & Hoskens, 2009), further research is required to investigate the possibility that active involvement may result in higher arousal which facilitates greater risk-taking. This effect could also operate independently of gamblers' beliefs about control and skill. Many problem/ex-problem gamblers believed that the table games could be played strategically and that it was possible to out-play others with some skill. While betting according to probability is possible, the literature suggests that experience/skill may only be useful in minimising losses, not increasing wins (Meyer et al., 2012) and in this case both problem/ex-problem and high frequency table gamblers overestimated their ability to use this information and their experience to their advantage.

No casino table game features were suggested to be helpful in maintaining control over gambling apart from breaks in the game caused by hand shuffling. These breaks offered the chance to pause for thought, breaking the sense of dissociation described by participants across all gambler frequency groups. A fast pace of table games was connected with loss of control by participants of the problem/ex-problem gambler focus group. This lends support to the notion that, as established with EGMs, the speed and frequency of casino table game outcomes influences the development of problems. Research exploring the impact of slowing the pace of table games would be helpful in determining whether this would impact on problem gamblers and/or reduce enjoyment of those who are not experiencing problems with their gambling.

Across all focus groups, gambler participants expressed a marked preference for low stakes tables which they believed extended the amount of time they could spend gambling (perceived as value for money). If low stakes games do indeed attract gamblers for the perceived 'value for money' and the lower stakes facilitate longer gambling sessions they could potentially increase the risk of developing the kinds of faulty reasoning processes and skill perception shown by more frequent table gamblers. Repeated exposure to situations and ways of thinking can result in faulty and sometimes maladaptive cognitive and behavioural patterns that are quite resistant to change (Blaszczynski & Nower, 2002; Catania & Cutts, 1963; Herrnstein & Hineline, 1966; Killeen, 1978; Skinner, 1948; Wagner & Morris, 1987). It is worth noting the apparent persistence of these beliefs among the problem/ex-problem gambler participants, despite their treatment by specialist problem gambling providers. The extent to which understanding of these fundamental aspects of casino table games can be increased, and the best methods for doing so, remains an important topic for further research.

### **8.1.2 EGM game characteristics**

Structural characteristics of EGMs play a key role in gamblers' decisions to gamble and the likelihood that they will gamble for longer, or at a higher intensity than intended (e.g. Griffiths, 1993). On one level, a key characteristic relates to the schedules of reinforcement (Ferster & Skinner, 1957; Skinner, 1953) that are used to arrange the various win-related features. However, the focus group results suggested that the nature of the win-related features themselves may also be important. Their relative frequencies are clearly related to gamblers' perceptions of their importance and their perceived impact on gambling behaviour. The way in which they are constructed, portrayed to, and experienced by, gamblers also seemed to influence the way gamblers perceived them.

Whilst a range of EGM features was discussed as important, it was overwhelmingly the free spin features that participants viewed as the most important and enjoyable feature (see also Livingstone & Woolley, 2008). Gambler participants often discussed the notion of value for money and, along with low denomination EGMs, free spins were central to this as they were perceived as a bonus and

‘playing with someone else’s money’. Winning free spins was discussed as a goal and thus their presence seemed to facilitate longer gambling sessions on two levels. First, gambling longer to win them and then winning free spins resulted in extended time at the EGM. Second, the free spins explicitly encouraged gamblers to bet more by playing more lines. Participants reported greater coverage (playing more lines) to maximise their chances. They also discussed how free spins replicated the way they were playing, so winning free spins when playing just a few lines was not valued, and winning free spins whilst playing a small number of lines left gambler participants feeling somewhat cheated.

The notions of ‘value for money’ and ‘maximising entertainment’ (extending time at an EGM while limiting expenditure) were pervasive across the focus groups. Low denomination machines were preferred on this basis, and because of their perceived safety relative to other EGMs. However, because of the free spins and the general impression that winning was very unlikely when playing a small number of lines, gambler participants typically played multiple or maximum lines on minimum value/low denomination (1 cent and 2 cent) machines. Gambler participants reported an interesting dichotomy in their thinking and behaviour in that they chose low denomination machines for safety and control reasons, but were aware that by gambling multiple lines they were gambling more per play than they initially intended. They rationalised this by reiterating that they were playing low denomination machines. Thus, their intention to gamble for as long as possible, together with low denomination machines, multiple lines and free spins worked to ensure lengthened gambling sessions. These lengthened sessions meant more opportunities for winning, further extending sessions and ultimately the potential for gambling harm (Harrigan & Dixon, 2010).

Higher frequency gambler and current or former problem gambler participants discussed more variation in their strategy (Delfabbro & Winfield, 1999), generally playing more lines, and playing more lines when they believed they were more likely to win. These participants were also more likely to use PIDs to choose machines that provided higher return-to-player percentages. Harrigan and Dixon (2010) have used EGM simulations to show that machines with higher return-to-player percentages are potentially more harmful products as they facilitate longer sessions and exposure to more wins and win-related features. Thus, the self-described more ‘analytical’ approach to playing EGMs potentially leads to extended gambling sessions (as the gambler intends) but not necessarily with the lower risk that the gamblers perceived.

Jackpots and the prospect of large wins were commonly mentioned by high frequency gambler participants as reasons for gambling. However, once in a venue, it seemed that the decisions on which EGMs to play and how long to continue playing were made on the basis of the smaller, more frequently occurring events; specifically whether the gambler had a history of good experiences with an EGM, the denomination of the machine, and the features occurring while the gambler is playing. Jackpots were the only feature gambler participants associated with ceasing gambling (participants reported leaving a venue when they won a jackpot and sometimes when they observed another patron winning a jackpot). In addition to being a main reason for gambling, exposure to jackpots (either personally or seeing someone win one) seemed to increase the likelihood of gambling again at a future date. Graphics and sounds were important in that they added to the experience via their associations with the win- and bet-related features (Delfabbro et al., 2005; Loba et al., 2002), and some participants discussed personal reasons for particular graphics resonating with them. However, this would seem most likely to arise through their association with perceived gambling success, or other pleasant outcomes in particular gambling environments.

In the Pathways Model, Blaszczynski and Nower (2002) outlined how operant and classical conditioning principles can lead to habitual gambling and faulty cognitions related to gambling (see also, e.g. Ladouceur, 2004; Ladouceur, Gaboury, Dumont, & Rochette, 1988; Walker, 1992). The focus group results showed how a range of EGM features work to extend both the amount of time gamblers spend at an EGM and the intensity of their betting. Recent biological research has also

discussed how prolonged and repeated exposure and stimulation of this nature can lead to addiction, where one reward is enhanced in value at the expense of others (Baler & Volkow, 2011; Volkow et al., 2008; Volkow et al., 2012). Learning, conditioned cues, and expected rewards combine to over-activate motivation and reward systems, whilst inhibiting cognitive control circuits (Volkow et al., 2008). It is now generally accepted that supra-physiological stimulation (as with addictive drugs such as cocaine) is not necessary to produce the physiological changes that seem to underlie addiction. Rather, repeated stimulation at normal physiological levels with other supporting environmental cues is sufficient. This highlights the need to identify features of EGMs that result in such conditions being met, and thus greatly increase the likelihood of problem gambling.

Both the Pathways Model (Blaszczynski & Nower, 2002) and the Systems Model of Abuse/Addiction (e.g. Volkow et al., 2008; Volkow et al., 2011) are informative on how gambling problems might arise, and the focus group results highlight some features of EGMs in New Zealand that whilst popular with gamblers can facilitate harmful patterns of gambling in a relatively unobtrusive way. Frequent but small win-related events, particularly free spin features, resonate with the processes described in these models, lengthen sessions and increase exposure to wins of various magnitudes (Harrigan & Dixon, 2010) thus apparently creating the repeated patterns of physiological stimulation described by Volkow et al. In addition to the potential physiological changes, faulty cognitions and behaviours are, therefore, repeatedly and frequently associated with reward (see e.g. Bruner & Revusky, 1961; Catania & Cutts, 1963; Skinner, 1948) and gamblers can come to believe in their greater skill or ability to influence events. The current and former problem gambler participants, and many frequent gambler participants articulated views suggesting they believed they had some greater skill or knowledge with respect to EGM gambling, and had at least at one stage developed harmful gambling behaviours.

Features such as free spins and other frequent small win-related events coupled with low denomination EGMs with multiple playable lines should be the focus of further research and harm minimisation efforts. These features seem highly valued by gamblers and facilitate extended gambling sessions even with a limited budget. They ensure that the repeated behavioural (e.g. Blaszczynski & Nower, 2002; Bruner & Revusky, 1961; Catania & Cutts, 1963; Delfabbro & Winefield, 1999; Delfabbro et al., 2005; Ferster & Skinner, 1957; Skinner, 1948) and physiological (e.g., Baler, 2011; Volkow, et al., 2008; Volkow, et al., 2011) events occur that are likely to underlie the development of problem gambling.

### ***8.1.3 Player information display systems and pop-up messages***

PIDs and pop-up messages were a central focus of the gambling industry focus groups. Discussion of these features was integrated into a broader discussion of game features in the gambler groups. Overall, the main conclusion from the discussions of these features was that pop-up messages, in particular, were operating as intended, that is, they invoked a compulsory break in play for those gamblers who experienced them. High frequency and current/former problem gambler participants had more exposure to pop-up messages than low frequency gambler participants, and hence they had a greater familiarity with them. Gambler participants reported reading the message information, though not always understanding or agreeing with it. Low frequency gambler participants had sometimes experienced pop-up messages, and several participants suggested that they were useful in terms of clarifying how long they had been playing, with some citing them as a factor in initiating help-seeking behaviours.

High frequency and problem gambler participants expressed a range of views in response to pop-up messages, from acceptance and habituation, to frustration, annoyance and arguing strongly that the information was incorrect and that they had a better understanding of their current level of gambling.

Perhaps most interesting was that some gambling venue staff participants expressed related views suggesting that the pop-up messages were ineffective, and that patrons either avoided them by regularly changing machines, ignored them or used the break in play as an opportunity to check their mobile phone. Many participants expressed strongly negative views suggesting the pop-up messages are annoying, patronising, ineffective and cause distress to gamblers. Even if patrons deliberately avoid this harm-minimisation intervention by changing machines, they would in effect be taking a break, and thus at least afforded an opportunity to consider not continuing to gamble, albeit without the additional information the pop-up message provides. Further, if gamblers were changing machines to avoid pop-up messages, they must be doing this on the basis of elapsed time and, therefore, at least paying attention to their gambling session length. It is noted that no evidence of pop-up avoidance behavior was found in the in-venue observational phase of the present study. From the focus groups, it seems that venue staff members are aware of this behaviour and, as such, it presents them with an opportunity to approach gamblers and discuss their level of gambling, assuming (as seems likely) that those changing machines are intensive, frequent gamblers likely to be experiencing some level of harm.

Some venue staff participants also disagreed with the notion that gamblers entered a trance-like state or gambled for longer than they planned which, in their view, was a key reason for the introduction of pop-up messages. These kinds of views were expressed more strongly amongst non-casino venue participants some of whom believed that gamblers were aware of the extent of their gambling, and in control of it; any intervention to assist control was perceived as either patronising or interfering. Non-casino venue participants did not view gambling as their 'core' business; rather for some, it seemed the gambling component of their work was an unwanted addition and the occasional extra work sometimes necessitated by the occurrence of a pop-up message was a source of frustration. In contrast, one casino staff participant reported seeing less of the trance-like, apparently automatic, gambling behaviour on EGMs since the introduction of pop-up messages.

More generally, some venue staff participants and some gambler participants suggested that the pop-up messages were potentially effective and provided additional and timely information to gamblers to aid in informed decision making. However, the PIDs were less prevalent in discussion and gambler participants, in particular, seemed much less aware of this voluntary feature. Those who were aware of PIDs and other information available on EGMs tended to be high frequency and/or problem gamblers. They tended to use this information to make decisions around EGM choice and deciding whether to change EGMs. Thus, this information seemed to be part of their self-reported more 'analytical' approach to EGM gambling. The effects of PIDs could, therefore, in some cases be counter-productive, at least in gamblers already gambling at high intensity.

Whilst some gambler participants and the occasional venue staff participant acknowledged the possible benefits of pop-up messages, the overwhelming focus was on the perception that they created annoyance, frustration and confusion for patrons and venue staff alike. The behaviours described by the focus group participants were used as a background for the later in-venue observational study. However, it is worth noting that there was a common theme of negativity around the reported behaviours (which mostly included frustration and annoyance, and sometimes anger and aggression). The venue staff participants were largely convinced the pop-up messages were ineffective (despite the fact they clearly enforce a break in gambling), were overwhelmingly experienced by high frequency gamblers, and often necessitated interactions between venue staff and gamblers (no instances of such interactions were observed in the present study). High frequency and problem gambler participants often believed the information was incorrect and this view was shared, in the main, by venue staff participants. In fact, these views held by gambler participants, as well as other behaviours discussed by venue staff participants, are potentially a sign of harmful gambling.

## 8.2 Observational Study

### 8.2.1 EGM game characteristics

Hundreds of small credit wins were observed in casinos and pubs, maintaining a consistent pattern of gambling behaviour. This is consistent with the notion that a key feature underlying gambling behaviour is the schedule of reinforcement arranged, specifically variable ratio schedules which have been widely shown to maintain very consistent and inflexible rates of responding (Ferster & Skinner, 1957; Skinner, 1953). Beyond that, the EGMs provide increased flexibility in the amount wagered (via the EGM denomination and number of playable lines). The popular betting strategy of maximising coverage of lines and minimising credits bet until no credits remain, described in the focus groups and observed in venues, seemed to give gamblers a sense of minimising expenditure but in fact tends to work to extend session length overall. Rockloff and Greer (2010) showed that at-risk gamblers with many self-reported negative emotions placed lower bets and that gamblers with low level arousal paired with negative affect engaged in the most intense and long lasting betting behaviour. The present observational data support the notion that low betting over long periods of time (potentially linked to states such as boredom and low level anxiety) is a pattern of behaviour occurring frequently and is readily observable.

As the literature suggests (Livingstone, 2005; Livingstone et al., 2008), and the focus group participants discussed, winning free spins was clearly exciting, engaging and even a talking point for the gamblers observed. These features, when combined with the frequent small credit wins, made it increasingly difficult for researchers to keep track of whether a gambler was winning or losing (with respect to money inserted, won and cashed out) over the course of their session; gamblers are likely to have the same issue. In the majority of cases, gamblers behaved in the manner predicted by irregular reinforcement (steady consistent gambling); these observations continue to support the notion that no features are as influential as the underlying reinforcement schedules. Additional credit wins and free spins were observed both to obscure the relationship between winning and losing and to extend gambling sessions.

The behaviours observed during a free spin or animated feature most often included watching the spins or pictures play out; however, the finding that many gamblers also watched others play must be considered in light of the empirical literature which suggests that EGM betting behaviour can be intensified through social facilitation via the belief that others are gambling and winning money (e.g. Rockloff & Dyer, 2007), and also via the presence of others in the gambling environment (Rockloff et al., 2012). Though EGMs were considered in the focus groups to be the less social activity (as compared with the group atmosphere around casino table games), interaction between players (e.g. smiles, nods, congratulations) was frequently observed suggesting that social interactions occur in a more subtle way around EGMs and could impact on gambling behaviour. Group gambling was also observed, particularly in the casino environment where groups of friends would occupy a bank of machines together, watch each other gamble and share winnings to keep everyone gambling for longer. Though numbers are small and thus must be interpreted with great caution, three gamblers were observed to view free spins won on another gambler's machine and then to increase their bet/spend and speed of play shortly after. Findings like these that are supportive of social facilitation provide some evidence that an EGM "demo mode", suggested to have potential harm minimisation effects by providing a way to socially participate in the game environment for a time with others without spending money (Coates & Blaszczynski, 2013), may not be as effective if gamblers using this feature also go on to gamble on EGMs for money.

Gamblers in both pub and casino settings were observed choosing to skip the music and credit roll produced by small wins, allowing them to move more quickly to the next spin. To the extent that this ability can be seen as enhancing gamblers' involvement in and/or control over the games, these

findings are seemingly related to research documenting the effects of involvement on faulty cognitions and problem development. Ladouceur and Sévigny's (2005) study on the relationship between gamblers ability to "stop" reels and their illusion of control showed that the ability to stop a reel: 1) Resulted in a skewed understanding of the gambler's impact upon the machine and in this way became a factor in the development of cognitive distortions, and/or 2) Could function to increase the speed of the game (both aspects linked to the development of gambling problems). Although EGMs in New Zealand do not have a "stop" feature, any interactive element associated with features or 'games within the game' could be of some concern from a harm minimisation perspective. In the present study, skipping the music and credit roll at least increased the speed of the game. One observed additional feature has the potential to provide some level of perceived control over the outcome of the games where, in the case of a feature won, the type of animation played to the gambler and in some cases the reward associated with the feature could be chosen by the gambler. Gamblers tended to sustain their choice of both animated figure and reward combination (generally preferring more free spins over higher prize multipliers) suggesting the development of some theory around their involvement or choice, and the probability of winning (potential for cognitive distortion).

Available literature is limited yet suggests that the availability of EGM jackpots should motivate additional consumption on those EGMs in comparison to those without such features (Rockloff & Hing, 2013). Discussion of jackpots overheard in venues indeed indicated that they are attractive and do prompt some gamblers to try their luck in a particular gambling area; however, jackpot chasing or jackpot focused behaviour was not frequently observed, nor were gamblers observed checking the advertised jackpot amount during or before play. In situations where jackpots were advertised as possible (due to the prize amount reaching a certain range), some patterns of behaviour were identified, often along with explicit mention of the jackpot, that suggest sensitivity to this feature (such as more frequent machine changes and more systematic alternating of bets or lines played). Observation suggested that jackpots may function to attract gamblers but that gambling behaviour is sustained at the machine by more ordinary small credit win-related events and free spins.

Interestingly, focus group venue staff opinion that EGM switching behaviour frequently occurs, and occurs in response to both pop-up messages (avoidance behaviour) and the abundance of choice of EGMs available (particularly in casinos) was not borne out in the in-venue observations. In fact, most gamblers did not change machines at all while they were being observed. This finding was also in contrast to a recent observational study examining venue characteristics and gambling behaviour in New Zealand which found that about 58% of gamblers shifted machines, and that problem gamblers were more likely to shift machines (Thomas, Mora & Rive, 2012). In the current study, the few gamblers who did change machines were also losing money at the time which again suggests that perception of reward frequency arranged by the machine plays a key role in determining gambling behaviour. Drawing on discussion of the "gambler's fallacy", observation supported the notion that gamblers tend to anticipate that lower pay back will eventually result in high pay back over time (Coates & Blaszczyński, 2013). Free spins were the most commonly observed preceding feature in sessions with multiple game or machine changes both in casinos and pubs. This suggests that this popular feature may be considered a significant win by gamblers, reducing the perceived likelihood of future wins. Further research is required to determine behavioural norms around machine changing and the relationship between this behaviour and problem gambling. The current observations suggest that switching behaviour is readily observable but does not occur in response to, or to avoid pop-up messages. Rather, it seems to occur following an extended period of losing and, as such, may represent a further opportunity for venue staff to engage with gamblers in conversation about their gambling, with particular sensitivity to the possibility that gamblers may be chasing losses.

## 8.2.2 *Player information display systems and pop-up messages*

As researchers were able to observe and document 40 occurrences of pop-up messages during 48 hours of observation<sup>13</sup>, and were unable to observe specific detail presented in the pop-up messages in all but one of these occurrences, suggests that concern around gambler privacy articulated by focus group gamblers and venue staff alike is largely unfounded. Additionally, evidence of gambler frustration with pop-up messages (raised in both gambler and venue staff focus groups as a major issue) was unusual in the observations (four gamblers exhibited signs of frustration out of 18 casino gamblers observed to receive pop-up messages) and readily apparent (slapping the machine, violent button pressing). Thus, these limited occurrences could also produce valuable opportunities for host responsibility staff to speak with those gamblers in distress.

Again in contrast to focus group reports, many gamblers were observed engaging with the pop-up information on screen; more than half of gamblers in pubs who received pop-up messages were observed to read the provided information. While acknowledging the relatively small number of observations, there were instances of pop-up messages preceding a decision to cash out and leave the gambling area. As previously discussed, frequent variable rewards combined with multiple line betting makes determining the relative profitability of an EGM session difficult to establish (while maintaining the salience of potential wins throughout). Just under half of all observed gamblers behaved in a way that suggested that they expected wins to occur with increasing time spent playing, i.e. an increase in credits bet was observed in the context of a losing streak. It is clear from previous studies that in a range of experimental situations, people will quickly abandon maladaptive patterns of behaviour if the value of persisting versus abandoning the strategy is made relatively salient (Goltz, 1992; Navarro & Fantino, 2005a). Further, these studies firmly establish the principle that salient information (if accessible to gamblers) could well be effective in terms of assisting gamblers to gamble in a controlled manner. Taken together, the present findings suggest that many gamblers engage with pop-up messages and that the provided information is likely to be useful for some. Gamblers in the focus groups suggested that pop-up message information could be made more accessible and engaging (in terms of the information and format) which may assist more gamblers to notice and read the information. Other research has suggested that higher threat warnings or warnings from a scientific source might enhance depth of processing attitudes and intentions (Muñoz et al., 2012). Importantly, and contrary to popular belief, pop-up messages did not seem to be detrimental to the gambling experience for the majority of gamblers observed.

The observation of gamblers seeming to watch others play during an enforced break in their own play (during a pop-up message) is potentially important from a harm minimisation perspective when considered in light of empirical findings that EGM betting behaviour can be intensified through social facilitation via the belief that others are gambling and winning money (e.g. Rockloff & Dyer, 2007) and the mere presence of others (Rockloff et al., 2012).

## 8.3 Survey

### 8.3.1 *Gambling behaviour, risk and distress*

The survey results suggest that regular gamblers tend to be focused on the gambling aspect of venues (as opposed to alcohol and food entertainment components). The results for regular gamblers showed elevated levels of problem gambling risk and psychological distress, and reduced levels of risky drinking in comparison to non-regular gamblers. Those who played casino table games and/or EGMs

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<sup>13</sup> Pop-up messages were observed 22 times in casinos and 18 times in pubs. For context, 377 credit wins, 133 free spins, 65 feature wins and three jackpots were also observed in that time.

regularly tended to have longer gambling sessions with a small number of regular gamblers spending large dollar amounts (skewing the distribution).

The distributions of key outcome variables for time and money spent gambling showed that a few gamblers spend very large amounts of time and/or money on casino table game and/or EGM gambling. PGSI risk categories and high psychological distress predicted more time and money spent playing casino table games, while PGSI risk also predicted longer time and more money spent playing EGMS. The present results are consistent with the notion that a substantial proportion of industry profits are derived from a small number of individuals, many of whom will be experiencing problems or be at risk of developing them<sup>14</sup>.

### **8.3.2 Casino table game characteristics**

The features of casino table games identified as important in the analysis of the focus group data were also well supported by the survey results. The majority of both non-regular and regular gamblers who gambled on casino table games reported a preference for blackjack (42% and 30% respectively) and roulette (26% and 31% respectively). The descriptive survey results support the assertion that, in order of importance, games where a low minimum bet is possible, the croupier/dealer, social interaction at the table, player skill, having some control over the game, a small number of players at the table and a faster game are key table game features affecting gambler satisfaction. Consistent with the literature, the table game feature reported to have the most pronounced influence on spending more money and time gambling than intended was social interaction at the table (a social facilitation effect). Conversely, a small number of players at the table was perceived to lead to spending less than intended. That the croupier was perceived to be particularly influential in terms of increasing time spent gambling at table games also provides evidence that sociality (interpersonal contact) plays a key role in determining the nature of casino table game play for many gamblers, often functioning to extend sessions.

Particular coping styles were associated with less time (use of instrumental and emotional social support) and less money spent (use of emotional social support, planning) on casino table games suggesting that these could be potential protective factors in regard to loss of control. Indeed, research into gambling pathways has also shown social support acts as a direct protective factor in relation to gambling frequency and problems and indirectly through gambling motivations that are based around avoidance and accessibility (Thomas et al., 2011). The social nature of casino table games seems to impact on control over gambling in important ways, operating to facilitate gambling in a session. Conversely, good social support away from gambling seems to support control. Thus, social isolation or lack of social support seems likely to play a role in the development of gambling harm and could be considered further in relation to protective interventions. Also relevant for control was evidence for a ‘budget conscious’ orientation to casino table gambling as being used by some gamblers. Participants for whom low minimum bet was important or very important to satisfaction tended to spend less time and less money on tables. This orientation seems consistent with a planned coping approach (extended to gambling) and this finding is also relevant for harm minimisation efforts and interventions.

Sociality was indicated to be a particularly key (and risky) feature in regard to expenditure. Participants influenced by social interaction at the table or by the croupier (in terms of gambling

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<sup>14</sup> The 2010 Australian Government Productivity Commission Report estimated problem gamblers’ share of the total gaming machine expenditure was approximately 40% (Productivity Commission, 2010). In the 2011 research paper “Gambling away perspective? A review of the evidence justifying electronic gaming regulations” the authors were critical of the Productivity Commission report and suggested that expenditure by problem gamblers was more likely to be between 10% and 20% (Novak, & Wilson, 2011).

satisfaction or impact on their expenditure) spent more money than participants who considered these features of lesser importance. This finding is somewhat counter-intuitive where we might expect sociality to primarily encourage the spending of time (seeking to be part of a continuing and engaging social interaction) and, perhaps, money as a more secondary result of this. The role of the croupier in encouraging expenditure is worthy of further research (including perhaps a review of guidelines around how these staff interact with customers).

The multivariate modelling suggested that the perception that casino table games showcase player skill and allow control over the game was important to gambling satisfaction for gamblers who spent the most time and money gambling. These same features, if perceived by a gambler to either improve or work against their control over time or money spent gambling, were associated with more time and money spent gambling. These results seem to highlight the behavioural impacts of the kinds of cognitive distortions often associated with problem gambling (the belief in one's own skill and one's ability to control the outcome of the games), where even as a gambler believes their level of skill and control cause them to spend either more or less time, they are in fact spending consistently more time than other players (for whom these aspects of table games are not considered important or influential). Gamblers are likely to be similarly familiar with their own play patterns (in terms of time and money spent); however, they are unlikely to be aware of the amount of time and money that others tend to spend. This notion could be explored further, for example examining the impact of making gamblers aware of typical lengths of time spent playing casino table games that are associated with non-problematic play. It may be more effective to highlight time spent in this way, as money available to spend can be far more variable between gamblers than time available. Developing theory about game outcomes that are largely produced by chance (Meyer et al., 2012) seems to support continued gambling and 'investment' of more time and money than originally intended (Navarro & Fantino, 2005a). Popular understandings of casino table game outcomes as being affected by player skill may, therefore, exacerbate the potential for these games to cause harm for individuals attracted to notions of skill and influence and for those who gamble for longer in order to acquire these 'attributes' and/or believe that the skill and control they possess are effective in mitigating the risk of overspending.

Gamblers who rated control over their gambling activity as important spent more time and money gambling on casino table games and this was consistent over time, i.e. those gamblers attracted to their perceived control over table games consistently spent more time and money gambling across the time period studied, while those for whom control was not important spent progressively less. Participants who reported that the croupier was unimportant also spent consistently less time gambling over time. Thus, it is contended that games which encourage a perception of control and the presence of croupier, are potentially problematic features for some gamblers.

The finding that Asian and Pacific ethnicities were associated with elevated time and money spent gambling is of concern given that these groups are regarded to be at higher risk of developing gambling problems (Abbott & Volberg, 2000; Blaszczynski, Huynh, Dumlao, & Farrell, 1998). Research has explored Asian gamblers' preference for casino table games (Liu & Wan, 2011); however, the finding that Pacific people seem to play casino table games for longer and to spend more than other ethnicities (excluding Asian gamblers) has implications for the targeting of harm minimisation efforts. This also suggests that casino table games may be differentially problematic for Asian and Pacific people in comparison to European and Māori (in that once they are gambling on table games, Asian and Pacific gamblers tend to gamble for longer and to spend more money).

Taken together, these findings suggest that interventions clarifying (in an accessible manner for gamblers) the nature of casino table games, specifically countering gamblers' beliefs about their ability to control the game and build skill on game outcomes, and the effect of the croupier, may be effective in assisting gamblers to gamble in a controlled manner (i.e. to spend less time on gambling if they need to). Of the two most popular table games identified, blackjack involves some skill in decision making for the gambler (though counting cards remains a skill/practice that is made difficult

by casinos and explicitly banned), while roulette is a game of pure chance. In addition, guidelines detailing the lack of croupier involvement in game outcomes and clarifying their impact on game process (including their behaviour and characteristics) could be developed for harm minimisation purposes as well as for the information of gamblers themselves.

### **8.3.3 EGM game characteristics**

In the focus group phase of the study, small non-representative groups of gamblers identified key EGM features impacting on their enjoyment and play. That these features were endorsed as important for satisfaction by a much larger convenience sample recruited directly from casino and pub environments is in further support of their importance in relation both to gamblers' enjoyment and the nature of their gambling. Consistent with the literature, and the earlier phases of this research, free spins were rated particularly highly by participants (Livingstone et al., 2008). Of note is the consistent proportion of gamblers (as high as 50% in the case of free spins) who believed that these features have an impact on their gambling, whether to increase or decrease time or money spent.

The univariate analyses suggested that smokers and risky drinkers spend less time gambling on EGMs; this seems likely to be an impact of compulsory breaks in play (in this case caused by the need to buy drinks or to smoke in a designated area, rather than by pop-up messages). It is interesting to note that the effect is specific to time spent gambling and was not evident in the reported money spent gambling. This suggests that these gamblers spend more money in the shorter time they are engaged with the machines and it may be that the breaks in gambling are preventing these gamblers from spending much more than their non-smoking/drinking counterparts. The fact that smokers and drinkers do tend to take more breaks (evidenced by the overall shorter session lengths for risky drinkers) could be important, representing an opportunity to communicate with these gamblers verbally, if appropriate, or via strategically placed messaging in venues (smoking and bar areas), encouraging them to consider the level of their gambling during that break.

While general psychological distress was not associated with either time or money spent gambling on EGMS, the results in relation to coping style provide evidence that styles which include seeking support from others, engaging in planning and taking active steps to address issues are associated with spending less time (instrumental and emotional social support, planning) and money (instrumental and emotional social support, active coping and planning) on EGM gambling. It is possible that messaging and interventions modelling and/or encouraging these kinds of coping strategies could be effective in reducing the amount of time and money spent gambling on EGMs. The content of messaging provided (in pop-up messages and in the venue environment) was discussed in focus groups with suggestion that this could be made more relevant and engaging to them. These notions have also been discussed and explored in some previous research (Monaghan, 2008; Monaghan & Blaszczynski, 2010; Munoz et al., 2010).

The finding that the use of social support (both instrumental and emotional) and planning as coping strategies predicted less gambling time (indicating the potentially protective nature of engaging in these behaviours) is an avenue which could be explored further. For example, exploring in more detail the relationships between the various coping styles and gambling behaviour, in particular understanding how gambling behaviour is affected by the absence of what seem to be, in this context, positive coping styles, or the presence of those styles which seem less helpful. On the basis of the current findings, public health messages and interventions could focus on encouraging and developing the coping styles that seem helpful. Further research would also help to determine what kind of messaging is likely to be successful with individuals for whom coping style is an issue in extending their gambling.

Participants' age group (less than 20 years and 65 years and older) and living situation (married/couple without children, single adult living alone) were also associated with longer gambling times. This may have additional implications for the targeting of messages and developing interventions to minimise gambling harm. At the least, providing a range of alternative community-based entertainment and socialisation opportunities tailored to these groups is a worthwhile consideration. That Asian and Pacific gamblers tended to spend more money on EGMs is of particular concern, coupled with the finding that Asian gamblers tended to spend the longest time at EGM machines without a break. Session length appeared related to uninterrupted time available with retirees on pensions and single adults living alone spending the longest time gambling on EGMs per session. Of note is that coping style was unrelated to session length, suggesting that the amount of time spent playing without a break may not be influenced by coping factors. The results pointing to social support as a protective factor associated with reduced time and money spent on EGM gambling may also suggest that EGM gambling (and the EGM environment) may be more attractive to those with few social alternatives available; becoming an issue for people who are to some degree socially isolated.

A multivariate modelling procedure was used to control for the influencing factors identified in the univariate analyses. Those variables continuing to predict more time spent gambling on EGMs included age (less than 20 years and 65 years and older), problem gambling risk category and non-smoking status. In addition, a coping style that in the context of EGM gambling would seem to be intuitively unhelpful (mental disengagement) was noted to operate together with the aforementioned variables in a way that predicted less time spent gambling on EGMs. This result is difficult to interpret but may suggest that the capacity to disengage mentally from tasks, in this case gambling (rather than engaging in the increasingly analytical gambling described by frequent and problem gamblers), may work to inhibit the kinds of cognitive distortions from developing that tend to extend gambling, such as the belief in one's increasing ability to predict wins or 'beat the system'. Quite simply, if a gambler is not consciously considering what they are doing, then it would seem unlikely that associations would be made by them between their behaviour and the various chance outcomes an EGM provides.

Greater expenditure on EGMs was predicted by Asian ethnicity, PGSI risk category, age (less than 20 years and 65 years and older), and EGM gambling in both casinos and pubs. As noted above, the age and ethnicity results provide some indication of how interventions and public health initiatives might be targeted. The planning coping style predicted reduced expenditure on EGMs which suggests that providing information to gamblers and those involved in harm prevention about such strategies that may be useful in preventing or minimising gambling harm is a logical step. Taken together, multivariate modelling suggests opportunities for targeted interventions facilitating planning coping styles and planning generally, in combination with breaks in play (pop-up messaging or natural breaks for smoking and drinking) for gamblers aged less than 20 years, older than 65 years and for Asian gamblers.

Using planning as a coping style is of particular interest as it predicted both less time and less money spent gambling on EGMs in the univariate analyses. Simple planning or self-management strategies are often part of generic cognitive behavioural approaches to interventions with problem gamblers and more broadly. They are also frequently part of related interventions such as budgeting advice. Additionally, the often discussed notion of pre-commitment as a harm minimisation approach with EGMs is an example of an approach which in theory should explicitly facilitate the adoption of a more planned approach to gambling (consistent with, but of course not necessarily indicative of a more broadly planned coping style). Such an intervention would require careful design and evaluation as to its utility both in controlled experimental environments and live gambling environments prior to being widely introduced. However, one striking finding of the observational and survey components of the present research is that there was little or no evidence that the compulsory intervention considered here (pop-up messages) impacted on the satisfaction of the

majority of gamblers. In fact, there was some evidence (e.g. preference of low denomination machines and reading of available information and pop-up messages) that gamblers were attempting some level of planning or self-management on their own. Thus, a system that explicitly provides a mechanism for this could be particularly useful. That planning retained an effect on money spent on EGMS when operating in combination with other factors in multivariate analyses (Asian ethnicity, PGSI category, age group, EGM venue types) suggests that this effect is the more powerful (as compared to the effect of planning on time spent gambling). An important conceptual issue for harm minimisation arguably remains in teasing out the relative importance of time and money spent as focal points for health promotion efforts.

Isolating the effects of game characteristics using the multivariate modelling procedure allowed the particular effects of some game features to be further clarified. Those participants who reported jackpots as important spent more time gambling on EGMS (corroborating the focus group discussion with higher frequency gamblers). Participants identifying low minimum bets as a key game feature spent less money. The obvious conclusion is that the jackpot feature extends gambling sessions and, in so far as extended sessions can be equated with increased risk, is potentially harmful for some people. More particularly, when gamblers interact with, and come to place a high value on, jackpots or focus on winning them, this could be potentially harmful. Intuitively this logic, as a focus on winning an extremely rare feature such as a jackpot, would necessitate extended gambling sessions. Participants who seemed to be budget conscious (in valuing low minimum bets most highly) indeed seemed able to control their expenditure (spending less money in comparison to those who did not value this feature).

When asked about the impact of key features on intended time and money spent gambling, some gamblers appeared particularly susceptible to free spins and jackpots in relation to both time and money spent gambling on EGMS. In particular, gamblers who considered these features to have an effect on their time and money spent (either reducing or increasing this beyond their intention) spent more time and money than those who reported these features as having no effect. Features such as free spins are much more common than jackpots but they work to directly extend gambling sessions by providing additional (apparently free) gambles. Again, attending to jackpots may seem to the player to reduce their time and expenditure on the machines (e.g. focus group participants discussed abandoning play where the jackpot payout is not “due” or has already been won) but in fact seems to produce extended gambling sessions and encourage expenditure. Emerging research suggesting clarifying the structure of jackpots may be of use to some gamblers who are induced to spend more money by jackpot-oriented machines, whether these are progressive (incrementally grow in value as gamblers place bets) or deterministic (probability that jackpot will be won increases as gamblers play) (Rockloff, 2014).

In addition to the effect of free spins and jackpots, participants who reported small frequent wins as influential (either increasing or decreasing time spent gambling) and those who reported number of playable lines as influential, tended to spend more money on EGMS than those who reported these features to have no effect. Thus having a theory about the features’ impact on a session, regardless of the direction of that impact, was associated with spending more time (in the case of small frequent wins) and money (in the case of number of playable lines) gambling.

Taken together, these findings point to jackpots and, more particularly, jackpot chasing as a particular enticement to begin and continue a gambling session for some gamblers. Free spins and small frequent wins seem to operate together within a session such that losses become difficult to track and gamblers are encouraged to continue to play beyond their intended time in anticipation of highly desirable free spins (seen as a golden opportunity to win while apparently playing with ‘house money’) and larger credit wins. Small minimum bets, which seem affordable, work together with the number of playable lines available which tend to be played to their maximum to increase chances of winning on every spin (mini-max betting style), particularly winning in the context of free spins

where bets are repeated without the opportunity to adjust them (thus effectively working against a minimal expenditure). As these key features seem interrelated and appear to obscure time and money expenditure for some gamblers, opportunities for harm minimisation are difficult to identify with certainty without further research. It seems likely that at least clarifying the nature of low minimum bet EGMs by highlighting the per spin cost on maximum lines would be helpful for those who tend to spend more than they intend under the assumption that they are low risk. What is clear from all phases of the present research is that gambling on one, or few lines, reduces the likelihood of a win per spin (and thus per minute). This betting style is thus perceived as boring and, as such, is not used by gamblers. Playing multiple lines on low denomination machines increases the likelihood of winning on each spin but, importantly, not per gamble/line. This functions to increase enjoyment and perception of winning when in reality, much of this ‘winning’ equates to losses disguised as wins.

Recalling their relationship with unintended expenditure, free spins can be a persistently problematic feature (for gamblers who are attracted to them) as highlighted by the longitudinal analyses. This showed consistently more time and money spent by gamblers for whom this feature is important (compared with a decrease in expenditure over time for gamblers who are not attracted to free spins). Thus, the effect of free spins for some gamblers is particularly strong and persists over time. Unfortunately for harm minimisation, the free spins feature is also closely linked with gambling satisfaction for around 80% of gamblers meaning that alteration to this feature is likely to impact significantly on gambler enjoyment.

Participants who reported low minimum bets as an important feature spent less money in comparison to those who reported this feature as less important. The focus groups analyses suggested that gamblers favoured low denomination EGMs for budgetary and perceived safety reasons, and that this allowed them to ‘maximise their value for money’. It could be said that a propensity to planning in combination with the low denomination feature enables some gamblers to control their expenditure. However, biological research suggests that regardless of the magnitude of stimulation involved, extended and repeated stimulation can lead to brain function changes consistent with addiction (Volkow et al., 2012). At another level, it could be that gamblers’ preconceived notions of safety and budget management, as expressed by focus group participants, are confounded by the fact that on low denomination machines, tracking expenditure is both more difficult (as evident from the in-venue observations) and perceived as less important (because of the relative ‘safety’ of these machines).

#### **8.3.4 *Player information display systems and pop-up messages***

Awareness of PIDs among EGM gamblers was high (69%) with 46% using PIDs information; this indicates that a substantial proportion of gamblers engage with this information (8% do so often). Approximately one third of gamblers who use this feature (n=147) reported that PIDs aid control over their gambling to some degree (30% time spent, 34% money spent). This suggests that this feature is useful for gamblers and potentially working as intended for at least a proportion of gamblers. Some gamblers reported that PIDs have an effect on them stopping gambling (7%), considering the level of their gambling (14%) and reducing gambling (15%). Although PIDs were unlikely to be considered a factor in behaviour change or consideration, they were reported to be accurate in provided information and generally did not have any negative impacts on gambling satisfaction (largely consistent with focus group reports). Thus PIDs, being voluntary, do not seem to impact on enjoyment for the majority of gamblers and seem useful for a proportion of those who use them. That some gamblers (33%) use PIDs as a factor to change machines is consistent with problem and high frequency gambler focus group reports of strategically gambling on EGMs (largely through consideration of pay back percentage). This particular use of PIDs could be seen as problematic if preference is for the higher pay back machines which some research (Harrigan & Dixon, 2010) has suggested might be the

more dangerous product as a result of their potential to encourage longer sessions and return visits by exposing players to more frequent wins of more variable magnitude.

Multivariate analyses of the effects of voluntary use of PIDs on gambling behaviour could suggest some strategic use by gamblers who access them, possibly in choosing higher pay back machines. Participants who reported that PIDs lead to an increase in their gambling, and participants who considered PIDs help control their time spent gambling, in fact spent the most time on EGMs. This finding, if related to strategic use and preference for high pay back machines, is unfortunate from a harm minimisation perspective and highlights that there may be some unintended impacts of PIDs for gamblers who believe they are able to use this feature to their advantage. As previously discussed, higher pay back EGMs produce more frequent rewards and may facilitate longer sessions (Harrigan & Dixon, 2010), and these extended exposures are consistent with recent neuro-imaging research on addictions (Volkow, Wang, Tomasi, & Baler, 2013). Strategic use of PIDs would be consistent with some common cognitive distortions associated with harmful gambling. It seems likely that clarifying the meaning of machine pay back percentages (as over the lifetime of machines and mainly affecting the frequency and variability of rewards in a gambling session) could be of assistance to some gamblers.

The longitudinal analyses indicated a helpful function in that PIDs awareness was associated with a small decrease in money spent on EGMs over six months (among those who were aware of PIDs). In comparison, however, participants who were unaware of this feature spent progressively less overall (in comparison to those who were aware); this suggests the possibility of some strategic gambling involving PIDs that may be slightly increasing expenditure for some gamblers who are aware of them and use them in this way.

With pop-up messages, consistent evidence for gambler engagement with the messages was found. This was in strong contrast to gambling industry and gambler focus group reports of an overwhelming habituation and lack of engagement. On viewing a pop-up message, half of the respondents indicated they would read the information presented in the message. Pop-up messages were considered to aid control over time and money spent by roughly one quarter of the gamblers who reported being aware of them. Combined with the fact that a few participants indicated they would consider the impact of (10%), reduce (8.8%) or even stop (6%) their gambling, this indicates that pop-up messages are working in a way that minimises harm for some gamblers.

However, almost a fifth of respondents (18%) indicated that they would change machines in response to a pop-up message. This could point to the more problematic analytical style of play referred to earlier in relation to the PIDs or to a faulty belief that pop-up messages have an impact on game outcomes (blocking winnings for example) as referred to by focus group participants. Thus, frequent machine changes in response to pop-up messages could be considered indicative of risky gambling behaviour or behaviour that is related to some faulty reasoning about the nature of machine events. Whilst the focus groups and survey results were consistent in that changing EMGs was a consequence of pop-up messages (notably some focus group participants suggested that gamblers changed EGMs to avoid pop-up messages which was not evident in the in-venue observations). It is certainly an issue worth further research attention, perhaps through more extensive in-venue observations.

Most of the regular gamblers (70%) reported seeing one or two pop-up messages per gambling session. While acknowledging reliance on gamblers' self-report, it can be suggested that experiencing one or two pop-up messages (or a session length of roughly 30 - 60 minutes) is not uncommon in casinos and pubs. This is also consistent with the most common session lengths observed as part of the in-venue observations (30 - 45 minutes). Four percent of gamblers reported having been spoken to about their gambling by venue staff (equally split between pub and casino venues) whereas 15% reported they typically see upwards of four pop-up messages per session. Additionally, four gamblers were observed exhibiting signs of distress in response to pop-up messages and no venue staff were

observed interacting with gamblers. It seems reasonably clear that there is room for improvement in host responsibility training and practice. There is little evidence in the present research that venue staff are engaging with gamblers who may be experiencing problems, particularly those who are spending upwards of two hours gambling on EGMs in a single session. That venue staff do not seem to be taking up such opportunities (perhaps due to the perception of problem gambling as at the periphery of their core business as articulated in focus groups) is important given the finding that increased session length predicts problem gambling risk. In marked contrast to venue staff focus group reports, pop-up messages were in fact considered accurate by most gamblers (62%) with most gamblers either neutral or positive about the impact of pop-up messages on their enjoyment of gambling (71%); thus, at the very least, pop-up messages do not seem to be adversely affecting the experience of gamblers. Additionally, this finding suggests that where gamblers are exhibiting signs of annoyance or distress around pop-up messages (as reported by venue staff focus group participants), that this behaviour, while perhaps more noticeable, is not the norm and may be indicative of gambling problems or distress and present further opportunity for conversation about responsible gambling.

Multivariate analyses showed that reported impacts of pop-up messages (e.g. the reported likelihood that participants would read the information) generally had no effect on time spent gambling. This suggests that the effect pop-up messages have on gambling behaviour may be relatively subtle making results somewhat difficult to detect in the present study (especially given the small number of gamblers who reported seeing pop-up messages). For example, it may be that the effect of reducing gambling in response to pop-up messages is to bring time and money spent into line with that of gamblers for whom this feature is irrelevant. That participants who reported negativity about pop-up messages did not report spending any less time gambling on EGMs is further evidence that pop-up messages do not seem to have a major negative impact on the gambling enjoyment of most gamblers. Pop-up messages do not appear to cause many gamblers to stop gambling on EGMs (even when they dislike them); however, at the very least they are not resulting in a reduction of enjoyment and they seem to be assisting some gamblers to control their gambling. It is reiterated here that dislike/distress shown in response to pop-up messages may be indicative of at-risk gambling and represent a valuable opportunity for venue staff to intervene. Participants who reported they would likely stop gambling or consider their gambling in response to a pop-up message did, in fact, tend to spend less money gambling overall, suggesting these messages have a clear and significant effect on money spent by some gamblers.

Over time, participants who reported that pop-up messages would reduce their gambling, reported a significant decrease in money spent between baseline and the three month follow up, although this increased again slightly at six months (though not to baseline levels). Participants who reported no impact of pop-up messages on reducing their gambling spent progressively less money over time. These findings suggest that pop-up messages are associated with a positive effect on the gambling expenditure of those who report being affected by them, as well as those who report being unaffected by them. The results of the current study are consistent with international research suggesting that pop-up messages can assist control by providing a compulsory break in play and information to prompt gambler reflection and choice to continue gambling. Further research into message content and effectiveness is warranted. Further research is also required to investigate the ways in which the impact of pop-up messages on reducing expenditure varies with respect to different types of gamblers ( by demographics, game preferences etc.).

#### **8.4 Study limitations**

Participants self-selected into the focus groups (gambling industry staff, gambling service providers, and gamblers opted in to these groups). In this way, the perspectives included cannot be regarded as

wholly representative and may be biased by a particular interest in the topic of this study. However, the range of views expressed as well as the diversity of the demographics is regarded as sufficient for the stated purpose of these groups which was a thorough canvassing of opinion in the field and to inform the focus of subsequent phases of the research. Researcher bias in both data collection and interpretation was minimised via the use of a Nominal Group Technique (NGT) which explicitly encouraged participation from all group members, prevented the group from being dominated by one or more individuals, and resulted in a clear outcome reflective of group opinion. Descriptive content analysis of the focus group data was combined with a more quantitative approach which enabled verification of the information collected and ranked in the focus group process (reflected in individual worksheets and on the group flip-charts). Further, focus group data were analysed independently by three investigators.

By necessity (so as not to interrupt or affect gambler behaviour) the in-venue observational study was carried out covertly and as such it is likely that some detail was sacrificed and that some errors occurred in the note-taking process. In regard to EGMs, the focus in this study was only on low denomination machines. This focus was guided by focus groups reports of a strong preference among gamblers for these machines and the desire to ensure findings were relevant to the experience of the average gambler. Venue visits confirmed that the low denominations machines were the most popular and, therefore, most likely to allow for a large number of observations. It may well be that different patterns of play, preferences and relevant/key features would be evident with higher stakes games.

The surveys were conducted with a convenience sample and are, therefore, not representative of the gambling population generally. A large number of participants were recruited from a single casino (in a city with a population demographic that is different from New Zealand as a whole) and the rest were recruited in pubs in Auckland. Time frames were short between re-contact of participants (three and six months) and it may be that longer time frames would have shown more changes across time. Additionally, the combination of game characteristics across casino table games and EGMs, and the focus on pop-up messages and PIDS also meant that the survey tool was somewhat diffuse. The length of the survey was cited as a major factor in attrition by those participants contactable at the three and six month time points.

Given the above, the findings of this study are generalised with some caution. However, the three phases were each conducted using different approaches with different limitations and as a whole the results were generally consistent (with the notable exceptions of some of the views expressed in the focus groups). The triangulation of information afforded by such a mixed methods approach lends support to the applicability of the findings beyond the specific contexts studied. Additionally, the results of the current study align with international research suggesting that pop-up messages can assist control by providing a compulsory break in play and information to prompt reflection and choice. Further research into message content and effectiveness is warranted.

## **8.5 Conclusions and policy implications**

Implications for policy derived from the key findings of the present research are summarised in this section in relation to specific game features identified as problematic or potentially problematic, the impact of PIDs and pop-up messages and other implications for harm minimisation efforts.

## Specific game features

### *Casino table games*

Social interaction and perceived control over the game are highlighted by the present research as potentially risky features of casino table games for gamblers. Participants influenced (either deriving gambling satisfaction or impacting on expenditure) by social interaction at the table or by the croupier spent more money on casino table games than those who were not influenced by those features. Results demonstrated the encouraging effect of croupiers over time, as participants for whom croupiers were unimportant spent consistently less time gambling over the six months. Gamblers who spent the most time and money gambling on casino tables associated these games with player skill and control over the game. Whether the gambler believed their skill and control over the game either improved or worked against their control, they tended to spend more time and money on table gambling. The effect of having perceived control over the game was particularly pervasive; gamblers who believed in their control of casino table games consistently spent more time and money gambling across six months, while those for whom control was not important spent progressively less. Thus, it appears likely that games which encourage perception of control and the presence or behaviour of a croupier are potentially problematic features for some gamblers.

Particular coping styles were associated with less time (use of instrumental and emotional social support) and less money spent (use of emotional social support, planning) gambling on casino table games, suggesting that these could be potential protective factors to mitigate loss of control. That social isolation or lack of social support seems to play a role in the development of gambling harm could be considered further in relation to protective interventions. Additionally, a ‘budget conscious’ orientation to casino table gambling (those for whom low minimum bet was important to satisfaction tended to spend less time and less money gambling) seems consistent with a planned coping approach which could be enhanced by harm minimisation efforts and interventions and recommended in venue responsible gambling messaging.

Social interaction was noted to increase money spent gambling whereby participants influenced by social interaction at the table or by the croupier (in either deriving gambling satisfaction or impacting on their expenditure) spent more money than participants not interested in these features. The role of a croupier in encouraging expenditure is worthy of further research (including perhaps a review of guidelines around how staff interact with customers). Investigating what customer service means in the context of casino table game play could be important in understanding the role this interaction (dealer behaviour and characteristics) has for gamblers, and particularly for gamblers at risk of developing problems. The rules for casino table games enforceable by the Department of Internal Affairs appear to provide no guidelines for the interaction between croupier and gambler, instead focusing on casino staff generally prohibiting the giving of game advice and the acceptance of bribes such that “A player shall not be advised by an employee of the casino on how to play, except to ensure compliance with these rules” and “No person employed in a casino ... or associated with a casino, may solicit or accept any tip, gratuity, consideration or other benefit from any player or customer in the casino” (Department of Internal Affairs, 2014). Further research is recommended linking personality, social support and coping styles of gamblers and the importance placed on the croupier (explicating important aspects of their behaviour and appearance) to aid in understanding how such combined effects impact on gambler behaviour, control and problem development. At the least, there might be some opportunity for a harm minimisation role of croupiers. Having continuous face-to-face contact with gamblers would provide a unique opportunity to recognise harmful gambling at a very early stage.

The perception that casino table games showcase player skill and allow control over the game was the key to gambling satisfaction for gamblers who spent the most time and money gambling. Whether a gambler believes their level of skill and control causes them to spend either more or less time, they are

in fact spending consistently more time than other gamblers (for whom these aspects of table games are not considered important or influential). Of relevance for policy is the fact that gamblers are likely to be unfamiliar with typical time and money spent on gambling. This notion suggests that examining the impact of increasing gamblers' awareness of typical lengths of time spent gambling on table games (that are associated with non-problematic play) could be useful. It seems that popular understanding that table game outcomes are affected by player skill may exacerbate the potential for these games to cause harm for individuals attracted to notions of skill and influence. Interventions clarifying (in an accessible manner for gamblers) the nature of casino table games are suggested as reasonable in this context. Specifically, messaging countering gamblers' beliefs about their ability to control the game and build skill (these are clearly not relevant to roulette and very rarely relevant to blackjack) and the effect of the croupier on game outcomes may be effective in assisting gamblers to gamble in a controlled manner (i.e. to spend less time on gambling, if they need to).

### *EGMs*

In relation to EGMs, the current study identified free spins and jackpots as operating against control over time and money spent, in a way that affected a consistent proportion of gamblers. Jackpots were identified as a particular enticement to begin and continue a gambling session, while free spins were shown in the longitudinal analyses to be a particularly powerful inducement to spend more money gambling, for those participants who reported them to be important. Within a session, free spins and small frequent wins seemed to operate together to disguise losses as wins and to encourage gamblers to continue to play beyond their intended time, in anticipation of highly desirable free spins. Contrary to their intuitive association with controlled play, small minimum bets which seem affordable worked together with the number of playable lines available to encourage a mini-max (minimum bet over maximum lines) betting strategy to increase the chances of winning on each spin (though the chances of winning per gamble of course remained unaffected).

As noted, free spins seemed particularly problematic in extending sessions and expenditure beyond intended levels. Some gamblers appeared particularly attentive and susceptible to free spins and spent more time and money gambling on EGMs, whether they considered free spins to work in their favour or not. Free spins occur more often than jackpots and work to directly extend gambling sessions by providing additional (apparently free) gambles and because they have high status as a desirable prize (particularly when combined with a maximum line bet). The addition of prize multipliers available in combination with free spins on some machines (e.g. as an array of combinations of number of free spins and a prize multiplier for the gambler to choose between as their feature prize) arguably works to more firmly ground the importance of free spins in a gambler's mind. Essentially, free spins are associated not just with free gambles but with winning more while doing so. Research investigating the effects of removal of prize multipliers on player satisfaction and gambling session length/losses would thus be important. The present research supports the consideration of restricting the availability of free spins and bonus features and ensuring that the return-to-player percentage remains unchanged when these features are in operation. Regardless of whether free spins actually signal a real change in reward frequency, they clearly signal periods of gambling that appear different to gamblers. Gamblers seem to believe something different is happening in the game when free spins occur and are behaving as if this is the case. In an early seminal study, Morse and Skinner (1957) have shown that changing something as simple as a key colour and leaving the rate of reward exactly the same allows chance variations in reward rate to be interpreted as important and related to colour change; behaviour change in accordance can be seen. In essence, any changes can be perceived to be meaningful and affect behaviour, even if they are not. In the case of EGMs, the changes are very salient and signal a 'bonus phase' or similar. Gambler behaviour seems unduly affected by these features, and they are clearly a component worthy of further investigation and policy consideration.

When people interact with, and come to place a high value on, the possibility of winning jackpots (being ‘in to win’), this feature seems to produce extended gambling sessions and encourage expenditure thus increasing the risk of harm. Jackpot chasing seems a particular enticement both to begin, and to continue a gambling session for some gamblers. Further research into the possibility of mitigating the impact of free spins and jackpots on increasing gambling behaviour is warranted. Unfortunately for harm minimisation, in the present research the free spin and jackpot features were found to be linked very closely with gambling satisfaction for around 80% of participants in the case of free spins, and 72% in the case of jackpots. This suggests that alteration to these features is likely to impact significantly on player enjoyment. However, an experimental study has shown that a ‘jackpot expiry’ function may have potential for harm minimisation where, after playing for a certain amount of time, gamblers become ineligible to win the jackpot and are notified of this fact. Crucially, a preliminary study has suggested that a pop-up message advising gamblers they can no longer win the jackpot seems not to affect player enjoyment, and also is associated with earlier cash out (and potentially safer gambling) (Rockloff, 2014). These findings are yet to be extended to live gambling environments with at-risk and non-problem gamblers. Nonetheless, laboratory studies of this nature are generally indicative of real world results, and these provide enough support to consider at least further investigation, or perhaps piloting the linkage of jackpots to player time on EGMs, perhaps using existing pop-up message technology. In terms of gambler enjoyment, it is worth noting that in both the present research and Rockloff’s (2014) study there was little evidence of pop-up messages impacting on gambler enjoyment, despite this being a common criticism prior to, and since, their introduction. It seems likely that as long as the essence of the experience of gambling on EGMs can be maintained, alterations to EGMs to make them safer would be unlikely to substantially impact on gambler enjoyment.

In relation to the popular mini-max betting style, discussed as integral to winning free spins and winning during free spins, it seems likely that clarifying the nature of low minimum bet EGMs by making explicit the per spin cost on maximum lines along with the net outcome of each spin (i.e. not highlighting the kind of ‘wins’ that are in reality a loss) would be helpful for some gamblers. Some practitioners and researchers remain concerned about the impact of chance near misses on gambler behaviour (Dixon et al., 2011; Dixon & Schreiber, 2004; Macaskill, 2014). The array and relative salience of symbols plus the multiple playable lines means that this is no longer a simple phenomenon. Therefore, one, two or three line EGM simulations do not replicate the array of stimuli experienced by gamblers in real world settings. It may be that gamblers respond differentially to symbols associated with bonus features, or simply to an increase in population of any symbols in the display; however, the dated notion of a near miss on a single playable line no longer seems to be the case. Certainly, consideration could be given to setting a maximum number of playable lines on EGMs and ensuring the net result of each gamble is explicit to the gambler, rather than highlighting a small win on one line at the expense of the overall loss on that gamble. More generally the psychophysics and physiology of mini-max betting could be investigated further.

### ***PIDs and pop-up messages***

Although unlikely to be considered by gamblers as a factor in behaviour change or consideration of gambling levels, PIDs were predominantly reported to be accurate in information provided, and without negative impacts on gambling satisfaction. Thus PIDs, as voluntary features, do not seem to impact on enjoyment for the majority of gamblers, and were also reported to be useful for a small proportion of those who use them. That the present results suggested that some gamblers may be using PIDs as part of analytic play strategies (linked to cognitive distortion and problem gambling) is of concern and may represent an unintended consequence of PIDs, if a gambler’s preference is for the higher pay back machines (Harrigan & Dixon, 2010). Further research into the relationship between use of PIDs, session length and return visits is warranted for this reason. Despite existing efforts to make gamblers aware of how EGMs operate, gamblers’ behaviour and, in particular, regular

gamblers' behaviour (consistent with the dialogue from the focus groups) suggests profound misunderstandings are either present or develop. Clarification via signage (in venues or on EGM screens) in a manner explicitly understood by gamblers might be considered.

An important finding from the observational and survey components of this research is that there was little or no evidence that compulsory pop-up messages impacted on the satisfaction of the majority of gamblers. Modifications to pop-up messages and other alterations to EGMs to increase consumer safety should be considered in this light, as this was a feature that had opposition on the basis of its possible impact on gambler enjoyment. The present study also suggests that where gamblers are exhibiting signs of annoyance or distress related to pop-up messages, that this behaviour is not the norm (very few instances were observed and there was little indication of annoyance or distress in the survey data) and may be indicative of gambling problems or distress and present an opportunity for a conversation about responsible gambling. Further, in contrast to focus group reports (from gamblers and venue staff), consistent evidence for gambler engagement with pop-up messages was found. Pop-up messages were reported to aid control over time and money spent by approximately one quarter of the gamblers who reported being aware of them. In addition to those few who indicated they would consider the impact of, reduce or even stop their gambling, this indicates that pop-up messages are working in a way that directly minimises harm for some gamblers. Thus pop-up messages seem successful in a key goal. They enforce a break in play for gamblers who have been gambling continuously for a long period and that sometimes leads to gamblers considering the level of their gambling. The information presented seems to be attended to by gamblers, and at the least can be used to support them in making an informed choice on whether to continue gambling. At a minimum they provide a short break from the behavioural conditioning processes and cognitive changes the machines facilitate (Blaszczynski & Nower, 2002).

As with PIDs, there are possible links between pop-up messages and problem gambling that could be explored further. The propensity to change machines in response to a pop-up message reported by survey participants (though not observed by researchers in the in-venue observations) may reflect a problematic analytical style of play or a faulty belief that pop-up messages have an impact on game outcomes. Thus, frequent machine changes in response to pop-up messages could be considered indicative of risky gambling behaviour (and warrant venue staff comment or intervention) and is certainly an issue worth further research attention, perhaps through more extensive in-venue observations. It was notable that in the venue staff focus groups, changing EGMs was reported to be occurring to avoid pop-up messages rather than in response to them. No evidence was found that this was the case and the in-venue observations suggested that pop-up message occurrence is easily noted by even a casual observer; as such there might be a need for further training of venue staff around observing patrons at EGMs.

The findings of this study also suggested a number of avenues to consider around the appropriate content and tone of messaging contained within pop-up messages, making these potentially more useful and relevant to gamblers. Evidence that coping styles which include seeking support from others, engaging in planning and taking active steps to address issues are associated with spending less time and money on EGM gambling suggest messaging focused on encouraging these kinds of coping strategies may be effective in reducing the amount of time and money spent gambling on EGMs. In addition, natural breaks (for smoking and drinking) could be exploited further in terms of the placement and timing of interventions and messaging. Making message content relevant (perhaps using loyalty card data in the case of casinos) to participants' age group (particularly less than 20 years and retirees) and living situation (particularly those without families at home) may also assist in the personalisation and effective targeting of messages. On the basis of the current findings, wider public health messages and interventions could also focus on encouraging and developing the coping styles that seem helpful. Further research would be necessary to determine what kind of messaging is likely to be successful with individuals for whom coping style is an issue in extending their gambling.

Using planning as a coping style is of particular interest as it predicted both less time and less money spent gambling on EGMs and because simple planning/self-management strategies are often part of approaches to interventions with problem gamblers. Planning is also frequently part of related interventions such as budgeting advice. Pre-commitment is a harm minimisation approach with EGMs that in theory should facilitate the adoption of a more planned approach to gambling (consistent with but not necessarily indicative of a more broadly planned coping style). Such an intervention would naturally require careful design and evaluation as to its utility both in controlled experimental environments and live gambling environments prior to being widely introduced.

### ***Harm minimisation***

The results pointing to social support as a protective factor associated with reduced time and money spent on EGM gambling may also suggest that EGM gambling (and the EGM environment) may be more attractive to those who are, to some degree, socially isolated. Further, it is not clear from these results whether gamblers tend to gamble more because they are socially isolated, or gamblers tend to become socially isolated because they gamble more. However, it seems reasonable to assume that some people gamble on EGMs (which can be seen as a social activity to some extent when it takes place in the vicinity of others) as a method of addressing their lack of social support. The in-venue observations provided some evidence of the social nature of EGM gambling, with various tips and advice being offered to our researchers (who gambled in an obviously 'amateurish' fashion by betting the minimum amount on a single line). It would seem that an ongoing focus on community development/strengthening and providing a range of alternative community-based entertainment and socialisation opportunities tailored to age group, living situation and ethnicity is a worthwhile notion to explore.

In regard to host responsibility, there was little evidence in the present research that venue staff were engaging with gamblers who may be experiencing problems, particularly those who were spending upwards of two hours gambling on EGMs in a single session (reported by 15% of survey respondents who had experienced pop-up messages). This is problematic because increased session length predicts gambling risk. Of additional relevance for policy is an indication of the kinds of potentially problematic behaviours that researchers were able to observe in venues and are, therefore, likely to be observable by venue staff, specifically: low consistent betting over long periods of time and some distress in relation to pop-up messages. Of note is that information contained in pop-up messages that was perceived as private both by gamblers and venue staff in the focus groups (e.g. a gambler's specific expenditure and length of playing time) was generally not able to be read by concentrated observation, suggesting that concern over privacy is largely unfounded.



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**APPENDIX 1:  
ETHICAL APPROVAL**

*Phase One gambler focus groups*



## MEMORANDUM

### Auckland University of Technology Ethics Committee (AUTEC)

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To: Jason Landon  
From: **Dr Rosemary Godbold and Madeline Banda** Executive Secretary, AUTEC  
Date: 20 May 2011  
Subject: Ethics Application Number 11/54 **Investigation into the effect of gambling game characteristics, PIDS and pop-up technology on problem gambling behaviour in New Zealand: Phase one: consumer consultation groups.**

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Dear Jason

Thank you for providing written evidence as requested. We are pleased to advise that it satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC) at their meeting on 28 March 2011 and that on 2 May 2011, we approved your ethics application. This delegated approval is made in accordance with section 5.3.2.3 of AUTEC's *Applying for Ethics Approval: Guidelines and Procedures* and is subject to endorsement at AUTEC's meeting on 13 June 2011.

Your ethics application is approved for a period of three years until 2 May 2014.

We advise that as part of the ethics approval process, you are required to submit the following to AUTEC:

- A brief annual progress report using form EA2, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. When necessary this form may also be used to request an extension of the approval at least one month prior to its expiry on 2 May 2014;
- A brief report on the status of the project using form EA3, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. This report is to be submitted either when the approval expires on 2 May 2014 or on completion of the project, whichever comes sooner;

It is a condition of approval that AUTEC is notified of any adverse events or if the research does not commence. AUTEC approval needs to be sought for any alteration to the research, including any alteration of or addition to any documents that are provided to participants. You are reminded that, as applicant, you are responsible for ensuring that research undertaken under this approval occurs within the parameters outlined in the approved application.

Please note that AUTEC grants ethical approval only. If you require management approval from an institution or organisation for your research, then you will need to make the arrangements necessary to obtain this.

When communicating with us about this application, we ask that you use the application number and study title to enable us to provide you with prompt service. Should you have any further enquiries regarding this matter, you are welcome to contact Charles Grinter, Ethics Coordinator, by email at [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz) or by telephone on 921 9999 at extension 8860.

On behalf of AUTEC and ourselves, we wish you success with your research and look forward to reading about it in your reports.

Yours sincerely

Dr Rosemary Godbold and Madeline Banda  
**Executive Secretary**  
**Auckland University of Technology Ethics Committee**

Cc: Max Abbott, Katie Palmer



## MEMORANDUM

### Auckland University of Technology Ethics Committee (AUTEC)

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To: Jason Landon  
From: **Charles Grinter** Ethics Coordinator  
Date: 1 July 2011  
Subject: Ethics Application Number 11/147 **The effects of game characteristics on gambling behaviour in New Zealand: Industry consultation groups.**

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Dear Jason

Thank you for providing written evidence as requested. I am pleased to advise that it satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC) at their meeting on 13 June 2011 and I have approved your ethics application. This delegated approval is made in accordance with section 5.3.2.3 of AUTEC's *Applying for Ethics Approval: Guidelines and Procedures* and is subject to endorsement at AUTEC's meeting on 25 July 2011.

Your ethics application is approved for a period of three years until 1 July 2014.

I advise that as part of the ethics approval process, you are required to submit the following to AUTEC:

- A brief annual progress report using form EA2, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. When necessary this form may also be used to request an extension of the approval at least one month prior to its expiry on 1 July 2014;
- A brief report on the status of the project using form EA3, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. This report is to be submitted either when the approval expires on 1 July 2014 or on completion of the project, whichever comes sooner;

It is a condition of approval that AUTEC is notified of any adverse events or if the research does not commence. AUTEC approval needs to be sought for any alteration to the research, including any alteration of or addition to any documents that are provided to participants. You are reminded that, as applicant, you are responsible for ensuring that research undertaken under this approval occurs within the parameters outlined in the approved application.

Please note that AUTEC grants ethical approval only. If you require management approval from an institution or organisation for your research, then you will need to make the arrangements necessary to obtain this.

When communicating with us about this application, I ask that you use the application number and study title to enable us to provide you with prompt service. Should you have any further enquiries regarding this matter, you are welcome to contact me by email at [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz) or by telephone on 921 9999 at extension 8860.

On behalf of AUTEC, I wish you success with your research and look forward to reading about it in your reports.

Yours sincerely

Charles Grinter

On behalf of Dr Rosemary Godbold and Madeline Banda **Executive Secretary**  
**Auckland University of Technology Ethics Committee**

Cc: Max Abbott, Maria Bellringer, Katie Palmer



## MEMORANDUM

### Auckland University of Technology Ethics Committee (AUTEC)

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To: Jason Landon  
From: **Dr Rosemary Godbold** Executive Secretary, AUTEC  
Date: 28 November 2011  
Subject: Ethics Application Number 11/302 **Pop-up messages, player information displays and game characteristics - effects on gambler behaviour.**

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Dear Jason

Thank you for providing written evidence as requested. I am pleased to advise that it satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC) at their meeting on 14 November 2011 and I have approved your ethics application. This delegated approval is made in accordance with section 5.3.2.3 of AUTEC's *Applying for Ethics Approval: Guidelines and Procedures* and is subject to endorsement at AUTEC's meeting on 12 December 2011.

Your ethics application is approved for a period of three years until 28 November 2014.

I advise that as part of the ethics approval process, you are required to submit the following to AUTEC:

- A brief annual progress report using form EA2, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. When necessary this form may also be used to request an extension of the approval at least one month prior to its expiry on 28 November 2014;
- A brief report on the status of the project using form EA3, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. This report is to be submitted either when the approval expires on 28 November 2014 or on completion of the project, whichever comes sooner;

It is a condition of approval that AUTEC is notified of any adverse events or if the research does not commence. AUTEC approval needs to be sought for any alteration to the research, including any alteration of or addition to any documents that are provided to participants. You are reminded that, as applicant, you are responsible for ensuring that research undertaken under this approval occurs within the parameters outlined in the approved application.

Please note that AUTEC grants ethical approval only. If you require management approval from an institution or organisation for your research, then you will need to make the arrangements necessary to obtain this.

When communicating with us about this application, we ask that you use the application number and study title to enable us to provide you with prompt service. Should you have any further enquiries regarding this matter, you are welcome to contact me by email at [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz) or by telephone on 921 9999 at extension 6902.

On behalf of AUTEC and myself, I wish you success with your research and look forward to reading about it in your reports.

Yours sincerely

Dr Rosemary Godbold  
**Executive Secretary**  
**Auckland University of Technology Ethics Committee**



## MEMORANDUM

### Auckland University of Technology Ethics Committee (AUTEC)

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To: Jason Landon  
From: Rosemary Godbold, Executive Secretary, AUTEC  
Date: 16 July 2012  
Subject: Ethics Application Number **12/155 Pop-up messages, player information displays and game characteristics - effects on gambler behaviour.**

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Dear Jason

Thank you for providing written evidence as requested. I am pleased to advise that it satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC) at their meeting on 9 July 2012 and I have approved your ethics application. This delegated approval is made in accordance with section 5.3.2.3 of AUTEC's *Applying for Ethics Approval: Guidelines and Procedures* and is subject to endorsement by AUTEC at its meeting on 13 August 2012.

Your ethics application is approved for a period of three years until 16 July 2015.

I advise that as part of the ethics approval process, you are required to submit the following to AUTEC:

- A brief annual progress report using form EA2, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. When necessary this form may also be used to request an extension of the approval at least one month prior to its expiry on 16 July 2015;
- A brief report on the status of the project using form EA3, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. This report is to be submitted either when the approval expires on 16 July 2015 or on completion of the project, whichever comes sooner;

It is a condition of approval that AUTEC is notified of any adverse events or if the research does not commence. AUTEC approval needs to be sought for any alteration to the research, including any alteration of or addition to any documents that are provided to participants. You are reminded that, as applicant, you are responsible for ensuring that research undertaken under this approval occurs within the parameters outlined in the approved application.

Please note that AUTEC grants ethical approval only. If you require management approval from an institution or organisation for your research, then you will need to make the arrangements necessary to obtain this.

To enable us to provide you with efficient service, we ask that you use the application number and study title in all written and verbal correspondence with us. Should you have any further enquiries regarding this matter, you are welcome to contact me by email at [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz) or by telephone on 921 9999 at extension 6902. Alternatively you may contact your AUTEC Faculty Representative (a list with contact details may be found in the Ethics Knowledge Base at <http://www.aut.ac.nz/research/research-ethics/ethics>).

On behalf of AUTEC and myself, I wish you success with your research and look forward to reading about it in your reports.

Yours sincerely

Dr Rosemary Godbold  
Executive Secretary  
**Auckland University of Technology Ethics Committee**

Cc: Max Abbott; Maria Bellringer; Katie Palmer

## **APPENDIX 2: IN-VENUE OBSERVATION PROTOCOL**

### **Section A - General principles**

*Overall, the aim is to ensure that the research activity has no effect whatsoever on the gamblers, the venue staff, or the venue - whilst being able to collect data on typical gambling behaviour.*

1. Descriptions must be of naturally occurring behaviours in-situ - authenticity.
2. Must be unobtrusive - to avoid any influence or impact on the gamblers in terms of their gambling, or their experience of the venue.
3. Privacy of gamblers and venue staff of fundamental importance.

### **Section B - Protocol for venue visits**

1. Researchers will be members of the research team: They will be screened for any possible gambling problems prior to entering venues, and will have several sessions with Dr Landon and Ms Palmer du Preez prior to entering a venue.
2. Experienced researchers will be paired with novice researchers for venue visits.
  - a. Researchers will be in contact via text/phone within venues.
3. Prior to entering the venue, the researchers will identify a liaison point for de-briefing and making notes on exiting the venue.
4. Researchers will enter venues and participate as regular patrons. They will not announce themselves or their purpose to other patrons, staff or venue management.
5. Researchers will participate in the regular activities at the venue and not draw attention to themselves. Behaviour will vary from venue-to-venue, but could include gambling, having a drink or a light meal, or watching sport on television.
6. Researchers will enter venues in pairs and behave as regular patrons. They may stay together in the venue, or separate depending on the venue layout. They will determine a location and activity appropriate to participate in and document the relationships between pop-up messages, game characteristics and gambling behaviour.
  - a. The chosen location should permit a view of a several gaming machines and related activities. Suitable activities include a light meal, a non-alcoholic beverage, watching television or, if required, gambling (see Section C).
  - b. Researchers will not initiate contact or interact with other patrons or staff beyond the contact appropriate and necessary to be a venue patron (e.g. ordering beverages, responding when spoken to, getting change etc).
  - c. Researchers will move around venues during their visits, as appropriate for regular patrons of the venues (i.e. this will differ between pub and casino venues). This will allow researchers to observe different games and gamblers from different locations, and to participate in different activities.
7. Researchers will unobtrusively note the behaviours of gamblers, while simultaneously engaging in venue-appropriate behaviours.
  - a. Researchers will not engage in any obvious 'research behaviour' in venues, or any behaviours noticeably different from venue patrons. Any in-venue note taking will appear as normal behaviour (e.g. appear as if texting on a cell-phone).
  - b. Brief notes will be made in venues on a small Blackberry or similar device at regular (approximately 15 minute) intervals. All in-venue note-taking will be discrete and must take the appearance of a regular activity (e.g. texting).
  - c. While in venues, researchers will attend carefully to the events related to electronic gaming machine play related to the features of the machines (including descriptions

of the features of machines [see note templates]) and with particular reference to the behaviours in following the occurrence of pop-up messages. An earlier phase of this project suggests the following (not exhaustive) list of behaviours as a reference list.

- i. Changing machines.
  - ii. Unnecessary button pushing.
  - iii. Cashing out - intentional and unintentional (accompanied by audible/visible frustration).
  - iv. Texting/checking messages.
  - v. Break - bathroom, cigarette, drink - then return to machine.
  - vi. Waiting and watching other gamblers (ignoring message).
  - vii. Confusion - summoning venue staff to clarify.
8. Detailed field notes will be made after leaving the venue - either onto paper or onto a digital voice recorder.
- a. In both cases, notes will be relatively unstructured - a list of prompts is available, but researchers will provide broad contextual descriptions.
  - b. Researchers will not write up any information that can identify any gambler, staff member, or venue - no personal details will be recorded, and data will be carefully managed to ensure anonymity at all levels (venue and individual).

### **Section C - Gambling in venues**

*Gambling will not be required in casino venues as there are numerous other behaviours in which the researchers can engage in as patrons. Thus, gambling will only be engaged in non-casino venues, when there is not any alternative activity which allows research goals to be met. If gambling is required, researchers will:*

1. Choose the lowest denomination machines available.
2. Choose a location suitable for viewing other machines.
3. Play at a deliberately slow rate.
4. Bet just one line at a time.
5. Ensure the machine is not part of any linked jackpot, or that any stand-alone jackpot is not near its maximum.

### **Section D - Treatment of any winnings**

*Given the nature of gambling, our avoidance of gambling and the playing strategies that will be adhered to, substantial wins are very unlikely. Nonetheless, in the event they occur:*

1. Wins will generally be played back into the machine to continue the research visit.
2. At the end of the session, residual credits will be cashed out and returned to Dr Landon/Dr Bellringer and used for future visits.
3. A larger win (>\$75) will be cashed out to be returned to the research fund for further site visits.

### **Section E - Responding to patron queries**

*Previous similar research suggests that it is very unlikely that researchers will be identified as such by other patrons; however, if this does occur the following protocols should be used. Overall the integrity of the study is paramount, so researchers are to err on the side of caution and end site visits if there is any doubt over integrity.*

1. Should the researcher meet someone they know, the researcher will end the visit if the integrity of the study is compromised.

2. Should a patron approach a researcher and ask what their purpose is in the venue, researchers will take a cautious approach, and:
  - a. If the question is general in nature, respond inferring they are just relaxing and taking some time out.
  - b. If the questioning suggests the patron is suspicious of the researcher, the researcher will disclose that they are participating in research aimed to better understand gambling environments and excuse themselves and leave the venue.
    - i. They will at this time inform their research partner and arrange to meet at the designated debriefing location.
    - ii. If the venue was a non-casino venue, the research session will be terminated. If the venue was a casino, the researchers will discuss whether they should re-enter the venue - as the casinos are much larger, this might be an option.

**APPENDIX 3:  
BASELINE QUESTIONNAIRE**

**Pop-up messages, player information displays and game characteristics –  
effects on gambler behaviour.**

**Baseline Questionnaire**

<b>Participant Identification No:</b>	
<b>Interview Date (dd/mm/yr):</b>	
<b>Interview Time:</b>	
<b>Interviewer Name:</b>	
<b>Call Duration (minutes):</b>	

Participant ID: \_\_\_\_\_

**SECTION A: TABLE GAMES - PARTICIPATION**

A1	Do you play <u>table games</u> at <u>casinos</u> ?	Code	Route
	Yes	1	A2
	No	2	C1
	Refused	98	C1

A2	Which <u>3 casino table games</u> do you <u>play most</u> ?	Rank (1-3)	Route
a	Baccarat		
b	Midi Baccarat		
c	Mini Baccarat		
d	Blackjack		
e	Caribbean Stud Poker		
f	Craps		
g	Money Wheel		
h	Electronic Money Wheel		
i	Pai Gow		
j	Poker		
k	Pontoon		
l	Roulette		
m	Electronic Roulette		
n	Tai Sai		
o	Texas Hold'em		
p	Three Card Poker		
q	Other ( <b>please specify</b> ): _____		
	Don't know	99	
	Refused	98	

A3	On average, how often do you play table games at the casino?	Code	Route
	Less than monthly	1	
	Monthly	2	
	2-3 times a month	3	
	Weekly	4	
	2-3 times a week	5	
	More than 4 times a week	6	
	Don't know	99	
	Refused	98	

Thinking about your table game gambling in casino venues in the *last 3 months*...

A4	On average, how long would you spend playing table games on any given playing day?	Code	Route
	<input type="checkbox"/> _____ minutes		
	<input type="checkbox"/> _____ hours		
	Don't know	99	
	Refused	98	

A5	On average, how much money would you spend playing table games (to the nearest \$5) on any given playing day?	Code	Route
	\$ _____		
	Don't know	99	
	Refused	98	

A6	On average, how long would you spend playing a <u>table game</u> <u>without a break</u> ?	Code	Route
	<input type="checkbox"/> _____ minutes		
	<input type="checkbox"/> _____ hours		
	Don't know	99	
	Refused	98	

## SECTION B: TABLE GAMES – FEATURES

B1	I am going to read out some features of table games. As I read out each feature, please tell me <u>how important</u> this feature is in terms of your <u>satisfaction with gambling</u> .	Not important	Slightly important	Moderately important	Important	Very important	Don't know	Refused
a	Games where a low minimum bet is possible	1	2	3	4	5	99	98
b	Player skill	1	2	3	4	5	99	98
c	A small number of players at the table	1	2	3	4	5	99	98
d	Social interaction at the table	1	2	3	4	5	99	98
e	A faster game	1	2	3	4	5	99	98
f	Having some control over the game	1	2	3	4	5	99	98
g	Croupier/dealer (if present at table)	1	2	3	4	5	99	98

B2		How do these features usually affect your gambling level with reference to your intended <u>money</u> spent on gambling?					<i>Don't know</i>	<i>Refused</i>
		<i>Much less than intended</i>	<i>Slightly less than intended</i>	<i>No effect</i>	<i>Slightly more than intended</i>	<i>Much more than intended</i>		
a	Games where a low minimum bet is possible	1	2	3	4	5	99	98
b	Player skill	1	2	3	4	5	99	98
c	A small number of players at the table	1	2	3	4	5	99	98
d	Social interaction at the table	1	2	3	4	5	99	98
e	A faster game	1	2	3	4	5	99	98
f	Having some control over the game	1	2	3	4	5	99	98
g	Croupier/dealer (if present at table)	1	2	3	4	5	99	98

B3		How do these features affect your gambling level with reference to your intended <u>time</u> gambling at the table?					<i>Don't know</i>	<i>Refused</i>
		<i>Much less than intended</i>	<i>Slightly less than intended</i>	<i>No effect</i>	<i>Slightly more than intended</i>	<i>Much more than intended</i>		
a	Games where a low minimum bet is possible	1	2	3	4	5	99	98
b	Player skill	1	2	3	4	5	99	98
c	A small number of players at the table	1	2	3	4	5	99	98
d	Social interaction at the table	1	2	3	4	5	99	98
e	A faster game	1	2	3	4	5	99	98
f	Having some control over the game	1	2	3	4	5	99	98
g	Croupier/dealer (if present at table)	1	2	3	4	5	99	98

B4 Are there other important features which affect your satisfaction with table gambling?

Other important features:

## SECTION C: EGMs - PARTICIPATION

C1	Do you play <u>any</u> electronic gaming machine or pokies?	Code	Route
	Yes	1	C2
	No	2	F1
	Refused	98	F1

C2a	Where do you play <u>gaming machines or pokies</u> most often?	Code	Route
	Casino	1	C3
	Pub	2	C3
	Club	3	C3
	Other (please specify)	4	C3
	Refused	98	C3

*Interviewer note: The main difference between a pub and a club is that clubs have private membership – i.e. one must be a registered member of a club to be on the premises and use the facilities.*

C2b	Do you play <u>gaming machines or pokies</u> in a pub or club (tick as many as apply)?	Code	Route
	Pub	1	C2b
	Club	2	C2b
	No	3	C7
	Refused	98	C7

Thinking about your electronic gaming machine gambling in pubs or clubs in the *last 3 months...*

C3	On average, <u>how often</u> do you play gaming machines or pokies in <u>pubs or clubs</u> ?	Code	Route
	Less than monthly	1	
	Monthly	2	
	2-3 times a month	3	
	Weekly	4	
	2-3 times a week	5	
	More than 4 times a week	6	
	Don't know	99	
	Refused	98	

C4	On average, how long do you usually play pub or club gaming machines on any given playing day?	Code	Route
	<input type="checkbox"/> _____ minutes		
	<input type="checkbox"/> _____ hours		
	Don't know	99	
	Refused	98	

C5	On average, how much <u>money</u> would you spend (to the nearest \$5) on a single pub or club machine in a typical gambling session?	Code	Route
	\$ _____		
	Don't know	99	
	Refused	98	

C6	How much <u>time</u> would you gamble at <u>a single pub or club machine</u> in a <u>typical session</u> ?	Code	Route
	<input type="checkbox"/> _____ minutes		
	<input type="checkbox"/> _____ hours		
	Don't know	99	
	Refused	98	

C7	Do you play <u>gaming machines or pokies</u> at a <u>casino</u> ?	Code	Route
	Yes	1	C8
	No	2	D1
	Refused	98	D1

Thinking about your electronic gaming machine gambling at the **casino** in the *last 3 months*...

C8	On average, how often do you play gaming machines or pokies at the casino?	Code	Route
	Less than monthly	1	
	Monthly	2	
	2-3 times a month	3	
	Weekly	4	
	2-3 times a week	5	
	More than 4 times a week	6	
	Don't know	99	
	Refused	98	

C9	On average, how long do you usually play casino gaming machines on any given playing day?	Code	Route
	<input type="checkbox"/> _____ minutes		
	<input type="checkbox"/> _____ hours		
	Don't know	99	
	Refused	98	

C10	How much <u>money</u> would you spend (to the nearest \$5) on a single casino machine in a <u>typical gambling session</u> ?	Code	Route
	\$ _____		
	Don't know	99	
	Refused	98	

C11	How much <u>time</u> would you spend playing on <u>a single casino machine</u> in a <u>typical gambling session</u> ?	Code	Route
	<input type="checkbox"/> _____ minutes		
	<input type="checkbox"/> _____ hours		
	Don't know	99	
	Refused	98	

## SECTION D: EGMs – PIDs and Pop-ups

### Player Information Displays (PIDs)

Every electronic gaming machine or pokie has a **player information display** feature. It provides information about the machine, e.g. game rules; return to player information; odds of winning; win, loss and time of session, etc.

D1	Are you aware of player information displays on EGMs?	Code	Route
	Yes	1	D2
	No	2	D10
	Refused	98	D10

D2	How often do you view or use the player information displays?	Code	Route
	Never	1	D10
	Rarely	2	D3
	Sometimes	3	D3
	Often	4	D3
	Always	5	D3
	Don't know	99	D3
	Refused	98	D3

D3	How do you use the player information displays?
	Answer:

D4	On viewing a player information display, how likely would you...	Not at all	Unlikely	Neutral	Likely	Very likely	Don't know	Refused
a	Stop gambling in that visit	1	2	3	4	5	99	98
b	Reduce your gambling	1	2	3	4	5	99	98
c	Increase your gambling	1	2	3	4	5	99	98
d	Change machines	1	2	3	4	5	99	98
e	Consider the overall level of your gambling	1	2	3	4	5	99	98
f	Consider seeking help about your gambling	1	2	3	4	5	99	98

D5	Do the player information displays help you control the amount of money you spend on your gambling?	Code	Route
	Not at all	1	
	Slightly	2	
	Somewhat	3	
	Moderately	4	
	Very much	5	
	Don't know	99	
	Refused	98	

D6	Do the player information displays help you control the amount of time you gamble on the machine?	Code	Route
	Not at all	1	
	Slightly	2	
	Somewhat	3	
	Moderately	4	
	Very much	5	
	Don't know	99	
	Refused	98	

D7	How accurate is the information provided in player information displays regarding your money spent gambling?	Code	Route
	Not at all	1	
	Slightly	2	
	Somewhat	3	
	Moderately	4	
	Extremely	5	
	Don't know	99	
	Refused	98	

D8	How accurate is the information provided in player information displays regarding your time spent gambling?	Code	Route
	Not at all	1	
	Slightly	2	
	Somewhat	3	
	Moderately	4	
	Extremely	5	
	Don't know	99	
	Refused	98	

D9	How do the player information displays affect your satisfaction with your gambling?	Code	Route
	Very negatively (much worse)	1	
	Negatively (somewhat worse)	2	
	Neutral (about the same)	3	
	Positively (somewhat better)	4	
	Very positively (much better)	5	
	Don't know	99	
	Refused	98	

### **Pop-Up Messages**

There are messages which pop up on the screen of the gaming machine at regular intervals; these messages remind and inform players on how long they have playing on the machine, the total amount of money won or lost, and let players decide whether they would like to continue or stop gambling. You are unable to continue gambling whilst the pop-up message is on the screen.

D10	In the last 3 months, have you experienced a pop-up message	Code	Route
	Yes	1	D11
	No	2	E1
	Refused	98	E1

D11	In the last 3 months, how often have you seen pop-up messages?	Code	Route
	Never	1	E1
	Rarely	2	D14
	Sometimes	3	D14
	Often	4	D12
	Always	5	D12
	Don't know	99	E1
	Refused	98	E1

D12	How many times do you see a pop-up message in a typical gambling session?	Code	Route
	<input type="checkbox"/> _____ times		D13
	Don't know	99	D13
	Refused	98	D13

D13a	Have venue staff ever spoken to you about your gambling?	Code	Route
	Yes	1	D13b
	No	2	D14
	Refused	98	D14

D13b	What kind of venue were you in when staff spoke to you about your gambling?	Code	Route
	Pub	1	
	Club	2	
	Casino	3	
	Don't know	99	
	Refused	98	

D14	Do the pop-up messages help you control the amount of money you spend on your gambling on the machine?	Code	Route
	Not at all	1	
	Slightly	2	
	Somewhat	3	
	Moderately	4	
	Very much	5	
	Don't know	99	
	Refused	98	

D15	Do the pop-up messages help you control the amount of time you gamble on the machine?	Code	Route
	Not at all	1	
	Slightly	2	
	Somewhat	3	
	Moderately	4	
	Very much	5	
	Don't know	99	
	Refused	98	

D16	How accurate is the information provided in pop-up messages?	Code	Route
	Not at all	1	
	Slightly	2	
	Somewhat	3	
	Moderately	4	
	Extremely	5	
	Don't know	99	
	Refused	98	

D17 How do the pop-up messages affect your satisfaction with your gambling? Code Route

Very negatively (much worse)	1
Negatively (somewhat worse)	2
Neutral (about the same)	3
Positively (somewhat better)	4
Very positively (much better)	5
Don't know	99
Refused	98

D18	On seeing a pop-up message, how likely would you...	<i>Not at all</i>	<i>Unlikely</i>	<i>Neutral</i>	<i>Likely</i>	<i>Very likely</i>	<i>Don't know</i>	<i>Refused</i>
a	Read the information	1	2	3	4	5	99	98
b	Stop gambling in that visit	1	2	3	4	5	99	98
c	Reduce your gambling	1	2	3	4	5	99	98
d	Increase your gambling	1	2	3	4	5	99	98
e	Change machines	1	2	3	4	5	99	98
f	Consider the overall level of your gambling	1	2	3	4	5	99	98
g	Consider seeking help about your gambling	1	2	3	4	5	99	98

D19 What else are you likely to do when a pop-up message is displayed?

Answer:

## SECTION E: EGMs – FEATURES

E1 I am going to read out some features of electronic gaming machines. As I read out each feature, please tell me <u>how important</u> this feature is in terms of your satisfaction with <u>gambling</u> .		Not important	Slightly important	Moderately important	Important	Very important	Don't know	Refused	
								99	98
a	Free spins	1	2	3	4	5	99	98	
b	Small frequent wins	1	2	3	4	5	99	98	
c	Jackpots	1	2	3	4	5	99	98	
d	Machines with low minimum bets	1	2	3	4	5	99	98	
e	Number of playable lines	1	2	3	4	5	99	98	
f	Themed graphics and sounds	1	2	3	4	5	99	98	

E2 How do these features affect your gambling level with reference to your intended <u>money</u> spent on gambling?		Much less than intended	Slightly less than intended	No effect	Slightly more than intended	Much more than intended	Don't know	Refused	
								99	98
a	Free spins	1	2	3	4	5	99	98	
b	Small frequent wins	1	2	3	4	5	99	98	
c	Jackpots	1	2	3	4	5	99	98	
d	Low minimum bets	1	2	3	4	5	99	98	
e	Number of playable lines	1	2	3	4	5	99	98	
f	Themed graphics and sounds	1	2	3	4	5	99	98	

E3		How do these features affect your gambling level with reference to your intended <u>time</u> gambling on the machine?					Don't know	Refused
		<i>Much less than intended</i>	<i>Slightly less than intended</i>	<i>No effect</i>	<i>Slightly more than intended</i>	<i>Much more than intended</i>		
a	Free spins	1	2	3	4	5	99	98
b	Small frequent wins	1	2	3	4	5	99	98
c	Jackpots	1	2	3	4	5	99	98
d	Low minimum bets	1	2	3	4	5	99	98
e	Number of playable lines	1	2	3	4	5	99	98
f	Themed graphics and sounds	1	2	3	4	5	99	98

E4 Are there any other features which affect your satisfaction with electronic gaming machine gambling?

Other important features:

## SECTION F: OTHER GAMBLING FORMS – PARTICIPATION

F1 Do you play...? (tick all that apply)

a	<input type="checkbox"/> Lotto (including Strike, Powerball and Big Wednesday)
b	<input type="checkbox"/> Keno (not in a casino)
c	<input type="checkbox"/> Instant Kiwi or other Scratch ticket
d	<input type="checkbox"/> Housie (bingo) for money
e	<input type="checkbox"/> Horse or dog racing (excluding office sweepstakes)
f	<input type="checkbox"/> Sports betting at the TAB or with an overseas betting organisation
g	<input type="checkbox"/> Internet based gambling
h	<input type="checkbox"/> Other gambling activity (please specify): _____
i	<input type="checkbox"/> None of the above

## SECTION G: PROBLEM GAMBLING SEVERITY INDEX (PGSI) and HELPSEEKING

Thinking about the last 3 months...

		Never	Sometimes	Most of the time	Almost always	Don't know	Refused
G1	How often have you bet more than you could really afford to lose? Would you say...	1	2	3	4	99	98
G2	How often have you needed to gamble with larger amounts of money to get the same feeling of excitement?	1	2	3	4	99	98
G3	How often have you gone back another day to try to win back the money you lost?	1	2	3	4	99	98
G4	How often have you borrowed money or sold anything to get money to gamble?	1	2	3	4	99	98
G5	How often have you felt that you might have a problem with gambling?	1	2	3	4	99	98
G6	How often have people criticized your betting or told you that you had a gambling problem, regardless of whether or not you thought it was true?	1	2	3	4	99	98
G7	How often have you felt guilty about the way you gamble or what happens when you gamble?	1	2	3	4	99	98
G8	How often has gambling caused you any health problems, including stress or anxiety?	1	2	3	4	99	98
G9	How often has your gambling caused any financial problems for you or your household?	1	2	3	4	99	98

G10	Have you sought any help for your gambling in the past 3 months?	Code	Route
	Yes	1	G11
	No	2	H1
	Refused	98	

G11 What prompted you to seek help for your gambling?

Answer:

## SECTION H: K-10

The next few questions relate to areas of your life that are a bit broader than just gambling, though some may be relevant for people's gambling.

The following questions ask about how you have been feeling during the <u>past four weeks</u>		<i>None of the time</i>	<i>A little of the time</i>	<i>Some of the time</i>	<i>Most of the time</i>	<i>All of the time</i>	<i>Don't know</i>	<i>Refused</i>
H1	In the past 4 weeks...How often did you feel worn out for no good reason? Would you say...	1	2	3	4	5	99	98
H2	In the past 4 weeks...How often did you feel nervous?	1	2	3	4	5	99	98
H3	In the past 4 weeks...How often did you feel so nervous that nothing could calm you down?	1	2	3	4	5	99	98
H4	In the past 4 weeks...How often did you feel hopeless?	1	2	3	4	5	99	98
H5	In the past 4 weeks...How often did you feel restless or fidgety?	1	2	3	4	5	99	98
H6	In the past 4 weeks...How often did you feel so restless you could not sit still?	1	2	3	4	5	99	98
H7	In the past 4 weeks...How often did you feel depressed?	1	2	3	4	5	99	98
H8	In the past 4 weeks...How often did you feel that everything was an effort?	1	2	3	4	5	99	98
H9	In the past 4 weeks...How often did you feel so sad that nothing could cheer you up?	1	2	3	4	5	99	98
H10	In the past 4 weeks...How often did you feel worthless?	1	2	3	4	5	99	98

## SECTION I: COPE – Selected subscales

We are interested in how people respond when they confront difficult or stressful events in their lives. There are lots of ways to try to deal with stress. I will ask you to indicate what you generally do and feel when you experience stressful events. Obviously, different events bring out somewhat different responses, but think about what you usually do when you are under a lot of stress.

For the following questions, please indicate when you experience a stressful event whether:

- 1 = You usually don't do this at all
- 2 = You usually do this a little bit
- 3 = You usually do this a medium amount or
- 4 = You usually do this a lot

		<i>Don't do this at all</i>	<i>Do this a little bit</i>	<i>Do this a medium amount</i>	<i>Do this a lot</i>	<i>Don't know</i>	<i>Refused</i>
I1	You turn to work or other substitute activities to take your mind off things	1	2	3	4	99	98
I2	You try to get advice from someone about what to do	1	2	3	4	99	98
I3	You concentrate your efforts on doing something about it	1	2	3	4	99	98
I4	You say to yourself "this isn't real"	1	2	3	4	99	98
I5	You admit to yourself that you can't deal with it, and quit trying	1	2	3	4	99	98
I6	You discuss your feelings with someone	1	2	3	4	99	98
I7	You use alcohol or drugs to make yourself feel better	1	2	3	4	99	98
I8	You talk to someone to find out more about the situation	1	2	3	4	99	98
I9	You daydream about things other than this	1	2	3	4	99	98
I10	You make a plan of action	1	2	3	4	99	98
I11	You try to get emotional support from friends or relatives	1	2	3	4	99	98
I12	You just give up trying to reach your goal	1	2	3	4	99	98
I13	You take additional action to try to get rid of the problem	1	2	3	4	99	98

		<i>Don't do this at all</i>	<i>Do this a little bit</i>	<i>Do this a medium amount</i>	<i>Do this a lot</i>	<i>Don't know</i>	<i>Refused</i>
I14	You try to lose yourself for a while by drinking alcohol or taking drugs	1	2	3	4	99	98
I15	You refuse to believe that it has happened	1	2	3	4	99	98
I16	You talk to someone who could do something concrete about the problem	1	2	3	4	99	98
I17	You sleep more than usual	1	2	3	4	99	98
I18	You try to come up with a strategy about what to do	1	2	3	4	99	98
I19	You get sympathy and understanding from someone	1	2	3	4	99	98
I20	You drink alcohol or take drugs, in order to think about it less	1	2	3	4	99	98
I21	You give up the attempt to get what you want	1	2	3	4	99	98
I22	You think about how you might best handle the problem	1	2	3	4	99	98
I23	You pretend that it hasn't really happened	1	2	3	4	99	98
I24	You go to movies or watch TV, to think about it less	1	2	3	4	99	98
I25	You ask people who have had similar experiences what they did	1	2	3	4	99	98
I26	You take direct action to get around the problem	1	2	3	4	99	98
I27	You reduce the amount of effort you are putting into solving the problem	1	2	3	4	99	98
I28	You talk to someone about how you feel	1	2	3	4	99	98
I29	You use alcohol or drugs to help you get through it	1	2	3	4	99	98
I30	You think hard about what steps to take	1	2	3	4	99	98
I31	You act as though it hasn't even happened	1	2	3	4	99	98
I32	You do what has to be done, one step at a time	1	2	3	4	99	98

## SECTION J: NEO-PI (IMPULSIVE NESS)

I am now going to read out some statements. As I read out each statement, please tell me how strongly you agree or disagree with the statement.		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Don't know	Refused
J1*	I rarely overindulge in anything	1	2	3	4	5	99	98
J2	I have trouble resisting my cravings	1	2	3	4	5	99	98
J3*	I have little difficulty resisting temptation	1	2	3	4	5	99	98
J4	When I am having my favourite foods, I tend to eat too much	1	2	3	4	5	99	98
J5*	I seldom give in to my impulses	1	2	3	4	5	99	98
J6	I sometimes eat myself sick	1	2	3	4	5	99	98
J7	Sometimes I do things on impulse that I later regret	1	2	3	4	5	99	98
J8*	I am always able to keep my feelings under control	1	2	3	4	5	99	98

\* Rev. items (Reverse scoring)

## SECTION K: DEMOGRAPHICS

Finally I need to ask some general questions about you so that we know we have a reasonable coverage of the population.

K1	Record gender (don't ask)	Code	Route
	Male	1	
	Female	2	
	Don't know	99	

K2	Which of the following best describes your household living situation?	Code	Route
	Single adult living alone	1	
	Single adult with other adults only (e.g. flat share)	2	
	Single adult with child/children at home	3	
	Married/de-facto couple	4	
	Family with adults only (Grown-up children living at home)	5	
	Family (including extended) with children at home	6	
	Other ( <b>please specify</b> ): _____	7	
	Don't know	99	
	Refused	98	

K3	What year and month were you born?	Code	Route
	Year _____ Month _____		N5
	Refused	98	N4

K4	Would you mind telling me which age group you belong to?	Code	Route
	Below 20 years	1	
	20 – 24 years	2	
	25 – 44 years	3	
	45 – 64 years	4	
	65+ years	5	
	Don't know	99	
	Refused	98	

K5	What is your current employment status?	Code	Route
	Working in paid employment (full time) (30 hours or more a week)	1	
	Working in paid employment (part time) (Less than 30 hours a week)	2	
	Not in paid work, looking for a job	3	
	Full time student	4	
	Retired	5	
	Unemployed	6	
	Not in paid work, not looking for a job (for any other reason - homemaker,	7	
	Other ( <b>please specify</b> ): _____	8	
	Don't know	99	
	Refused	98	

K6	Are you currently receiving any of the following forms of income support?		
a	<input type="checkbox"/> NZ Superannuation		
b	<input type="checkbox"/> Working for Families (Family Support, In Work Payment, Family Tax Credit)		
c	<input type="checkbox"/> Unemployment benefit		
d	<input type="checkbox"/> Domestic purposes benefit		
e	<input type="checkbox"/> Sickness benefit		
f	<input type="checkbox"/> Invalid's benefit		
g	<input type="checkbox"/> Student allowance		
h	<input type="checkbox"/> Disability allowance		
i	<input type="checkbox"/> ACC (as income support, not reimbursement for health services)		
j	<input type="checkbox"/> Other benefits ( <b>please specify</b> ): _____		
k	<input type="checkbox"/> None of the above		
	Refused		98

K7	What is the highest educational qualification you have achieved?	Code	Route
	None or below secondary school	1	
	Secondary school qualification	2	
	Trade or technical certificate/qualification	3	
	Tertiary diploma or certificate (undergraduate)	4	
	Bachelor's Degree or higher	5	
	Other ( <b>please specify</b> ): _____	6	
	Refused		98

K8	What would be your personal income, from all sources, before tax or anything	Code	Route
	Less than \$10,000	1	
	\$10,001 – \$20,000	2	
	\$20,001 – \$40,000	3	
	\$40,001 – \$60,000	4	
	\$60,001 – \$80,000	5	
	\$80,001 – \$100,000	6	
	\$100,001 – \$120,000	7	
	\$120,001 or more	8	
	Don't know	99	
	Refused		98

K9	What is your ethnicity? <i>(more than one option may be selected)</i>	
a	<input type="checkbox"/> NZ European	
b	<input type="checkbox"/> Māori	
c	<input type="checkbox"/> Pacific <b>(please specify):</b> _____	
d	<input type="checkbox"/> Asian <b>(please specify):</b> _____	
e	<input type="checkbox"/> Other <b>(please specify):</b> _____	
	Refused	98

*\*CAN STOP HERE IF NESSESARY – i.e. participant is unwilling to continue/spend more time.*

## SECTION L: THE GAMBLING RELATED COGNITION SCALE (GRCS)

I am now going to read out some statements about people's feelings about gambling. As I read out each statement, please tell me how strongly you agree or disagree with these statements based on your feelings in the last 3 months.

		Strongly disagree	Moderately disagree	Mildly disagree	Neither agree or disagree	Mildly agree agree	Moderately agree	Strongly agree	Don't know	Refused
L1	Gambling makes me happier	1	2	3	4	5	6	7	99	98
L2	I can't function without gambling	1	2	3	4	5	6	7	99	98
L3	Praying helps me win	1	2	3	4	5	6	7	99	98
L4	Losses when gambling are bound to be followed by a series of wins	1	2	3	4	5	6	7	99	98
L5	Relating my winning to my skill and ability makes me continue gambling	1	2	3	4	5	6	7	99	98
L6	Gambling makes things seem better	1	2	3	4	5	6	7	99	98
L7	It is difficult to stop gambling as I am so out of control	1	2	3	4	5	6	7	99	98
L8	Specific numbers and colours can help increase my chances of winning	1	2	3	4	5	6	7	99	98
L9	A series of losses will provide me with a learning experience that will help me win later	1	2	3	4	5	6	7	99	98
L10	Relating my losses to bad luck and bad circumstances makes me continue gambling	1	2	3	4	5	6	7	99	98
L11	Gambling makes the future brighter	1	2	3	4	5	6	7	99	98
L12	My desire to gamble is so overpowering	1	2	3	4	5	6	7	99	98
L13	I collect specific objects that help increase my chances of winning	1	2	3	4	5	6	7	99	98
L14	When I have a win once, I will definitely win again	1	2	3	4	5	6	7	99	98
L15	Relating my losses to probability makes me continue gambling	1	2	3	4	5	6	7	99	98
L16	Having a gamble helps reduce tension and stress	1	2	3	4	5	6	7	99	98
L17	I'm not strong enough to stop gambling	1	2	3	4	5	6	7	99	98
L18	I have specific rituals and behaviours that increase my chances of winning	1	2	3	4	5	6	7	99	98

		Strongly disagree	Moderately disagree	Mildly disagree	Neither agree or disagree	Mildly agree	Moderately agree	Strongly agree	Don't know	Refused
L19	There are times that I feel lucky and thus gamble those times only	1	2	3	4	5	6	7	99	98
L20	Remembering how much money I won last time makes me continue gambling	1	2	3	4	5	6	7	99	98
L21	I will never be able to stop gambling	1	2	3	4	5	6	7	99	98
L22	I have some control over predicting my gambling wins	1	2	3	4	5	6	7	99	98
L23	If I keep changing my numbers, I have less chances of winning	1	2	3	4	5	6	7	99	98

*\*CAN STOP HERE IF NESESARY – i.e. participant is unwilling to continue/spend more time.*

## SECTION M: AUDIT-C

The next three questions refer to your alcohol use over the past 3 months. For each statement, please indicate the response that is most true for you.

M1	How often do you have a drink containing alcohol? Would you say...	Code	Route
	Never	1	N1
	Monthly or less	2	M2
	2-4 times per month	3	M2
	2-3 times per week	4	M2
	4 or more times per week	5	M2
	Don't know	99	M2
	Refused	98	M2

M2	How many drinks containing alcohol do you have on a typical day when you are	Code	Route
	1 or 2	1	
	3 or 4	2	
	5 or 6	3	
	7 to 9	4	
	10 or more	5	
	Don't know	99	
	Refused	98	

M3	How often do you have six or more drinks on one occasion? Would you say...	Code	Route
	Never	1	
	Less than monthly	2	
	Monthly	3	
	Weekly	4	
	Daily or almost daily	5	
	Don't know	99	
	Refused	98	

## SECTION N: TOBACCO USE

N1	Have you ever smoked cigarettes or tobacco at all, even just a few puffs? Please include cigars and pipes	Code	Route
	Yes	1	N2
	No	2	END
	Refused	98	N2

N2	Have you smoked a total of more than 100 cigarettes in your whole life?	Code	Route
	Yes	1	N3
	No	2	N3
	Refused	98	N3

N3	How often do you currently smoke?	Code	Route
	You don't smoke now	1	
	At least once a day	2	
	At least once a week	3	
	At least once a month	4	
	Less often than once a month	5	
	Don't know	99	
	Refused	98	

## **THANK AND CLOSE:**

This completes the survey. Thank you very much for your time and assistance. Your help is greatly appreciated.

\*\* Check contact details with the respondent.

\*\* Obtain postal address for petrol voucher delivery.

If participant gambles once a week or more – remind them that we will be in touch with them again in 3 months' time.



**APPENDIX 4:  
FOLLOW UP QUESTIONNAIRE**

**Pop-up messages, player information displays and game characteristics –  
effects on gambler behaviour.**

**Follow up 2 (6 Month) Questionnaire**

<b>Participant Identification No:</b>	
<b>Interview Date (dd/mm/yr):</b>	
<b>Interview Time:</b>	
<b>Interviewer Name:</b>	
<b>Call Duration (minutes):</b>	

Participant ID: \_\_\_\_\_

**SECTION A: TABLE GAMES - PARTICIPATION**

A1	Do you play <u>table games</u> at <u>casinos</u> ?	Code	Route
	Yes	1	A2
	No	2	C1
	Refused	98	C1

A2	Which <u>3 casino table games</u> do you <u>play most</u> ?	Rank (1-3)	Route
a	Baccarat		
b	Midi Baccarat		
c	Mini Baccarat		
d	Blackjack		
e	Caribbean Stud Poker		
f	Craps		
g	Money Wheel		
h	Electronic Money Wheel		
i	Pai Gow		
j	Poker		
k	Pontoon		
l	Roulette		
m	Electronic Roulette		
n	Tai Sai		
o	Texas Hold'em		
p	Three Card Poker		
q	Other ( <b>please specify</b> ): _____		
	Don't know	99	
	Refused	98	

A3	On average, how often do you play table games at the casino?	Code	Route
	Less than monthly	1	
	Monthly	2	
	2-3 times a month	3	
	Weekly	4	
	2-3 times a week	5	
	More than 4 times a week	6	
	Don't know	99	
	Refused	98	

Thinking about your table game gambling in casino venues in the *last 3 months*...

A4	On average, how long would you spend playing table games on any given playing day?	Code	Route
	<input type="checkbox"/> _____ minutes		
	<input type="checkbox"/> _____ hours		
	Don't know	99	
	Refused	98	

A5	On average, how much money would you spend playing table games (to the nearest \$5) on any given playing day?	Code	Route
	\$ _____		
	Don't know	99	
	Refused	98	

A6	On average, how long would you spend playing a <u>table game</u> <u>without a break</u> ?	Code	Route
	<input type="checkbox"/> _____ minutes		
	<input type="checkbox"/> _____ hours		
	Don't know	99	
	Refused	98	

## SECTION B: TABLE GAMES – FEATURES

B1	I am going to read out some features of table games. As I read out each feature, please tell me <u>how important</u> this feature is in terms of your <u>satisfaction with gambling</u> .	Not important	Slightly important	Moderately important	Important	Very important	Don't know	Refused
a	Games where a low minimum bet is possible	1	2	3	4	5	99	98
b	Player skill	1	2	3	4	5	99	98
c	A small number of players at the table	1	2	3	4	5	99	98
d	Social interaction at the table	1	2	3	4	5	99	98
e	A faster game	1	2	3	4	5	99	98
f	Having some control over the game	1	2	3	4	5	99	98
g	Croupier/dealer (if present at table)	1	2	3	4	5	99	98

B2		How do these features usually affect your gambling level with reference to your intended <u>money</u> spent on gambling?					<i>Don't know</i>	<i>Refused</i>
		<i>Much less than intended</i>	<i>Slightly less than intended</i>	<i>No effect</i>	<i>Slightly more than intended</i>	<i>Much more than intended</i>		
a	Games where a low minimum bet is possible	1	2	3	4	5	99	98
b	Player skill	1	2	3	4	5	99	98
c	A small number of players at the table	1	2	3	4	5	99	98
d	Social interaction at the table	1	2	3	4	5	99	98
e	A faster game	1	2	3	4	5	99	98
f	Having some control over the game	1	2	3	4	5	99	98
g	Croupier/dealer (if present at table)	1	2	3	4	5	99	98

B3		How do these features affect your gambling level with reference to your intended <u>time</u> gambling at the table?					<i>Don't know</i>	<i>Refused</i>
		<i>Much less than intended</i>	<i>Slightly less than intended</i>	<i>No effect</i>	<i>Slightly more than intended</i>	<i>Much more than intended</i>		
a	Games where a low minimum bet is possible	1	2	3	4	5	99	98
b	Player skill	1	2	3	4	5	99	98
c	A small number of players at the table	1	2	3	4	5	99	98
d	Social interaction at the table	1	2	3	4	5	99	98
e	A faster game	1	2	3	4	5	99	98
f	Having some control over the game	1	2	3	4	5	99	98
g	Croupier/dealer (if present at table)	1	2	3	4	5	99	98

B4 Are there other important features which affect your satisfaction with table gambling?

Other important features:

## SECTION C: EGMs - PARTICIPATION

C1	Do you play <u>any</u> electronic gaming machine or pokies?	Code	Route
	Yes	1	C2
	No	2	F1
	Refused	98	F1

C2a	Where do you play <u>gaming machines or pokies</u> most often?	Code	Route
	Casino	1	C3
	Pub	2	C3
	Club	3	C3
	Other (please specify)	4	C3
	Refused	98	C3

*Interviewer note: The main difference between a pub and a club is that clubs have private membership - i.e. one must be a registered member of a club or a signed-in guest of a member to be on the premises and use the facilities.*

C2b	Do you play <u>gaming machines or pokies</u> in a pub or club (tick as many as apply)?	Code	Route
	Pub	1	C2b
	Club	2	C2b
	No	3	C7
	Refused	98	C7

Thinking about your electronic gaming machine gambling in pubs or clubs in the *last 3 months...*

C3	On average, <u>how often</u> do you play gaming machines or pokies in <u>pubs or clubs</u> ?	Code	Route
	Less than monthly	1	
	Monthly	2	
	2-3 times a month	3	
	Weekly	4	
	2-3 times a week	5	
	More than 4 times a week	6	
	Don't know	99	
	Refused	98	

C4	On average, how long do you usually play pub or club gaming machines on any given playing day?	Code	Route
	<input type="checkbox"/> _____ minutes		
	<input type="checkbox"/> _____ hours		
	Don't know	99	
	Refused	98	

C5	On average, how much <u>money</u> would you spend (to the nearest \$5) on a single pub or club machine in a typical gambling session?	Code	Route
	\$ _____		
	Don't know	99	
	Refused	98	

C6	How much <u>time</u> would you gamble at <u>a single pub or club machine</u> in a <u>typical session</u> ?	Code	Route
	<input type="checkbox"/> _____ minutes		
	<input type="checkbox"/> _____ hours		
	Don't know	99	
	Refused	98	

C7	Do you play <u>gaming machines</u> at a <u>casino</u> ?	Code	Route
	Yes	1	C8
	No	2	D1
	Refused	98	D1

Thinking about your electronic gaming machine gambling at the **casino** in the *last 3 months*...

C8	On average, how often do you play gaming machines at the casino?	Code	Route
	Less than monthly	1	
	Monthly	2	
	2-3 times a month	3	
	Weekly	4	
	2-3 times a week	5	
	More than 4 times a week	6	
	Don't know	99	
	Refused	98	

C9	On average, how long do you usually play casino gaming machines on any given playing day?	Code	Route
	<input type="checkbox"/> _____ minutes		
	<input type="checkbox"/> _____ hours		
	Don't know	99	
	Refused	98	

C10	How much <u>money</u> would you spend (to the nearest \$5) on a single casino machine in a <u>typical gambling session</u> ?	Code	Route
	\$ _____		
	Don't know	99	
	Refused	98	

C11	How much <u>time</u> would you spend playing on a <u>single casino machine</u> in a <u>typical gambling session</u> ?	Code	Route
	<input type="checkbox"/> _____ minutes		
	<input type="checkbox"/> _____ hours		
	Don't know	99	
	Refused	98	

## SECTION D: EGMs – PIDs and Pop-ups

### Player Information Displays (PIDs)

Every electronic gaming machine or pokie has a **player information display** feature. It provides information about the machine, e.g. game rules; return to player information; odds of winning; win, loss and time of session, etc.

D1	Are you aware of player information displays on EGMs?	Code	Route
	Yes	1	D2
	No	2	D10
	Refused	98	D10

D2	How often do you view or use the player information displays?	Code	Route
	Never	1	D10
	Rarely	2	D3
	Sometimes	3	D3
	Often	4	D3
	Always	5	D3
	Don't know	99	D3
	Refused	98	D3

D3	How do you use the player information displays?
	Answer:

D4	On viewing a player information display, how likely would you...	Not at all	Unlikely	Neutral	Likely	Very likely	Don't know	Refused
a	Stop gambling in that visit	1	2	3	4	5	99	98
b	Reduce your gambling	1	2	3	4	5	99	98
c	Increase your gambling	1	2	3	4	5	99	98
d	Change machines	1	2	3	4	5	99	98
e	Consider the overall level of your gambling	1	2	3	4	5	99	98
f	Consider seeking help about your gambling	1	2	3	4	5	99	98

D5	Do the player information displays help you control the amount of money you spend on your gambling?	Code	Route
	Not at all	1	
	Slightly	2	
	Somewhat	3	
	Moderately	4	
	Very much	5	
	Don't know	99	
	Refused	98	

D6	Do the player information displays help you control the amount of time you gamble on the machine?	Code	Route
	Not at all	1	
	Slightly	2	
	Somewhat	3	
	Moderately	4	
	Very much	5	
	Don't know	99	
	Refused	98	

D7	How accurate is the information provided in player information displays regarding your money spent gambling?	Code	Route
	Not at all	1	
	Slightly	2	
	Somewhat	3	
	Moderately	4	
	Extremely	5	
	Don't know	99	
	Refused	98	

D8	How accurate is the information provided in player information displays regarding your time spent gambling?	Code	Route
	Not at all	1	
	Slightly	2	
	Somewhat	3	
	Moderately	4	
	Extremely	5	
	Don't know	99	
	Refused	98	

D9	How do the player information displays affect your satisfaction with your gambling?	Code	Route
	Very negatively (much worse)	1	
	Negatively (somewhat worse)	2	
	Neutral (about the same)	3	
	Positively (somewhat better)	4	
	Very positively (much better)	5	
	Don't know	99	
	Refused	98	

### **Pop-Up Messages**

There are messages which pop up on the screen of the gaming machine at regular intervals; these messages remind and inform players on how long they have playing on the machine, the total amount of money won or lost, and let players decide whether they would like to continue or stop gambling. You are unable to continue gambling whilst the pop-up message is on the screen.

D10	In the last 3 months, have you experienced a pop-up message	Code	Route
	Yes	1	D11
	No	2	E1
	Refused	98	E1

D11	In the last 3 months, how often have you seen pop-up messages?	Code	Route
	Never	1	E1
	Rarely	2	D14
	Sometimes	3	D14
	Often	4	D12
	Always	5	D12
	Don't know	99	E1
	Refused	98	E1

D12	How many times do you see a pop-up message in a typical gambling session?	Code	Route
	<input type="checkbox"/> _____ times		D13
	Don't know	99	D13
	Refused	98	D13

D13a	Have venue staff ever spoken to you about your gambling?	Code	Route
	Yes	1	D13b
	No	2	D14
	Refused	98	D14

D13b	What kind of venue were you in when staff spoke to you about your gambling?	Code	Route
	Pub	1	
	Club	2	
	Casino	3	
	Don't know	99	
	Refused	98	

D14	Do the pop-up messages help you control the amount of money you spend on your gambling on the machine?	Code	Route
	Not at all	1	
	Slightly	2	
	Somewhat	3	
	Moderately	4	
	Very much	5	
	Don't know	99	
	Refused	98	

D15	Do the pop-up messages help you control the amount of time you gamble on the machine?	Code	Route
	Not at all	1	
	Slightly	2	
	Somewhat	3	
	Moderately	4	
	Very much	5	
	Don't know	99	
	Refused	98	

D16	How accurate is the information provided in pop-up messages?	Code	Route
	Not at all	1	
	Slightly	2	
	Somewhat	3	
	Moderately	4	
	Extremely	5	
	Don't know	99	
	Refused	98	

D17 How do the pop-up messages affect your satisfaction with your gambling? Code    Route

Very negatively (much worse)	1
Negatively (somewhat worse)	2
Neutral (about the same)	3
Positively (somewhat better)	4
Very positively (much better)	5
Don't know	99
Refused	98

D18 On seeing a pop-up message, how likely would you...

		<i>Not at all</i>	<i>Unlikely</i>	<i>Neutral</i>	<i>Likely</i>	<i>Very likely</i>	<i>Don't know</i>	<i>Refused</i>
a	Read the information	1	2	3	4	5	99	98
b	Stop gambling in that visit	1	2	3	4	5	99	98
c	Reduce your gambling	1	2	3	4	5	99	98
d	Increase your gambling	1	2	3	4	5	99	98
e	Change machines	1	2	3	4	5	99	98
f	Consider the overall level of your gambling	1	2	3	4	5	99	98
g	Consider seeking help about your gambling	1	2	3	4	5	99	98

D19 What else are you likely to do when a pop-up message is displayed?

Answer:

## SECTION E: EGMs – FEATURES

E1 I am going to read out some features of electronic gaming machines. As I read out each feature, please tell me <u>how important</u> this feature is in terms of your satisfaction with <u>gambling</u> .		Not important	Slightly important	Moderately important	Important	Very important	Don't know	Refused	
								99	98
a	Free spins	1	2	3	4	5	99	98	
b	Small frequent wins	1	2	3	4	5	99	98	
c	Jackpots	1	2	3	4	5	99	98	
d	Machines with low minimum bets	1	2	3	4	5	99	98	
e	Number of playable lines	1	2	3	4	5	99	98	
f	Themed graphics and sounds	1	2	3	4	5	99	98	

E2 How do these features affect your gambling level with reference to your intended <u>money</u> spent on gambling?		Much less than intended	Slightly less than intended	No effect	Slightly more than intended	Much more than intended	Don't know	Refused	
								99	98
a	Free spins	1	2	3	4	5	99	98	
b	Small frequent wins	1	2	3	4	5	99	98	
c	Jackpots	1	2	3	4	5	99	98	
d	Low minimum bets	1	2	3	4	5	99	98	
e	Number of playable lines	1	2	3	4	5	99	98	
f	Themed graphics and sounds	1	2	3	4	5	99	98	

E3		How do these features affect your gambling level with reference to your intended <u>time</u> gambling on the machine?					Don't know	Refused
		<i>Much less than intended</i>	<i>Slightly less than intended</i>	<i>No effect</i>	<i>Slightly more than intended</i>	<i>Much more than intended</i>		
a	Free spins	1	2	3	4	5	99	98
b	Small frequent wins	1	2	3	4	5	99	98
c	Jackpots	1	2	3	4	5	99	98
d	Low minimum bets	1	2	3	4	5	99	98
e	Number of playable lines	1	2	3	4	5	99	98
f	Themed graphics and sounds	1	2	3	4	5	99	98

E4 Are there any other features which affect your satisfaction with electronic gaming machine gambling?

Other important features:

## SECTION F: OTHER GAMBLING FORMS – PARTICIPATION

F1 Do you play...? (tick all that apply)

a	<input type="checkbox"/> Lotto (including Strike, Powerball and Big Wednesday)
b	<input type="checkbox"/> Keno (not in a casino)
c	<input type="checkbox"/> Instant Kiwi or other Scratch ticket
d	<input type="checkbox"/> Housie (bingo) for money
e	<input type="checkbox"/> Horse or dog racing (excluding office sweepstakes)
f	<input type="checkbox"/> Sports betting at the TAB or with an overseas betting organisation
g	<input type="checkbox"/> Internet based gambling
h	<input type="checkbox"/> Other gambling activity (please specify): _____
i	<input type="checkbox"/> None of the above

## SECTION G: PROBLEM GAMBLING SEVERITY INDEX (PGSI) and HELPSEEKING

Thinking about the last 3 months...

		Never	Sometimes	Most of the time	Almost always	Don't know	Refused
G1	How often have you bet more than you could really afford to lose? Would you say...	1	2	3	4	99	98
G2	How often have you needed to gamble with larger amounts of money to get the same feeling of excitement?	1	2	3	4	99	98
G3	How often have you gone back another day to try to win back the money you lost?	1	2	3	4	99	98
G4	How often have you borrowed money or sold anything to get money to gamble?	1	2	3	4	99	98
G5	How often have you felt that you might have a problem with gambling?	1	2	3	4	99	98
G6	How often have people criticized your betting or told you that you had a gambling problem, regardless of whether or not you thought it was true?	1	2	3	4	99	98
G7	How often have you felt guilty about the way you gamble or what happens when you gamble?	1	2	3	4	99	98
G8	How often has gambling caused you any health problems, including stress or anxiety?	1	2	3	4	99	98
G9	How often has your gambling caused any financial problems for you or your household?	1	2	3	4	99	98

G10	Have you sought any help for your gambling in the past 3 months?	Code	Route
	Yes	1	G11
	No	2	H1
	Refused	98	

G11 What prompted you to seek help for your gambling?

Answer:

**SECTION H: K-10**

So far the questions have been about player information displays, pop-up messages, game features and gambling. We are now going to ask some more general questions about other behaviours to help us understand more about you in relation to player information displays, pop-up messages and game characteristics. Please be assured that we ask these standard questions of everybody

The following questions ask about how you have been feeling during the <u>past four weeks</u>		<i>None of the time</i>	<i>A little of the time</i>	<i>Some of the time</i>	<i>Most of the time</i>	<i>All of the time</i>	<i>Don't know</i>	<i>Refused</i>
H1	In the past 4 weeks...How often did you feel worn out for no good reason? Would you say...	1	2	3	4	5	99	98
H2	In the past 4 weeks...How often did you feel nervous?	1	2	3	4	5	99	98
H3	In the past 4 weeks...How often did you feel so nervous that nothing could calm you down?	1	2	3	4	5	99	98
H4	In the past 4 weeks...How often did you feel hopeless?	1	2	3	4	5	99	98
H5	In the past 4 weeks...How often did you feel restless or fidgety?	1	2	3	4	5	99	98
H6	In the past 4 weeks...How often did you feel so restless you could not sit still?	1	2	3	4	5	99	98
H7	In the past 4 weeks...How often did you feel depressed?	1	2	3	4	5	99	98
H8	In the past 4 weeks...How often did you feel that everything was an effort?	1	2	3	4	5	99	98
H9	In the past 4 weeks...How often did you feel so sad that nothing could cheer you up?	1	2	3	4	5	99	98
H10	In the past 4 weeks...How often did you feel worthless?	1	2	3	4	5	99	98

## SECTION I: COPE – Selected subscales

We are interested in how people respond when they confront difficult or stressful events in their lives. There are lots of ways to try to deal with stress. I will ask you to indicate what you generally do and feel when you experience stressful events. Obviously, different events bring out somewhat different responses, but think about what you usually do when you are under a lot of stress.

For the following questions, please indicate when you experience a stressful event whether:

- 1 = You usually don't do this at all
- 2 = You usually do this a little bit
- 3 = You usually do this a medium amount or
- 4 = You usually do this a lot

		<i>Don't do this at all</i>	<i>Do this a little bit</i>	<i>Do this a medium amount</i>	<i>Do this a lot</i>	<i>Don't know</i>	<i>Refused</i>
I1	You turn to work or other substitute activities to take your mind off things	1	2	3	4	99	98
I2	You try to get advice from someone about what to do	1	2	3	4	99	98
I3	You concentrate your efforts on doing something about it	1	2	3	4	99	98
I4	You say to yourself "this isn't real"	1	2	3	4	99	98
I5	You admit to yourself that you can't deal with it, and quit trying	1	2	3	4	99	98
I6	You discuss your feelings with someone	1	2	3	4	99	98
I7	You use alcohol or drugs to make yourself feel better	1	2	3	4	99	98
I8	You talk to someone to find out more about the situation	1	2	3	4	99	98
I9	You daydream about things other than this	1	2	3	4	99	98
I10	You make a plan of action	1	2	3	4	99	98
I11	You try to get emotional support from friends or relatives	1	2	3	4	99	98
I12	You just give up trying to reach your goal	1	2	3	4	99	98
I13	You take additional action to try to get rid of the problem	1	2	3	4	99	98

		<i>Don't do this at all</i>	<i>Do this a little bit</i>	<i>Do this a medium amount</i>	<i>Do this a lot</i>	<i>Don't know</i>	<i>Refused</i>
I14	You try to lose yourself for a while by drinking alcohol or taking drugs	1	2	3	4	99	98
I15	You refuse to believe that it has happened	1	2	3	4	99	98
I16	You talk to someone who could do something concrete about the problem	1	2	3	4	99	98
I17	You sleep more than usual	1	2	3	4	99	98
I18	You try to come up with a strategy about what to do	1	2	3	4	99	98
I19	You get sympathy and understanding from someone	1	2	3	4	99	98
I20	You drink alcohol or take drugs, in order to think about it less	1	2	3	4	99	98
I21	You give up the attempt to get what you want	1	2	3	4	99	98
I22	You think about how you might best handle the problem	1	2	3	4	99	98
I23	You pretend that it hasn't really happened	1	2	3	4	99	98
I24	You go to movies or watch TV, to think about it less	1	2	3	4	99	98
I25	You ask people who have had similar experiences what they did	1	2	3	4	99	98
I26	You take direct action to get around the problem	1	2	3	4	99	98
I27	You reduce the amount of effort you are putting into solving the problem	1	2	3	4	99	98
I28	You talk to someone about how you feel	1	2	3	4	99	98
I29	You use alcohol or drugs to help you get through it	1	2	3	4	99	98
I30	You think hard about what steps to take	1	2	3	4	99	98
I31	You act as though it hasn't even happened	1	2	3	4	99	98
I32	You do what has to be done, one step at a time	1	2	3	4	99	98

## SECTION J: NEO-PI (IMPULSIVE NESS)

I am now going to read out some statements. As I read out each statement, please tell me how strongly you agree or disagree with the statement.		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Don't know	Refused
J1*	I rarely overindulge in anything	1	2	3	4	5	99	98
J2	I have trouble resisting my cravings	1	2	3	4	5	99	98
J3*	I have little difficulty resisting temptation	1	2	3	4	5	99	98
J4	When I am having my favourite foods, I tend to eat too much	1	2	3	4	5	99	98
J5*	I seldom give in to my impulses	1	2	3	4	5	99	98
J6	I sometimes eat myself sick	1	2	3	4	5	99	98
J7	Sometimes I do things on impulse that I later regret	1	2	3	4	5	99	98
J8*	I am always able to keep my feelings under control	1	2	3	4	5	99	98

\* Rev. items (Reverse scoring)

## SECTION K: DEMOGRAPHICS

Finally, I need to ask a few general questions to see if your circumstances have changed since we last contacted you. .

**Has there been a change in your household living situation since we last contacted you about 3 months ago?**

**If YES: K2**

**If NO: K5**

K2	Which of the following best describes your household living situation?	Code	Route
	Single adult living alone	1	
	Single adult with other adults only (e.g. flat share)	2	
	Single adult with child/children at home	3	
	Married/de-facto couple	4	
	Family with adults only (Grown-up children living at home)	5	
	Family (including extended) with children at home	6	
	Other (please specify): _____	7	
	Don't know	99	
	Refused	98	

**Has there been a change in your employment or income situation since we last contacted you about 3 months ago?**

**If YES: K5**

**If NO: Section M.**

K5	What is your current employment status?	Code	Route
	Working in paid employment (full time) (30 hours or more a week)	1	
	Working in paid employment (part time) (Less than 30 hours a week)	2	
	Not in paid work, looking for a job	3	
	Full time student	4	
	Retired	5	
	Unemployed	6	
	Not in paid work, not looking for a job (for any other reason - homemaker,	7	
	Other (please specify): _____	8	
	Don't know	99	
	Refused	98	

K6	Are you currently receiving any of the following forms of income support?	Code	Route
a	<input type="checkbox"/> NZ Superannuation		
b	<input type="checkbox"/> Working for Families (Family Support, In Work Payment, Family Tax Credit)		
c	<input type="checkbox"/> Unemployment benefit		
d	<input type="checkbox"/> Domestic purposes benefit		
e	<input type="checkbox"/> Sickness benefit		
f	<input type="checkbox"/> Invalid's benefit		
g	<input type="checkbox"/> Student allowance		
h	<input type="checkbox"/> Disability allowance		
i	<input type="checkbox"/> ACC (as income support, not reimbursement for health services)		
j	<input type="checkbox"/> Other benefits (please specify): _____		
k	<input type="checkbox"/> None of the above		
	Refused	98	

K8	What would be your personal income, from all sources, before tax or anything	Code	Route
	Less than \$10,000	1	
	\$10,001 – \$20,000	2	
	\$20,001 – \$40,000	3	
	\$40,001 – \$60,000	4	
	\$60,001 – \$80,000	5	
	\$80,001 – \$100,000	6	
	\$100,001 – \$120,000	7	
	\$120,001 or more	8	
	Don't know	99	
	Refused	98	

*\*CAN STOP HERE IF NESESARY – i.e. participant is unwilling to continue/spend more time.*

## SECTION M: AUDIT-C

The next three questions refer to your alcohol use over the past 3 months. For each statement, please indicate the response that is most true for you.

M1	How often do you have a drink containing alcohol? Would you say...	Code	Route
	Never	1	N1
	Monthly or less	2	M2
	2-4 times per month	3	M2
	2-3 times per week	4	M2
	4 or more times per week	5	M2
	Don't know	99	M2
	Refused	98	M2

M2	How many drinks containing alcohol do you have on a typical day when you are	Code	Route
	1 or 2	1	
	3 or 4	2	
	5 or 6	3	
	7 to 9	4	
	10 or more	5	
	Don't know	99	
	Refused	98	

M3	How often do you have six or more drinks on one occasion? Would you say...	Code	Route
	Never	1	
	Less than monthly	2	
	Monthly	3	
	Weekly	4	
	Daily or almost daily	5	
	Don't know	99	
	Refused	98	

## SECTION N: TOBACCO USE

N1	Have you ever smoked cigarettes or tobacco at all, even just a few puffs? Please include cigars and pipes	Code	Route
	Yes	1	N2
	No	2	END
	Refused	98	N2

N2	Have you smoked a total of more than 100 cigarettes in your whole life?	Code	Route
	Yes	1	N3
	No	2	N3
	Refused	98	N3

N3	How often do you currently smoke?	Code	Route
	You don't smoke now	1	
	At least once a day	2	
	At least once a week	3	
	At least once a month	4	
	Less often than once a month	5	
	Don't know	99	
	Refused	98	

## THANK AND CLOSE:

This completes the survey and concludes your involvement in our study. Thank you very much for your time and assistance. Your help is greatly appreciated in this important research. The research results will be published and available on the AUT Gambling and Addictions Research Centre website. We think this will be in mid-2014.

\*\* Obtain postal address for petrol voucher delivery.

## **APPENDIX 5: INTERCEPT RECRUITMENT GUIDELINES**

### **General principles for intercept recruitment:**

- Must be polite and friendly - to avoid any negative influence or impact on the gamblers in terms of either their gambling, or their experience of the venue.
- The privacy of gamblers and venue staff is of fundamental importance.
- Permission has been sought from each venue owner/manager prior to commencement of intercept recruitment.
- Researchers will approach patrons as they leave the venue.
- Researchers will not approach patrons if they appear heavily intoxicated.

*Overall aim to minimise effects on the patrons, the venue staff, and the venue - whilst being able to invite patrons to participate in the research.*

It is important to communicate our legitimacy (this is a university study). And that we are neutral on gambling, i.e. we will not mention “problem gambling”. This study is about PIDs, pop-ups and how people view the effects of the products themselves (gaming machines, table games) on their enjoyment and behavior.

### **Researcher safety protocol:**

- **Intercept recruitment will only occur in pairs or groups.**
- **Researchers will remain in sight of each other, and be in mobile phone contact.**

### **Basic intercept recruitment process:**

1. Introduce self, create interest in our project!
2. Explain their commitment: 30min survey on pokie game characteristics (what they like, how they games affect how they play) over phone, \$20 petrol voucher after each call, and possibility of follow up in 3 months and 6 months’ time if they are a regular player.
3. Participant is given participant information sheet to read and opportunity to ask questions.
4. Participant signs consent form.
5. Fill out recruitment questionnaire either together or allow participant to do this.
6. **Ensure all recruitment information is collected and legible!**

<b>Informed consent to participate</b>
--

To ensure informed consent is given and maximise follow-up success, we need to be careful to explain to each interested person what their participation involves, i.e. follow up survey by phone at a time that suits them - a 30min phone call within 7 days, \$20 petrol voucher provided after this call. Some participants (regular players) will also be contacted twice more within 6 months - there will be a voucher after each subsequent call (outlined in Participant information sheet and on consent form).

**Participant must take a copy of the Participant Information Sheet.**

**Participant must each sign a consent form and take a copy of this form.**

## APPENDIX 6: DESCRIPTIVE SURVEY RESULTS

### Gambling activity

Information on the types of gambling activities that participants reported taking part in is reported in this Appendix, including time and money spent in casino and pub settings.

#### *Casino table game activity*

Participants' self-reported table game activity in casinos was explored among non-regular (gamble less than once a week) and regular (once per week or more often) gamblers and across the baseline sample as a whole (Table 64). A similar proportion of non-regular gamblers to regular gamblers reported that they play table games at casinos (35% c.f. 37% respectively). Note that participants in the regular gambler group may be regular casino table game players, regular EGM players or both. Of those who reported casino table gambling, one quarter (25%) of baseline participants reported playing these games regularly and a substantial proportion indicated they play monthly or less (59%). Participants ranked their three favourite casino table games, with blackjack and roulette emerging as favourites being ranked first and second in order of preference among regular and non-regular gamblers.

**Table 64. Casino table game activity at baseline by gambling frequency**

Baseline	Non-regular (n=292)		Regular (n=227)		Total (N=519)	
	N	(%)	N	(%)	N	(%)
<b>Plays table games at casinos</b>						
Yes	103	(35.3)	83	(36.6)	186	(35.8)
No	189	(64.7)	144	(63.4)	333	(64.2)
<b>How often do you play table games at the casino?</b>						
Less than monthly	55	(53.4)	26	(31.3)	81	(43.6)
Monthly	24	(23.3)	4	(4.8)	28	(15.1)
2 - 3 times a month	24	(23.3)	7	(8.4)	31	(16.7)
Weekly	-	-	24	(28.9)	24	(12.9)
2 - 3 times a week	-	-	18	(21.7)	18	(9.7)
More than 4 times a week	-	-	4	(4.8)	4	(2.2)
<b>Favourite casino table game</b>						
Blackjack	43	(41.8)	25	(30.1)	68	(36.6)
Roulette	27	(26.2)	26	(31.3)	53	(28.5)
Poker	8	(7.8)	6	(7.2)	14	(7.5)
Texas Hold'em	5	(4.9)	2	(2.4)	7	(3.8)
Baccarat	3	(2.9)	2	(2.4)	5	(2.7)
Money Wheel	2	(1.9)	4	(4.8)	6	(3.2)
Caribbean Stud Poker	2	(1.9)	2	(2.4)	4	(2.2)
Electronic Money Wheel	2	(1.9)	-	-	2	(1.1)
Midi Baccarat	1	(1.0)	1	(1.2)	2	(1.1)
Three Card Poker	-	-	1	(1.2)	1	(0.5)
Mini Baccarat	-	-	-	-	-	-
Craps	-	-	-	-	-	-
Pai Gow	-	-	-	-	-	-
Ponton	-	-	-	-	-	-
Electronic roulette	-	-	-	-	-	-
Tai Sai	-	-	-	-	-	-
Not Reported	10	(9.7)	14	(16.9)	24	(12.9)
<i>Total</i>	<i>103</i>	<i>(35.3)</i>	<i>83</i>	<i>(36.6)</i>	<i>186</i>	<i>(35.8)</i>

Self-reported averages for time and money spent gambling on casino table games are shown in Table 65. Regular gamblers reported spending more time casino table gambling per day (mean 120.4 minutes, median 120 minutes) than non-regular gamblers (mean 102.5 minutes, median 90 minutes). On average, regular gamblers reported spending a similar amount of time when casino table gambling without a break as non-regular gamblers (mean 61 and 55.1 minutes respectively). However, the low median value (30 minutes), large range (10 to 360 minutes) and standard deviations (64.1) for the regular gambler group indicates that there may be more variability in the time spent gambling without a break for these gamblers than for non-regular gamblers. The mean expenditure for regular gamblers was higher (\$258.9) than that for non-regular gamblers (\$138.2) and the similar median figures (\$100 for both) and much higher maximum expenditure for regular gamblers (\$3,000 vs. \$1000 for the non-regular group) suggest this is a result of a small group of regular gamblers spending large amounts of money.

**Table 65. Time and money spent gambling on casino table games by gambling frequency**

<b>Baseline</b>	<b>Non-regular (n=103)</b>	<b>Regular (n=83)</b>	<b>Total (n=186)</b>
<b>Average time per gambling day (minutes)</b>			
Mean	102.5	120.4	110.5
Standard Deviation	76.9	90.1	83.3
Median	90	120	120
Range (Min. - Max.)	5 - 420	10 - 360	5 - 420
No. missing	5	4	9
<b>Average time spent gambling without break (minutes)</b>			
Mean	55.1	61.0	57.8
Standard Deviation	41.7	64.1	52.8
Median	60	30	30
Range (Min. - Max.)	5 - 180	10 - 360	5 - 360
No. missing	7	6	13
<b>Average expenditure per gambling day (\$)</b>			
Mean	138.2	258.9	191.3
Standard Deviation	181.7	436.5	324.4
Median	100	100	100
Range (Min. - Max.)	10 - 1,000	0 - 3,000	0 - 3,000
No. missing	1	3	4

### ***EGM gambling activity***

The majority of participants at baseline indicated that they play EGMs (90%). The frequency of EGM activity in pubs/clubs and casinos separately is detailed in Table 66<sup>15</sup>. A similar proportion of regular (63%) and non-regular gamblers (57%) reported playing EGMs at pubs or clubs. Of those reporting pub/club EGM gambling, 60% reported gambling less frequently than once per week. Some EGM gambling at casinos was reported by the majority of regular and non-regular gamblers (both 79%). Approximately half of those who reported gambling on casino EGMs indicated they gambled monthly or less often (52%), and about one-third (30%) indicated gambling on them one a week or more often.

<sup>15</sup> When interpreting this information, it must be recalled that two thirds of participants were recruited from casinos (67%) (Table 7) and thus are likely to report playing in this environment. The remainder were recruited in and around pubs. In regard to gambling frequency, gamblers in the regular gambler group could be regular gamblers on any combination of casino table games, and pub/club or casino EGMs.

**Table 66. Frequency of EGM activity in pubs/clubs and casinos by gambling frequency**

Baseline	Non-regular (n=292)		Regular (n=227)		Total (n=519)	
	N	(%)	N	(%)	N	(%)
<b>Gambles on EGMs</b>						
Yes	255	(87.3)	214	(94.3)	469	(90.4)
No	37	(12.7)	13	(5.7)	50	(9.6)
<b>Gambles on EGMs at pubs/clubs</b>						
Yes	146	(57.3)	134	(62.6)	280	(59.7)
No	109	(42.8)	80	(37.4)	189	(37.4)
<i>Total</i>	255	(100.0)	214	(100.0)	469	(100.0)
<b>How often gambles on EGMs at pubs/clubs</b>						
Less than monthly	58	(39.7)	8	(6.1)	66	(23.6)
Monthly	46	(31.5)	4	(3.0)	50	(17.9)
2-3 times a month	41	(28.1)	10	(7.6)	51	(18.2)
Weekly	-	-	70	(52.3)	70	(25.0)
2-3 times a week	-	-	38	(28.0)	38	(13.6)
More than 4 times a week	-	-	3	(2.3)	3	(1.1)
Not Reported	1	(0.7)	1	(0.8)	2	(0.7)
<i>Total</i>	146	(100.0)	134	(100.0)	280	(100.0)
<b>Gambles on EGMs at Casinos</b>						
Yes	201	(78.8)	169	(79.0)	370	(78.9)
No	54	(21.2)	45	(21.0)	99	(21.1)
<i>Total</i>	255	(100.0)	214	(100.0)	469	(100.0)
<b>How often gambles on EGMs at casino</b>						
Less than monthly	105	(52.2)	26	(15.4)	161	(35.4)
Monthly	47	(23.4)	16	(9.5)	63	(17.0)
2-3 times a month	48	(23.9)	16	(9.5)	64	(17.3)
Weekly	-	-	67	(39.6)	67	(18.1)
2-3 times a week	-	-	38	(22.5)	38	(10.3)
More than 4 times a week	-	-	4	(2.4)	4	(1.1)
Not Reported	1	(0.5)	2	(1.2)	3	(0.8)
<i>Total</i>	255	(100.0)	214	(100.0)	469	(100.0)

EGM gambling was also categorised by venue preference (Table 67). A slightly larger proportion of regular gamblers (41%) than non-regular gamblers (35%) reported preference for both pub/club and casino EGM gambling.

**Table 67. EGM venue preference by gambling frequency**

EGM venue	Non-regular (n=292)		Regular (n=227)		Total (n=519)	
	N	(%)	N	(%)	N	(%)
Casino EGMs only	96	(42.7)	76	(38.8)	172	(40.9)
Both pub/club and casino EGMs	78	(34.7)	80	(40.8)	158	(37.5)
Pub/club EGMs only	51	(22.7)	40	(20.4)	91	(21.6)

Average time and money spent gambling on EGMS in each setting (pub/club and casino) at baseline is detailed in Table 68 and Table 69.

Regular gamblers who gamble on pub/club EGMS reported spending more time per gambling day than non-regular gamblers (mean 62.5 minutes, median 60 minutes vs. mean 52.2 minutes, median 30 minutes). Regular gamblers also reported spending more money per gambling day than non-regular gamblers (mean \$55.2, median \$40 vs. mean \$43.2, median \$22.5). Regular and non-regular gamblers reported a similar length of time gambling on one machine without a break (median 20 minutes for both) (Table 68).

**Table 68. Time and money spent gambling on EGMS in pubs/clubs by gambling frequency**

Baseline	Non-regular (n=146)	Regular (n=134)	Total (n=280)
<b>Average time per day (minutes)</b>			
Mean	52.2	62.5	57.1
Standard Deviation	49.7	43.8	47.2
Median	30	60	60
Range (Min. - Max.)	5 - 360	5 - 240	5 - 360
No. missing	8	9	17
<b>Time spent without break (minutes)</b>			
Mean	30.8	33.8	32.2
Standard Deviation	30.9	28.3	29.6
Median	20	20	20
Range (Min. - Max.)	5 - 240	3 - 120	3 - 240
No. missing	13	12	25
<b>Average expenditure per day (\$)</b>			
Mean	43.2	55.2	49.0
Standard Deviation	52.9	55.1	54.2
Median	22.5	40	30
Range (Min. - Max.)	5 - 400	6 - 300	5 - 400
No. missing	6	3	9

Regular gamblers reported spending more time gambling on casino EGMS per day (mean 124.6 minutes, median 120 minutes) than non-regular gamblers (mean 106.4 minutes, median 90 minutes). On average, regular gamblers also spent longer gambling on casino EGMS without a break (median 30 minutes) than non-regular gamblers (median 30 minutes) and spent more money per day (median \$60) than non-regular gamblers (median \$40) (Table 69).

**Table 69. Time and money spent gambling on EGMS in casinos by gambling frequency**

Baseline	Non-regular (n=201)	Regular (n=169)	Total (n=370)
<b>Average time per day (minutes)</b>			
Mean	106.4	124.6	115.0
Standard Deviation	84.8	72.1	79.4
Median	90	120	120
Range (Min. - Max.)	5 - 480	10 - 360	5 - 480
No. missing	27	14	41
<b>Time spent without break (minutes)</b>			
Mean	29.9	43.1	36.0
Standard Deviation	32.7	45.8	39.7
Median	20	30	20
Range (Min. - Max.)	5 - 180	5 - 240	5 - 240
No. missing	23	19	42
<b>Average expenditure per day (\$)</b>			
Mean	69.6	101.7	84.0
Standard Deviation	90.4	107.9	100.3
Median	40	60	50
Range (Min. - Max.)	2 - 600	2 - 550	2 - 600
No. missing	3	8	11

### *Other gambling activities*

Participants were asked to indicate whether they take part in any other types of gambling. Responses at baseline are summarised in Table 70. Similar participation in other types of gambling was observed between the regular and non-regular gamblers. Two-thirds (66%) of the total baseline

sample indicated they gambled on Lotto, with Instant Kiwi (41%), horse or dog racing (20%) and sports betting (15%) the next most popular activities. Close to one-fifth (17%) of participants indicated they did not engage in any additional gambling types.

**Table 70. Other gambling activities at baseline by gambling frequency**

Gambling activities	Non-regular (n=292)		Regular (n=227)		Total (n=519)	
	N	(%)	N	(%)	N	(%)
Lotto	190	(65.1)	150	(66.1)	340	(65.5)
Instant Kiwi	121	(41.4)	89	(39.2)	210	(40.5)
Horse or dog racing	57	(19.5)	47	(20.7)	104	(20.0)
Sports betting	41	(14.0)	36	(15.9)	77	(14.8)
Other (e.g. cards for money with friends)	16	(5.5)	10	(4.4)	26	(5.0)
Housie/bingo	12	(4.1)	11	(4.9)	23	(4.4)
Internet betting	13	(4.5)	9	(4.0)	22	(4.2)
Keno	7	(2.4)	10	(4.4)	17	(3.3)
None of the above	45	(15.4)	44	(19.4)	89	(17.2)
Not reported	3	(1.0)	-	-	3	(0.6)

### Problem gambling

The Problem Gambling Severity Index was used to assess problem gambling status in the baseline cohort. Categorised PGSI scores are shown in Table 71. Thirty-six of the participants (7%) scored eight or more on the PGSI, meeting the criteria for problem gambling. Regular gamblers (12%) were more likely to score as problem gamblers than non-regular gamblers (3%). A further 81 participants (16%) scored between three and seven and were classified as moderate-risk gamblers. Overall, just over half of the participants were non-problem gamblers (56%), with the remaining 44% showing some level of risk in their current gambling. Among regular gamblers this pattern was reversed with 55% showing some risk and 44% classed as non-problem gamblers.

**Table 71. Gambling severity at baseline by gambling frequency**

PGSI classification	Non-regular (n=291)		Regular (n=227)		Total (n=519)	
	N	(%)	N	(%)	N	(%)
Non-problem gambler (score of 0)	189	(65)	189	(44)	289	(56)
Low-risk gambler (score 1-2)	57	(20)	55	(24)	112	(22)
Moderate-risk gambler (score 3-7)	37	(13)	44	(19)	81	(16)
Problem gambler (score 8+)	8	(3)	28	(12)	36	(7)

Note: One non-regular participant did not answer the PGSI.

### Psychological distress

The Kessler-10 (K-10) scale was used to assess psychological distress; the results are shown in Table 72. The majority of gamblers at baseline (75%) indicated low psychological distress. Moderate distress was indicated by the responses of 16%, with high and very high distress indicated by six per cent and four per cent of gamblers respectively. The proportion of regular gamblers categorised as experiencing high or very high psychological distress was slightly elevated in comparison with non-regular gamblers (8% vs. 4% high; 6% vs. 2% very high).

**Table 72. Psychological distress at baseline by gambling frequency**

K-10 category	Non-Regular (n=292)		Regular (n=226)		Total (n=519)	
	N	(%)	N	(%)	N	(%)
Low (score 10-15)	224	(76)	163	(72)	387	(75)
Moderate (score 16-21)	50	(17)	32	(14)	82	(16)
High (score 22-29)	11	(4)	18	(8)	29	(6)
Very high (score 30-50)	7	(2)	13	(6)	20	(4)

Note: One regular participant did not answer the K-10.

## Psychological measures

### *Coping*

Stable (trait) coping styles used in response to stressful life events were measured using selected subscales of the COPE Inventory (Carver, Scheier, & Weintraub, 1989). This inventory assesses coping responses that are expected to be dysfunctional when relied upon in a cross-situational manner where other approaches may be more useful, as well as responses that are expected to be functional most of the time. Baseline scores across the sample for each of the eight COPE subscales selected (mental disengagement, instrumental social support, active coping, denial, behavioural disengagement, emotional social support, substance use and planning) are reported in Table 73. Participants reported engaging in a wide range of coping strategies. Median scores were similar between the non-regular and the regular gambler participants.

**Table 73. Baseline sample scores on COPE subscales by gambling frequency**

Frequency	COPE subscale	N*	Mean	Median	SD	Min. - Max.
Non-regular (n=292)	Planning	279	11.5	3.3	12	4 - 16
	Active coping	285	11.4	3.2	13	4 - 16
	Emotional social support	283	10.0	3.7	10	4 - 16
	Instrumental social support	285	9.6	3.4	10	4 - 16
	Mental disengagement	286	7.6	2.5	7	4 - 15
	Substance use	283	5.5	2.8	4	4 - 16
	Behavioural disengagement	283	5.4	2.2	4	4 - 14
	Denial	283	5.0	2.0	4	4 - 16
Regular (n=227)	Planning	212	10.3	3.3	11	4 - 16
	Active coping	212	10.6	3.2	11	4 - 16
	Emotional social support	212	8.2	3.5	8	4 - 16
	Instrumental social support	215	8.1	3.3	8	4 - 16
	Mental disengagement	215	7.4	2.4	7	4 - 14
	Substance use	213	5.5	3.0	4	4 - 16
	Behavioural disengagement	213	5.4	2.0	4	4 - 14
	Denial	213	5.1	2.1	4	4 - 15

\*N varies due to participants who answered "don't know" or refused to give responses on scale items

### *Impulsiveness*

Results for the personality trait of impulsiveness (measured using a NEO-PI subscale) at baseline are detailed in Table 74. Impulsiveness median scores were similar between non-regular and regular gamblers.

**Table 74. Baseline sample scores on NEO-PI by gambling frequency**

Frequency	NEO-PI subscale	N	Mean	Median	SD	Min. - Max.
Non-regular (n=292)	Impulsiveness subscale	290	21.8	4.6	22	8 - 36
Regular (n=227)	Impulsiveness subscale	223	21.3	4.5	21	8 - 39

## Alcohol and tobacco use

### Alcohol risk

Using the Audit-C, gamblers were classified as either non-risky or risky drinkers as shown in Table 75 (cut-off score of 4 points for women and 5 for men indicates risky drinking). Substantially more males were risky drinkers (73%) than females (28%). Less female regular gamblers were risky drinkers than female non-regular gamblers (20% vs. 34%). This pattern was also seen in males, though was less marked (70% risky drinking among regular gamblers vs. 75% among non-regular gamblers).

**Table 75. Alcohol risk category at baseline by gender and gambling frequency**

Gender	AUDIT-C category	Non-regular (n=238) <sup>#</sup>		Regular (n=177) <sup>#</sup>		Total (n=415) <sup>#</sup>	
		N	(%)	N	(%)	N	(%)
Male	Non-risky drinkers	37	(26)	33	(30)	70	(27)
	Risky drinkers	108	(75)	77	(70)	185	(73)
Female	Non-risky drinkers	79	(66)	60	(80)	139	(72)
	Risky drinkers	40	(34)	15	(20)	55	(28)

<sup>#</sup> Due to time limitations during questionnaire administration, AUDIT-C scores were not collected for 36 participants.

### Tobacco use

As shown in Table 76 the majority of participants were currently smoke free (73% either ex-smoker or non-smoker), while just under one-quarter (24%) were smoking daily. This proportion is just slightly higher than the 22% of people aged 15-64 years reported to be current cigarette smokers in the 2009 New Zealand Tobacco Use Survey (Ministry of Health, 2010b). Smoking status appears largely consistent across gambling frequency category with the exception of infrequent smokers being more common among non-regular gamblers than regular gamblers.

**Table 76. Smoking status at baseline by gambling frequency**

Tobacco smoking category	Non-regular (n=264) <sup>#</sup>		Regular (n=185) <sup>#</sup>		Total (n=449) <sup>#</sup>	
	N	(%)	N	(%)	N	(%)
Non-smoker <sup>##</sup>	125	(47)	87	(47)	212	(47)
Ex-smoker	65	(25)	50	(27)	115	(26)
Infrequent smoker	12	(5)	2	(1)	14	(3)
Once a day smoker	62	(23)	46	(25)	108	(24)

<sup>#</sup> Due to time limitations during questionnaire administration, smoking information was not collected for 70 participants.

<sup>##</sup> Non-smoker defined as less than 100 cigarettes in whole life.

**APPENDIX 7:  
DESCRIPTIVE SURVEY RESULTS - CASINO TABLE GAME FEATURES**

Participants who reported gambling on casino table games at baseline rated the importance of key table game features to their gambling satisfaction (Table 77). Each of these key features was endorsed as important to gambling satisfaction by at least two-thirds of participants. More than half of table game gamblers rated *croupier/dealer* (66%), *games where a low minimum bet is possible* (58%) and *having some control over the game* (53%) as ‘important or very important’ to their satisfaction.

**Table 77. Reported impact of key table game features on gambling satisfaction**

Feature	Not important	Slightly/Moderately important <sup>#</sup>	Important/Very important <sup>#</sup>	Not reported
	N (%)	N (%)	N (%)	N
Games where a low minimum bet is possible	22 (12.0)	55 (30.1)	106 (57.9)	3
Player skill	46 (24.9)	49 (26.5)	90 (48.7)	1
A small number of players at the table	65 (35.0)	56 (30.1)	65 (35.0)	0
Social interaction at the table	46 (24.7)	57 (30.7)	83 (44.6)	0
A faster game	65 (35.0)	65 (35.0)	56 (30.1)	0
Having some control over the game	51 (27.9)	36 (19.7)	96 (52.5)	3
Croupier/dealer (if present at table)	35 (18.9)	28 (15.1)	122 (66.0)	1

<sup>#</sup>Response categories have been collapsed.

The reported impact of the above casino table game features on intended money spent on gambling is shown in Table 78. Whilst at least half of table game gamblers reported that each feature had no effect on their expenditure (53% to 67%), a further quarter to one-third (between 22% and 34%) reported that these features led them to spend more than they intended. Excluding the presence of a croupier/dealer (4%), between 13% and 18% of table gamblers were reported that the features led them to spend less than they intended.

**Table 78. Impact of key casino table game features on intended money spent gambling**

Features	Spend less than intended <sup>#</sup>	No effect	Spend more than intended <sup>#</sup>	Not reported
	N (%)	N (%)	N (%)	N
Games where a low minimum bet is possible	30 (16.7)	105 (58.3)	45 (25.0)	6
Player skill	28 (15.6)	102 (56.7)	50 (27.8)	6
A small number of players at the table	32 (17.7)	110 (60.8)	39 (21.6)	5
Social interaction at the table	23 (12.9)	95 (53.1)	61 (34.1)	7
A faster game	31 (17.1)	103 (56.9)	47 (26.0)	5
Having some control over the game	29 (16.1)	101 (56.1)	50 (27.8)	6
Croupier/dealer (if present at table)	8 (4.4)	120 (66.7)	52 (28.9)	6

<sup>#</sup>Response categories have been collapsed.

Almost half (47%) of participants reported that *social interaction at the table* and *games where a low minimum bet is possible* led to spending more time gambling (47.2% and 47% respectively). All other features were reported to contribute to spending more time than intended gambling by between 20% and 43% of table gambling respondents. Notably, for the feature *a faster game*, more participants (28%) reported spending less time than intended on gambling at the tables than more time (20%) (Table 79).

**Table 79. Impact of key casino table game features on intended time spent gambling**

<b>Features</b>	<b>Spend less time than intended<sup>#</sup></b>	<b>No effect</b>	<b>Spend more time than intended<sup>#</sup></b>	<b>Not reported</b>
	<b>N (%)</b>	<b>N (%)</b>	<b>N (%)</b>	<b>N</b>
Games where a low minimum bet is possible	18 (9.9)	78 (43.1)	85 (47.0)	5
Player skill	18 (10.0)	96 (53.6)	65 (36.3)	7
A small number of players at the table	30 (16.7)	95 (52.8)	55 (30.6)	6
Social interaction at the table	13 (7.2)	82 (45.6)	85 (47.2)	6
A faster game	50 (27.6)	94 (51.9)	37 (20.4)	5
Having some control over the game	10 (5.6)	96 (53.3)	74 (41.1)	6
Croupier/dealer (if present at table)	7 (3.9)	95 (52.8)	78 (43.3)	6

<sup>#</sup> Response categories have been collapsed.

**APPENDIX 8:  
COVARIATE MEASURES BY TIME POINT**

Covariate measures of gambling severity, psychological distress and other psychological measures generally remained consistent across each of the time points. Each measure is reported across the time points in this section. Repeated measures General Linear Models were conducted to identify trends over time.

**Problem Gambling Severity Index (PGSI)**

PGSI scores did not change significantly across the three time points (mean 2.66 at baseline, 2.10 at 3 months and 2.06 at 6 months) as shown in Table 80.

**Table 80. Change in PGSI scores from baseline to three and six months**

	Baseline	3 months	Change (3 months - baseline)	6 months	Change (6 months - 3 months)	Change (6 months - baseline)
n	227	174	174	152	144	152
Mean	2.66	2.10	-0.24	2.06	-0.09	-0.04
SD	4.10	3.21	2.52	3.32	1.84	1.86
Median	1	1	0	0	0	0
Min.	0	0	-10	0	-9	-7
Max.	21	16	7	18	5	6

**Psychological distress (K-10)**

Psychological distress remained consistent across the three time points (mean 14.56 at baseline, 13.79 at 3 months, 14.43 at 6 months) as shown in Table 81 ( $p = 0.41$ ).

**Table 81. Change in K-10 scores from baseline to three and six months**

	Baseline	3 months	Change (3 months - baseline)	6 months	Change (6 months - 3 months)	Change (6 months - baseline)
n	226	174	173	151	143	150
Mean	14.56	13.79	-0.31	14.43	0.46	0.37
SD	6.18	5.22	4.92	6.62	5.77	5.41
Median	12	12	0	12	0	0
Min.	10	5	-20	4	-12	-18
Max.	42	34	19	39	26	25

**Psychological measures**

COPE subscale scores for *Behavioural disengagement* decreased across the three time points (mean 5.41 at baseline, 5.13 at 3 months, 4.86 at 6 months) ( $p = 0.02$ ). There were no statistically significant changes in scores for each of seven other COPE subscales (*mental disengagement, instrumental social support, active coping, denial, emotional social support, substance use and planning*<sup>16</sup>) across the three time points (Table 82).

<sup>16</sup> *Active coping* and *planning*, along with seeking *social support for instrumental reasons*, are regarded as problem focused coping styles. Seeking *social support for emotional reasons* is thought to represent an emotion focused

**Table 82. COPE subscales from baseline to three and six months**

COPE subscale	Baseline	3 months	Change (3 months - baseline)	6 months	Change (6 months - 3 months)	Change (6 months - baseline)
<b>Mental disengagement</b>						
n	215	163	155	146	132	140
Mean	7.41	7.19	-0.15	6.94	-0.40	-0.32
SD	2.40	2.37	2.34	2.45	2.06	2.33
Median	7	7	0	6	0	0
Min.	4	4	-6	4	-7	-6
Max.	14	16	6	16	5	6
<b>Use of instrumental social support</b>						
n	215	163	155	146	132	140
Mean	8.14	8.04	-0.19	8.34	0.24	0.26
SD	3.29	3.55	3.63	3.36	2.80	3.44
Median	8	7	0	8	0	0
Min.	4	4	-12	4	-10	-12
Max.	16	16	9	16	8	9
<b>Active coping</b>						
n	212	163	154	146	132	138
Mean	10.58	10.68	0.10	10.52	-0.27	-0.09
SD	3.21	3.21	3.49	3.60	3.21	3.87
Median	11	11	0	11	0	0
Min.	4	4	-9	4	-11	-10
Max.	16	16	10	16	8	10
<b>Denial</b>						
n	213	163	154	145	132	138
Mean	5.09	4.86	-0.12	4.70	-0.13	-0.30
SD	2.12	1.88	2.33	1.48	1.41	2.33
Median	4	4	0	4	0	0
Min.	4	4	-10	4	-4	-10
Max.	15	14	10	13	5	9
<b>Behavioural disengagement</b>						
n	213	163	154	145	132	138
Mean	5.41	5.13	-0.18	4.86	-0.30	-0.54
SD	2.04	1.96	2.09	1.67	1.62	2.08
Median	4	4	0	4	0	0
Min.	4	4	-6	4	-8	-7
Max.	14	16	9	14	4	10
<b>Use of emotional social support</b>						
n	212	163	154	146	132	138
Mean	8.18	8.53	0.23	8.60	0.12	0.43
SD	3.52	3.41	3.22	3.51	2.60	3.14
Median	8	8	0	8	0	0
Min.	4	4	-11	4	-7	-11
Max.	16	16	8	16	8	8

coping style where sympathy and understanding is sought out. Coping tendencies that rely on disengagement (either *behavioural disengagement* or *mental disengagement*), *denial* and *substance use* are thought to be potentially dysfunctional if used in inappropriate settings or as a primary coping style.

COPE subscale	Baseline	3 months	Change (3 months - baseline)	6 months	Change (6 months - 3 months)	Change (6 months - baseline)
<b>Substance use</b>						
n	213	163	154	146	132	139
Mean	5.53	5.31	0.16	5.01	-0.34	0.01
SD	3.02	2.51	2.29	2.20	1.73	2.47
Median	4	4	0	4	0	0
Min.	4	4	-8	4	-8	-8
Max.	16	16	10	16	9	12
<b>Planning</b>						
n	212	163	154	146	132	138
Mean	10.34	10.66	0.15	10.74	-0.05	0.32
SD	3.34	3.56	3.89	3.73	3.32	4.35
Median	11	11	0	11	0	0
Min.	4	4	-12	4	-12	-12
Max.	16	16	9	16	9	11

Results for the ‘impulsiveness’ personality trait (measured using a NEO-PI subscale) at baseline, three months and six months are detailed in Table 83. There were no statistically significant differences in impulsiveness mean scores across the three time points.

**Table 83. NEO-PI impulsiveness subscale from baseline to three and six months**

	Baseline	3 months	Change (3 months - baseline)	6 months	Change (6 months - 3 months)	Change (6 months - baseline)
n	223	171	170	151	143	150
Mean	21.29	20.76	-0.41	20.68	-0.14	-0.54
SD	4.53	4.51	4.41	4.85	4.07	4.57
Median	21	21	-1	21	0	-0.5
Min.	8	8	-13	8	-16	-18
Max.	39	37	14	31	11	13

### Alcohol risk

Alcohol risk levels (measured by the AUDIT-C) decreased slightly over the three time points, as presented in Table 84. This change was statistically significant ( $p = 0.02$ ).

**Table 84. AUDIT-C from baseline to three and six months**

	Baseline	3 months	Change (3 months - baseline)	6 months	Change (6 months - 3 months)	Change (6 months - baseline)
n	177	141	120	129	105	107
Mean	0.47	0.39	-0.03	0.36	-0.06	-0.09
SD	0.50	0.49	0.32	0.48	0.30	0.38
Median	0	0	0	0	0	0
Min.	0	0	-1	0	-1	-1
Max.	1	1	1	1	1	1

**APPENDIX 9:  
DESCRIPTIVE SURVEY RESULTS - EGM FEATURES**

**Key EGM Features**

Gamblers reported the importance of key EGM features on their satisfaction with gambling (Table 85). *Free spins* and *jackpots* were reported to be important or very important by over 70% of EGM gamblers (less than 10% of respondents reported these features as unimportant). Over half (53%) of the respondents reported *small frequent wins* to be important/very important compared with only 14% reporting this feature to be not important. EGM gamblers' responses to *number of playable lines* and *themed graphics and sounds* indicated more division in opinion in regard to their level of importance.

**Table 85. Importance of key EGM features on gambling satisfaction**

Feature	Not important	Slightly/ Moderately important <sup>#</sup>	Important/ Very important <sup>#</sup>	Not reported
	N (%)	N (%)	N (%)	N
Free spins	26 (5.7)	70 (15.4)	360 (79.0)	13
Small frequent wins	63 (13.7)	151 (32.9)	245 (53.3)	10
Jackpots	45 (9.8)	82 (17.9)	332 (72.3)	10
Machines with low minimum bets	89 (19.5)	141 (30.9)	226 (49.6)	13
Number of playable lines	123 (27.1)	139 (30.6)	192 (42.3)	15
Themed graphics and sounds	138 (30.0)	135 (29.4)	187 (40.7)	9

<sup>#</sup> Response categories have been collapsed.

In regard to their intended money spent on gambling (Table 86), less than 15% of EGM gamblers reported that the key features led them to spend less than they intended. However, over half of participants reported that the features had no effect on the intended expenditure. *Free spins*, *jackpots* and *small frequent wins* were endorsed by between 30% and 41% of EGM gamblers as encouraging them to spend more money gambling than they intended. Only about one-fifth (20% to 23%) of respondents spent more than intended based on *low minimum bets*, *number of playable lines* and *themed graphics and sounds*.

**Table 86. Impact of key EGM features on intended money spent on gambling**

Features	Spend less than intended <sup>#</sup>	No effect	Spend more than intended <sup>#</sup>	Not reported
	N (%)	N (%)	N (%)	N
Free spins	41 (9.1)	226 (50.3)	182 (40.5)	20
Small frequent wins	65 (14.3)	253 (55.6)	137 (30.1)	14
Jackpots	51 (11.2)	237 (52.0)	168 (36.8)	13
Machines with low minimum bets	65 (14.3)	299 (65.6)	92 (20.2)	13
Number of playable lines	42 (9.3)	307 (67.6)	105 (23.1)	15
Themed graphics and sounds	33 (7.2)	328 (71.9)	95 (20.8)	13

<sup>#</sup> Response categories have been collapsed.

EGM gamblers' reporting of the impact of key features on their intended time spent gambling (Table 87) showed that less than 13% of EGM gamblers reported that the key features led them to spend less time gambling than they intended. Thirty six percent to 68% of participants reported that the features had no effect on the intended time gambling. *Free spins*, *jackpots* and *small frequent wins* were endorsed by between 42% and 59% of EGM gamblers as encouraging them to spend more time gambling than they intended. One-fifth to one-third (21% to 31%) of respondents spent more time

gambling than intended based on *low minimum bets, number of playable lines and themed graphics and sounds*.

**Table 87. Reported impact of key EGM features on intended time spent gambling**

Feature	Spend less time than intended <sup>#</sup>	No effect	Spend more time than intended <sup>#</sup>	Not reported
	N (%)	N (%)	N (%)	N
Free spins	23 (5.1)	162 (36.0)	265 (58.9)	19
Small frequent wins	39 (8.6)	186 (41.0)	228 (50.3)	16
Jackpots	58 (12.8)	205 (45.4)	189 (41.8)	17
Machines with low minimum bets	45 (10.0)	266 (58.9)	141 (31.2)	17
Number of playable lines	58 (12.9)	297 (65.9)	96 (21.3)	18
Themed graphics and sounds	39 (8.6)	310 (68.4)	104 (23.0)	16

<sup>#</sup> Response categories have been collapsed.

### Engagement with player information displays

Sixty nine percent (319/465) of participants who gamble on EGMs reported awareness of player information displays (PIDs)<sup>17</sup>. As shown in Table 88, of those who were aware of PIDs, a few stated they use them often/always (7.6%), whereas the majority of participants indicated they use PIDs rarely/sometimes (39%) or never (54%).

**Table 88. Baseline frequency of use of PIDs**

	Never	Rarely/ Sometimes	Often/ Always	Not reported
	N (%)	N (%)	N (%)	N
<b>How often do you view or use PIDs?</b>	171 (53.8)	123 (38.7)	24 (7.6)	1

Participants who reported that they never view or use PIDs (n=171) were not asked subsequent questions relating to PIDs. Participants who indicated that they used PIDs were asked how they use them (open ended question). Among the 119 responses to this question, common responses were “to find out how to play the machine/how to place bets or what constitutes a win, for example symbol combinations” (42%), followed by “to check the pay-out percentage” (32.8%), “to check my session spend and time” (13.4%), and “out of curiosity” (10.1%).

Of those who use them, PIDs were perceived to have some impact on control over time and money spent (Table 89) for approximately one third of respondents (30% time, 34% money). Some respondents indicated that PIDs help them control the amount of money and time spent moderately/very much (15% and 13% respectively). However, about two-thirds of respondents reported no impact of PIDS on control over money and time spent gambling (66% and 70% respectively).

<sup>17</sup> The 50 participants who did not report using EGMs, and an additional four who refused to answer questions on PIDs are excluded from this section.

**Table 89. Perceived impact of PIDs on control over time and money spent on gambling**

	Not at all	Slightly/ Somewhat	Moderately/ Very much	Not reported
	N (%)	N (%)	N (%)	N
Helped to control the amount of <b>money</b> spent	98 (65.8)	29 (19.5)	22 (14.8)	4
Helped to control the amount of <b>time</b> gambled	104 (69.8)	25 (16.8)	20 (13.4)	3

As shown in Table 90, PIDs were perceived to be moderately/extremely accurate in regard to the record of money and time spent within a gambling session for about half of the participants (50% money, 51% time). Around half of participants felt PIDs to be inaccurate ('not at all') or only slightly/somewhat accurate in relation to the record of money spent (50%) and time spent (49%) in a gambling session.

**Table 90. Perceived accuracy of PIDs**

	Not at all	Slightly/ Somewhat	Moderately/ Extremely	Not reported
	N (%)	N (%)	N (%)	N
Accuracy regarding money spent gambling	25 (18.8)	42 (31.6)	66 (49.6)	13
Accuracy regarding time spent gambling	23 (17.6)	41 (31.3)	67 (51.1)	13

As can be seen in Table 91, most participants (75%) were neutral in regard to the impact that PIDs had on their satisfaction with gambling, while a few reported the impact to be negative (14%) or positive (12%).

**Table 91. Impact of PIDs on gambling satisfaction**

	Negatively	Neutral	Positive	Not reported
	N (%)	N (%)	N (%)	N
How PIDs affect satisfaction with gambling	21 (13.6)	115 (74.7)	18 (11.7)	2

Gamblers who had seen or were aware of PIDs reported the likely effect of accessing the information on their behaviour (Table 92). They were generally unlikely to seek help (92%), increase gambling (87%), consider the level of their gambling (78%) or reduce their gambling (74%). Some gamblers reported they would likely change machines in response to this information (33% vs. 51% unlikely), and a few reported they would reduce their gambling (15%) or consider the overall level of their gambling (14%).

**Table 92. Impact of PIDs on gambler behaviour**

On viewing a player information display, how likely would you...	Unlikely <sup>#</sup>	Neutral	Likely <sup>#</sup>	Not reported
	N (%)	N (%)	N (%)	N
Stop gambling in that visit	124 (82.1)	17 (11.3)	10 (6.6)	3
Reduce your gambling	111 (74.0)	16 (10.7)	23 (15.3)	4
Increase your gambling	129 (86.6)	12 (8.1)	8 (5.4)	5
Change machines	77 (51.3)	23 (15.3)	50 (33.3)	4
Consider the overall level of your gambling	114 (78.1)	12 (8.2)	20 (13.7)	8
Consider seeking help about your gambling	136 (91.9)	4 (2.7)	8 (5.4)	6

<sup>#</sup> Response categories have been collapsed.

## Engagement with pop-up messages

Fifty seven percent (260/460) of participants who gamble on EGMs reported experiencing a pop-up message in the last three months<sup>18</sup>. Participants reported seeing pop-up messages rarely/sometimes (59%) and often/always (38%) in a typical gambling session, whilst seven participants who were aware of them had not seen a pop-up message in the last three months. Where participants reported seeing pop-up messages often or always, most (70%) reported seeing one or two in a typical session (Table 93); fewer participants reported seeing more than three pop-ups per session (30%). Just four percent (4/98) of respondents reported that venue staff spoke to them about their gambling (two in pubs and two in casinos).

**Table 93. Pop-up message frequency per session for participants seeing them often or always**

Number of pop-up messages in a typical gambling session <sup>#</sup>	N	(%)
1	29	(29)
2	41	(41)
3	15	(15)
4	7	(7)
5+	7	(8)
<i>Total</i>	99	-

<sup>#</sup>This question was only asked of those who reported seeing pop-up messages often or always. One participant refused to answer this question.

As Table 94 details, although most participants reported that pop-up messages did not affect the amount of control they had over money and time spent gambling (72% money, 76% time), around a quarter reported an effect ranging from slightly/somewhat to moderately/very much (25% money, 22% time).

**Table 94. Impact of pop-up messages on control over money and time spent on gambling**

	Not at all	Slightly/ Somewhat	Moderately/ Very much	Not reported
Pop-up messages help to control amount of:	N (%)	N (%)	N (%)	N
Money spent	186 (71.5)	41 (15.8)	24 (9.2)	9
Time gambled	197 (75.8)	34 (13.1)	20 (9.2)	9

Pop-up messages were perceived to be inaccurate in the information they provide by a few (15%), slightly/somewhat accurate by some (23%), and moderately/extremely accurate by a slightly larger proportion (39%) of respondents. Almost two-thirds of participants were neutral in regard to the impact of pop-up messages on their satisfaction with gambling (63%), whereas some reported the impact of pop-up messages to be negative (25%) and a few to have a positive impact (9%).

On viewing a pop-up message, half (50%) of the respondents indicated they would read the information presented in the message (Table 95). While most respondents were unlikely to engage in any other behaviour, some indicated that they would change machines (18%) and a few indicated they would consider the level of their gambling (10%) or reduce their gambling (9%).

<sup>18</sup> The 50 participants who did not report using EGMs and an additional nine who did not answer questions on pop-up messages are excluded from this section.

**Table 95. Impact of pop-up messages on gambler behaviour**

	<b>Unlikely<sup>#</sup></b>	<b>Neutral</b>	<b>Likely<sup>#</sup></b>	<b>Not reported</b>
	<b>N (%)</b>	<b>N (%)</b>	<b>N (%)</b>	<b>N</b>
Read the information	103 (40.7)	23 (9.1)	127 (50.2)	7
Stop gambling in that visit	214 (84.9)	22 (8.7)	16 (6.4)	8
Reduce your gambling	209 (83.3)	20 (8.0)	22 (8.8)	9
Increase your gambling	236 (94.4)	12 (4.8)	2 (0.8)	10
Change machines	173 (69.2)	31 (12.4)	46 (18.4)	10
Consider the overall level of your gambling	206 (82.4)	19 (7.6)	25 (10.0)	10
Consider seeking help about your gambling	235 (94.0)	10 (4.0)	5 (2.0)	10

<sup>#</sup> Response categories have been collapsed.

When participants were asked about anything else they might do while a pop-up message was displayed (n=175) (open ended question), most participants indicated they would simply “wait for it to go away” (63%). Other popular responses were “become annoyed” (8%), “go and get a drink” (6%) and “talk to a friend” (5%). Five participants indicated they would “watch others play” and four participants indicated that they would “change machines” while a pop-up message was displayed.