Validation study of in-venue problem gambler indicators

Dr Anna Thomas
Swinburne University of Technology

Associate Professor Paul Delfabbro
The University of Adelaide

and

Dr Andrew R Armstrong
Swinburne University of Technology

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ACRONYMS

EGM	Electronic gaming Machine
GRA	gambling research Australia
PGSI	Problem gambling Severity Index
VLT	Video Lottery Terminal
PG	problem gambler
NPG	Non-problem gambler
MRG	Moderate risk gambler
LRG	low risk gambler
U.S.	United States
SOGS	South Oaks Gambling Screen
SGC	Saskatchewan Gaming Corporation
PGSI	Problem Gambling Severity Index
ALH	Australian Hospitality and Leisure Group

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Executive Summary

Overview

- The principal aims of the project were twofold and these were investigated in two stages:
    - Stage One sought to validate a set of problem gambling behavioural indicators developed in 2007 by Delfabbro, Osborn, Nevile, Skelt and McMillen to identify people who were experiencing problems with gambling (in particular, with electronic gaming machines).
    - Stage Two sought to assess the practical validity of a measure derived from these findings, the Gambling Behaviour Checklist (GBC-EGM), when applied by current EGM venue staff as a tool for identifying and assisting at-risk customers.
- Chapter 1 of the report provides a review of the literature and policy relevant to the identification of problem gamblers. Chapter 2 details Stage One and Chapter 3 details Stage Two.

Key Findings from Stage One: Validation of a set of problem gambling indicators

- The *Checklist of Visible Indicators,* developed by Delfabbro et al. in 2007 was validated against a 2013 sample of over 500 regular (fortnightly +) EGM gamblers across Australia.
- Almost all 52 indicators were more likely to be reported by problem gamblers than lower risk gamblers in both the 2007 and 2013 samples.
- The extent to which the indicators differentiated between PGSI-classified problem gamblers and non-problem gamblers in the 2013 sample was very highly correlated with the ratios observed in the 2007 sample;

- The strongest indicators included the rarest behaviours reported by regular gamblers. These behaviours can be considered hallmarks of problem gambling (e.g. customer asks for credit or loans; displays visible deteriorations in personal appearance; conceals presence at venue; is rude to staff; or if friends or relatives contact the venue looking for the customer).
- As in the 2007 study, the 2013 investigation also confirmed the existence of other indicators that were more commonly observed amongst all players, but which were more frequently observed amongst problem gamblers. Such indicators were considered less definitive on their own, but were considered indicative of problem gambling when observed in clusters. Examples included: looking sad and depressed, leaving the venue to find money, betting relative large sums per spin, replaying wins, or gambling through meal times.
    - For men, additional indicators included avoiding contact with others, physically shaking while gambling, and gambling for long periods without a break.
    - For women, additional indicators included avoiding the cashier, and gambling intensely without reacting to what was going on around them.
- The presence of 4-5 indicators successfully identified of problem EGM gamblers with a high degree of probability (80%+).
- The 52-item Likert-scored *Checklist of Visible Indicators* was transformed into the briefer and quicker to use 36-item *Gambling Behaviour Checklist* (the GBC-EGM) for use *in situ* by EGM staff.

Key Findings from Stage Two: Practical validation of the Gambling Behaviour Checklist

- To examine the practical validity of the GBC-EGM, a version modified for staff working the Victorian EGM environment was piloted over a three month period in Melbourne hotels, with staff using it as part of their normal protocols to assist in identification of possible problem gamblers.
- Following the three month pilot period, focus groups were conducted with eleven gaming staff located in the three venues to explore the usefulness of the checklist as a tool to assist in the identification of problem gamblers.
- Staff described the pilot GBC-EGM as clearly presented, relevant and comprehensive.
- For experienced staff, the checklist facilitated quick and easy identification of problem gamblers, reminding them at a glance of problem behaviours. For less experienced staff (<2 years EGM experience), the checklist assisted in proactive identification of problem behaviours, and increased confidence when managing customers.
- Use of the checklist was linked to improved customer observation and awareness of problem behaviours that were previously unknown to staff.
- Most checklist behaviours were considered easy to observe by almost all staff, especially those relating to gambling intensity and duration, EFTPOS use, customer aggression towards other customers, and superstitious rituals.
- A small number of checklist behaviours were considered more difficult to observe. These included: the rarest behaviours (which were also the strongest problem gambling indicators, e.g. asking for credit or loans); those less obvious to staff without specific training (e.g. friends or relatives contacting venue to locate customer); and those requiring greater than normal customer attention or customer knowledge (e.g. observing a spending pattern increase).
- The observability of some behaviours were location dependent (e.g. Bets $3 per spin required staff to be on the gaming floor) or shift dependent (e.g.

observing patrons having difficulty stopping at closing time). Busy periods limited observation of behaviours requiring sustained observation (e.g. observing customers staying on to gamble after friends left the venue).

- Staff usually observed around 10 checklist behaviours in a customer before responding with a follow-up action. Staff actions were more likely to follow observation of multiple higher severity behaviours than lower severity behaviours.
- Staff typically followed up with a general chat and put the customer under further observation, which is consistent with current Victorian staff training. It was uncommon for staff to say they consulted with senior staff about customer behaviour, and rare for them to approach customers directly about their problem behaviour unless the customer was threatening other patrons or property.
- There is a clear need for formal and informal staff training in identification and intervention as part of normal work practice. Use of the checklist within training will increase staff awareness of the range of indicators, the need to consider the context of behaviours, and the need to begin interventions early.
- Following analysis of staff feedback, the GBC-EGM was further refined into the 30-item GBC-EGM-SV for staff in Victoria, and the 32-item GBC-EGM-S for staff in other jurisdictions or countries. These versions enhanced checklist usability for staff through enhancing its brevity and simplicity as applied under typical working conditions. The 38-item GBC-EGM-R for researchers was also developed on the basis of the findings which prioritises breadth of behaviours over brevity.

Conclusions

- In this evaluation, key visible problem gambling indicators were identified and validated across multiple samples. The prevalence of these indicators in

different gambler-risk groups and the extent to which they discriminate between them were established.

- This information was used to develop the Gambling Behaviour Checklist. The checklist was shown to assist staff to observe, consolidate information and act on customers exhibiting multiple problem gambling behaviours before they asked for help.
- Integration of the checklist into gambling venues would appear to improve staff capacity to identify problem gambling behaviours, and subsequently act to minimise customer harm and enhance customer safety.
- The evaluation has provided a valuable evidence base to support the translation of problem gambling theory into staff practice under real working conditions.

CHAPTER 1: Literature Review

1.1 Background: A Public Health Approach to Problem Gambling

Despite some declines over the last decade, gambling remains a very popular leisure activity in Australia. Around 70% of the population gambles at least once per year and over 10% participate on a weekly basis. Australians spend over $19 billion annually on gambling with approximately 60-70% of this attributable to electronic gaming machines (EGMs) located in casinos, pubs and clubs (Delfabbro, 2011; Productivity Commission, 2010). At the time of writing, there were over a dozen casinos in Australia and more than 5000 gambling venues.

Problem gambling on EGMs is especially high when compared to other forms of gambling. Approximately 600,000 or 4% of Australian adults play EGMs at least weekly (Productivity Commission, 2010). While survey results vary, around 15% (90,000) of these weekly players are considered problem gamblers. An additional 15% (90,000) are at moderate risk of becoming problem gamblers. These rates are much higher than the prevalence of problem (0.69%) and moderate-risk (1.67%) gamblers amongst the total population of Australian adults who gamble. Illustrating the extent of the issue, problem and moderate-risk gamblers account for around 41% and 19% of EGM spending respectively. This amounts to 60% or $7.2 billion of total EGM expenditure (Productivity Commission, 1999, 2010).

Problem gambling is defined in terms of both behaviour and consequences. It is characterised by difficulties in limiting the amount of time and/or money spent on gambling whereby these difficulties result in harmful consequences for the gambler, their family and friends, or for the community (Neal, Delfabbro, & O'Neil, 2005). Adverse consequences typically involve financial problems including mortgage

foreclosure, inability to pay bills, rent or purchase essentials, such as food, and relationship breakdown. These harms extend to the family and friends of people who experience problem gambling. Work performance is often affected, resulting in absenteeism and potential job loss. Clinical distress is frequently reported, with suicide attempts in the worst cases. Problems can extend from legal to criminal issues when debts remain unpaid, or when theft or domestic violence result from financial or emotional strain (American Psychiatric Association, 2000; Productivity Commission, 2010).

In the past, the most common Government response to these documented negative consequences has been to provide funding for treatment services. However, in recognition of the fact that only a minority of problem gamblers (< 10%) seek formal assistance for their problems (Delfabbro, 2011; Productivity Commission, 2010); an increasing policy emphasis has been placed on prevention. Legislation and policy is now more specifically directed towards finding ways to prevent harm before it occurs. In general, this philosophy is consistent with a 'public health' approach to social and health problems which are now favoured by most Governments in Western countries (Brown, 2000; Brown and Raeburn, 2001; Griffiths, 2004; Korn and Shaffer, 1999). Although the term 'public health' has different definitions, it refers to a preference towards the development of broader or whole-of-population strategies to reduce the risks of harmful behaviour. Public health approaches typically divide policies and practices into three categories: primary, secondary and tertiary. Tertiary services are those which provide assistance to those already affected by a disease or disorder and include hospitals and the treatment services described above. Secondary interventions assist those already involved in the behaviour likely to cause harm, whereas primary interventions attempt to prevent the potentially problematic behaviour before it begins.

In the area of gambling policy, different State Governments have spent large amounts of money on both tertiary and primary intervention strategies, with the latter usually

taking the form of expensive mass media campaign to warn people about the dangers of problem gambling[1]. In recent years, however, a greater focus has been upon secondary intervention strategies to assist those who might be at risk of gambling-related harm. Usually described as 'responsible gambling initiatives', these measures usually involve two components. The first involves an appeal to existing gamblers to gamble in a way that minimizes harm (e.g., "Think of what you are really gambling with'), whereas the second places an emphasis on the responsibilities of the industry to provide products and venues that are safer and less likely to lead to harm (Griffiths, Wood, Parke and Parke, 2007; IPART, 2005; McMillen and Pitt, 2005; Productivity Commission, 2010).

In an industry context, such responsible gambling policies have taken many forms ranging from corporate duty-of-care statements to stated policy guidelines, voluntary codes to mandatory policies legislated and endorsed by State laws (Delfabbro, Osborn, Nevile, Osborn, and Skelt, 2007). Included within these guidelines or policies have been a variety of provisions, including restrictions on the availability of gambling to minors, bans on credit, limitations on automatic teller machine (ATM) withdrawals, staff training and the promotion of help service information usually via posters, flyers and cards in venues. In many countries, gamblers can also make applications to have themselves excluded from entry into venues if they believe that they cannot control their gambling (Hing, Nisbet, and Nuske, 2010; McMillen and Toms, 2006; Productivity Commission, 2010).[2]

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[1] Earlier campaigns in the 1990s usually focused on getting peopl e to seek help, whereas more recent campaigns try to encourage greater awareness of the potential dangers of excessive gambling and the value of 'responsible gambling'.

[2] Such provisions have also extended to the provision of online gambling services (Gainsbury, 2011; Griffiths, 2003). For example, *eCOGRA* (*e-Commerce and Online Gambling Regulation and Assurance*) is an independent UK-based company that has set standards and guidelines for the responsible provision of egambling services. Online gambling providers can apply for accreditation via *eCOGRA* based on their inclusion of various responsible gambling provisions, including age-restrictions, links to support serv ice websites, cooling off periods, self-exclusion and player account information.

Most of these provisions are reactive in the sense that the industry's actions are dictated largely by compliance with broader legislative requirements or responses to gambler-initiated requests for assistance (Hancock, Schellinck, & Schrans, 2008). However, as both Griffiths (2009), and Delfabbro, King and Borgas (2011) have recently pointed out, there is now greater emphasis (both in policy and legislation) on the extent to which the industry should take a proactive role in identifying and assisting people before any action is taken by gamblers themselves. In land-based forms of gambling, this form of proactive intervention implies that venue staff should take steps to intervene in situations where they have reasonable grounds on which to suspect that a person might be experiencing problems. In some situations this may be uncontroversial - if the person is showing obvious signs of distress, acting in a violent or destructive manner, or admits to experiencing problems with gambling. However, it is less clear when, and if, staff should respond when they have only a suspicion that a person has a problem with their gambling.

Accordingly, it is these more ambiguous situations that have given rise to both policy and research interest in the extent to which venue staff might be able to identify problem gamblers before they seek help. What sort of indicators or behaviours should be used; how should this information be used; and, to what extent are venue staff able to use this information to make effective early interventions? In the following sections, we review the best available evidence concerning the behavioural profiling of problem gamblers and how it might be used. Included in this review will be a discussion of the logistical challenges associated with applying this information in practice as well as examples of industry groups or venues that have attempted to incorporate indicators into their staff training and responsible gambling policies.

1.2 Identifying Problem Gamblers in Physical Venues: Sources of Evidence and Indicators

1.2.1 Overview

Most research into gambling over the last three decades have been on self-report methods. Relatively less attention has been directed towards understanding the extent to which gambling behaviour can be observed *in situ*. Despite this, there are now several studies and reviews (e.g., Allcock, 2002; Delfabbro, Osborn, Neville, McMillen, & Skelt, 2007; Delfabbro, Kin, & Griffiths, 2012) that have provided evidence that gambling behaviours are often visible or observable in venue environments so that it might be possible for staff to identify people at greater risk of gambling problems. In the sections that follow, we summarise the contents of earlier literature produced prior to 2007 along with a summary of the Delfabbro et al. (2007) report and other related research that has emerged between 2007 and 2013.

In both of the earlier reviews by Delfabbro and colleagues (Delfabbro et al., 2007, 2012), it was pointed out that the literature in this area is relatively small and is characterised by a diversity of methodologies and variables, so that it is not possible to conduct any formal 'critical review' or meta-analytical analysis of the findings. Nevertheless, following the methods employed by Delfabbro et al. (2012), literature concerning this topic for the present review was sought using a number of search strategies. This included: (a) A keyword search of major databases including PsychINFO, Scopus, and ISI Web of Knowledge using terms such as 'identifying/ identification * problem gamblers/ing, 'behavioural profiling', 'detection', 'indicators', and (b) Google searches using the same key terms, and (c) The authors' knowledge of previous studies and reviews of the area, conference presentations and experts in the area.

1.2.2 Studies of within-venue gambling

As pointed out by Delfabbro et al. (2012), the first major report relating to this topic was developed with the support of the Australasian Gaming Council (AGC) in 2002. The AGC review was not a research project, but a compilation of submissions from a variety of Australian and international experts working in research or clinical practice[3] (Allcock, 2002). The principal focus of the Allcock review was on behaviour in venues. Contributors were asked to comment on whether there were observable indicators that might reliably be used to differentiate problem gamblers from recreational gamblers in venues. They were also asked to state their views on the practical utility of this knowledge and how knowledge concerning the validity of indicators could be enhanced by future research. Most of the contributors identified indicators that they believed could be used, but most were pessimistic about how well staff could apply this knowledge given the various practical constraints associated with working in venue environments (Allcock, 2002; Blaszczynski, 2002; Ladouceur, 2002; Lesieur, 2002). These concerns related principally to the (i) visibility of behaviour in larger venues, (ii) consistency of observers, (iii) ability of staff to provide meaningful insights into pathological behaviour, and (iv) duration of observation periods. For example, as some authors pointed out, if staff changed shifts reasonably frequently, then concerns were raised about whether staff could observe individual customers for a sufficient duration to develop a good knowledge of their behaviour.

Although containing a wealth of information concerning the possible range of indicators that might be used, the 2002 report made no attempt to consolidate this information in way that would enable it to be used in research or in practice. Instead, this task remained to be completed by subsequent empirical studies, each of which was to develop and test their own comprehensive list of indicators and behaviours.

[3] The contributors included experienced researchers and /or clinical including Professors Lesieur, Blaszczynski, Ladouceur, Dr. Clive Allock amongst others.

The first of these studies was undertaken by Schellinck and Schrans (2004) in Nova Scotia. In this study, data was collected from a sample of 927 video lottery terminal (VLT) gamblers, 16.5% of whom were problem gamblers on the Focal Gambling Screen. A range of indicators were presented and respondents were asked to indicate how often they had experienced each symptom. Gamblers were asked to indicate how often these symptoms occurred when they gambled on a 5-point scale[4]. Other questions related to the reported frequency of gambling in the four months prior to the study and the number of venues that had been visited (Delfabbro et al., 2012).

The results in this study were prepared using a technique called association analysis. Association analysis is a technique often used in marketing and polling research to enable researchers to determine the probability of a given event occurring (e.g., in this case a problem gambler being identified) based on a combination of cues being detected at a given point in time. Each analysis requires the calculation of a number of variables. The first of these is the relative likelihood of problem and non-problem gamblers ever reporting a particular event. A second stage then involves weighting the data by the percentage of occurrences on which gamblers reported having displayed the behaviour[5].

Shellinck and Schrans (2004) showed that indicators could be differentiated along two dimensions: lift and frequency. They observed, for example, that some indicators had a very high lift value in the sense that they were clearly factors that were much more common in problem gamblers than other gamblers. Indicators could also vary in relation to how often they were reported to occur when problem gamblers visited a

[4] The 5-point scale was rated 0 = 'Never', 1 = 'Rarely or less than 25% of occasions', 2 = 'Occasionally or 25-50% of the time', 3 = 'Frequently or 50% or more occasions', and 4 = 'Always or 100% of the time'.

[5] Range is 0% to 100%, but based on recoding the ordinal categories described to 0-8 with 8 = 100%. The frequency of visitation to venues could be as frequent as once every four months to once every day (120 times). Accordingly, for every indicator it was therefore possible to assign a weight ranging from 8 to 960, where 8 = indicator occurred once (effectively 100% on 1 occasion) to 960 (every 120 visits). If all of these visits occurred at the one venue, a weight of 960 would be assigned, but if the person divided their regular visits equally between two venues, then the number of visits was halved on the assumption that any one location would only observe half of the instances. These weights were assigned to the percentages reporting each behaviour to calculate confidence ratings that indicated the likelihood of a person being a problem gambler if a particular indicator had been observed

venue (The 15 most commonly reported as summarised in Table 1). Based on their analyses, the authors found that the most common experiences or behaviours reported by problem gamblers in terms of frequency were spending three-quarters of their time gambling, gambling for more than 180 minutes in one session, feeling angry, and sweating. Feeling sick or sad or gambling for over 180 minutes in one session were the factors that most strongly differentiated problem gamblers from other gamblers. For example, a person was around three times more likely to be a problem gambler as compared with the base-rate in the sample if they reported feeling sick while gambling (as indicated by the lift value). Some indicators (using credit cards, shaking, going out to get cash) were more commonly reported by problem gamblers, but were much less commonly observed when non-problem gamblers played VLTs (as indicated by the percentage of problem gambler visits during which a given indicator was likely to be observed) (Delfabbro et al., 2012).

Table 1: Top 15 Indicators of problem gambling status

Indicator	Confidence	% PG visits	Lift
Feels sick to stomach/ nauseous	78.59	16.72	2.95
Feels sad/ depressed	74.50	29.08	2.80
Gambles for over 180 minutes per session	66.91	36.34	2.51
Borrows money to gamble	63.68	8.72	2.39
Gets the shakes	63.00	4.97	2.37
Has sweaty palms/ body	62.85	25.05	2.36
Feels edgy, nervous	62.53	22.72	2.35
Gets headaches	60.85	25.94	2.29
Gets out more cash to gamble with	58.67	7.93	2.21
Gambles for over 120 minutes per session	54.28	51.54	2.04
Spends ¾ of their time gambling	54.00	75.02	2.03
Uses credit card to gamble	53.64	2.52	2.02
Playing two VLTs at same time	53.03	10.16	1.99
Feels angry	52.83	32.36	1.99
Gets dry eyes	52.31	16.49	1.97

(from Schellinck & Schrans, 2004)
Note: Confidence refers to the probability that a person could be classified as a problem gambler given the presence of a single self-reported indicator

The results further revealed that confidence ratings could be increased substantially by considering more than one indicator together. For example, if one considered feeling sick and 'cashed a cheque' together, the confidence rating would increase to 99%. High ratings could also be obtained if only visible cues such as playing more than 180 minutes and cashing a cheque in combination were examined. For this combination, the confidence ratings increased to 90%. If one combined gambling for 180+ minutes and 'jammed the machine for continuous play' and gambled three-quarters of the time, the confidence rating was 95%, and similarly high confidence ratings could be obtained based on a variety of different variable combinations. However, as the authors pointed out, the difficulty with these combinations was that the estimated probability of these all

occurring at the same time was quite low (usually only around 5% or less for most combinations). These findings therefore suggested that the same problem gambler was unlikely to display multiple behaviours at any one location. Despite this, the results showed that if one could observe the best two-three indicator combinations (i.e. that yielded confidence ratings of 90%+), one would likely to be correct on 94% of occasions; only 6% of non-problem gamblers would be falsely approached (false positives) based on the use of indicators.

As Delfabbro et al. (2012) point out, while these findings are of interest in that they allow some differentiation between the behaviours of problem gamblers and other gamblers, there are several ways in which the study could be extended and re-examined. Only a relatively narrow range of behaviours and indicators were considered and many of these were either not visible or not applicable to some jurisdictions (e.g., in Australia, the provision of credit in venues, and gambling on two machines is not allowed[6]). A second issue is the assumption of the model used. While it appears very sensible to weight the indicators based on the relative number of visits to venues and the percentage of times with which they occur, this assumes that the likelihood of behaviour being detected on any one occasion increases the more often a person gambles and the more frequent the indicator. It does not consider the possibility that some venues may be able to accumulate information about players across multiple visits. Some indicators might be detected and noted on one occasion, whereas others could be observed on other days. Some venues or casinos, if they have a good knowledge of certain regular customers may be able to maintain files or logs relating to certain players and base their identification of problem gamblers on observations collected over an extended period.

[6] Although not permitted, these behaviours can sometimes still occur if venue staff are not sufficiently vigilant.

Such a possibility was considered in a study subsequently conducted by Hafeli and Schneider (2006) in Switzerland. In this research, qualitative interviews were conducted with a sample of 28 problem gamblers, 23 casino employees and seven regular gambling customers in an attempt to develop a range of indicators that might be used to identify problem gamblers within Swiss casinos. Material from these interviews was content analysed and classified into meaningful categories. Only statements that were simple and concise, and which referred to concrete examples of behaviour were included. The final checklist comprised 39 items (Identified, although not the exact wording in Table 2 and 3). Each item was scored "Applicable" and "Not applicable" and organised into six specific clusters of behaviour. Some of these were specific to table games or electronic gaming machines (EGMs), whereas others related to any form of gambling.

Table 2: Clusters of gambling behaviour

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1. *Frequency and Duration* (2 items): How many times the person gambles per week and for how many hours on each occasion.

2. *Raising the Funds* (5 items): Guest repeatedly changes high denomination notes at the cash desk; Guest tries to borrow from other guests; Guest tries to sell objects of value; Guest repeatedly withdraws cash more than once from ATMs; Guest repeatedly asks for a travel loan or parking ticket.

3. *Betting Behaviour* (7 items): Amount bet per visit; Level of bet per press of the button or game at the table; Guest raises bets each time or she visits; Guest bets consistent amounts; Guest immediately bets his/her winnings; (If playing EGMs) guest often presses the double button on EGMs; Guest repeatedly feeds EGMs bank notes

4. *Social Behaviour* (4 items): Guest avoids contact with others; Guest visits casino alone on more than 80% of occasions; Guest is impolite to staff (sudden, rude, demanding); Guest seeks contact (e.g., chats with other guests or casino staff).

5. *Reactions and behaviour while gambling* (20 items): Many of these items are specific to particular types of gambling, whereas others apply more generally (see Table 3 for a summary).

6. *Appearance* (1 item): Guest appears not to care about his/ her appearance (greasy unwashed hair, dirty clothes, unshaven, strong body odour, does not change clothes)

(from Hafeli & Schneider, 2006)

Table 3: Behaviours and reactions while gambling

Specific to Slot machines
Guest asks for his/her machine to be reserved (either for the next day or if he/she leaves the machines unattended for a moment)
Guest hits the buttons hard or hits the machines
Guest strokes the machines
Guest berates or swears at the machines
Guest talks to the machines
Guest complains about losses or blames them on the casino industry or machines

Table Games
Guest berates the croupier or blames him/her for losses
Guest often places bets too late in roulette
Guest bangs table with fist

General Behaviours
Guest gambles almost uninterruptedly
Guest is so focused on gambling that he or she barely reacts to what is going on around him/her
Guest gambles on more than one machine at once
Guest smokes a lot
Guest has 2 or more glasses of alcohol while gambling
Guest runs from table to table or machine to machine
Guest is nervous (e.g., shaking, perspiring, etc.)
Guest pleased about winning
Guest complains about losing
Guest already waiting outside casino doors before opening time
At closing time, it is difficult to persuade the guest to stop playing

(from Hafeli & Schneider, 2006)

Hafeili and Schneider's (2006) analyses showed that problem gamblers gambled more intensely and frequently, appeared more compelled to find many different ways to raise funds to gamble, and had different social and emotional responses. For example,

problem gamblers appeared to be more socially withdrawn, angry, anxious, depressed, but also more immersed in the activity. Most of these items appeared to have good face validity as indicators of problem gambling, although some items "Guest pleased by winning" and "Guest seeks social contact" appeared more questionable because it is known that problem gamblers are often solitary and evasive in their social interactions and also report reduced enjoyment from gambling (see Ben-Tovim, Esterman, Tolchard, and Battersby, 2001).

Although the authors did not present statistical analyses to show how these indicators could be used to differentiate between different types of gambler, these indicators have been applied in training programs for staff working in Swiss casinos, where there are already policies and procedures in place to identify customers with gambling-related problems. Swiss gambling policies are governed by the Casinos Act of 1998 which, as one of its provisions, requires staff to log instances of problem gambling. If people display two or more of what are termed A-type criteria (e.g., they admit to having a problem, try to borrow or steal money, or receive third party enquiries) (see Delfabbro et al., 2007, 2012; Hancock, 2011), an interview will be conducted with gamblers, whereas a range of other indicators (B-type criteria) are logged over time.

Hafeli and Schneider's (2006) work was followed by an Australian study undertaken by Delfabbro et al. (2007) which drew upon material from Hafeli and Schneider's as well as other previous studies, including the work of Schellinck and Schrans (2004) and the Allcock (2002) review. This study also attempted to develop indicators that were not so specifically focused on particular activities (e.g., casino table games), but which could be applied to venue-based gambling more broadly. Based upon this material, it was argued that visible indicators appeared to fall into six principal groups. Once again, there were items that referred to the statistically unusual frequency or intensity of gambling; evidence concerning gamblers' need for funding while gambling; variations in social and emotional responses, but also evidence that gamblers had lost control

over their gambling urges (Delfabbro et al., 2012). A full summary of this study appears below.

Summary of Delfabbro et al. (2007) national study

The first part of the research involved a survey of venue staff (n=120) and counsellors (n=20) recruited from different parts of Australia. Respondents were presented with lists of indicators and asked to specify whether each was a valid indicator of problem gambling. Findings showed almost all of the indicators were endorsed by both groups of respondents with venue staff, in particular, placing a very strong emphasis on social and emotional responses (e.g., customer anger, blaming staff for losing). Venue staff also drew attention to the importance of looking for changes in customer appearance and behaviour or "out of character" behaviours rather than solely focusing on static indicators.

Other questions in the venue staff survey related to likely impediments to identification, including staff hours, turnover, the size of venues, the visibility of customers on the gaming floor, and the adequacy of training. Over 70% indicated that there was inadequate staff training, 57% said that customers were difficult to see, around 50% thought that staff turnover and shift-lengths were a problem, and 58% did not think that staff would have enough time to observe problem gamblers on the gaming floor. At the same time, all the respondents believed that they had observed problem gamblers at venues at which they had worked. Thirty-eight percent indicated that this happened on a weekly basis and 42% reported that they saw problem gamblers all the time. Only 14% reported that it was hard or very difficult to spot problem gamblers, but 46% indicated having significant difficulties approaching people in the venue (Delfabbro et al., 2012).

A major component of the research by Delfabbro (2007) was a detailed survey of almost 700 regular gamblers recruited either from the general community or from

outside gaming venues. Participants were eligible to participate if they gambled at least fortnightly on EGMs, casino games or sports and race betting, although the principal focus was on EGMs because this is largely venue-based. All respondents completed the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001) and responded to a checklist of indicators where the frequency of each indicator was scored using a 5-point rating scale (0, 25, 50, 75, 100% of the time). Twenty per cent of the sample scored 8+ on the PGSI and were classified as problem gamblers, 21% were at risk, and 58% were low or no risk (Delfabbro et al., 2007).

The principal analyses in the Delfabbro et al. (2007) study were based on calculations that compared the relative odds of different indicators being reported by problem and non-problem gamblers. Consistent with early work by Schellinck and Schran (2004), the results showed that indicators typically fell into one of two categories. One group of indicators occurred relatively commonly in problem gamblers but were also reported by a moderate proportion of other regular gamblers. A second group were more rarely reported, but typically only by problem gamblers. Each indicator was described in terms of its likelihood of being reported by a problem gambler (PG) versus other regular gamblers, or P (indicator / PG) / P (indicator / Non-PG) with higher ratios indicating a greater the likelihood of the indicator being reported by problem gamblers. Table 4 shows that almost all behaviours or experiences were significantly more likely to be reported by problem gamblers, but that the divergence of responding varied across times.

Table 4: Probability of behaviour or indicators: Problem vs. non-problem gamblers

Indicator	PGs	NPG	PG/ NPG
Frequency, Duration and Intensity			
1. Gambled so intensely you barely reacted to what was going on around you	.91	.25	3.64
2. Gambled continuously	.91	.31	2.94
3. Rushed from one machine or gaming table to another	.80	.30	2.67
4. Bet $5 or more per spin most of the time	.51	.21	2.43
5. Gambled every day of the week	.66	.28	2.36
6. Gambled for three hours or more without a proper break	.87	.39	2.23
7. Played very fast	.92	.43	2.14
8. Played mainly high denomination $1 machines	.76	.44	1.73
9. After winning on poker machines, you play on quickly without even stopping to listen to the music or jingle	.96	.60	1.60
Impaired Control			
1. Found it difficult to stop gambling at closing time	69	.13	5.31
2. Gambled right through your lunch break or usual dinner time	.66	.15	4.41
3. Fell asleep at a machine	.08	.02	4.00
4. Stopped gambling only when the venue was closing	.74	.28	2.64
6. Started gambling when the venue was opening	.65	.25	2.60
5. Tried obsessively to win on a particular machine	.93	.54	1.72
Social Behaviours			
1. Asked venue staff not to let other people know you there	.16	.02	8.00
2. Had friends or relatives call/arrive at venue asking for you	.42	.08	5.25
3. Become very angry if someone took your favourite machine or spot in the venue	.70	.20	3.50
4. Was impolite to venue staff	.23	.07	3.29
5. Avoided contact, communicated very little with anyone else	.84	.31	2.71
6. Stayed on to gamble while friends left the venue	.77	.33	2.33

Indicator	PGs	NPG	PG/ NPG
Raising Funds/ Chasing Behaviour			
1. Asked for a loan or credit from venues	.16	.01	16.0
2. Borrowed money from other people at venues	.54	.11	4.91
3. Fell asleep at a machine	.08	.02	4.00
4. Started gambling when the venue was opening	.65	.25	2.60
5. Got cash out 2+ occasions to gamble ATM/ EFTPOS	.89	.43	2.07
6. Asked to change large notes at venues before gambling	.74	.43	1.72
5. Tried obsessively to win on a particular machine	.93	.54	1.72
Emotional Responses			
1. Cried after losing a lot of money	.58	.05	11.60
2. Shaking (while gambling)	.60	.06	10.00
3. Sweated a lot (while gambling)	.56	.07	8.00
4. Displayed your anger	.55	.09	6.11
5. Kicked machines	.23	.04	5.75
6. Sat with head in hand after losing	.68	.12	5.67
7. Felt nervous/ edgy	.84	.19	4.42
8. V. Sad /depressed (after gambling)	.94	.36	2.61
Other Behaviours			
1. Gambled after having drunk a lot of alcohol	.56	.37	1.51
Irrational Attributions			
1. Complained to staff about losing	.37	.10	3.70
2. Blamed venues or machines for losing	.81	.23	3.52
3. Swore at machines or venue staff because you lost	.49	.20	2.45

(from Delfabbro et al., 2007); PG=problem gambler, NPG=non-problem gambler

Some activities, such as using ATMs on several occasions, playing very fast, or trying very hard to win on one machine were relatively common amongst problem gamblers, but also reported by a modest proportion of other gamblers. By contrast, very strong

emotional responses or attempts to disguise one's gambling were rarely reported by non-problem gamblers.

These indicators were used in a series of logistic regression analyses to determine the best predictors of gambler status (problem vs. non-problem). Regressions were run for the overall sample and then for males and females separately, thus three final models were presented with different indicators. Table 5 shows the probability of a person being a problem gambler based on the accumulated observation of specific behaviours or indicators.

Table 5: Probability of a person being a problem gambler

	PG
Total Sample	
Nervous and edgy	.53
+ Cried after losing	.81
+ Left venue to find money	.87
+ Played very fast	.89
+ Gambled continuously	.89
Males Only	
Gambled for 3+ hours without break	.33
+ Sweated a lot while gambling	.74
+ Difficulty stopping at closing time	.86
+Displayed anger	.90
Females Only	
Kicked machines	.65
+ Nervous or edgy	.90
+ Lost track of things around them	.95
+ 2 or more withdrawals from ATMs	.98
+ Left venue to find money	.99
+ Angry if spot taken	.99

(from Delfabbro et al., 2007), PG=problem gambler
Note: Each proportion/percentage is based on the cumulative addition of the indicators in that model, e.g., in total sample .87 or 87% is based on the 1st three indicators.

All three models showed that more accurate differentiation is likely to occur based on multiple indicators, but that the classification probabilities associated with the addition of indicators is subject to marginal returns.

For males, one indicator alone leads to little classification accuracy (33%), whereas the addition of one more indicator leads to significant increases in confidence (74%). However, once three indicators have been introduced, only relatively small increments in the probability value will be achieved if additional indicators are considered. This effect appears to be even stronger when one considers female problem gamblers. For this group, it appears that as few as two indicators may be sufficient to be at least 90% confident that a person is a problem gambler. The strongest predictors for males appeared to relate to impaired control (i.e., an inability to stop gambling) and emotional responses, whereas strong emotional responses and a preoccupation with gambling appeared most indicative when considering female problem gamblers.

1.2.3 Related research: Studies of online and electronic gambling

Despite our principal focus on venue-based gambling, it is important to draw attention to related work that may have future implications for gambling in Australia and/or could inform development of indicators to be used in face to face environments (Delfabbro et al., 2012). Much of this work relates to online gambling, but there are also studies and identification systems that have been applied to gaming in venues. In both contexts, attempts have been made to develop computerised systems that are capable of tracking the activity of individual players over time (Griffiths, 2009). For example, if people use some form of loyalty card or device when they gamble, it is possible for venues to determine how long individual players gamble, how much they spend, and on how many machines (Griffiths & Wood, 2008).

On the internet, this information is even more detailed. Player account data can be used to examine the nature of the bets people place, how much they spent over time,

how long they spend gambling, and any trends in their expenditure patterns (Griffiths & Parke, 2002). This information can then be used to alert players to how much they have been spending and for the gambling provider to determine whether the person might benefit from a particular responsible gambling service (e.g., exclusion, time-outs, problem gambling service information). In several countries systems (e.g., *PlayScan, Observer,* and *GAMTrack*) have been designed to track player behaviour and provide diagnostic or 'smart' interpretations of player data.

Tools of this nature were designed to detect players at risk of developing gambling problems, and offer the gamblers' tools to help change their behaviour. Such tools have been likened to a 'safety belt' (i.e., something you use without intending to actually make use of). In most cases, the use of these systems has been voluntary, but gaming operators will typically recommend that customers take advantage of these features (Griffiths, Wood & Parke, 2009). If the system predicts players' behaviour as risky, they get an advance warning together with advice on how they can change their patterns in order to avoid future unhealthy and/or risky gambling.

In 2009, Griffiths, Wood and Parke undertook a critical review of *PlayScan,* a voluntary responsible gambling tool which is made available to internet gamblers by *Svenska Spel* and used by around a quarter of all gamblers. The system uses a 'traffic light' indicator system to indicate the level of risk. If a player's gaming is stable and without any signs of risky gaming behaviour, it gives a green signal to the player. A yellow signal indicates some risky gaming. Serious problems with gaming are indicated by a red signal. The study showed very low rates of utilisation of other features such as limit-setting but found that over 60% of players found the traffic light warning to be useful and made them more aware of their gambling.

Other parts of the world, including the Canadian providences of Saskatchewan and Nova Scotia, have developed similar systems, although detailed evaluations of these

systems have not been made available for peer review. Davies (2007) points out that Saskatchewan was one of the first places in the world to examine whether technology could be incorporated into existing loyalty card systems to provide responsible gambling features. The system arose as the result of collaboration between the technology company *iView Systems*, the Saskatchewan Gaming Corporation (SGC) who developed a software package called *iCare* that was installed on VLTs in its major casinos (Austin, 2007). *iCare* is a computerised tracking system that allows casinos to monitor and track player behaviour across time. The software is used in conjunction with a responsible gambling training programme for staff (Davies, 2007). Davies reported that two levels of training are used. Level 1 training is designed to teach staff to recognise the warning signals or 'red flags' that may indicate that a customer is experiencing gambling-related harm, whereas Level 2 trains staff in ways to approach and intervene if problems are detected. These different levels are very similar to those described by other casinos around the world, e.g., SkyCity Auckland and Adelaide (Hing et al., 2010). According to promotional material, *iCare* software has the capacity to generate predictive information based on an algorithm so that the casino can observe changes in player behaviour over an extended period. The system also allows incidents to be logged so that an information base can be built up concerning certain at-risk customers. How information is used is then up to the discretion of individual casinos, but would usually involve interactions with players who appear to be showing signs of risky play.

Internet tracking has also been used to profile gambling behaviour in two recent United States (U.S.) studies. For example, LaBrie and Shaffer (2011) examined the gambling behaviour of 679 sports betters using account data provided by the industry. All of these people had provided information concerning the reason for closing down their accounts. One of these reasons was because of problem gambling so that it was possible to compare the behaviour of 215 people who closed down their accounts for

this reason and those who had not been satisfied (n=113) and who had been no longer interested (n=351). Using discriminant function analysis, the authors showed that the problem gamblers differed in several ways. They typically bet more often, placed larger bets, and engaged in more intense betting soon after enrolment. Although none of these findings may seem surprising, these results suggested that it was methodologically possible to study internet gambling and to develop prospective profiles that might indicate more problematic behaviour.

A second study of internet gambling conducted by Xuan and Shaffer (2009) examined 18 months of data collected from 226 people who had closed their accounts due to gambling-related problems and a case control sample of 226 people who kept their accounts open. It was found that problem gamblers, in comparison to the control group, tended to increase the average size of their bets, decrease the frequency of their bets, but choose less risky odds just prior to closing down their accounts. Thus, contrary to the view that problem gamblers might try to chase their losses by choosing riskier bets, some problem gamblers tended to become more conservative over time. Larger bets were placed on options with shorter odds (Delfabbro et al., 2012).

In the UK, Griffiths (2009; Griffiths & Whitty, 2010) examined the behavioural characteristics of online problem gamblers as part of several consultancy projects for online gaming companies and as part of a study based on data from 160,000 online gamblers from *win2day,* the Austrian gaming operator (Auer & Griffiths, 2011). This work identified a number of behavioural indicators that are engaged in by online problem gamblers and that can be spotted online using behavioural tracking technology. Such behaviours include (i) spending a lot of time and/or money gambling, (ii) increasing the amount of time and/or money spent gambling over time, (iii) chasing gambling losses, (iv) playing a variety of games, (v) player 'reload' within gambling session, (vi) frequent payment method changes, (vii) verbal aggression, and (viii) constant complaints to customer services. Griffiths argues that any one of these on

their own does not necessarily indicate problem gambling but that the more behavioural indicators that a gambler engages in, the more likely they are to be an online problem gambler (Delfabbro et al., 2012).

There have also been attempts to track the behaviour of EGM players using card-based systems. For example, a study by Svetieva, Walker, Blaszczynski, and Sharpe (2006) examined the playing behaviour of 102 EGM players in NSW clubs using data collected from membership cards. These cards were used as part of a loyalty club system that allowed one to track the intensity of play across multiple venues. The principal aim of the study was to determine whether problem gamblers (defined as people with South Oaks Gambling Screen [SOGS] scores > 5) had a different play profile from other gamblers. The results showed that problem gamblers tended to gamble for longer periods each week (280 minutes vs. 192 minutes), play more days per week (2.28 vs. 1.79) and lose significantly more money ($65 vs. $26). However, the two groups of gamblers did not differ in other aspects of play, including how often they changed machines, stayed on the machines, or gambled continuously.

Other analyses of this nature have been undertaken as part of trials of responsible gambling features or pre-commitment technology on EGMs. In South Australia, for example, an evaluation of a card-based pre-commitment system (*Playsmart*) provided by the company *Worldsmart* allowed access to player expenditure data over a number of months (Schottler, 2010). As in Svetieva et al.'s (2006) study, problem gamblers (classified using the PGSI) were found to gamble larger amounts and to have longer gambling sessions than recreational players. In this trial, players had to set limits in relation to their expenditure or the amount of time spent gambling. If these limits were breached, a signal would be sent to a computer console in venues so that staff would be alerted to which players had exceeded their limits. Players could also receive personalised warning messages to alert them to the status of their session.

A similar study conducted by Focal Research (2007) as part of an evaluation of the Nova Scotia Responsible Gambling Device obtained similar findings by analysing data obtained from cards tracked over a number of months in VLT venues. The study was able to examine pre- and post-expenditure patterns for players who had, or had not, utilised the responsible gambling features on the pre-commitment cards. The study showed that it was possible to determine the level of expenditure of different groups of gamblers based on their level of risk (i.e., problem vs. non-problem gamblers) and the extent to which use of the pre-commitment features had led to changes in their gambling behaviour.

Thus it is possible to use electronic systems to track behaviour and create profiles based on the riskiness of play. These can then be used to generate tailored warnings to customers and/or to alert staff to risky or problematic customer play. In the latter case, alerts can be incorporated into responsible gambling training programs and lead to staff approaches to possible problem gamblers (Delfabbro et al., 2012).

1.2.4 Critique of indicator studies

On the whole, the studies conducted so far have yielded reasonably consistent findings. All agree that: (a) there are potentially valid indicators of problem gambling, (b) it is necessary to base judgments about the status of individual gamblers on multiple indicators or sources of information, and (c) many of the indicators are either observable or measurable either within venues or capable of being tracked electronically (in some contexts). However, the existing studies also have a number of limitations that need to be taken into account before this information can be easily translated to 'responsible gambling' applications.

The first difficulty is that most (if not all) of the published studies described above involved only single samples. For statistical models to be confidently applied to

different gamblers populations, it would be important to show that models developed in one sample can be replicated using another (Schellinck, 2011).

A second difficulty is that survey-based responses do not provide a lot of information concerning the practical reality of observing and consolidating information in a venue environment. Even if the same staff members are available in the venue over a protracted period, it does not necessarily follow that they will have the ability to observe the same customers all the time. In Delfabbro et al.'s (2007) study, an attempt was made to position observers in venues for periods of up to four hours to determine how much behaviour could be reasonably observed in this period. In general, it was found that several indicators could be observed in this period, but that such a process was unlikely to be possible for venue staff members who generally only spent around 15% of their time in the areas where gaming machines were operating. Schellinck and Schran's (2004) work similarly shows that, if the actual frequency with which people produce different indicators are considered, the probability of observing two indicators together at a particular point in time is likely to be very low.

However, staff do appear to be able to observe signs of problematic gambling. Delfabbro et al.'s (2007) study included discussions with experts and venue staff, finding that, although staff generally felt that current training was inadequate, they were still able to identify problem gambling in their venues. Similarly, a study in Victoria (Cosic, 2012) found that staff nominated observable signs of problem gambling correlated well with those of Delfabbro et al. (2007). Cosic found that staff most commonly discussed signs related to emotional responses and chasing funds suggesting that these are the most easily observable in staff. She concluded that training should be targeted at increasing staff awareness of some of the less obvious signs including social behaviours and impaired control.

More support for the view that staff can observe signs of problem gambling over time was obtained in another recent study by Delfabbro, Borgas and King (2011) that involved an *in situ* interview with both customers and venue staff at several South Australian venues. Customers were approached and asked to complete a short survey concerning their gambling habits as well as a measure of problem gambling (the PGSI). Staff members were then asked to rate their knowledge of each of these customers and the likelihood of them being problem gamblers. These staff had received training from Gaming Care South Australia which included some element of training in how to identify problem gamblers in venues with potential indicators and some role playing exercises. It was found that staff generally knew the customers' gambling habits quite well and were generally able to identify those who were more likely to be at risk of having gambling-related problems as based on PGSI scores. Those identified as possible problem gamblers by venue staff had significantly higher PGSI scores than those who were identified as not having problems. However, the classification rates based on the correspondence of staff ratings and self-reported PGSI classifications were low. Of 22 problem gamblers identified by self-report, 14 were reported as having no problems by staff, whereas a small number of non-problem and low risk gamblers (PGSI scores < 3) were suspected of being problem gamblers. These results suggest that staff knowledge was sufficient to assist them in confidently knowing the general group of customers that might be monitored more closely for signs of gambling-related harm, but that staff are likely to under-estimate the severity of gambling issues, and will be reluctant to label a customer as a problem gambler until the signs are very clear.

Another reason staff may be reluctant to nominate customers as problem gamblers is a lack of confidence in approaching and discussing gambling problems. The need for staff training in both identification and approach was highlighted in a survey of 426 managers/nominees and venue staff conducted by the Victorian Commission for

Gambling Regulation (VCGR; VCGR News, 2011). They found that most staff would like to receive more comprehensive training in identifying possible problem gamblers and interacting with them. In particular, 36% of employees reported having some difficulties identifying problem gamblers and two-thirds (66%) said they were "less than comfortable" initiating contact with customers.

Similar results were found in a South Australian study by Hing, Nisbet and Nuske (2010). A number of gaming staff were interviewed and provided with different venue scenarios and asked to describe how they would respond. Most felt reasonably confident in being able to assist people who self-reported as having difficulties with gambling, but few felt confident about proactively approaching customers. It was generally considered easier to assist people if they were regular customers and where there had been some opportunity to build some personal rapport, but it was also acknowledged that many problem gamblers are also secretive and made active attempts to conceal their difficulties and avoid contact with staff. These findings further strengthen the argument for greater translation of research relating to the identification of problem gamblers into staff training.

1.2.5 Indicators in policy and practice contexts

Including problem gambling indicators in policy

In Australia and a number of other countries, attempts have been made to encourage venues to play a more active role in providing their services in a manner that reduces the likelihood of gambling-related harm. At the broadest level, these take the form of duty of care statements developed by the industry to promote themselves as 'responsible' service providers. However, there are also dedicated 'codes of practice' that set out more specific details concerning the principles and practices that should feature in the delivery of services. In most jurisdictions, these codes are voluntary in that members of the industry are encouraged to use them, but are not penalised for

non-compliance. Mandatory codes, by contrast, involve a requirement to adhere to a range of obligations which are informed by legislation, audited and enforced by regulators often at a threat of financial penalties or a withholding of operational rights (see Delfabbro et al., 2007 for a detailed review).

In Australia, almost every industry operator has its own code of practice (over 30 exist, Australasian Gaming Council, 2012), but States and Territories differ in how codes are applied. A summary of the different codes (current for 2012) is provided in Table 6. As indicated, South Australia and Victoria both have mandatory codes of practice which set out specific practices that must be complied with to hold a gambling licence. All staff must undergo training to work in venues and the industry is expected to take reasonable steps to identify and assist people who may be at risk of gambling-related harm. Tasmania has similar mandatory codes and an emphasis on the provision of appropriate staff training. Victoria has a mandatory requirement for codes of practice but, unlike South Australia and the ACT, the industry is given the responsibility of developing its own set of practices that address the key requirements set out by the State regulator.

In Queensland, a co-regulatory environment applies. Responsible gambling provisions are developed through collaboration between the State Government, non-Government sector and the industry. Staff training is based on a Responsible Gambling Training Manual and periodic audits and reviews are put in place to update and refine the code over time. The Northern Territory Model is quite similar to the Queensland model, although the code is more specifically identified as 'mandatory'. Codes of practice are required by law and training must be undertaken using an approved training manual.

Table 6: Responsible gambling codes of practice by jurisdiction

Region	Code of Practice	Details	Staff Training	Identification of problem gamblers
VIC	Mandatory	All providers of gambling services must have a code of practice. The code must address a number of key requirements, but the exact form of the implementation is left to industry	Gaming staff must complete an approved course must within 6 months of appointment and have refresher courses every 3 years. Courses must address recognised competency standard.	The code must provide details concerning how staff interact with customers. Training must include awareness of the symptoms of problem gambling and knowledge of what to do if indicators are detected.
SA	Mandatory	A legislated code applies to all providers of gambling services.	All staff are required to undergo responsible gambling training.	The training should encourage the proactive identification of problem gambling in venues.
NSW	Self-regulatory	The industry has its own voluntary codes which include a wide range of responsible gambling provisions.	All staff are required to undergo responsible gambling training.	No specific emphasis on the proactive identification of problem gamblers.
ACT	Mandatory	A legislated code applies to all providers of gambling services.	All staff required to undergo approved responsible gambling training.	Active attempts should be made by staff to identify problem gamblers.

Region	Code of Practice	Details	Staff Training	Identification of problem gamblers
QLD	Co-regulatory	The code of practice is developed as a result of a collaboration between parties (Government, non-Government and the industry)	Responsible Gambling Training Manual to be used for training.	Some emphasis on identification of problem gamblers. Incident registers and audits are encouraged.
TAS	Mandatory	A legislated code applies to all gambling providers.	Venue staff must undergo appropriate training as approved by the Tasmanian Gaming Commission	Training involves assistance to staff in recognising and dealing with people with gambling problems or at-risk.
WA	Self-regulatory	Individual industry providers have their own voluntary codes.	Training encouraged but not required	No specific emphasis on the proactive identification of problem gamblers.
NT	Mandatory / Co-regulatory	Industry, non-Govt. and Govt. collaborate to develop code.	Responsible Gambling Training Manual to be used for training.	No specific emphasis on the proactive identification of problem gamblers

By contrast, New South Wales has a largely self-regulatory system in which individual industry groups provide their own voluntary codes of practice. The content of these codes is generally similar to the other States and Territories and staff training is required. Western Australia, the only State without EGMs in clubs and hotels, does not have a formal code of practice, but individual providers report that they comply with their own voluntary codes. Details of the specific regulatory bodies, legislation and documents relating to responsible gambling have been reviewed by the Australasian Gaming Council (2012) and Delfabbro et al. (2007).

In New Zealand, under the Gambling Act 2003, the industry is required to adhere to a legislated, mandatory code of practice. Included in this set of provisions is a requirement that all venue staff undertake appropriate training and that the industry develop strategies to assist in the early identification of customers who are either experiencing gambling-related harm or who at 'at risk' of developing harm. The actual nature of the training and identification policy is determined by the industry, but training must be approved by the Government (e.g., the New Zealand Gambling Commission reviews the appropriateness of intervention policies). These requirements, therefore, are similar to those in various Australian states and territories.

Training staff in the use of indicators to identify problem gambling

In response to this legislative mandate, the major New Zealand casinos have developed detailed identification and intervention policies that apply to their venue operations. For example, as discussed by Delfabbro et al. (2007), Christchurch Casino has, for a number of years, developed a list of indicators used in training to assist staff to identify problem gamblers. Almost all of these are included in the list presented earlier in this review and relate to unusual social and emotional behaviours, excessive time spent at the Casino, changes in hygiene or appearance and attempts to borrow money. Staff at Christchurch are trained to look for these known indicators and how

these relate to the DSM-IV criteria for pathological gambling. A similar, but longer list of indicators is employed by SkyCity Casino in Auckland. In their system, indicators are divided into groups: those which are high risk indicators of harm and those which need to be examined in relation to other factors. High risk indicators would include situations where the gambler admits to having a problem or where they are third party enquiries about the person's wellbeing. Other indicators relate to social and emotional behaviours or the extent to which the person is looking to raise money to gamble (e.g., attempts to sell things, borrowing, requests for credit). Training in the process of identification and how staff should respond is included as part of SkyCity's Host Responsibility Programme and this is also available in the SkyCity Adelaide Casino.

Training in how to identify problem gambling is also featured in a number of Australian training programs, but using different methodologies or strategies. Some indicative examples are as follows:

- GamingCare and ClubSafe in South Australia have dedicated training sessions for venue staff which review indicators of problem gambling and conduct role-plays to assist staff in recognising patterns of behaviour and how to respond to customers.

- Venue Support Workers (VSWs) in Victoria similarly provide venue staff with training sessions in observable signs and behaviours shown by possible problem gamblers and ways to approach. Training programs incorporate findings from prior research, particularly those of Delfabbro et al. (2007).

- Echo Entertainment (e.g., Jupiters Casino) has developed a short list of key problem gambling indicators which are used as the basis for assisting staff to identify people who might be experiencing harm.

- Star City (NSW) has developed DVDs and training materials relating to problem gambling indicators.

In Europe, there are number of examples of industry attempts to assist and identify problem gamblers within venues. As discussed earlier in this report (Section 1.2.2), Swiss Casinos have developed their own list of indicators which they use as the basis for identifying customers who might be experiencing problems as required by Swiss law. Some indicators are placed into an A-list so that if even one indicator is observed then the Casino takes immediate steps to speak to the person and make a formal record of the interaction. Others are included in a B list which comprises a range of 'lower' risk indicators. This information is logged on a file specific to that person so that it can be used to orient staff towards this person on future visits (see Delfabbro et al., 2007 for a more detailed review).

A similar system applies in the Holland Casino system. Customers can either exclude themselves from the venue or the Casino can do this unilaterally. Typically, this takes the form of a restriction placed on the number of times that a person is allowed to visit within a specified period of time (e.g., number of visits per month or week). In Holland, such policies can be more easily enforced than in Australia because customers are required to show identification each time they enter the casinos.

Northern American approaches to responsible gambling are considerably more variable. In the U.S., most responsible gambling policies are implemented through self-regulatory or industry-based approaches. Many industry groups incorporate information concerning problem gambling and its symptoms into their training, but few (if any) encourage staff to take active steps to identify problem gamblers. A similar situation exists in Canada, although most provinces have enacted dedicated responsible gambling legislation to inform the responsible provision of gambling services, appropriate staff training as well as restrictions on the availability of gambling.

In Canada, attempts have been made to develop commercial systems that might assist venues in implementing responsible gambling policies and which would extent to the process of early detection. For example, the research company Focal Research in Nova Scotia has complex algorithms with hundreds of player tracking variables which can be used to profile the gambling patterns of people with different classifications on the PGSI. According to Schellinck and Schrans (2011) such models have been developed using samples of over 1000 casino gamblers and validated using both development and test samples. Attempts to use electronic tracking of player behaviour as a means to detect higher risk gambling have been trialled in Saskatchewan using a software package called iView in conjunction with the Saskatchewan Gaming Corporation (SGC; as discussed in Section 1.2.3). The models developed in Canada by Focal Research are reported to achieve a high degree of accuracy, although it is acknowledged that different models have to be developed for each jurisdiction or venue to make them effective. Although these tools or models are commercial products with proprietary interests that prevent them from being made available for independent assessment or peer review in the academic literature, these developments have important implications for the nature of responsible gambling and harm minimisation in the future.

Impediments to identifying problem gamblers using behavioural indicators

Despite these developments, there remain challenges to identifying problem gamblers in venues or in any context. First, although (as discussed in the section above), some training of venue staff in identifying and approaching possible problem gamblers has begun, industry staff are typically not trained to identify problem gambling *in situ*. Industry respondents will often argue that it is inappropriate for non-clinically or psychologically trained people to make a judgment about the status of gamblers (Allcock, 2002). A second problem is the threat of resentment and customer privacy. Unsolicited scrutiny of customer behaviour could be considered a violation of trust by

some customers and evoke an angry response (Hing et al., 2010), although there are international examples which suggest that this process can be facilitated by appropriate staff training. A third view is that it may not be in the industry's interest to identify and assist problem gamblers if a significant proportion of revenue is being derived from those customers (e.g., the Productivity Commission, 2010 estimates that 42% of EGM revenue is derived from problem gamblers). Finally it has been argued that venue staff may not have sufficient time to observe particular customers in enough detail to make any sort of judgment about their disposition (Allcock,2002).

Another problem identified by Hancock (2011) is that, in larger land-based gambling venues in particular, there are often organisational structures that are inimical to effective action when indicators of problem gambling are detected. Junior staff who interact with gamblers may not have the authority to take action; referrals may need to be made to other senior staff, and then a separate person again may have to interact with the customer. She suggests that a more effective model is one where skilled staff with the ability to provide immediately counselling and assessment are located on-site, or can be readily contacted in the event that a customer with difficulties is identified. Some models of this nature are claimed to be in operation already at some major casinos, but it is clear that thorough and transparent evaluations of these arrangements need to be conducted to ensure that they are making a genuine contribution to harm minimisation as opposed to corporate marketing in the guise of 'responsible gambling'.

1.3 Conclusions

There is increasing emphasis on the need for interventions that assist people at-risk of gambling problems. Part of this push includes an emphasis on proactively approaching at-risk people before they ask for help. This type of early identification and assistance can reduce the severity of problems long term. Identification of possible gambling problems by venue staff fits within these parameters. Studies have established that

there are visible indicators of problematic gambling and that behaviours can be delineated in terms of how commonly they are seen in problem gamblers and how well they discriminate between problem and non-problem gamblers. It has further been established that multiple indicators should be observed to increase confidence of accurate identification and that it is likely that observations will need to be made over a number of occasions to facilitate this.

However, there remain a number of limitations that need to be addressed. First, studies conducted so far have involved only single samples. It is important that models developed in one sample are shown to be replicable in other samples to ensure confidence that the findings can be applied to different gamblers populations.

Second, survey-based responses do not examine the practical validity of the indicators. In other words, can venue staff actually observe and consolidate information about particular customers in a busy venue environment? In particular, concerns have been raised about practical difficulties in observing behaviour due to the size and layout of venues; whether staff are able to consistently observe behaviour across time and situation; whether staff have sufficient time for observations; and whether training is sufficient to allow accurate identification.

Third, these studies do not articulate on what is done after identification of possible problem gamblers. In particular, how are approaches managed by staff and management; what are the outcomes of these approaches in terms of customers reactions (initially and longer term); and how do staff feel about the need and outcomes of these approaches?

1.4 Research Objectives

The aim of this research project was to address these gaps in understanding. To do this we constructed a 2-part study. The scope of the study included all Australian States and Territories and focussed on EGM gamblers in clubs, pubs and casinos. We

focussed on EGM gambling in response to tender requirements. This refinement in methodology is appropriate as allows us to be more specific in terms of the conclusions drawn regarding the most appropriate visible indicators for this form of gambling. The vast majority of items on the original checklist related to this form of gambling and it is known that the vast majority of all gambling-related problems are associated with this form of gambling. EGM venues are also the most numerous and relevant venue-types in Australia and employ a large number of staff.

Stage One

The first stage of the study was designed to validate the identified indicators developed by Delfabbro et al., in 2007 and rate the indicators in terms of their strength in contributing to the identification of problem gamblers in venues. A large sample of regular (fortnightly +) EGM gamblers will be sampled across Australia. Using methodologies and analyses similar to those used in 2007 enabled us to determine if the findings of the 2007 study were fundamentally stable in terms of (a) the types of behaviours which are commonly or frequently displayed by problem gamblers, (b) the types of behaviours which discriminate between problem and non-problem gamblers, and (c) the behaviours which best predict problem gambling. This assisted in identifying valid and reliable indicators of possible and probable problem gambling. These indicators formed the Gambling Behaviour Checklist for use in EGM venues (GBC-EGM).

Stage Two

The second stage of the research was designed to validate the Gambling Behaviour Checklist (GBC-EGM) in terms of its usefulness as a tool for staff to use in identifying potential problem gambling customers. This was done through conducting a 3-month trial of the use of the checklist by EGM venue staff. Semi-structured focus groups were then conducted with staff to evaluate the checklist. The evaluation was designed to

articulate on the practical validity of the checklist and assisted in providing an evidence base for the translation of theory into practice. Final refinements to the GBC-EGM resulting from this evaluation constituted the GBC-EGM-SV for Victorian staff and GBC-EGM-S for staff in other jurisdictions and countries. These versions prioritise checklist usability, brevity and simplicity for staff working in the typical EGM venue environment. A researcher checklist was also developed on the basis of the findings, the GBC-EGM-R, which prioritises breadth of behaviours over brevity.

CHAPTER 2: Stage One - Statistical Validation of the Gambling Behaviour Checklist

2.1 Methodology

2.1.1 Participants

Five hundred and five regular EGM gamblers[7] from across Australia were recruited. There were 225 females ranging in age from 18 to 98 (M age = 43.61, SD = 15.71) and 280 males ranging in age from 18 to 82 (M age = 34.84, SD = 16.05). A breakdown of demographic characteristics can be found in Table 7 below.

Table 7: Table of Demographics

Variable	Males n	Males %	Females n	Females %
Country of birth				
Australia	248	88.6	187	83.5
Other	28	11.4	34	16.5
State of Residence				
Australian Capital Territory	4	1.4	4	1.8
NSW	110	39.3	46	20.4
Northern Territory	3	1.1	9	4.0
Queensland	31	11.1	25	11.1
South Australia	33	11.8	35	15.6
Tasmania	5	1.8	5	2.2
Victoria	92	32.9	99	44.0
Western Australia	2	0.7	2	0.9
Marital status				
Single	147	52.7	66	29.3
Currently partnered	110	39.4	109	48.4
Separated/divorced/widowed	22	7.9	50	22.2
Household				
Live alone	48	17.2	45	20.1
Couple (no children)	49	17.6	56	25.0
Couple with children at home	47	16.1	43	19.2
Sole parent with children at home	6	2.2	33	14.7

[7] Regular EGM gamblers in this case included people who reported gambling on EGMs at least twice a month. This criterion was consistent with the method used by Delfabbro et al. (2007) and was used because it has proved to be an effective way to recruit a sufficient sample of gambler at different levels of risk. If the criterion had been less stringent (e.g., once per month) fewer problem gamblers may been recruited given the same allocation of resources for recruitment.

Share house	53	19.0	18	8.0
Living with parents	72	25.8	20	8.9
Other	6	2.2	9	4.0

Variable	Males n	Males %	Females n	Females %
Work status				
Full time	128	45.9	77	34.2
Student primarily	56	20.1	19	8.4
Part time/casual	43	15.4	56	24.9
Seeking employment	23	8.2	9	4.0
At home/retired	19	6.8	48	21.3
Other	10	3.6	16	7.1

2.1.2 Measures

Demographics

Details were recorded concerning the participants' gender, age, country of birth, suburb and State of residence, marital status, living arrangements, work status.

Gambling Frequency

Frequency and type of gambling was assessed over the past 12 months across six different types of gambling activities. For this report only frequency of gambling on EGMs is reported. Participants reported how frequently they played EGMs (pokies) at hotels, clubs and the casino. In each case frequency was measured on a 9 point Likert-type scale where 0 = *(0 times over the past year)* and 9 = *(More than 5 times a week)*.

Problem Gambling

The *Problem Gambling Severity Index* (PGSI; Ferris & Wynne, 2001) is part of the Canadian Problem Gambling Index. This was used to assess the severity of problem gambling for this study. The PGSI consists of 9 items and captures both gambling behaviour (e.g., 'Have you gone back another day to try to win the money you lost?') and the adverse consequences of gambling (e.g., 'Has your gambling caused you any health problems, including stress or anxiety?'). Items are rated by participants on a 4-point Likert scale where 0 = *(Never)* and 3 = *(Almost always)*. Scores are summed across the whole scale and range from 0-27. Risk levels as set by Ferris and Wynne were as follows: 0 = Non problem gambling, 1-2 = Low risk gambling, 3-7 = moderate

risk gambling, 8+ = problem gambling. Research indicates the PGSI is psychometrically sound, with demonstrated high internal consistency (α = .84 - .92), stability (test-retest at 3-4 weeks .78), and validity with high correlations between the PGSI and other measures of problem gambling (Ferris & Wynne, 2001). The Cronbach's Alpha in the current sample was .94 (very high).

Analysis of Visible Behaviours and Signs

The final *checklist of visible indicators* developed by Delfabbro et al. (2007) was used. The question stem was also modified to relate only to EGM gambling due to the focus of the present study. Respondents were presented with 52 items and asked to report how often they usually engaged in the particular behaviour on a 5-point scale where, 1 = Never (0% of the time), 2 = Rarely (Fewer than 1 in 4 times you gambled), 3 = Occasionally (25-50% of the times you gambled), 4= Frequently (50% of time or more often), and 5= Always (100% of the time). Indicators were divided into six categories. In total 12 items related to the frequency, duration and intensity of gambling; 5 related to impaired control; 8 items captured social behaviours; 9 related to raising money or chasing behaviours; 11 related to emotional responses; and 7 relating to various other behaviours including drinking alcohol while gambling, a decline in grooming/appearance, irrational attributions for losing and avoiding the cashier. Minor alterations were made to a few items that referred to casino games as the scope of the study related to EGM gambling.

2.1.3 Procedure

Ethics approvals to conduct the survey were obtained from the Department of Justice (JREC) and Swinburne University (SUHREC) Human Research Ethics Committees. The study used similar sampling strategies to the Delfabbro et al. (2007) study, recruiting a non-random convenience sample designed to oversample at-risk and problem gamblers as these were the populations of particular interest. To do this we recruited regular EGM gamblers as it is known that larger numbers of problem

gamblers are represented in regular EGM gamblers than in the wider population (Productivity Commission, 2010). The final sample therefore was intended to include large samples of problem and moderate risk gamblers as well as no and low-risk gamblers. This enabled examination of indicators for each of these groups as well as comparisons between people who gambled regularly but non-problematically and those who experience problems, thereby isolating items that are indicative of problematic rather than simply regular gambling.

As was the case with Delfabbro et al. (2007), the major disadvantage of these methods is that the resulting sample is not random, so findings may not generalise back to all problem gamblers in the community. However, obtaining large samples of at-risk gamblers is very difficult using random sampling strategies due to the low base rate of this group in the community. This was not a prevalence study and the sampling strategy used meets the primary requirement of the study to compare problem gamblers and non-problem gamblers. The two studies combined include over 300 problem gamblers and almost 300 moderate risk gamblers from across Australia thus findings are likely to be reasonably reflective of these populations. Further, as discussed below the sampling strategy targeted gamblers directly through venues across the country as well as through wider community sampling methods, increasing the likelihood of a diverse sample of gamblers.

We used a combination of methods to recruit participants. Our initial survey included some additional measures designed to broaden the focus of the survey to include gambling motivations and self-regulation of gambling, thereby diffusing the focus on behavioural indicators of problematic gambling. This survey was estimated to take between 15 and 20 minutes. However, the initial newspaper advertisement resulted in fairly low numbers so the survey was cut down to its essential elements to reduce the length of participation to between 5 and 10 minutes. We advertised the survey to the general community through newspaper and Facebook advertisements. We also

advertised to EGM customers directly through paper-based flyers placed in gaming venues across all States and Territories in Australia and through electronic links placed on venue websites. As recruitment progressed we targeted further advertising at specific States and Territories to facilitate as wide recruitment as possible. To be eligible for inclusion in the study, all participants had to be over 18, live in Australia and gamble on EGMs at least twice per month[8].. In all advertising prospective participants were invited to take part in the research relating to their gambling habits. They were directed to a website supported by Swinburne University of Technology which contained a hotlink to the online survey. Prospective participants were also able to ring or email the investigators and request a paper-based survey if preferred. Almost all participants chose to take part online. The online and paper-based surveys were identical and included the 2007 behavioural checklist, a measure of severity of problem gambling symptoms, questions about frequency of gambling on various activities and selected demographics. At the end of the survey respondents were invited to provide their contact details to receive a $30 shopping voucher as thanks for their time and effort. Once the surveys were downloaded the contact details were separated from survey responses to preserve participant anonymity. Both contact details and survey responses were saved on second secure online databases.

2.2 Analytical Framework

When considering the most appropriate methodology to apply to this validation study, we reviewed national and international literature in relation to scale development for behavioural screens as well as validation studies for behavioural screens. In doing this we considered the type of screen that was being developed in this particular case. As discussed in this review, much of the previous research shows that problem gamblers are likely to exhibit only one or two observable behavioural indicators during any one

[8] The fortnightly gambling requirement (as a measure of current regular EGM gambling) replicates Delfabbro et al. (2007) methodology.

gambling session (Delfabbro et al, 2007; Schellinck & Schrans, 2004). Additionally, the indicators exhibited by a gambler can differ across sessions, and between gamblers. As a result, development of an effective checklist to assist in staff training and in identifying problem gamblers depends on evaluating the performance of several different individual (or coupled) indicators. This is in contrast to usual scale development which focuses on the best combinations of multiple items, optimal cut-off scores, and satisfactory internal reliability (DeVellis, 2003; Murphy & Davidshofer, 2001). It also contrasts with usual practice for development of screens which is to reduce the scale to the smallest possible number of items which can reliably identify the behaviour (Brown, Leonard, Saunders & Papasouliotis, 2001). Thus, usual statistical approaches that apply to scale development, such as item-response theory are difficult to apply in this context.

Nonetheless, as the checklist relies on determining status from observable indicators, much like diagnosing an individual with an illness, the types of analyses used in the medical literature may be informative. However, such diagnoses are often determined by either one particularly reliable indicator (e.g., detecting anti-bodies from a blood sample), or by a cluster of features that can present over a considerable time-period, and which patients can self-report (e.g., a self-report screen for drug and alcohol use or mental health issues). It is evident from the review, that identifying behavioural indicators in a gambling venue differs from this. First, there is no single reliable indicator that can be used to identify problem gamblers from non-problem gamblers. Second, it may not always be possible to observe the same individual over multiple sessions to determine the stability of indicators or whether the person's gambling has changed over time (although as discussed in the literature review, some research has indicated that this was sometimes possible). Third, only observable indicators are used, so the checklist cannot rely upon self-report. Hence, the statistical approaches used in the medical literature are likely to differ from those required to develop the checklist.

Due to the uniqueness of the type of analyses required, an extensive literature search showed the only relevant research that may inform the statistical approach for this validation study were the two previous quantitative studies that attempted to identify behavioural indicators in a gambling setting (Delfabbro et al, 2007; Schellinck & Schrans, 2004). The former study (Schellinck & Schrans, 2004) used 'association analysis', which, as described in the literature review, is often used for data-mining in marketing research. The analysis does not involve any inferential statistics. Rather, it provides information about the rules of association between particular indicator(s) and a given event (in this case, attending a gaming venue). The prior probability that a gambler at a venue is a problem gambler is calculated, and then the increase in this probability given observation of a particular indicator, or group of indicators (this is calculated in two different ways, and depends on distinction) is determined. For each indicator, the likelihood of a problem gambler exhibiting a given indicator during a session (frequency) is also calculated.

Overall, association analysis is beneficial as it provides information that is directly relevant to determining the likelihood that a gambler at a venue is a problem gambler. The analysis also incorporates the prior probability of being a problem gambler, rather than assuming the null hypothesis as is the case with inferential statistics. The downside of the analysis is that distinction and frequency are calculated separately for each indicator, so there is no overall measure for the performance of each indicator. Additionally, indicators (or small groups of indicators) are examined separately, rather than being incorporated into a model. Thus, the relationship between indicators is not tested. Finally, association analysis does not make any inferences from the sample data to the population, and so is not able to provide confidence intervals for the data.

The latter study (Delfabbro et al, 2007) used inferential statistics, specifically, logistic regression, to make inferences to the population from which the sample was drawn. When using a dichotomous outcome variable (problem-gambling status), logistic

regression is a common choice. It requires no assumptions about the distribution of the predictor variables, and predictors can be continuous, discrete, or mixed. Thus, there are few issues that arise due to the way in which the predictor variables (the indicators) were measured.

For each indicator, Delfabbro and colleagues (2007) calculated a ratio of the frequency at which problem gamblers exhibit the behavioural indicator over the frequency at which non-problem gamblers exhibit the behavioural indicator. Such ratios incorporate both distinction and frequency, and so provide an overall measure of the performance of each indicator. Indicators were grouped into categories of related behaviours (e.g., impaired control, social behaviours, emotional responses), and the ratios for each group of indicators were entered into separate logistic regressions, in order to identify which were able to significantly predicting gambling status. The significant predictors in each regression were then entered together into one final logistic regression. Only those indicators that remained significant in this final regression were retained. As multi-collinearity between predictors is likely to be high (many predictors are likely to be related), and only unique variance is tested in regressions, only five predictors remained significant (gambling continuously, playing very fast, leaving venue to search for further funds, cried after losing, appearing nervous/edgy). Thus, the study was able to make inferences about indicators from the sample to the population, but most indicators were discarded in the final models.

Following this review, this study will use a combination of statistical approaches. As discussed in detail in this review, behaviours displayed by problem gamblers are likely to differ not only between people but also within the same person across different visits. Therefore, the unique circumstances of this type of screen mean it would not be advantageous to dramatically reduce the number of indicative behaviours available to staff. To avoid this outcome, odd-ratios and cross-tabulation analyses, which were used effectively in the earlier study by Delfabbro et al. (2007) will again be used. These

analyses will assist by providing useful information concerning the relative importance of individual indicators.

The study will also use logistic regression analyses to identify the strongest predictors of problem gambling. An additional statistical approach, Bayesian analysis, will also be used to overcome some of the issues related to association analysis and traditional inferential statistics (logistic regression). Like association analysis, Bayesian analysis starts with a model that incorporates the prior probability that a gambler is a problem gambler (rather than spuriously assuming a null hypothesis). Then, as information accrues about the association rules for each indicator (how much more likely a gambler is to be a problem gambler given a particular indicator), the model is updated. All indicators can be entered into the model at once, so the relationship between indicators is incorporated into the model (unlike association analysis). This increases the accuracy of the model. Furthermore, unlike inferential statistics, Bayesian analysis does not depend on arbitrary p-values which determine whether or not a variable is retained, nor is multi-collinearity an issue in Bayesian analysis. Thus, all indicators can be retained, and can contribute to the model. Finally, the model can be updated whenever more information accrues. Thus, as more is learned about the association between problem-gambling status and various behavioural indicators, this information can be incorporated. The analysis does not have to be re-run, as would be the case with traditional inferential statistics and association analysis. Hence, although no inferences are made about the performance of indicators in the population (as is the case with inferential statistics), the sample size may eventually become sufficiently large that it is not necessary to make such inferences (Kruschke, 2010).

2.3 Results

Data from the 2013 data collection form the basis of these results. However, as this study is primarily a validation study of the research conducted by Delfabbro et al.

(2007) we have referred to results from that study and conducted comparative analysis between the two studies. This has been done to check validity in terms of reliability or stability of results from 2007 to 2013 data. When we have referred to data from the Delfabbro et al.(2007) study we have termed this the '2007' data.

2.3.1 EGM Gambling Behaviour over the past 12 months

Of the 505 participants, 498 completed the PGSI. This group were used for the remaining analyses. We combined people in the no and low risk categories to create three final risk categories: no-low risk gamblers (LRG); moderate risk gamblers (MRG) and problem gamblers (PG). An examination of the frequency of EGM gambling behaviour over the past 12 months showed that there was a general pattern of more frequent gambling at each of the venue types by higher risk gamblers compared to lower risk gamblers (see Table 8). This pattern was similar across clubs, hotels and casinos.

Table 8: Frequency of EGM gambling over the past 12 months

	Never		Occasionally		Often		Very Often	
	n	%	n	%	n	%	n	%
EGM gambling at hotels								
Low risk gamblers	26	17.4	21	14.1	72	48.3	30	20.1
Moderate risk gamblers	7	4.7	22	14.9	60	40.5	59	39.9
Problem Gamblers	9	4.5	28	13.9	43	21.4	121	60.2
EGM gambling at clubs								
Low risk gamblers	28	18.8	32	21.5	62	41.6	27	18.1
Moderate risk gamblers	20	13.5	28	18.9	54	36.5	46	31.1
Problem Gamblers	24	11.9	28	13.9	47	23.4	102	50.7
EGM gambling at Casinos								
Low risk gamblers	48	32.2	73	49.0	20	13.4	8	5.4
Moderate risk gamblers	35	23.6	70	47.3	32	21.6	11	7.4
Problem Gamblers	46	22.9	78	38.8	38	18.9	39	19.4

Percentages for each row sum to 100%

Never=not in the last year, Occasionally=less than once/month, Often=more than once/month but less than once/week, Very often=once a week or more
No-low risk gamblers n=149, moderate risk gamblers n=148, problem gamblers N=201

2.3.2 Problem gambling severity

An examination of problem gambling severity shows that there were approximately a third of participants in each risk category according to the measure of severity of gambling problems used, the PGSI (see Table 9 below). There were 149 (30%) no and low risk gamblers, 148 (30%) moderate risk gamblers and 201 (40%) problem gamblers.

Table 9: Percentage of participants in each risk category

	Male		Female	
Risk category	**n**	**%**	**n**	**%**
No-low risk gamblers (LRG)	78	28.3	71	32.0
Moderate risk gamblers (MRG)	80	29.0	68	30.6
Problem Gamblers (PG)	118	42.8	83	37.4

2.3.3 Common indicators of problem gambling

In line with prior research it is important to understand the type of relevant visible behaviours that are commonly displayed by problem gamblers, i.e., what behaviours people with gambling problems say they do frequently or always when in a gaming venue. Therefore, the first series of analyses examined the prevalence of specific indicators in the sample. We compared the three risk groups no-low risk gamblers; moderate risk gamblers and problem gamblers. The value of these summaries is that they show how often certain indicators are likely to be displayed by problem and moderate risk gamblers and thus isolate behaviours which are commonly displayed by significant groups of problem gamblers. Appendix A presents complete tables of cross tabs for the three groups x frequency of engaging in behaviours (never, rarely,

occasionally, frequently or always) for all behaviours. Chi-squared analyses confirmed that the prevalence of *'frequent'* and *'always'* responses were significantly higher for higher risk gamblers compared to lower risk gamblers for all of the behaviours and indicators. Below we present the behaviours that at least 25% of problem gamblers reported engaging in *frequently* or *always*, i.e., common behaviours of problem gamblers.

Frequency, duration and intensity indicators

Eight of the 12 items reflecting how intensely or frequently a person gambled were commonly reported by problem gamblers (see Table 10). As can be seen problem gamblers are likely to gamble quickly and will be so focussed on their play they do not stop to enjoy wins. They are likely to play for significant periods of time without a break and spend significant amounts in a session.

Table 10: Intensity and duration behaviours commonly displayed by problem gamblers

Frequency, duration and intensity indicators	**%**
gambling three hours or more without a proper break	41
gambling so intensely, that they lose track of things around them	38
very fast gambling	42
betting $2.50 or more most of the time	28
gambling on after the jingle starts	57
rushing from one machine to another	46
spending more than $300 or more per session	67
changing expenditure patterns	33

Percentage of problem gamblers who engaged in the behaviour 'frequently' or 'always'

Indicators of Impaired Choice or Control

Three of the five items around impaired control were commonly shown by problem gamblers, particularly around still gambling at closing time (see Table 11).

Table 11: Indicators of impaired choice or control commonly displayed by problem gamblers

Indicators of impaired choice or control	%
gambling when the venue was closing	27
finding it difficult to stop at closing time	31
trying obsessively to win on a particular machine	55

Percentage of problem gamblers who engaged in the behaviour 'frequently' or 'always'

Social Indicators of Problem Gambling

In contrast to the indicators around duration/intensity and impaired control, none of the indicators identifying particular social behaviours or interactions occurred commonly in any gambler risk group. The only behaviour that was reported to occur frequently or always by at least 25% of problem gamblers was the item relating to *social avoidance of others in venues* which was reported by 29% of problem gamblers.

Indicators related to Raising Funds or Chasing Behaviour

Five of the nine items examining behaviours relating to raising money to gamble or chasing losses were found to be relatively common in problem gamblers (see Table 12). Problem gamblers were particularly likely to be searching for money to continue gambling, spending all the money they have at the venue (including winnings) and leaving the venue empty handed. As was the case for social indicators, other behaviours occurred only rarely (e.g., borrowing money, asking for loans).

Table 12: Raising funds and chasing indicators commonly displayed by problem gamblers

Raising funds and chasing indicators	%
taking cash out on two or more occasions at a venue	43
putting large amounts back into machines	45
leaving the venue to find more money	25

rummaging around for additional money in handbags or wallets	38
running out of all available money at the venue	50

Percentage of problem gamblers who engaged in the behaviour 'frequently' or 'always'

Emotional and Physiological Indicators of Problem Gambling

Of the 11 items examining potentially visible emotional and physiological responses only three were endorsed by 25% or more problem gamblers, most commonly feeling sad or depressed after gambling (see Table 13).

Table 13: Emotional and physiological indicators commonly displayed by problem gamblers

Emotional and physiological indicators	**%**
felt nervous or edgy	25
felt sad and depressed after gambling	50
experienced a significant mood change during sessions	43

Percentage of problem gamblers who engaged in the behaviour 'frequently' or 'always'

Other Behaviours and Gambling

Respondents were also asked to indicate whether they engaged in a range of miscellaneous behaviours. The most commonly reported behaviours amongst problem gamblers were gambling after drinking a lot of alcohol (26%) and blaming machines or venues for losing (28%) (reported frequently or always by at least 25% of problem gamblers).

Based on the results above, it would appear that the most prevalent indicators of problem gambling which can be observed in venues relate to the duration and intensity of gambling (e.g., playing for long periods without interruption, being totally involved in the process of gambling, playing rapidly or frenetically) or raising funds/chasing behaviours (e.g., using ATMs etc. multiple times, spending all available money). Indicators related to social or emotional responses were much less frequently displayed but the most common of these related to avoiding contact and appearing sad

or depressed after gambling. In terms of impaired control customers who are still gambling at closing time and who do not want to leave may be experiencing problems. Others may blame staff or venues for losing or drink alcohol while gambling.

2.3.4 Reliability of common indicators

As an indicator of reliability, we examined the more common indicators displayed frequently or always by problem gamblers in the 2013 study compared to the earlier 2007 study (for indicators that were included in both studies)[9]. See Table 14 below which shows the visible indicators most likely to be observed frequently or always in problem gamblers 2013 percentages compared to 2007.

Table 14: Common visible indicators in problem gamblers 2013 v 2007

Indicator	2013 %	2007 %
Frequency, Duration and Intensity		
Spend more than $300 in one session of gambling	67	-
Playing on without listening to the jingle	57	44
Rush from one machine to another	46	17
Play very fast	42	45
Gamble for 3 or more hours without a proper break	41	39
Gambling intensely, lose track of things around them	38	40
Significant change in expenditure pattern	33	-
Bet $2.50 or more per spin	28	-
Impaired Control		
Try to win obsessively on one machine	63	55
Find it difficult to stop at closing time	31	19
Stop only when the venue is closing	27	14
Social Behaviours		
Avoided contact	29	34
Raising Funds / Chasing behaviour		
Run out of all available money at venue	50	-
Got cash out 2+ times from ATM or EFTPOS	43	45
Put large amounts of money back into machine	45	39
Rummage around for more money	38	-
Leave the venue to find more money	25	22
Emotional responses		
Felt sad and depressed	50	67

[9] Some variables were identified as part of the 2007 investigation (e.g., in feedback from respondents and in qualitative components of the investigation), but were not part of the formal quantitative validation in this earlier study. These are indicated by"-".

Significant change of mood during session	47	-
Nervous/ edgy	25	29
Other behaviours		
Blamed venues or machines for losing	28	32
Drank a lot of alcohol before gambling	26	22

Percentage of problem gamblers who engaged in the behaviour 'frequently' or 'always'

On the whole, there was a lot of similarity with 12 out of 15 common indicators being listed as most prevalent in both studies. Behaviours which were more common in 2013 included rushing from one machine to the next and gambling around closing time.

2.3.5 Discriminating between problem gamblers and other customers

Relative probability of behaviours: Problem vs non-problem gamblers

The relative prevalence of behaviours in problem gamblers and how much more likely one is to observe certain behaviours in problem gamblers than other gamblers must also be examined. To do this we compared the relative proportion of problem gamblers and other gamblers who reported particular observable behaviours on at least some occasions (i.e., rarely or more often). The resulting odds-ratio figures indicate how much more likely this particular behaviour would be observed in a problem gambler on any occasion compared to other customers (i.e., irrespective of how frequently the behaviour might typically be observed). A figure > 1 indicates that the behaviour is more common problem gamblers (e.g., 1.5 = 50% more likely, 2.0 = twice as likely). These ratios provide a useful way of determining the 'severity' of items, i.e., to identify which behaviours (even if they are rare) are likely to be indicative of problem gambling. The results showed that all behaviours were significantly more prevalent in problem gamblers. Table 80 in Appendix A provides details and ratios for each item and Table 15 below shows items with ratios ≥ 2, i.e., behaviours which are at least twice as likely to be seen in problem gamblers compared to other customers. This criterion was used in the interests of parsimony to allow readers to focus on the most discriminating

indicators and because the previous 2007 (Delfabbro et al., 2007) found little evidence that indicators with ORs < 2 would feature in final multivariate models.

Table 15: Behaviours at least twice as likely to be shown in problem gamblers compared to non-problem gamblers

Behaviour	Ratio
Frequency, intensity, duration	
Gambled every day of the week	2.28
Gamble for 5 or more hours without a break of 15 minutes or longer	3.49
Gamble so intensely that you barely react to what was going on around you	3.26
Play very fast (e.g., insert money and/or pressing buttons rapidly)	2.02
Gamble on 2 or more machines at once	2.36
Gamble continuously	2.09
Spend more than $300 in one session of gambling	2.55
Impaired control	
Stop gambling only when the venue is closing	3.00
Gamble right through your usual lunch break or dinner time	4.55
Find it difficult to stop gambling at closing time	4.35
Start gambling as the venue is opening	3.06
Social Behaviours	
Ask venue staff to not let other people know that you were gambling there	7.75
Have friends or relatives call or arrive at the venue asking if you are still there	5.35
Act rudely or impolitely to venue staff	5.70
Avoid contact, or communicate very little with anyone else	2.36
Stay on to gamble while your friends leave the venue	2.66
Become very angry if someone takes your favourite machine or spot in the venue	3.42
Stand over other players while waiting for your favourite machine	3.70
Raising funds/ Chasing behaviour	
Borrow money from other people at venues	6.61
Ask for a loan or credit from venues	12.7
Put large win amounts back into the machine and continue playing	2.32
Leave the venue to find money to continue gambling	4.61
Run out of all money including all money in your purse or wallet when you leave the venue	2.11
Use the coin machine at least 4 times in a session	2.20
Emotional responses	
Find yourself shaking (while gambling)	5.71
Sweat a lot (while gambling)	4.63
Feel nervous/ edgy (e.g., leg switching, bites lip continuously)	2.60
Display your anger (e.g., swearing to yourself, grunts)	2.53
Kick or violently strike machines with fists	5.65
Feel very sad or depressed (after gambling)	2.15

Cry after losing a lot of money	7.62
Sit with your head in hands after losing	5.94
Play the machine very roughly and aggressively (e.g., with fists or slaps)	3.89
Groan repeatedly while gambling	2.96
Feel a significant change in your mood during sessions	2.15
Other behaviours	
Avoid the cashier and only use cash facilities	4.02
Notice decline in grooming/ appearance	11.0
Blame venues or machines for losing	2.78
Complain to staff about losing	4.80
Swear at machines or venue staff because you are losing	4.32
Compulsively rub the machine	2.02

As in the 2007 study, indicators tended to fall into different clusters using this analysis. Some behaviours are more prevalent amongst problem gamblers, but also reasonably common amongst non-problem gamblers resulting in low ratios (e.g., playing on without stopping to listen for the jingle; trying to win obsessively on a particular machine; asking to change large notes at a venue). Other behaviours are rarer and are typically only reported by problem gamblers, resulting in large ratios (e.g., asking the venue not the reveal the presence of the gambler; trying to borrow money from people at the venue and social or emotional behaviours such as being rude to staff, shaking kicking machines or crying). Other indicators tended to fall in between these two extremes.

The results also showed that the items that best differentiate between the two groups are not necessarily the ones that occur most often. Whereas section 2.2.3 showed that seven behaviours relating to frequency, duration and intensity were likely to be shown by problem gamblers at any given session (occurring on most, if not all, venue visits), only one of these items had an odds-ratio of greater than 3. Thus, by themselves, these behaviours may not work as well to identify a problem gambler as other items.

These figures do not allow one to specify the reverse probability, (i.e., Probability of problem gambler given the presence of an indicator), but they show that there is a

range of potentially visible behaviours which are very rare in non-problem players and much more common in problem gamblers. These results provide support for the conclusions from the 2007 study; namely, that there are distinctive profiles of potentially observable behaviour that theoretically could allow one to differentiate between problem gamblers and other players.

Relative probability of behaviour across all risk levels

There is also interest in knowing to what extent indicators are likely to differentiate between different levels of risk over and above those which differentiate between problem gamblers and others. In particular whether there are there specific indicators which clearly differentiate between:

(a) problem gamblers and moderate risk gamblers
(b) moderate risk gamblers and low-no risk gamblers,
(c) higher risk gamblers (being both problem-moderate risk gamblers) and lower risk gamblers (low-no risk gamblers).

Table 81 in Appendix A displays all of these different ratios for each item. The sections below discuss items which discriminate between these higher and lower risk gamblers.

High Severity Indicators: Table 16 shows behaviours which differentiate best between problem and moderate risk gamblers. We have displayed those which are at least twice as likely to be seen in problem gamblers than those who are moderately at risk of gambling problems. As can be seen, these indicators tend to be at the more severe end of the behavioural spectrum, such as gambling for 5 or more hours without a break, finding it difficult to stop at closing time, hiding out from family or friends, having strong emotional reactions and using different methods to try to raise funds. These behaviours also had higher odds-ratio scores when problem and non-problem gamblers were compared.

Table 16: Behaviours at least twice as likely to be shown in problem gamblers compared to moderate risk gamblers

Behaviours	PG/ Mod
Frequency, intensity, duration	
Gamble for 5 or more hours without a break of 15 minutes or longer	2.21
Gamble so intensely that you barely react to what was going on around you	2.10
Impaired control	
Stop gambling only when the venue is closing	2.07
Gamble right through your usual lunch break or dinner time	2.82
Find it difficult to stop gambling at closing time	2.48
Social Behaviours	
Ask venue staff to not let other people know that you were gambling there	4.19
Have friends or relatives call or arrive at the venue asking if you are still there	3.55
Act rudely or impolitely to venue staff	3.55
Become very angry if someone takes your favourite machine or spot in the venue	2.14
Stand over other players while waiting for your favourite machine	2.63
Raising funds/ Chasing behaviour	
Borrow money from other people at venues	4.19
Ask for a loan or credit from venues	7.47
Leave the venue to find money to continue gambling	2.71
Emotional responses	
Find yourself shaking (while gambling)	4.34
Sweat a lot (while gambling)	3.10
Kick or violently strike machines with fists	3.10
Cry after losing a lot of money	4.14
Sit with your head in hands after losing	3.20
Play the machine very roughly and aggressively (e.g., with fists or slaps)	2.57
Groan repeatedly while gambling	2.26
Other behaviours	
Avoid the cashier and only use cash facilities	2.46
Notice decline in grooming/ appearance	5.92
Complain to staff about losing	2.99
Swear at machines or venue staff because you are losing	3.47

Early warning signs: The comparisons between at-risk and low risk gamblers (i.e., between PG-MRG and LRG and between MRG and LRG) showed most items had ratios greater than 2, and many of the ratios were quite high (> 10). This is because these comparisons maximise the differentiation in the sample. These differences are

most strikingly observed in the comparison of social and emotional behaviours. Within those sections, many ratios are very high with some values greater than 30. This means that there is generally greater differentiation when you are comparing higher risk and low risk gamblers than we saw when comparing moderate risk and problem gamblers or even when comparing problem and non-problem gamblers.

The greatest degree of differentiation was found when comparing PG-MRG to LRG. In other words, although problem gamblers are more likely to report each behaviour than moderate gamblers, the difference between higher-risk and low-risk gamblers was even greater. Again full details can be found in Appendix A, but we have used Table 17 to display items which were shown to differentiate well between higher risk (PG-MRG) and low risk gamblers (odds-ratio ≥ 2) and which *have not* been earlier identified with either the PG/NPG or PG/MRG ratio analyses as particularly important (i.e., they had odds-ratio scores <2 in those earlier analyses but here show that higher risk gamblers are twice as likely to display these behaviours at least sometimes compared to low risk gamblers).

Table 17: Behaviours at least twice as likely to be shown in high risk gamblers (PG-MRG) compared to lower risk gamblers (not previously identified)

Behaviour	**PG+ Mod/ LR**
Frequency, intensity, duration	
Gamble for 3+ without a break of 15 minutes or longer	2.61
Rush from one machine to another	2.18
Significantly change in expenditure pattern	2.74
Impaired control	
Try obsessively to win on a particular machine	2.17
Social Behaviours	
Brag about winning or make a big show of gambling skill	2.99
Raising funds/ Chasing behaviour	
Get cash out (ATM/EFTPOS) 2+ occasions in a session to gamble	2.73
Ask to change large notes at venues before gambling	2.28
Rummage around in your purse or wallet for additional money	2.15

These additional items may therefore act as early warning signs of gambling issues. As can be seen these items relate primarily to frequency and intensity of gambling and attempts to raise funds (indicators which were earlier shown to be particularly commonly displayed by problem gamblers).

Taken together these findings suggest that if you are interested in differentiating between moderate-risk and problem gamblers (i.e., identifying people at the more severe end of the spectrum) indicators of outward personal harm (anger, crying, poorer appearance), clear financial harm (trying to ask for credit or loans) or socially inappropriate behaviours such as being rude to venue staff and hiding out from family/friends will be clearer indicators. Indicators relating to the intensity of gambling and money seeking/chasing wins when seen by themselves are more useful in differentiating at-risk gamblers from lower risk gamblers.

2.3.6 Reliability of discriminating indicators

To examine the reliability of indicators, another table was prepared to compare the ratios for individual indicators observed in the 2013 study with those obtained in 2007 study for problem gamblers vs. non-problem gamblers (see Table 18). As indicated, the results were generally quite similar. Although some ratios are either higher or lower in absolute terms, those which were higher in 2007 also tended to be higher in 2013. This suggests that the indicators identified in the earlier study as good discriminators between problem and non-problem gambling customers were ranked in a very similar ways in the present study.

Table 18: Comparative problem/ non-problem gambler risk ratios: 2013 vs 2007 study

Indicators	2013	2007
Frequency, intensity, duration		
Gambled every day of the week	2.28	2.36
Gamble for 3+ hours without a break of 15 minutes or longer	1.95	2.23
Gamble for 5+ hours without a break of 15 minutes or longer	3.49	-
Gambles intensely (does not react to external stimuli)	3.26	3.64
Plays very fast (inserting money/pushing buttons rapidly)	2.02	2.14
Bet $2.50 or more per spin most of the time	1.92	-
Plays on quickly after wins (not listening to music or jingle)	1.43	1.60
Rush from one machine to another	1.80	2.67
Gamble on 2 or more machines at once	2.36	-
Gamble continuously	2.09	2.94
Spend more than $300 in one session of gambling	2.55	-
Significantly change (increase) in expenditure pattern	1.91	-
Impaired control		
Stop gambling only when the venue is closing	3.00	2.64
Gamble right through your usual lunch break or dinner time	4.55	4.41
Find it difficult to stop gambling at closing time	4.35	5.31
Try obsessively to win on a particular machine	1.55	1.72
Start gambling as the venue is opening	3.06	2.60
Social Behaviours		
Ask venue staff to not let people know they there	7.75	8.00
Have friends or relatives call or asking if you are still there	5.35	5.25
Act rudely or impolitely to venue staff	5.70	3.29
Avoid contact, or communicate very little with anyone else	2.36	2.71
Stay on to gamble while your friends leave the venue	2.66	2.33
Become very angry if someone takes favourite machine/spot	3.42	3.50
Brag about winning or make a big show of gambling skill	1.95	-
Stand over other players while waiting for favourite machine	3.70	-
Raising funds/ Chasing behaviour		
Get cash out (ATM/EFTPOS) on 2+ occasions in single session	1.85	2.07
Ask to change large notes at venues before gambling	1.56	1.72
Borrow money from other people at venues	6.61	4.91
Ask for a loan or credit from venues	12.7	16.00
Put large win amounts back into the machine, continue playing	2.32	2.02
Leave the venue to find money to continue gambling	4.61	3.70
Rummage around in your purse or wallet for additional money	1.79	-
Run out of all money including in purse/wallet when leave	2.11	-
Use the coin machine at least 4 times in a session	2.20	-

Indicators	2013	2007
Emotional responses		
Find yourself shaking (while gambling)	5.71	10.00
Sweat a lot (while gambling)	4.63	8.00
Feel nervous/ edgy (e.g., leg switching, bites lip continuously)	2.60	4.42
Display your anger (e.g., swearing to yourself, grunts)	2.53	6.11
Kick or violently strike machines with fists	5.65	5.75
Feel very sad or depressed (after gambling)	2.15	2.61
Cry after losing a lot of money	7.62	11.60
Sit with your head in hands after losing	5.94	5.67
Play the machine very roughly and aggressively	3.89	-
Groan repeatedly while gambling	2.96	-
Feel a significant change in your mood during sessions	2.15	-
Other behaviours		
Gamble after having drunk a lot of alcohol	1.38	1.51
Avoid the cashier and only use cash facilities	4.02	-
Notice decline in grooming/ appearance	11.0	-
Blame venues or machines for losing	2.78	3.52
Complain to staff about losing	4.80	3.70
Swear at machines or venue staff because you are losing	4.32	2.45
Compulsively rub the machine	2.02	-

Note: "-" indicates variables which were identified within the 2007 study but were not fully validated due to time constraints.

The extent of this similarity was confirmed using a Pearson's correlation coefficient which yielded a value of .88 which suggests an extremely high level of correspondence between the ratios obtained in the two studies. Those ratios which were highest in 2007 also tended to be highest in 2013. The only area where there were some differences was in the nature of reported emotional responses.

2.3.7 Predicting problem gambling: Logistic Regression Analysis

Logistic regression was undertaken to determine which variables were the best predictors of problem gambler status taking into account relationships between behaviours (Keith, 2006). These analyses were undertaken using the same methods as in the 2007 study.

Initial models were run for each group of indicators (e.g., Intensity, duration, social behaviours) to identify the strongest indicators for a final model. Variables which did not prove to be significant in these individual regressions were dropped and the final model was developed based only on the significant variables[10]. Complete results for these initial models can be found in Appendix A in Tables 82-87.

All of the indicators found to be significant in the initial models were entered into final models to identify the overall strongest indicators of problem gambler status. An overall model was run first (Table19).

Table 19: Final model: Overall best independent predictors of problem gambler status

Predictors of PG status	B	SE	Wald	Odds ratio	95% CI
Constant	-4.50				
Bet $2.50+ per spin most times	1.10	.34	10.8	3.01	1.56-5.80
Leave venue to find more money	1.24	.30	16.6	3.46	1.91-6.27
Sad or depressed after gambling	1.66	.41	16.5	5.23	2.53-11.64
Change in grooming/ appearance	1.59	.36	19.4	4.88	2.41-9.88
Gamble through meal breaks	.89	.30	8.6	2.43	1.35-4.41
Put money back in and keep playing	.98	.38	6.7	2.67	1.18-5.61
86.9% of cases correctly classified, Nagelkerke R = .67					

This was followed with the development of separate models for males (Table 20) and females (Table 21). As with the overall model, the modelling process occurred in two stages with all variables were entered in their respective groups as initial models and

[10] In the interests of developing a more inclusive model, the criteria for inclusion was that the variable was significant $p < .10$ in the first model and had to be significant ($p < .05$) in the final model.

only those variables that were found to be significant in the first model included in the final gender-specific models.

Table 20: Final model: Overall best predictors of problem gambler status for males

Predictors of PG status	B	SE	Wald	Odds ratio	95% CI
Constant	-5.39				
Gambled 3 hours without break	1.44	.42	11.8	4.22	1.86-9.60
Bet $2.50+ per spin most times	2.08	.44	22.7	8.00	3.40-18.79
Avoid contact/ communication	1.36	.41	11.2	3.91	1.76-8.68
Shaking while gambling	1.62	.40	16.3	5.06	2.30-11.14
Sad and depressed after gambling	1.73	.48	12.9	5.64	2.19-14.49
85.9% of cases correctly classified, Nagelkerke R = .66					

Table 21: Final model: Overall best predictors of problem gambler status for females

Predictors of PG status	B	SE	Wald	Odds ratio	95% CI
Constant	-5.16				
Gamble intensely/ loss awareness	1.66	.47	12.24	5.25	2.07-13.29
Leave the venue to find money	2.50	.46	28.85	12.14	4.98-29.73
Sad and depressed after gambling	2.52	.83	9.36	12.48	2.48-62-90
Avoid cashier	.96	.47	4.14	2.61	1.04-6.56
87.3% of cases correctly classified, Nagelkerke R = .71					

Final models: Likelihood of Being Identified

As with the 2007 study, the present study conducted analyses to determine the behaviours most likely to indicate the presence of problem gambling. The probability of

a person being correctly classified as a problem gambler based on indicators can be calculated using the formula for logistic regression: $P(E) = e^z / 1 + e^z$, where e = the exponential constant and z = a vector based on the linear combination of values for the indicators. The value of $z = \beta_0 + \beta_1.X_1 + \beta_2.X_2 + ... \beta_m.X_n$, where β = the parameters or coefficients for each variable and X = value of the indicator (0 = not present, 1 = present). Using the information in Tables 19-21, it therefore becomes possible to work out the incremental probabilities of a person being a problem gambler by adding one indicator at a time. Indicators are included based on the magnitude of their respective parameters, starting with the highest one first. Calculations are provided for the overall sample as well as males and females separately (Tables 22-24).

Table 22: Probability of being classified as a problem gambler (overall)

	Probability
Sad and depressed	.05
+ change in grooming and appearance	.22
+ leave venue to find money	.50
+ Bets $2.50+ per spin most times	.75
+ Put wins back into machine	.89
+Gambles through usual meal times	.95

Table 23: Probability of being classified as a problem gambler (males only)

	Probability
Bets $2.50+ per spin	.04
+ Sad and depressed after gambling	.17
+ shaking while gambling	.51
+ gambles 3 hours+ without proper break	.82
+ Avoids contact with others	.95

Table 24: Probability of being classified as a problem gambler (females only)

	Probability
Sad and depressed after gambling	.07
+ leave venue to find money	.46
+ Gamble intensely/ Lose track of surroundings	.82
+ Avoids cashier	.93

The results show that it is necessary to accumulate a number of indicators before one can be confident of being able to identify a problem gambler. For the sample as a whole, it is necessary to accumulate at least 5 indicators. Using this model, one would look for a person who was sad and depressed, whose appearance had deteriorated, who was gambling at odd hours and often with large bet sizes. For males, one needs 4-5 indicators. The profile is of a withdrawn person who gamblers for long periods without proper breaks and who is antisocial and depressed. For females, one observes quite a similar pattern: poor mood states and a withdrawal from social interactions.

Bayesian Analysis of 2013 Models

Finally, as an extension of the 2007 study and as an illustration of how the study's information could be applied in future venue information systems, we applied Bayesian statistics based on the assumption that one typically already knows something about a population of interest before making a particular decision about the status of individuals within in it. This existing knowledge is usually expressed as a prior probability or base-rate which indicates the existing state of knowledge about a particular phenomena or hypothesis. For example, from a number of studies, we now know that the probability of a randomly selected adult in the population being a problem gambler (PGSI 8+ is about .5%, see Productivity Commission, 2010), whereas the base-rate for regular or weekly gamblers in venues has been estimated to be much higher (15-20%). According to Bayesian analysis, one can provide a more accurate statement about the likelihood of a given hypothesis if base-rate information is combined with diagnostic or classification probabilities. In medical contexts, for example, one might be able to indicate the likelihood of a person having a given disease based on a positive test result if one know the typical prevalence of the disease in the population (e.g., 1%) and the accuracy of the test (e.g., it correctly identifies a true case of 80% of occasions). Much of the research in this area shows that base-rate information tends to be downplayed and that getting a positive test result yields an exaggerated sense of risk because this

information fails to take the very low base-rate into account. Thus, even if the rest is quite reliable (e.g., 80% accuracy) and one gets a positive test, one's chances of having the disease may still be low if the disease is quite rare.

Bayes theorem calculates the probability of the hypothesis given the data we have available. It is given by the following formula:

$$P(H/D) = P(D/H).P(D) / [P(D/H).P(D) + P(A/H).P(A)]$$

Where, H = Our hypothesis (problem gambler) based on our diagnostic information, D = Probability of the event (e.g., how many problem gamblers in the population being considered), A = Probability of Alternate hypothesis (1- base-rate of problem gambling in population of interest).

In relation to the data above, it is clear that the probability of identifying a problem gambler based on the indicators is around .95 if one takes the maximum number of indicators. The probability of a person being a problem gambler in general (the base-rate) will be based on which population one chooses to examine. If venue staff, for example, were to direct their attention to people who gambled once per week, then it is known that around .2 (or 20%) of these people are likely to be problem gamblers. If these people gambled more than once per week, the figure is likely to be higher (e.g., .33 or 33%). When this information is placed into the formula, the following results emerge. For a base-rate of .20, the probability = (.95 x .2) / [(.95 x .2) + (.05 x .8) = .83. For a base-rate of .33, the probability is (.95 x .33) / [(.95 x .33) + (.05 x .67) = .90. In other words, when one directs attention only to regular gamblers, the probability that someone displaying all of these indicators is a problem gambler is not quite as high as indicated in the original logistic regression tables (i.e., it indicates that there is an 83% probability that someone you are observing who is showing all of these signs is a problem gambler, rather than the original conclusion that there is a 95% probability). Nonetheless this is still a very high probability and would warrant further investigation.

Further, if venue staff were to record indicators for people who came to their venue more than once per week, they could be very confident that a person was a problem gambler if they were successful in observing 4+ indicators for that individual (here, the probability is still 90%).

2.3.8 Reliability of Predictors

Although it is important to discern the consistency of indicators across the two studies, it is also important to examine whether studies of this nature are capable of developing classification models which can be replicated across more than one sample. To investigate this issue, we sought to determine whether the final models developed in the 2007 study could be replicated using this new sample. The same variables that appeared in the 2007 models were entered into a logistic regression with gambling status (problem vs. non-problem) as the dependent grouping variable. In other words, the same logistic regressions using the same variables used in 2007 have been re-run using 2013 data. The results of these analyses are displayed in Table 25 and 26.

Table 25: Predictors of being currently classified as a problem gambler: Comparison of 2007 final model for males: 2007 vs 2013 data

	B	Wald	Odds ratio	% classified
2007 Data				
Constant	-5.61			
Gambled 3+ hours without break	2.38	13.14**	10.8	
Sweated a lot	2.08	20.4***	8.0	
Difficulty stopping at closing time	1.79	14.1**	6.0	
Displayed anger	1.59	11.8**	4.9	89%
2013 Data				
Constant	-2.93			
Gambled 3+ hours without break	1.68	18.8***	5.5	
Sweated a lot	1.59	19.1***	4.9	
Difficulty stopping at closing time	1.26	13.3**	3.5	
Displayed anger	.66	3.53	1.9	91%

**p< .01 ***p< .001

Table 26: Predictors of being currently classified as a problem gambler: Comparison of 2007 final model for females: 2007 vs 2013 data

	B	Wald	Odds ratio	% classified
2007 Data				
Constant	-6.41			
Kicked machines	2.87	14.7**	17.6	
Nervous or edgy	2.28	22.5***	9.8	
Gambled intensely / Not aware of things going on	1.75	11.3**	5.7	
Multiple ATM withdrawals	1.75	9.3**	5.7	
Angry if spot taken	1.21	8.5**	3.4	
Left venue to find money	1.28	8.5**	3.6	91%
2013 Data				
Constant	-4.41			
Kicked machines	.36	0.3	1.4	
Nervous or edgy	1.05	4.1*	2.9	
Gambled intensely / Not aware of things going on	1.17	5.8*	3.2	
Multiple ATM withdrawals	.96	2.5	2.6	
Angry if spot taken	.82	2.4	2.3	
Left venue to find money	3.08	42.4***	21.7	81%

**p< .01 ***p< .001

As indicated in Table 25, with the exception of the 'anger variable' the final model for males developed in 2007 produced very similar results when it was run using the 2013 data. When the one non-significant predictor was removed and the model was re-run with the remaining 3 variables, it generated a model an 89% classification rate. Anyone who reported all 3 indicators would have an 89% probability of being a problem gambler as based upon the logistic regression formula. For females, results showed that only 3 of the 6 original 2007 variables were significant predictors when using the 2013 sample. Two of the inconsistent items again related to displays of anger. When only the remaining 3 significant predictors were retained and the model was re-run, it correctly classified 91% of cases and generated a probability of .86 for anyone who reported all three indicators. This is lower than the probability which had been reported

in the 2007 study, (> .90), but still very good. In other words, the 2007 models were well validated using the 2013 data[11].

2.3.9 Refining the model and determining severity of indicators

The next step was to use the information gained from the different sets of analyses including the comparisons from 2007 and 2013 data to create a more refined checklist which provides maximum information in a simple way, thereby maximalising usability. We used a colour coding system to create a list which incorporated information obtained about relative commonality of behaviours in problem gamblers, the ability of items to discriminate between risk groups of gamblers and highlighted the strongest items in terms of predicting problem gambling. These different levels of severity in indicators can be used to more effectively assist management and staff to make decisions on appropriate actions. The following describes the decisions used to create different levels of severity in indicators.

Red flags – strong indicators

If item was an independent predictor in either the 2007 or 2013 logistic regression analyses it was designated a red flag as these can be seen as strong indicators of gambling problems. In all but three cases these items were also at least twice as likely to be displayed by problem gamblers compared to others (odds ratios >2 PG/NPG), and this was again seen as a reasonable basis for receiving a red flag. In terms of the three items which had odds ratios under 2:

[11] In a recent article by Schrans and Schellinck (2011), it was suggested that differences in the composition of samples (i.e., the relative proportion of problem and non-problem gamblers) can also influence validation attempts. If samples are self-selected (as is the case in the this study), there is a danger that people with more of an interest in gambling and the extent of their problems may be more willing to volunteer. If so, the more problem gamblers one gets, the more one may be likely to obtain problem gamblers who self-select themselves to be evaluated. One way to reduce this bias is to weight the data so that the two sample compositions are equivalent. This was done in this analysis by applying weights to the 2013 sample so that it reflected the composition of the 2007 sample. Inspection of the resultant models showed that they were so similar to the unweighted ones that this adjustment was considered unnecessary.

- *Gambling for 3 or more hours without a proper break* had a ratio of 1.95. We considered making gambling 5 or more hours a red flag and giving 3+ hours a lower ranking (orange or yellow) but decided that, to limit redundancy and minimise confusion the checklist should retain only of these items in the interests. We decided to retain the more conservative *3 or more hours* as a red flag at this stage and see how well this worked *in situ* in Stage Two.
- *Get cash out 2 or more times through ATMs or EFTPOS* had a ratio of 1.85. It is possible the discriminability of this item was reduced somewhat by the removal of ATMs in Victoria which occurred during the data collection period. As this indicator has been discussed widely in the literature as a good indicator of problem gambling it was decided to retain this as a red indicator at this stage and examine its usefulness in Stage Two of the research.
- *Bet $2.50 or more most of the time* had a ratio of 1.92. This item was found to be relatively common across the board, with 41% of low risk gamblers reporting doing this. We therefore decided to make this a lower severity orange item and again examine its usefulness in Stage Two.

Orange flags – possible indicators

Orange flags were items which were at least twice as likely to be seen in problem compared to non-problem gamblers (odds ratios >2 PG/NPG) but which did not show up as independent predictors in logistic regressions.

Purple flags – very strong but uncommon indicators

We used the information gained from examining high severity indicators (those which discriminated well between moderate risk and problem gamblers) to create another level of severity. Items which were at least three times more likely to be seen in problem gamblers than even moderate risk gamblers (odds ratio >3 PG/MRG) were converted from orange to purple flags. In most cases these were relatively uncommon behaviours even in problem gamblers but were very rarely seen in non-problem

gamblers so should be seen as probable signs of gambling problems.

If the behaviour was already a red flag we retained this ranking to indicate it was a more commonly seen indicator. The exception to this was *significant decline in personal grooming/appearance*. This had been given a red flag as it was a significant predictor in the 2013 logistic regression but was reported by very few low or moderate risk gamblers so we decided to retain its identification as an uncommon indicator.

Yellow flags – early warning signs

We then used the analyses examining differences between lower and higher risk gamblers to create a final category. Yellow items were created from items which were initially not seen as very important (ratio PG>NPG being <2) but which were later shown to discriminate well between higher risk gamblers (PG and MRG) and low risk gamblers (discriminating with odds ratios > 2).

In the interests of reducing the length and complexity of the checklist where possible we collapsed some items relating to similar behaviours together where the risk level was the same. For example, items relating to anxiety (shaking, sweating or showing nervousness) were collapsed into one item as were items relating to displaying anger or aggression. This was consistent with the earlier discussed idea that emotionality is likely to be displayed by problem gamblers but the specific behaviours may vary across person and situation. We also combined gambling when venue opens and closes.

We then removed two items which did not discriminate well between any of the risk groups (plays on quickly without listing to winning jingles and gambling after drinking alcohol). The above removals and collapsing of items allowed us to move some items from the 'other behaviours' section to social or emotional responses and relabel this category 'irrational behaviours'. The resulting checklist, the Gambling Behaviour Checklist, for use in EGM venues (GBC-EGM) can be seen in Table 27.

Table 27: Gambling Behaviour Checklist for use in EGM venues (GBC-EGM) showing item severity flags

	Intensity and Duration
1	Gambles intensely without reacting to what's going on around him/her
2	Often gambles for long periods (3+ hours) without a proper break
3	Gambles continuously
4	Plays very fast (e.g., inserts money/presses buttons rapidly)
5	Bets $2.50 or more per spin most of the time
6	Gambles most days
7	Spends $300 or more in a session
8	Gambles on 2 or more machines at once
9	Significant increase in spending pattern
10	Rushes from 1 machine to another
	Loss of Control
11	Finds it difficult to stop gambling at closing time
12	Gambles right through normal meal times
13	Starts gambling when the venue is opening or only stops when venue is closing
14	Tries obsessively to win on a particular machine
	Money Seeking
15	Borrows money from other people at venue or asks for a loan/credit from venues
16	Leaves the venue to find money to continue gambling
17	Gets cash out on 2 or more occasions through ATM or EFTPOS
18	Puts large wins back into the machine and keeps playing
19	Avoids cashier and only uses cash facilities
20	Uses coin machine at least 4 times
21	Has run out of all money when he/she leaves venue
22	Asks to change large notes at venues before gambling
23	Rummages around in purse or wallet for additional money
	Social Behaviours
24	Significant decline in personal grooming or appearance over several days
25	Has friends or relatives contact the venue asking if the person is still there
26	Asks venue staff not to let others know they are there
27	Is rude or impolite to venue staff
28	Becomes angry or stands over other players if someone takes their favorite machine/spot
29	Avoids contact or conversation with others
30	Stays on to gamble when friends leave the venue
31	Brags about winning or makes a big show about their gambling skills
	Emotional Responses
32	Shows signs of anxiety while gambling (shaking, sweating, looking nervous/edgy)
33	Gets angry while gambling (kicking, hitting machines, swearing, grunting or groaning, playing roughly/aggressively)
34	Shows signs of distress after gambling (looks sad/depressed, crying, holding head in hands)
	Irrational Behaviours
35	Complains to staff about losing, or blames venue or machines for losing
36	Compulsively rubs belly of machine or screen while playing

2.4 Discussion and Conclusions

Stage One of this study achieved its aim of validating identified indicators developed by Delfabbro et al., in 2007 and rating the indicators in terms of their strength in contributing to the identification of problem gamblers in venues. This was done by recruiting another large sample of regular EGM gamblers across Australia and conducting analyses similar to those conducted in 2007. Analyses were used to examine the relative usefulness of each indicator. In addition, results of this new sample collected in 2013 were compared to those of 2007. Results were similar between the two studies suggesting the indicators were fundamentally stable in terms of (a) the types of behaviours which are commonly or frequently displayed by problem gamblers, (b) the types of behaviours which best discriminate between problem and non-problem gamblers, and (c) the behaviours which best predict problem gambling. This is an important extension of prior research which has involved only single samples. The results of the two studies were then used in combination to refine the *Checklist of Visible Indicators* (Delfabbro et al. 2007) into the *Gambling Behaviour Checklist* for use in EGM venues (GBC-EGM)[12],. Specific results and their meaning are discussed in detail below.

2.4.1 What do problem gamblers do in venues? Common indicators

The study firstly considered common indicators of problem gambling, i.e., behaviours which were frequently or always shown by problem gamblers when they were in venues. The results of the present study showed that the most common visible indicators of problem gambling which can be observed in venues relate to the duration and intensity of gambling or to ways of raising funds or chasing wins. Problem gamblers were likely to be intensely focussed on their play, want to play for long

[12] Three further versions of this measure are refined in Chapter 3, Stage Two, for staff use in Victoria, (GBC-EGM-SV), in other jurisdictions (GBC-EGM-S), and for researchers (GBC-EGM-R)

periods of time without a proper break and play rapidly or frenetically. They are likely to be trying to raise funds by leaving the venue to find more cash and/or using venue cash facilities multiple times. They will play back winnings and are likely to leave venues only once they have spent all their money. Social or emotional responses are very unlikely to be seen in any customer, but the most commonly shown by problem gamblers were avoiding contact with others or looking sad and depressed after gambling. Problem gamblers were likely to show some signs of impaired control such as gambling up until closing time and still not wanting to leave the venue. Problem gamblers may also drink a lot of alcohol while gambling or try to blame the machines or venues for their losses. Comparisons of common indicators in 2013 and 2007 showed there was a lot of similarity with 12 out of 15 of the common indicators being listed as most prevalent in both studies. These indicators are important because common indicators are more likely to be seen by venue staff.

2.4.2 How do we discriminate between problem gamblers and other customers?

Although it is important to know which behaviours are commonly shown by problem gamblers, this, by itself may not assist in discriminating between problem gamblers and other customers. This is because some behaviours which are common in problem gamblers may also be relatively common in regular gamblers who are not experiencing problems. For example, gambling after drinking a lot of alcohol was reported at least occasionally by almost half (47.2%) of the problem gamblers but was also reported at least occasionally by 36.5% of the moderate risk gamblers and 16% of the no-low risk gamblers.

Therefore, it is important to also examine the *relative* prevalence of these behaviours in problem gamblers as opposed to other players, and to consider how much more likely it is that staff will observe particular behaviours in problem gamblers compared to other gamblers. The results showed that some behaviours which were common in problem

gamblers were not good discriminators because they were also fairly common in non-problem gamblers. This included behaviours such as trying to win obsessively on particular machines, changing large notes at venues and playing on quickly after a win. This analysis also revealed that while frequency and intensity of gambling was a good warning sign of potential problem gambling (as these behaviours were commonly shown by problem gamblers), by themselves they were not good at identifying a problem gambler as they did not differentiate very well between problem and non-problem gamblers.

On the other hand, social and emotional behaviours, which were relatively uncommon in problem gamblers tended to discriminate well between problem gamblers and other customers. In some instances this was because these behaviours, while fairly rare in problem gamblers, were almost never seen in any other customer groups, for example telling staff not to let other people know you were in the venue or having family or friends asking if the person was at the venue. Other behaviours were seen across customer groups but more common in the higher risk groups such as displaying anger in the venue. Comparisons across the 2007 and 2013 data sets showed the discriminatory ability of items was stable across time. Items which discriminated well between problem and non-problem gamblers in 2007 tended to also discriminate well in 2013. Correlational analyses confirmed this. The only areas which showed noticeable variability in terms of discriminability were around emotional responses (signs of anger, nerves or distress).

Odd-ratio analyses were used to identify behaviours which discriminated well between specific risk groups, in this case behaviours which were at least twice as likely to be seen by a higher risk group than a lower risk group. Behaviours which were at least twice as likely to be seen by problem gamblers than non-problem gamblers could be seen as *possible signs* of problem gambling (i.e., much more likely to be seen in problem gamblers than other customers). Behaviours which were at least twice as

likely to be seen by problem gamblers than even moderate risk gamblers can be seen as *probable signs* of problem gambling (i.e., much more likely to be seen by those with established issues with their gambling). These included gambling for very extended periods of time, finding it difficult to stop gambling at closing time, trying to borrow money, hiding out from family or friends and showing strong emotional reactions. Finally, items which did not discriminate well between problem gamblers and others, but which did discriminate well between higher risk gamblers (problem and moderate risk) and no-low risk gamblers could possibly be *early warning signs* of gambling issues. These included changes (increases) in spending patterns, gambling for extended periods of time, rummaging around for additional gambling money or repeated visits to obtain money, and bragging about wins.

As well as showing good consistency with the earlier study by Delfabbro et al., (2007), the results of the present study also showed good consistency with prior research. They supported findings from studies into online gambling which found indicators of problematic gambling included spending substantial amounts of time or money gambling, more intense betting patterns, variable methods of obtaining money, aggression and complaints to staff (Griffiths, 2009; Griffiths & Whitty, 2010; LaBrie and Shaffer 2011; Schottler, 2010; Svetieva et al., 2006)

Further, indicators which were found to be commonly shown by problem gamblers in the present study were also commonly displayed by problem gamblers in Schellinck and Schrans' (2004) study, and indicators which discriminated well between problem and non-problem gamblers in the present study were also found to discriminate well between these groups by Schellinck and Schrans (2004). The only exceptions to this pattern were some slight differences in findings relating to (a) emotional/physiological responses (having sweaty palms/body and feeling angry) which Schellinck and Schrans found were common responses of problem gamblers and good at differentiating between the groups, but which the present study found were uncommon

differentiators, and (b) getting out more cash to gamble which was uncommon but a good differentiator in Schellinck and Schrans's study, while the present study's findings suggested it was a relatively common behaviour in both problem and non-problem gambler groups.

2.4.3 Predicting gambling problems

A series of analyses were run to see which indicators were best at predicting gambling problems, overall and for males and females separately. As was the case in 2007 and in earlier research by Schellick and Schrans (2004), the results showed that multiple indicators need to be observed to increase confidence that you have identified a possible or probable problem gambler. While the 2007 report suggested that as few as three indicators may be sufficient, the results of the present study suggested that observation of 4-5 indicators may be required to be very confident of gambling problems. This does not, however, mean that conversations about responsible gambling could not be initiated at earlier stages with customers exhibiting clear signs of risky gambling.

The indicators which are best able to predict gambling issues overall related to social/emotional behaviours (looking sad, appearing dishevelled), money seeking (leaving the venue to find money, re-playing wins), betting relatively large sums per spin, and gambling through meal times. For males additional specific indicators may be avoiding contact with others, shaking and gambling for long periods without a break. For women, specific predictive indicators included avoiding the cashier and intensity of gambling.

To examine consistency of predictors, analyses were run to determine whether the predictive models of 2007 could be replicated in the 2013 dataset. Results showed that findings were generally consistent, validating the 2007 models. For males the indicators which remained significant related to gambling for long periods without a

break, sweating and having difficulty stopping gambling at closing time. For women, consistently important indicators across both studies were gambling intensely, appearing nervous or edgy and money seeking. As was the case with the discriminatory analyses the main area of inconsistency was variability was around emotionality, in this case anger. Differences in this area might not be unexpected given that emotional reactions to gambling are likely to be highly variable between individuals based on dispositional factors such as age, gender and personality. Some people many display anger; others may become depressed. Situational factors may also influence the particular emotional response given. Thus, while emotional responses were detected as important across both studies, the exact nature of these responses appears to vary across to the two samples.

These findings were consistent with Schellnick and Schrans (2004) where an examination of combinations of predictors found that the most consistent indicators involved long gambling sessions, continuous gambling, money seeking, displays of anger/disorderly conduct, having trouble quitting, and playing two machines. Considering this in conjunction with findings discussed above it would appear that gambling for long periods without a break, gambling intensely, seeking additional money to gamble, and having trouble stopping gambling (e.g., to have a meal or because it is closing time) are likely to be particularly strong indicators of problematic gambling.

2.4.4 Levels of severity in indicators

The combined analyses were used to create a refined list which removed redundant or non-discriminatory items, had meaningful categories and used a colour coding system to designate levels of severity in the indicators based on commonality and discriminability of behaviours between relevant risk groups. The concept of delineating relative riskiness of particular behaviours has been used in the past, for example the Swiss Casinos Act of 1998 (see Delfabbro et al, 2007; 2012; Hancock, 2011)

differentiated between more severe A-type criteria and less severe B-type criteria with two or more A-type indicators resulting in the need for a staff interview, while B indicators are logged over time. Further, *PlayScan* provides internet gamblers with informative feedback regarding their playing behaviour using a traffic light system.

The resulting list consisted of *red flags* which were strong indicators of gambling problems (independent predictors of gambling problems); *orange flags* which were possible indicators of gambling problems (behaviours at least twice as likely to be seen in problem gamblers compared to others); *purple flags* which were very strong but uncommon indicators (behaviours at least three times more likely to be seen in problem gamblers than moderate risk gamblers) and *yellow flags* which were early warning signs (behaviours at least twice as likely to be seen in higher risk gamblers than low risk gamblers).

Methodological considerations

Although this study has a number of methodological strengths (a good sample size, standardised measures and used a consistent inclusion criteria for sampling), there are number of limitations that should be taken into account when interpreting the findings. First, the study is based on a convenience sample, so it is not clear to what extent the results can be generalised to all gamblers in the population. Those who are willing to take part in research may be more willing to admit that they have problems with their gambling and may be more aware of their own behaviour.

Second, the PGSI is a generalist measure of gambling problems so we cannot be certain that all gambling problems do relate to EGM gambling. However, we recruited only regular EGM gamblers, and it is known that regular gambling is positively associated with gambling problems, and that at least 70% of all gambling-related problems are associated with this form of gambling in Australia (Productivity

Commission, 2010). Thus it is very likely that any gambling issues related, at least in part, to EGM gambling.

Third, the scope of this study did not extend to an investigation of individual differences in the presentation of indicators (apart from gender). Thus, it is unclear to what extent these findings can be generalised across different cultural groups or across different age groups. It may be, for example, that the salience of certain behaviours differs depending on a person's cultural background.

Fourth, this stage of the research was based on self-report measures and the relationship between indicators and measures of problem gambler status. The extent to which indicators are able to predict whether or not a person is a problem gambler is therefore only theoretical. In practical terms, it may be much more difficult for venue staff to observe the different indicators and then make an accurate appraisal of a patron's gambling. This issue is examined in more depth in Stage 2 of the research, which follows, but it is recognised that other potential research methods could be used. One possibility, for example, is for staff observations to be combined with information obtained from electronic monitoring systems (e.g., pre-commitment or loyalty card systems; Delfabbro et al., 2012; Griffiths & Wood, 2009; Svetjeva et al., 2006).

Conclusions

Stage One achieved the aim of validating the findings of Delfabbro et al. (2007) and showing that those findings were fundamentally stable in terms of (a) the types of behaviours which are commonly or frequently displayed by problem gamblers, (b) the types of behaviours which discriminate between problem and non-problem gamblers, and (c) the behaviours which best predict problem gambling. Findings from the 2007 and 2013 data analyses were combined to refine the 2007 indicators into the Gambling Behaviour Checklist, the GBC-EGM, with items colour coded in terms of severity. This

checklist was then used in Stage Two by venue staff to identify possible and probable problem gamblers according to the number and severity of behaviours displayed.

CHAPTER 3: Stage Two – Practical Validation of the Gambling Behaviour Checklist

Stage Two of the study was undertaken to articulate on the practical validity of the GBC-EGM in terms of its usefulness as a tool for EGM venue staff to use to identify potential problem gambling customers. This was achieved by conducting a 3-month pilot of the checklist under real conditions of use, followed by semi-structured focus groups with staff to discuss the usefulness of the tool. Staff feedback in Stage Two was used to calibrate the checklist to their needs and working conditions, resulting in the GBC-EGM-SV for Staff in Victoria. Versions were also created for EGM staff operating in other jurisdictions and countries (the GBC-EGM-S), and EGM researchers (the GBC-EGM-R). Findings from stage two provide the beginnings of an evidence base for the translation of theory into practice.

3.1 Methodology

3.1.1 Participants

Primary participants were gaming staff from three Melbourne hotels which contained EGMs who volunteered to use the GBC-EGM during a 3-month trial period and who then participated in post-trial focus groups. The participants were eleven females who had between one month and 20 years experience working in EGM venues ($\underline{M}$ = 7.7, SD 7.4). Within this range of experience, two groups of staff were apparent. Four participants had worked for less than two years in EGM venues, whereas seven had worked for four years or more. For the purpose of qualitative analyses we classified those with less than two years' experience as 'less experienced' and those with four years or more experience as 'experienced'. In terms of age, three participants were between 18-30, four 31-50 and four 51+ years old.

Secondary participants were eight venue support workers (VSW) located in three Gamblers Help Services in metropolitan Melbourne. The workers volunteered their expertise and experience in terms of training venue workers in identification of, and approaching problem gamblers in venues.

3.1.2 Measures

Demographics

Staff details were recorded concerning gender, age range, gaming venue experience, shifts worked.

Gambling Behaviour Checklist

The GBC-EGM validated in Stage One was used by Victorian staff to monitor the behaviour of customers who they believed might have a gambling problem. Four items were modified for applicability to Victoria: (1) 'Gets cash out on 2 or more occasions through ATM or EFTPOS' (Item 17) was changed to EFTPOS only since ATMs are no longer permitted in Victorian EGM venues. (2) 'Avoids cashier and only uses cash facilities', and (3) 'Uses coin machine at least 4 times', were removed as they are not applicable in the Victorian context. (4) 'Bets $2.50 or more per spin most of the time' (Item 5) was changed to '$3' to equate with common Victorian bet denominations. Thus 34 of the 36 checklist items from Stage One were used in this pilot, with alignment of content to Victoria for two items. The pilot checklist is shown in below in Table 28.

Table 28: Pilot Gambling Behaviour Checklist for EGM Staff in Victoria (Pilot GBC-EGM-SV)

	Intensity and Duration
1	Gambles intensely without reacting to what's going on around him/her
2	Often gambles for long periods (3+ hours) without a proper break
3	Gambles continuously
4	Plays very fast (e.g., inserts money/presses buttons rapidly)
5	Bets $3 or more per spin most of the time
6	Gambles most days
7	Spends $300 or more in a session
8	Gambles on 2 or more machines at once
9	Significant increase in spending pattern
10	Rushes from 1 machine to another
	Loss of Control
11	Finds it difficult to stop gambling at closing time
12	Gambles right through normal meal times
13	Starts gambling when the venue is opening or only stops when venue is closing
14	Tries obsessively to win on a particular machine
	Money Seeking
15	Borrows money from other people at venue or asks for a loan/credit from venues
16	Leaves the venue to find money to continue gambling
17	Gets cash out on 2 or more occasions through EFTPOS
18	Puts large wins back into the machine and keeps playing
19	Has run out of all money when he/she leaves venue
20	Asks to change large notes at venues before gambling
21	Rummages around in purse or wallet for additional money
	Social Behaviours
22	Significant decline in personal grooming or appearance over several days
23	Has friends or relatives contact the venue asking if the person is still there
24	Asks venue staff not to let others know they are there
25	Is rude or impolite to venue staff
26	Becomes angry or stands over other players if someone takes their favorite machine/spot
27	Avoids contact or conversation with others
28	Stays on to gamble when friends leave the venue
29	Brags about winning or makes a big show about their gambling skills
	Emotional Responses
30	Shows signs of anxiety while gambling (shaking, sweating, looking nervous/edgy)
31	Gets angry while gambling (kicking, hitting machines, swearing, grunting or groaning, playing roughly/aggressively)
32	Shows signs of distress after gambling (looks sad/depressed, crying, holding head in hands)
	Irrational Behaviours
33	Complains to staff about losing, or blames venue or machines for losing
34	Compulsively rubs belly of machine or screen while playing

Staff indicated which of the 34 listed behaviours they had seen in the customer, both at the time of observation and any they could recall from past behaviour (the literature suggests staff can recall past customer behaviour, e.g. Delfabbro et al 2007). The behaviours were presented in their six categories: 10 items related to the intensity and duration of gambling; 4 related to impaired control; 8 items captured social behaviours; 7 related to raising money or money chasing behaviours; 3 related to emotional responses; and 2 related to irrational behaviours.

Patron identification and action report sheet

For each possible problem gambler observed, staff recorded details concerning the date and time of observation, customer age and gender, how often the observing staff member had seen the customer in the venue, and how often the customer visited to play EGMs. Staff also indicated what they had seen that alerted them to possible gambling problems in the customer (primary indicator/s), and the extent to which they personally believed the customer had a gambling problem.

After completing the GBC-EGM-SV checklist, staff were requested to complete a follow up action sheet detailing what actions they took (e.g., talk to a senior staff member; approach patron to talk for a general chat; approach patron to talk about behaviour/choices), any details about any relevant outcomes from these actions.

3.1.3 Procedure

Ethics approval to conduct the study was obtained from Swinburne University Human Research Ethics Committee (SUHREC). Information was obtained from venue support workers about Victorian venues that were likely to contain staff who had not yet been trained in identification of problem gamblers (we obtained this information as we were interested in training inexperienced staff in identification needs and then compare their experience with the checklist to more experienced staff who were provided with written instructions on how to use the tool). Of these potential sites, Australian Hospitality and

Leisure Group (ALH) identified three Melbourne venues for the 3-month trial of the checklist. The managers of each venue identified appropriate staff within their venues and asked them if they would like to take part in the study. All venue staff participation was voluntary. Some inexperienced staff who volunteered took part in a 1-2 hour face to face training session which involved a discussion of the need to identify potential problem gamblers in venues, non-confrontational ways to approach people identified as possible problem gamblers, and an explanation of how to use the checklist and fill in the research sheets. Staff were introduced to the six categories of behaviour on the checklist, the items comprising each, and the colour-coded minor and major problem-flag designation attached to each item. In two out of the three training sessions this session was provided in conjunction with an additional problem gambling training component provided by a venue support worker on support and counselling options available for people with gambling problems. Other staff who volunteered to take part were provided with written instructions similar to the face to face training including the need for observation of customer gambling behaviour, how to use the checklist and fill in research sheets, and ways to approach customers. All staff had backup support from their venue managers.

The checklist was incorporated into day to day functioning of the venue over the three month period. Staff were asked to complete the checklist and patron identification and action report sheet whenever they saw a customer who they thought may be showing behavioural signs of gambling problems. At the end of three months, participating staff were invited to participate in focus groups to provide feedback to the researchers concerning the practical validity of the checklist.

The results presented in Stage Two reflect the value of the checklist following self-directed learning rather than face-to-face training. As discussed above, we provided face-to-face training in use of the checklist to staff new to the EGM environment. Most

staff familiar with the EGM environment had already received training on identifying problem gamblers by venue support workers prior to the pilot. Rather than replicating training, we provided these staff members with the short written version of the training on the importance of identifying problem gamblers and how to use the checklist. We had intended to conduct some comparative analysis between the two groups to articulate on whether it is advantageous to provide the checklist within a supportive training environment (as opposed to providing it with written instructions). However, according to the venue managers, more than 50% of the inexperienced staff who completed the face to face training left the employing venues during the study. Moreover, only one staff member who had received the training and was still employed at the pilot venues volunteered to participate in the focus groups. We were therefore not able to conduct these comparisons. The remainder of the staff who participated in the focus groups were introduced to the checklist by their managers and fellow staff members and used the written instructions.

Focus group protocol and schedule

Staff who trialled the checklist were invited to provide feedback in semi-structured focus groups performed on-site. The focus groups were conducted to evaluate the practical utility of the checklist and constituent items as a tool for identifying at-risk gamblers. We sought to understand whether venue staff could observe and consolidate information about particular customers in a busy venue environment using the checklist. Focus groups took between 30 minutes and one hour to complete.

Semi-structured focus groups addressed the following issues:

a. Whether staff thought the checklist was a helpful tool to identify problem gambling behaviours and potential problem gamblers;
b. Whether the checklist behaviours were easy or difficult to observe under real conditions of use;

c. Whether there were problem gambling behaviours in the checklist that were new to staff (i.e., unfamiliar as potential identifying behaviours);
d. Whether there were problem gambling behaviours that staff felt were missing from the checklist (i.e., behaviours staff thought were indicative of behaviours but not on the list);
e. What kinds of difficulties staff encountered in use of the checklist;
f. What staff would change about the checklist;
g. What kinds of follow-up actions followed problem behaviour identification and what were the outcomes of these actions.

Venue support workers at the three venues participated in unstructured interviews prior to the 3-month trial. These interviews were designed to elicit information about the techniques they used to train venue staff in observing the behaviour of staff in venues to identify potential signs of problem gambling. As these staff used the 2007 version of the Behavioural Checklist in their training the interviews were also used to gather any relevant information about how the checklist was perceived by staff and how useful the venue support workers thought this tool was in training venue staff.

Workers at the services also assisted in identifying venues with inexperienced staff (who had not yet received training in identifying problem gamblers) and attended some of the training sessions to provide further training on providing problem gamblers with assistance in accessing help services.

3.1.4 Process of analysis

Focus group discussions were digitally recorded with participant permission. Discussions were transcribed and de-identified. Transcripts containing a total of 4950 lines of conversation were imported into NVivo 10, a qualitative software program for analysis. Sex, age group and years of experience working in EGM venues were attached to each passage of text.

We conducted thematic data analysis using a phenomenological framework (for details on this method see Braun & Clarke, 2006). Interview questions pertaining to each issue (i.e., 'a' through 'g' above) provided guiding parameters to our analysis whereby the data drove theme identification with an inductive approach. One researcher (A. A.) coded each passage for themes in context of the issue or issues that the passage addressed. Themes were examined for commonalities and variation in content across issues. A. A. discussed the emergent themes with A.T. considering the raw text and the meaning of the analysis in terms of existing literature and overarching research questions. This resulted in some adjustment and realignment of some themes with continued reference back to the raw text to ensure this final list of themes was grounded in the data (Corbin & Strauss, 2008).

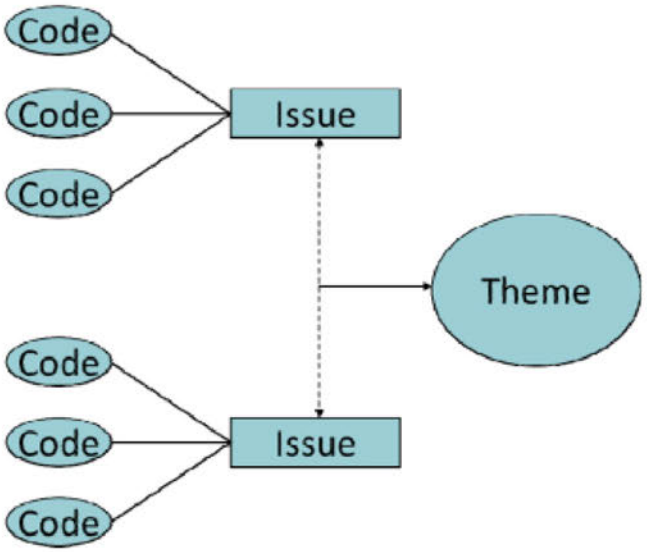


Figure 1: Qualitative data transformation

3.2 Results

3.2.1 Usefulness of the Gambling Behaviour Checklist

We asked staff whether, and how, they found the checklist useful in identifying problem gambling behaviours and potential problem gamblers. Staff responded in terms of the clarity, relevance and comprehensiveness of the checklist. The usefulness of the checklist also varied between the seven experienced (more than 4 years EGM experience) and four less experienced staff (less than 2 years EGM experience).

Clear, relevant and comprehensive checklist

Ten of the 11 staff who participated in the focus groups found the checklist useful in clarifying the signs of problem gambling and in the identification of potential problem gamblers:

> *Q: "Did it seem like these were clear identifiers of the people who might become difficult?"*
>
> *A: "Yes definitely, they're the things [behaviours] that I've always classed as the problem ones."* (Female, 51+ years old, 4 years EGM experience)

> *Q: Did you find the checklist helpful in identifying people with potential problems?*
>
> *A1: "It seemed relevant."*
>
> *A2: "It is, it's really relevant."*
>
> (A1: Female, 18-30 years old, 1 year EGM experience; A2: Female, 31-50 years old, 5 months EGM experience).

The members of one focus group spontaneously reported the checklist to be comprehensive:

> *Q: "Do you think there's something that's missing from the list? Is there something else?"*

A1: "I thought that was very good. Can you think of anything else?"

A2: "No. I actually found it helpful."

A1: "Yeah, I thought it was good. I could relate to it all straight away". (A1: Female, 51+ years old, 4 years EGM experience; A2: Female, 18-30, 2 years EGM experience)

Staff experience and use of the checklist

Experienced and less experienced staff both found the checklist useful for different reasons. ***Experienced staff*** tended to use the checklist as a helpful reminder of problem gambling behaviours:

Q: One of the aims of developing this kind of checklist is to increase staff confidence in identifying possible issues with clients who might have a problem. Did you feel like it increased your confidence in identifying people who might have a problem?

A1: No, I've always been aware [laughs].

Q: You've always been aware?

A1: Yeah.

Q: Yep. Yep. And did it change anything? So when you said you found it useful, how was it useful?

A1: Well it was useful [in] that it's like a refresher of things to look for when people came in and you know the regulars that are constant[ly] gambling, and when I filled out a few of them I thought 'yes, I take note of that, and yes I did'. It was just a reminder to what to… yeah.

(Female, 31-50 years old, 11 years EGM experience)

Experienced staff also found browsing the checklist to be a quick or easy way to identify problem gambling behaviours:

Q: "Okay. So did you find the checklist to be helpful at all in identifying people

who might have problems?"

A: "Yes I did."

Q: "Can you talk a little bit about that? What did you find helpful, for instance?"

A: "Well I just read through it, and it was just easier to tick what was applicable to whomever I was surveying."

(Female staff, 31-50 years old, 11 years EGM experience)

One of the more experienced staff did not find the checklist useful. This participant explained that she was well-versed in problem gambling behaviours after 20 years of working in the same venue with the same customers and was picking up the signs without needing to reference the checklist:

A: "I found there was a lot to fill out [on the checklist] and I've worked in there [EGM room] a long time and to me it's obvious. You get to know the people and then you get to know the ones that struggle with that kind of stuff and so I probably didn't need to do all of that so much. And a lot of the customers have all been here 20 years too, so you get an understanding of them and yeah."

(Female, 31-50 years old, 20 years EGM experience).

These results demonstrate the importance of ensuring that the checklist is used in a way that supports staff rather than simply increasing workloads.

Experienced staff believed that the checklist was particularly helpful for ***less experienced staff*** who need to know how to identify problem gamblers:

Q: "Did you find this sheet useful to have when you were looking at the customers – think they might have a problem?"

A: "I was sitting there staring at them just going, "Yeah" If I hadn't ever done gaming before this [checklist] would be really useful because everything in here

are the classic signs of people that have problems as far as I'm concerned." (Female staff member, 51+ years old, 4 years EGM experience)

Less experienced staff made similar statements. They explained that using the checklist had made them more aware of customer behaviour and the sensitive nature of the gambling environment. It also had the effect of increasing their confidence in identifying and potentially approaching problem gambling customers:

"Q: "What have you learnt from this sheet if you don't mind?"

A: "I just – like you just said I've developed a lot more confidence, especially with my knowledge and how to control everything and how to deal with situations and things like that."

Q: "Can you give an example of that for instance?"

A: "Well beforehand I wouldn't have approached anybody about their gambling issues because I felt like it was none of my business. I just felt like I'd be yelled at and things like that. Whereas now I have a lot more background information and a better understanding of how to approach people and to figure out whether they do have these problems, what sort of questions to ask and all of that sort of stuff. So it has yeah it's helped me a lot." (Female staff member, 18-30 years old, 1.5 years EGM experience).

The staff member quoted above also considered the checklist an improvement over existing methods of identifying problem gamblers:

Q:" So do you think that this – using the checklist or having it available it's an improvement over the previous methods of identifying problem gamblers, the previous training."

A: "Yeah definitely it's helped me out a lot. So yep."

Q: "And how has it helped you out?"

A: "Like I said, before with the confidence and I feel like I've got a better

knowledge of things to look at and how many things to look at because you sort of look at one or two things and go "oh yeah it could be a problem" and then you actually figure out that there's seven or eight things on this one list and you go "oh well yeah definitely needs to change". So yeah it's helped a lot." (Female staff member, 18-30 years old, 1.5 years EGM experience).

The manager of one venue concurred that use of the checklist had improved observation skills amongst the staff, particularly amongst newer staff:

A: "I don't know whether any of them [staff] had actually made these observations prior to that [study participation], especially because I had three new staff, so I think it was good because it made them go out there and actually do some observing and have a look at who's out there and what they're doing." (Venue manager, 31-50 years old, 20 years EGM experience).

The same manager also thought that use of the checklist had increased staff confidence and capacity to cope with problem gambling behaviours:

A: "..while we've been doing this [piloting the checklist], I haven't had anybody [staff] come up to me and ask me to go and deal with anybody [customer] that they thought was a problem gambler. I think this has sort of made them more confident themselves - the staff – in regards to being able to approach a customer if they did feel that they had issues." (Venue manager, 31-50 years old, 20 years EGM experience).

This shows the usefulness of the checklist to support inexperienced staff in particular. It can assist people new to the gaming environment to understand the behaviours which may indicate a gambling problem. Setting staff training within a broader context

whereby staff are given pointers on how to approach customers will also increase staff confidence and the ultimate success of the checklist as a staff tool.

Behaviours new to staff

Use of the checklist introduced staff to some new indicators of potential problem gambling. These were behaviours that staff had either not observed previously or had not considered to be potential indicators of problematic gambling. The six items are tabled below.

Table 29: Gambling Behaviour Checklist: Items that were new to staff

Item No.	Behaviour	Category
20	Asks to change large notes at venue before gambling	MS
22	Significant decline in personal grooming or appearance over several days	SB
23	Has friends or relatives contact the venue asking if the person is still there	SB
24	Asks venue staff not to let others know they are there	SB
28	Stays on to gamble when friends leave venue	SB
29	Brags about winning or makes a big show about their gambling skills	SB

MS: Money seeking; SB: Social behaviours

Consistent with this, three of the six items were among the rarest behaviours identified in Stage One (Items 22, 23, 24):

> *A: "There's a lot of things on here that weren't covered in the other training. A lot of the social behaviours, the grooming and things like that, asking friends calling in or relatives calling. Yeah basically all of those purple in the social behaviours."* (Female, 18-30, 1.5 years EGM experience).

The relative rarity of these behaviours means that they are less likely to be familiar to staff as indicators of problem gambling. It is possible, however, that some are more visible in environments other than hotels such as clubs or casinos.

Interestingly, some behaviours that Stage One had identified as quite common in

problem gamblers, were also unfamiliar to some staff. Behaviour such as changing large notes before gambling (Item 20) had not been thought of as an issue by some staff until they used the checklist. Some staff remained resistant to label it as such:

> *Q: "Do you reckon the people who are doing that, that they're the people who are more likely to spend too much, the people who are asking to change hundreds?"*
>
> *A: "Yes and no, yes and no. I mean, well they're the ones with the hundreds, they might have a bit more to spend but they're still losing it. I don't think you can say just because they've got the hundreds, they're looking like they're losing more because you can only lose what you can afford, yeah. I reckon it's across the board."*
>
> *Q: "So you can see it but it might not be as applicable to them, it mightn't be a problem behaviour?*
>
> *"A: "Might not or it might. Yeah it's all individual, yeah."*
>
> (Female, 31-50 years old, 20 years EGM experience)

This contrasted with the views of other staff who clearly saw this behaviour as part of a problem gambling cycle:

> *A: "A lot of people ask for $100 notes so that they can't put them back in, and then five minutes later they come back and say, "Change these." It's like a boomerang."*
>
> *Q: "So they're trying to self-control?"*
>
> *A: "Yeah. So they collect their $500, "Can I have hundreds so I don't use them," and then yeah, they blow it, they come back, change it, and they're gone."*
>
> (Female, 18-30 years old, 2 years EGM experience)

Item 29, 'Brags about winning or making a show of winning' was another behaviour that

most staff had not realised was an indicator of potential problems:

> *A: Yeah see again I just would've thought they were happy or whatever. I'd be happy if I won too but yeah I don't know if that would have been as a problem on my list of things to look out."* (Female, 18-30 years old, 1.5 years EGM experience).

This suggests it may be difficult for staff to separate happiness at a win from excessive bragging which may reflect an underlying need to be seen as a winner. Both of these behaviours are early warning signs and are behaviours which are still relatively common in non-problem gamblers so are possibly less easily identifiable as problematic than other more severe 'red flag' behaviours.

Finally, most staff had not been aware that customers who stayed on to gamble when friends left the venue were exhibiting a sign of gambling problems (Item 28):

> *Q: What about [customers] 'staying on to gamble when friends leave the venue'? If they arrive with a bunch of friends and then they stay.*
>
> *A: Yeah I have seen that. I wouldn't have thought of that as a concern either until this [checklist] came out.* (Female, 18-30 years old, 1.5 years EGM experience)

These findings emphasise the importance of integrating and contextualising these behaviours in staff training on problem gambler identification.

3.2.2 Individual item analysis

During the pilot we requested staff use the checklist to record all behaviours that they had observed in customers they suspected may be displaying problem gambling behaviour. In focus groups we asked staff about the ease with which they could

observe and match the checklist items to customer behaviour during routine shifts. Staff articulated their responses in terms of observation and interpretation experiences.

Observation experiences

There were clear distinctions between items that were easy or difficult to observe under real conditions of use. Table 30 shows the number of staff who found each checklist behaviour 'easy' to observe. It also shows the number of times behaviour was observed across the 23 customers that staff put under observation.

Table 30: Gambling Behaviour Checklist: Item observability and frequency

Item No	Behaviour	Category	Observa-bility[a]	Times Observed[b]
2	Gambles for long periods (3+ hours) without a proper break	I&D	11	14
3	Gambles continuously	I&D	11	4
6	Gambles most days	I&D	11	4
8	Gambles on 2 or more machines at once	I&D	11	6
14	Tries obsessively to win on a particular machine	LoC	11	14
17[C]	Gets cash out on 2 or more occasions through EFTPOS	MS	11	17
26	Becomes angry or stands over other players if someone takes their favourite machine/spot	SB	11	3
34	Compulsively rubs belly or screen while playing	IB	11	6
1	Gambles intensely without reacting to what's going on around him/her	I&D	10	5
7	Spends $300 or more in a session	I&D	10	16
16	Leaves the venue to find money to continue gambling	MS	10	6
18	Puts large wins back into machine and keeps playing	MS	10	14
20	Asks to change large notes at venue before gambling	MS	10	6
4	Plays very fast (e.g., inserts money/presses buttons rapidly)	I&D	9	7
10	Rushes from 1 machine to another	I&D	9	4
11	Finds it difficult to stop gambling at closing time	LoC	9	6
12	Gambles right through normal meal times	LoC	9	12
13	Starts gambling when the venue is opening or only stops when venue is closing	LoC	9	5
19	Has run out of all money when he/she leaves venue	MS	9	10
21	Rummages around in purse or wallet for additional money	MS	9	3
25	Is rude or impolite to venue staff	SB	9	5
31	Gets angry while gambling (kicking, hitting machines, swearing, grunting or groaning, playing roughly/aggressively)	ER	9	1
32	Signs of distress after gambling (looks sad/depressed, crying, holding head in hands)	ER	9	6
33	Complains to staff about losing or blames venue or machines for losing	IB	9	8
9	Significant increase in spending pattern	I&D	7	4
28	Stays on to gamble when friends leave venue	SB	7	7
5[C]	Bets $3 or more per spin most of the time	I&D	6	11
27	Avoids contact or conversation with others	SB	6	3
30	Shows signs of anxiety while gambling (shaking, sweating, looking nervous, edgy)	ER	6	3
15	Borrows money from other people at venue or asks for a loan/credit	MS	5	3
23	Has friends or relatives contact the venue asking if the person is still there	SB	5	1
24	Asks venue staff not to let others know they are there	SB	5	0
29	Brags about winning or makes a big show about their gambling skills	SB	5	1
22	Significant decline in personal grooming or appearance over several days	SB	4	1

[a] Observability = number out of 11 focus group participants who found the item easy to observe during typical shifts with higher numbers indicating easy observability. [b]Total number of times checklist behaviours were observed across 23 customers = 216. [C] Item content aligned to Victoria. I&D: Intensity and duration; LC: Loss of control; MS: Money seeking; SB: Social behaviours; ER: Emotional responses; IB Irrational behaviours

Seventy percent (24/34) of the checklist items were described as easy to observe by

the vast majority of focus group participants. Ease of observation correlated moderately with the actual number of times a behaviour was observed (r = .51), indicating that behaviours that were easier to observe were observed more often. The easiest behaviours to observe were generally those involving intensity and duration of play, i.e., behaviour directly related to EGM play as opposed to customer behaviour elsewhere in the venue. Regular use of EFTPOS (Item 17) was also easily seen and the most frequently observed behaviour in customers that staff had targeted for observation.

In contrast, 30% (n=10) of items were seen as difficult to observe by a third of staff. These encompassed most of the behaviours identified as rare in Stage One and/or unfamiliar or new to staff in Stage Two (Items 15, 22, 23, 24, 29). For example, customer attempts to borrow money (Item 15) were described as difficult to observe since customers actively concealed this behaviour from staff. Rather than witness money-borrowing, staff were more likely to have heard reports of this behaviour from other customers or staff. Item 24 was described as especially rare. According to staff, very few customers had asked them to conceal their presence from callers in recent times, and none had experienced this during the pilot period. Relatedly, when friends or relatives called a venue looking for a customer (item 23), staff could rarely match the call to the customer in question since they often did not know their clientele on a first name basis. It is possible that these behaviours are better at identifying problem gamblers at particular venues such as small clubs where regular customers are well known to staff or in regions where there are few venues so family and friends know where to call.

The usefulness of these behaviours as indicators of gambling problems may also have receded in recent times with the rise of mobile phone use and decline in fixed phone use. Staff noted that customers who wished to disguise their location from family,

friends and so forth would step outside the venue (beyond range of the tell-tale EGM sounds), to take or make a mobile phone call:

> *Q: "Do you ever get asked not to let others know that you're here, so "if someone calls for me don't let them know I'm here."*
>
> *A: "No, but I quite often see people with their mobile phones bolt outside to take the call rather than take it in the initial venue."*
>
> (Female, 31-50 years old, 5 months EGM experience).

The remaining items which staff found difficult to observe contained a mix of rare and commonly displayed behaviours (according to Stage One of the research), but they required staff to pay uncommon levels of attention to customers or to have personal knowledge of their customers. For instance, staff explained that they rarely paid the level of attention necessary to confidently report a decline in personal grooming over several days (item 22). Similarly, a significant increase in spending patterns (Item 9) was potentially observable in regular but not irregular customers. Whether customers stayed on to gamble after friends left the venue (Item 28) also required more than the typical level of attention, especially in the case of non-regular customers. Finally, whether customers were mostly betting $3 or more a spin (Item 5) was generally easy and quite common to see amongst targeted customers, but only for a few moments during a round of the gaming floor.

Interpretation experiences

Staff generally found it easy to interpret whether observed behaviour was normal or problematic and to reconcile the behaviour with available checklist items. There were some exceptions however where observations did not fit cleanly with the checklist items. For more than half the staff interviewed, it was hard to draw the line between customers who were enjoying some peace and quiet while gambling on their own, and those who were problematically avoiding contact with others (Item 27). For three staff

in one venue, this difficulty concerned a group of regular customers, each of whom sat on their own in a corner and gambled for many hours, yet at irregular intervals would yell across the gaming floor to each other to take a smoke or coffee break.

Bragging about winnings (Item 29) was also a problematic item for staff, with more than half unable to distinguish between customers' celebration of winnings and bragging of winnings. Signs of anxiety, including shaking, sweating, looking nervous or edgy (Item 30), were difficult for almost half the staff to differentiate from other forms of distress such as looking sad or depressed (Item 32). This last is possibly less of an issue from an identification point of view as any signs of distress should be taken as indicators of gambling problems.

Prior knowledge of customers also appeared to confound item interpretation in a small number of cases. For instance, whether two staff members thought a problematic increase in customer spending had occurred depended on how wealthy they believed the customer to be. In another case, a staff member described a customer as generally anxious so was unsure of applying anxiety item 30 as a problem gambling indicator. A further customer was described as sad and depressed as a result of having lost their partner to illness. The staff member was therefore unsure of applying item 32. While we did not gather enough information to be confident of the broader effects of customer relations, Delfabbro et al. (2007) suggests that staff to look for behaviours and reactions that are inconsistent or out of character in customers that they know well, rather than confine their focus to static interpretations of behaviour. Instructions to staff, therefore, should emphasise departures from normal behaviour as indicating potential for gambling issues.

3.2.3 Impediments to identification

During focus group discussions we also asked whether staff had encountered any practical difficulties in application of the checklist. Staff discussed three environmental considerations that affected use of the checklist and the applicability of particular items. These concerned the location of staff in the venue, the time of shift, and venue activity levels.

Location of staff in venue

The physical location of staff on a shift influenced the kinds of behaviours that they could observe. In particular, betting $3 or more per spin (Item 5) and expressions of anger (Item 31) were described as easier to observe while performing rounds on the gaming floor but more difficult to observe when attending to service areas such as the bar, cashier desk and EFTPOS:

> *Q: "What about betting $3 or more dollars per spin most of the time [Item 5], is that easy to see?"*
>
> *A: "You can see on the machine if you're walking past and you're having a look at it you can see what they're betting…"* (Female, 31-50 years old, 12 years EGM experience)

> *Q: "Which other ones do you think would be, are things that you guys can observe yourselves when you're working on the floor?"*
>
> *A: "Number 2 here, kicking, hitting machines, swearing, grunting, groaning. That happens all the time."*
>
> (Female, 51+ years old, 5 years EGM experience)

Time of shift

Other behaviours were only observable by staff on particular shifts. For example, item 11, 'Finds it difficult to stop gambling at closing time' was obviously only observable by staff who worked the 'graveyard' shift (usually 9pm to 5am). Similar limitations

surrounded endorsement of items 12, 'Gambles right through normal meal times', and item 13, 'Starts gambling when the venue is opening or only stops when the venue is closing'.

Q: "Do you see them [customers] finding it difficult to stop gambling at closing time?"

A: "Yeah, oh well I don't see that, I used to see it on graveyards, but I don't see it anymore because I don't do the graveyards."

Q: "So you'd only see that, of course, if you're on the late shift?"

A: "Yeah."

(Female, 51+ years old, 9 years EGM experience)

Another behaviour distinguished by time of day was item 10, which concerned rushing from one machine to another. Staff noted that this behaviour may be less likely to be observed during the quieter, late night hours"

Q: "And what about rushing from one machine to another? Is that something that happens?"

A: "Yeah I don't see that a lot. So like I said I work graveyard – mostly graveyard shifts so it's quiet generally. So if they're – most of the customers have their special machines that they like to play so they won't really rush from one to another." (Female, 18-30 years, 1.5 years EGM experience)

Venue activity level

There were often times when venue activity levels were high. These periods limited staff movements and attention to individual customers. They were also less able to take the time to think about customer profiles. Consequently when staff were working these busy periods they were less likely to be able to effectively identify problem gambling. One described her difficulties using the checklist during the research pilot period:

> *A: "I'm busy out there, and when I got told to do these [checklists] too, because we're understaffed, they're always cutting back, it's really hard to concentrate. You're constantly, and especially me when I'm cashiering, and I've got to concentrate on my money, because I'm dealing a lot of money, and by the time I read the first question I've got to go back to it. So sometimes it takes me a long time to get through all these questions."* (Female, 31-50 years old, 20 years EGM experience)

It is important to note that for study purposes, staff members completed the 34-item checklist for each customer they put under observation. Under real conditions of use, staff are encouraged to use the checklist as a reference point when considering customer behaviour rather than go through all 34 items. This would reduce the impact of venue activity level on checklist utility, especially for experienced staff and those more experienced with the checklist.

These findings support the need for a range of different items to compensate for the fact that some behaviour will only be able to be observed at particular times. This limitation could be minimised further if staff had a method of sharing concerns about particular customers so that multiple staff could contribute to identification of problematic gambling. The involvement of a senior staff member who works multiple shifts, for example, may assist with this.

3.2.4 Outcomes of identification

Our study instructions to staff included suggested follow-up actions where they identified customers exhibiting multiple problem behaviours, or the same behaviour on multiple occasions. These actions included writing up customers' behaviour in the log

book, sustained observation of customers, talking to senior staff members about customers' behaviour, approaching customers for general conversation, and approaching customers to talk directly about their problem behaviour. Suggested actions were in line with gambling venue code of conduct and existing training protocols including Responsible Service of Gaming. To gain an understanding of the relationship between identification and action, we asked staff to record any follow-up actions taken following identification. We also discussed their choices and experiences in the focus groups.

Descriptive statistics for the follow-up actions and the severity classes of precipitating problem behaviours are displayed in Table 31. Shown are the type, number and proportion of follow-up actions performed. Also shown are the severity class, number, proportion, mean and standard deviation of problem behaviours that precipitated each type of follow-up action.

Table 31: Descriptive statistics for follow-up actions by staff and precipitating problem behaviours by severity classes

Type of follow-up actions		**Number of follow-up actions**	**Number of problem behaviours by severity class**				
			Yellow	Orange	Red	Purple	*Total*
Write up in log book	n	1	0	1	4	0	*5*
	%	(4)	(0)	(20)	(80)	(0)	*(100)*
	M		na	1.00	4.00	na	*na*
	SD		(na)	(na)	(na)	(na)	*(na)*
Continued observation of customer for signs of gambling problems	n	11	17	39	53	5	*114*
	%	(48)	(15)	(34)	(46)	(4)	*(100)*
	M		1.55	3.55	4.81	0.45	*10.36*
	SD		(.69)	(2.42)	(2.89)	(.69)	*(5.46)*
Talked to senior staff member	n	5	6	21	31	5	*63*
	%	(22)	(10)	(33)	(49)	(8)	*(100)*
	M		1.20	4.20	6.20	1.00	*12.6*
	SD		(.45)	(1.64)	(3.42)	(.71)	*(5.27)*
Approach customer for general chat	N	19	29	70	98	9	*206*
	%	(83)	(14)	(34)	(48)	(4)	*(100)*
	M		1.53	3.68	5.16	0.47	*10.84*
	SD		(1.35)	(2.36)	(2.77)	(.70)	*(5.89)*
Approach customer to talk about behaviour	N	2	1	6	9	0	*16*
	%	(9)	(6)	(38)	(56)	(0)	*(100)*
	M		0.50	3.00	4.50	na	*8.00*
	SD		(.71)	(4.24)	(3.53)	(na)	*(8.50)*
Other actions taken	N	2	2	12	13	1	*28*
	%	(9)	(7)	(43)	(46)	(4)	*(100)*
	M		1.00	6.00	6.50	0.50	*14*
	SD		(0)	(0)	(.71)	(.71)	*(0)*
Total	*N*	*40*	*55*	*149*	*208*	*20*	*432*
	%		*(13)*	*(34)*	*(48)*	*(5)*	*(100)*
	M		*1.45*	*3.32*	*4.60*	*0.45*	*9.81*
	SD		*(1.26)*	*(2.44)*	*(3.00)*	*(.67)*	*(6.18)*

Note: N=23 customers; Staff frequently took more than one action and each behaviour was counted for each action; na = not applicable; Yellow = least severe behaviour class, Purple = most severe behaviour class.

The 'Number of follow-up actions' column shows that staff performed 40 follow-up actions across the 23 customers they profiled using the behavioural checklist. Staff frequently took more than one action, in most cases the staff response was to have a

general chat with the customer (19 of 23 cases, or 83%), and/or to observe the customer for further signs of gambling issues (11 of 23 cases, or 48%). In some cases staff approached a manager or more senior staff member to discuss their concerns about a customer. It was rare for staff to talk directly to customers about their behaviour.

The 'Total' column shows that follow-up actions mostly occurred following observation of between 4 and 16 checklist behaviours, with staff usually recording around ten behaviours (M = 9.81, SD 6.18). When staff saw one checklist behaviour they described becoming aware of other behaviours. The high number of behaviours that precipitated follow-up corresponds with research showing that staff are likely to underestimate the severity of gambling issues, and are reluctant to label a customer as a problem gambler until the signs are very clear (Delfabbro et al. 2012).

The 'Number of problem behaviours by severity class' columns show that the behaviours precipitating all follow-up actions were more often from the higher severity red and orange classes than from the lower severity yellow class. For instance, the follow-up action, 'Approach customer for general chat', was precipitated on average by 5 red classed behaviours (M = 5.16, SD 2.77). Moreover, red classed behaviours constituted 48% of precipitating observations. This should be expected as red and orange class items are stronger indicators of problem gambling and are more numerous in the checklist than the yellow 'early warning sign' items or the highest severity purple class behaviours. As discussed earlier, purple class items are also rare and difficult to observe (e.g. borrowing money from other people). These findings indicate that staff proactively engaged with customers using the listed follow-up actions when they were confident that multiple strong problem indicators were present.

Staff rationale and experiences of follow-up actions

During focus group discussions we asked staff to discuss the actions they took after they had identified a possible problem gambler and the outcomes of those actions. As noted earlier staff often took multiple actions (e.g., a general chat and continued observations). The different types of actions are discussed in more detail below.

Action: Observation and general chat

Staff described placing customers under extended observation after multiple problem behaviours (usually red and orange) were observed. Staff were also likely to say they approached the customer for a chat. These conversations were general with the staff member waiting for the customer to make reference to gambling problems rather than directly engaging the customer about their behaviour. A highly experienced staff member spoke about this process, and showed how she guided her conversation from general small talk, through further observations made during the conversation, to a position where she could gently go through options and encourage positive behaviour change:

> *A: "I might go up and just do little bit of small talking, see a lot of the time they'll go, "Oh God I'm doing everything on this and I've got to try and stop coming or..." I'll say, "well yeah", and they'll say to me, "What about if I bar myself?" And I go, "Yeah and then you can still come in and have dinner and stuff, but we can't allow you in the gaming room and..." Yeah, I don't force it down them though because I find then they go the other way. If they're slowly saying little bits you'll find in the end they'll come out and ask you. But you just let them slowly, maybe warm to you a bit and feel like that they can because they think, you don't want to judge them. Just hear what they've got to say and then I slowly just stick in my little things of, you know, if you do that you can still on a Saturday night come in and have a, you know, a bistro meal*

and then no-one has to know." (Female, 31-50 years old, 20 years EGM experience)

Action: Talk to senior staff member

On some occasions staff would talk to a manager or other senior staff member about the behaviour of customers they had observed but this was fairly infrequent. Consultations with senior staff were usually incorporated with a general chat to the customer, either before or after talking with the manager. Less experienced staff were more likely to draw on the experience of senior staff :

Q: [Did you perform any follow-up actions after identifying customers with problem behaviours?]

A: I did. Generally it was talking to a senior staff member like a gaming manager, mainly probably – we don't have a gaming manager so a gaming supervisor. So and approaching the customer for a general chat, I've done that as well. (Female, 18-30 years old, 1.5 years EGM experience)

Experienced staff felt that this was a secondary choice to acting independently and tended to only approach a manager in circumstances which extended beyond their confidence to control the situation:

Q: "If you see someone who's displaying problematic behaviours, they're getting angry at the machine or crying or whatever, what do you do? Would you talk to a senior member?"

A: "No I'd go to them [the customer] for a general chat first. And then if I feel it's growing too big for me and out of my control then I might say to [Manager's name] or someone, "Oh look, you know, [Customer's name] like I've tried to have a bit of a chat, I'm really worried because she's at that point,"... But I would start it; I start it and mostly finish it...

(Female, 31-50 years old, 20 years EGM experience)

Action: Direct approaches and write up in the log book

In rare circumstances, staff approached customers to directly address specific behaviour. The circumstances in which staff said they felt it was appropriate to discuss specific behaviour were when customers were behaving inappropriately towards other customers (item 26), when customers did not stop gambling at closing time (item 11), or when they damaged property (Item 31). Thus it was only when behaviour had become overtly problematic and was disrupting the comfort of other players or the venue that staff would directly refer to the player's behaviour.

A staff member new to the EGM room described having to act to stop customers intimidating others (Item 26):

> *Q: "Have you seen people becoming angrier standing over other players, if someone takes their machine?"*
>
> *A: "I have seen that, yes."*
>
> *Q: "So what happens when that happens?"*
>
> *A: "I always go and ask that person, "is this person bothering you?" And if they say "no", I leave it. But if they are bothering them, I just say "could you please move away from the machine, you're making that person feel uncomfortable."*
>
> (Female, 18-30, 1 month EGM experience)

A highly experienced staff member referred to actions taken when customers found it difficult to stop gambling at closing time (Item 11):

> *A: "Oh yeah, we struggle sometimes in the early hours when we're trying to say to people, "That's enough now we've got to close."*
>
> *Q: "And how do you deal with it, how do you deal with those people who won't go home..?"*
>
> *A: "Yeah we get security and we go, "Can you get them out now."*

(Female, 31-50 years old, 20 years EGM experience)

She also explained the circumstances under which the log book was included as part of direct action with customers who became angry (Item 31):

A: "We've had smashed screens, smashed buttons..."

Q: "What do you do in that kind of situation?"

A: "Just try and calm them down and just say, "Look I think it's time you leave."

Q: "Is that the kind of situation where you have to put it into a log book or what happens there?"

A: Yeah it's got to get written in an incident book, yeah.

(Female, 31-50 years old, 20 years EGM experience)

Obstacles to action: Aggression, rudeness and lack of staff confidence

Staff talked about barriers to direct action with players including fear of reprisal or lack of confidence. In particular, wariness of aggression or rudeness led many staff to think twice before taking direct action, and as the reason behind decisions not to refer to customers' gambling behaviour before the customer initiated the topic. Lack of confidence inhibited others, especially younger and less experienced staff from taking more direct actions.

Aggression and rudeness

Q: [Would you ever talk directly to a customer about their problem behaviour?]

A: "If you see them quite upset you might say that but I've learnt my lesson I wouldn't go up to aggressive people, I'm not going to come to work to get abused so I wouldn't do that, why would you do it."

(Female, 31-50 years old, 12 years EGM experience)

Q: "I was just going to ask you if you worry about receiving aggression."

A: "Yeah absolutely. A lot of the time. Because they – a lot of them get very aggressive. They're losing their money, they're losing their houses, you know, losing their families and they just need someone to take it out on. Whereas you're trying to help, that's the person they're just going to go ape at so. It's worrying."

(Female, 18-30 years old, 1.5 years EGM experience)

Perceptions of customer rudeness appeared to vary depending on the nature of the relationships staff had with customers. In one venue, the experience of staff members with established customer relationships appeared to have an impact on customer behaviour:

Q: And you're getting rudeness all the time, or frequently here?

A1: Yes, that's a regular daily thing.

A2: I don't know, I mean I get on really well, because I call everybody Love.

(Female, 31-50, 1 month EGM experience; Female 51+, 5 years EGM experience)

In another venue, the experience of rudeness remained the same irrespective of experience, age or relationships:

Q: "You know them [customers] by name, you've probably got a bit of a relationship with them, like staff customer relationship and they're still being rude to you?"

A1: "Yeah, when they're losing [item 33] and they put a lot in then [item 7] they'll start being rude to us as well won't they? Bite your head off, and they want everything done before they even ask for it."

Q: "That aggressive behaviour, do most of the staff receive that from people when they're upset, or are there people who might be a bit older or something like that and they get treated a bit more respectfully?"

A1: "No. Well I'm older, I'm in my fifties."

A2: "No, they don't care, they don't care."

A1: "They don't care at all."

A2: "Yeah, they don't care."

(A1: Female, 51+ years old; 4 years EGM experience; A2: Female, 18-30 years old, 2 years EGM experience)

Experiences such as these were sometimes raised as detracting from interest in following up at all, with staff dismissive of those whom they perceived to show a lack of respect.

Lack of confidence

Younger and less experienced staff were more likely to report a lack of confidence in their efficacy to follow-up with customers displaying clear problem behaviours:

Q: "When you've got someone coming up to you [at the EFTPOS] multiple times in a session and you know that they're spending a lot, do you – is that at the point where you intervene or is it intimidating to intervene."

A: It's probably where we should. I try and have a chat to them. It's such a hard situation to – yeah it's just so hard to approach people about..."

Q: "Tell me about that. Why is it hard to approach?"

A: "It's such a personal thing and if people feel like they want to spend that much money then they should be able to but there's – well I don't think they should be able to, they shouldn't. But it's really hard."

(Female, 18-30 years old, 1.5 years EGM experience)

Some of the older and more experienced staff also felt a lack of confidence at times, although this appeared to relate more to a lack of confidence in the appropriateness of their actions rather than in their ability to make the actual approach:

> *A*: "*I did make a comment when I filled out the form that I feel I'm not qualified [to follow-up]. You can only do so much, you can only speak to them… [However,] There is a couple of people that, because I've been here so long, that I was able to speak to them as a friend, but most people that have a gambling problem don't want to know you, they don't want you to know how much money they've put through, they're unapproachable."*
>
> (Female, 51+ years old, 11 years EGM experience)

These findings showed that staff did generally act once they had identified a customer with potential gambling problems. They highlight the staff preference to rely on observation and general chat as follow-up actions to their observations, and the value of these indirect actions to overcome obstacles of aggression, rudeness and lack of confidence. This style of responding is consistent with the training staff currently receive on ways to approach potential problem gamblers which emphasises the use of a general approach rather than confronting the customer directly, something which is likely to be much more stressful for staff and may be counterproductive (Cosic 2012)

3.2.5 Potential improvements to the checklist

The gambling behaviour checklist was devised to be used as a staff learning tool and an aide to problem gambling identification. It is important that the tool be streamlined for use in a busy, working environment. To this end, we engaged in a process of item and checklist refinement, incorporating feedback from staff about what they would change about the checklist and how the checklist might be practically implemented in the work setting. This includes the earlier discussed issues with some items in terms of observability and interpretation, as well as environmental impediments to behavioural

identification. The following sections discuss ways of addressing problematic items to improve the overall usability of the checklist.

Reduction in number of items

While two staff commented on the value of having a wide range of items present on the checklist, five others suggested that the checklist should contain fewer items, especially for workers who regularly worked busy shifts:

Q: How do you think the list could be improved?

A: I think there was a lot to read so when I was answering the things I was thinking, "Oh," if there was somehow, there was less of it there.

(Female, 31-50 years old, 12 years EGM experience)

A: Yeah what to look for but not have too many, just have a few of your main ones that yeah.

(Female, 31-50, 20 years EGM experience)

A1: I reckon it's too many, I reckon it should just be the more typical ones on there.

A2: Definitely make it smaller, because half of this is relevant.

A3: …there's way too many, like by the time you look at them and you think, oh maybe they've got that, or have they got that one. You're sort of second guessing yourself, there's too many to set it aside… I just reckon just have like maybe ten behaviours in total, that are the major ones. Like ones getting angry, ones with…

A1: Or gambling continuously.

(A1: Female, 18-30, 1.5 years EGM experience; A2: Female, 51+ years old, 5 years EGM experience; A3: Female, 31-50, 5 months EGM experience)

Repetitious or redundant items

Merging or removing repetitious items is one way of reducing an overly long list. Staff commented that there were repetitious items, and further, that the repetitious items made it difficult to choose one particular item over the other. Discussions suggested this may have led to situations in which one item was chosen arbitrarily over another, or both items were endorsed in relation to a single behaviour. An example of this relates to the comments of two staff who struggled to differentiate between Item 2, 'gambles continuously', and Item 3, 'often gambles for long periods (3+ hours) without a proper break'. A further staff member said she could not differentiate between these items and Item 1 'Gambles intensely without reacting to what's going on around him/her':

> *A: I just think you know, like you're saying gambles intensely and without reacting to what's going on around, or often gambles for long periods of three hours without a proper break, and then you've got gambles continuously – they're all sort of relevant. But they're all similar, but it's just worded differently, that's how I see it.* (Female, 31-50, 5 months EGM experience)

Another staff member raised the issue of repetition in relation to items 1 and 27, noting that they could not differentiate between a customer who gambled intensely without reacting to their surrounds and one who avoided contact or conversations with others. These repetitious items are tabled below.

Table 32: Repetitious item groupings according to staff

Item No	Grouping 1:	Category
1	Gambles intensely without reacting to what's going on around him/her	I&D
2	Often gambles for long periods (3+ hours) without a proper break	I&D
3	Gambles continuously	I&D
	Grouping 2:	
1	Gambles intensely without reacting to what's going on around him/her	I&D
27	Avoids contact or conversation with others	SB

I&D: Intensity and duration; SB: Social behaviours

Effective psychological scales often make use of several similar items to measure a concept as this can strengthen the accuracy of measurement. However, an important consideration in the development of screens for workplace use is to make them as brief and simple as possible. Early use of this particular screen by Venue Support Workers in Victoria suggested staff thought it was important to include variability of behaviour, however these results demonstrate the importance of combining items that are measuring the same overall concept. For example, merging items 2 and 3 would not result in any loss of information. It may also be possible to create a slightly more generic item and have examples that cover items 1, 2 and 3 to reduce the overall number of items related to intensity and duration. It is less certain whether items 1 and 27 should be combined as confusion between these items was only discussed by one person. Moreover these two items retain unique content in that they distinguish between the behaviours of gambling intensely and actively avoiding others.

Difficult to observe items

Removal or reworking of items that are rarely seen or otherwise difficult to observe is another way of reducing the checklist to a more practical length for staff. Ten items, tabled below, were rated as difficult to observe for a third of staff who participated (as discussed in Section 3.2.2). We therefore considered them for their utility.

Table 33: Gambling Behaviour Checklist: Difficult to observe items

Item	Behaviour	Category	Described by staff as difficult to observe (N=11)	Times observed[b] (N=216)
9	Significant increase in spending pattern	I&D	4	4
28	Stays on to gamble when friends leave venue	SB	4	7
5[c]	Bets $3 or more per spin most of the time	I&D	5	11
27	Avoids contact or conversation with others	SB	5	3
30	Shows signs of anxiety while gambling (shaking, sweating, looking nervous, edgy)	ER	5	3
15	Borrows money from other people at venue or asks for a loan/credit	MS	6	3

23	Has friends or relatives contact the venue asking if the person is still there	SB	6	1
24	Asks venue staff not to let others know they are there	SB	6	0
29	Brags about winning or makes a big show about their gambling skills	SB	6	1
22	Significant decline in personal grooming or appearance over several days	SB	7	1

[a] Number out of 11 focus group participants who found the item difficult to observe during a typical shift. [b]Total number of times checklist behaviours were observed across 23 customers = 216. [C] Item content aligned to Victoria. I&D: Intensity and duration; MS: Money seeking; SB: Social behaviours; ER: Emotional responses

Items that would benefit from enhanced staff awareness

Difficulties pertaining to the observation of items 5, 9, 22, and 28 manifested from the levels of attention staff give to customer behaviour. Rather than remove these items, training staff to be aware of these problem indicators would expand their repertoire and capacity to identify customers with potential gambling problems. For instance, whether or not customers stay on to gamble after friends leave (Item 28) is observable with appropriate attention. Observation of customer betting levels (Item 5) might be a practice encouraged during rounds of the gaming floor.

In the case of item 22, while staff participating in this study rarely noted a decline in personal grooming, more perceptive staff referenced customers who appeared to arrive untidy, unwashed and odorous, or in the same clothes as the previous day. It should also be noted that this has been seen as a key indicator within earlier consultations (Delfabbro et al., 2007). It may be that this item would benefit from a simple reworking to reflect issues with broader hygiene and/or appearance in customers (especially where this appears to be exacerbated over time).

Items that were rarely observed

Whereas observational difficulties for the above items would be alleviated through awareness training, results from both Stage One and Stage Two of this study suggest that items 15, 23 and 24 are unlikely to be observed frequently in EGM venues even

with such training. They are potentially less useful to a staff checklist applied under real conditions of use. However, all three items were very strong problem gambling indicators in Stage One and in Delfabbro et al (2007). Further, a customer exhibiting even one of these three particular indicators is immediately approached by staff and the incident formally recorded in Swiss casinos (see Delfabbro et al, 2007, 2012; Hancock, 2011). These items may become more useful with some simple re-wording. For example, while staff said they were unlikely to see customers attempting to borrow money (Item 15) they did say they may hear about attempts to borrow money from other customers or staff. This information could still be used as an identifying marker if it is seen in conjunction with other personal behaviour. Item 23 (having friends and family contact the venue asking for a customer) and item 24 (asking staff to conceal customer presence in a venue) are both evidence that a customer is attempting to conceal gambling visits from others. Staff also suggested a further similar behaviour, leaving the gaming room to use their mobile phone. In the interests of brevity and simplicity, therefore, it may be helpful to write an item encompasses all three behaviours as indicators that a customer to disguise or conceal their presence at the venue.

Items which were hard to interpret

Items 27, 29 and 30 were difficult for staff to interpret and may therefore benefit from removal, modification or require a training focus to enhance their usefulness. More than half the staff were unable to distinguish between customers' celebration of winnings and bragging of winnings (Item 29) and this behaviour was reported only once. The value of a similar indicator was questioned in a previous study for similar reasons (Ben-Tovim et al. 2001) This item might be considered for removal from a checklist used in EGM venues. It may be more useful for table games at casinos.

Signs of anxiety, including shaking, sweating, looking nervous or edgy (Item 30), were

difficult for many staff to differentiate from other forms of distress such as looking sad or depressed (Item 32). This is not so much an issue from an identification point of view as any signs of distress should be taken as indicators. Given the requests for a reduced number of items it may be worthwhile to further consolidate distress items by incorporating item 30 into item 32. The main argument against this is that it reduces what may be a variety of behaviours to a single indicator, thus minimising the chances of early identification in the absence of other indicators.

In the case of item 27, staff struggled to differentiate between customers who were enjoying some peace and quiet, and those who were problematically avoiding contact with others. Prior research would suggest this is likely to be a key item (Delfabbro et al. 2007; Current study, Stage One). Tailored staff training would likely improve the ability of staff to make this important distinction.

Suggestions for additional items

Staff suggested the inclusion of some further indicators of potential problem gambling that they had observed but which they could not locate on the checklist. Each suggestion is discussed below. Notably all suggested behaviours overlapped with an existing item. This suggests that some staff were not extrapolating from existing items to similar behaviours without specific examples being provided for a few different behaviours. The content of staff suggestions could be considered for clarification or modification of existing checklist items, or in development of further checklist items. Each of the behaviours suggested by staff is shown in Table 34. Alongside them are pre-existing checklist items which share similar content.

Table 34: Gambling Behaviour Checklist: Additional behaviours suggested by staff for inclusion and the closest relatable existing items

New behaviour	Closest relatable factor	Closest relatable existing item
Harrying or manipulating staff into prioritising customers' immediate gambling needs	SB	25: Is rude or impolite to staff
At closing time, puts a coin or two in multiple machines.	IB	34: Compulsively rubs belly of machine or screen while playing
Talks to the machine to increase chance of winning	IB	34: Compulsively rubs belly of machine or screen while playing
Spits on the machine for luck	IB	34: Compulsively rubs belly of machine or screen while playing
Putting a horseshoe on the machine for luck	IB	34: Compulsively rubs belly of machine or screen while playing
Hides winnings from partner who is present in the gaming room	MS	18: Puts large wins back into the machine and keeps playing
Puts a reserve sign on the EGM before going to dinner	LC	12: Gambles right through meal times
Calls the venue to see if a particular EGM is vacant, and perhaps to reserve the EGM	LC	14: Tries obsessively to win on a particular machine

LC: Loss of control; MS: Money seeking; SB: Social behaviours; IB Irrational behaviours

Social behaviours: Harrying staff

One observation was of behaviour where customers manipulated staff into prioritising their immediate gambling needs:

> *A: "When I first started here, I started believing the customers, "oh I've got to go to the doctors, can you do", like for instance, "oh can you hurry up and do this pay". And then I'd go back, and they're back on the machine. It's almost*

like they can't waste time, they want you to hurry up and they're sort of like telling tales, so that they can hurry up and get to their machines." (Female, 51+ years old, 9 years EGM experience).

This resonated with other examples staff gave in which they were cajoled into dropping what they were doing or were hurried to meet customer demand. It links to current item 28, concerning rudeness or impoliteness to staff.

Irrational behaviours: Coins in multiple EGMs, talking to EGMs, spitting on EGMS, and use of luck charms

At closing time, regular gamblers would sometimes visit the venue just to put a few coins into each machine in the hopes of setting off a win. A staff member thought might be problematic:

A: "[Customers] thought the machines were going to pay within the last half hour. We used to get people walk in - two, three, whatever - regulars, who'd walk in half an hour before closing time, and of course it used to be so frustrating because you'd be doing the readings and whatnot, and they'd put a dollar in there, and they honestly thought… It's ridiculous, you know, come in at 3:30 (am), you're half an hour before we closed… Oh people have got some funny ideas about gambling."

At face value, this behaviour fits with the intensity and duration items concerned with gambling on multiple machines (Item 8) and rushing from one machine to another (Item 10). However, the cognitions behind this behaviour fit most closely to the irrational behaviour domain, reflected in irrational belief that a last minute win is possible on an EGM that has been played throughout the day.

Three staff made observations concerning the regularity with which some customers talked to EGMs, and thought this irrationality or anthropomorphic attribution might be a sign of potential gambling problems:

> *A1: "Where you've got here, irrational behaviour – quite often you walk past and you can hear them talking to the machines, you haven't got anything about that. They actually talk to the machines."*
>
> *Q: "Okay, talking to the machines, yeah."*
>
> *A2: "Yeah they do."*
>
> *A1: "On a regular basis, "come on, give me the jackpot", "Come on, you can do it."*
>
> (A1: Female, 31-50 years old, 5 months EGM experience; A2 Female, 18-30 years old, 1 year EGM experience)

Additional superstitious behaviours were raised, including spitting on machines and placing horseshoes on the machine for luck:

> *Q: "What about compulsively rubbing the belly of the machine, do you see that?"*
>
> *A: "Oh yeah, the thing they spit on it, they do everything."*
>
> *Q: "Spit on it?"*
>
> *A: "Oh they spit on it, they put it on their hands and then they do... Aww it makes me sick."*
>
> *Q: … What other odd things do you see?"*
>
> *A: "We've got a lady that comes, she's got a horseshoe and <laughs> once I walked past, I had to double back, "Oh <customer name> what have you got?" "Oh that's my horseshoe." So she just leaves it sitting up on the thing. So I go, "Is your horseshoe helping?" She'll go, "Yeah today it is." Then she brings it in the next time <laughs> and then it's not helping anymore. So yeah."*

Q: "That's interesting. So do you reckon this would be a useful list for new staff?"

A: "Probably for new people, yeah because you need to start to see some signs of what people do, yeah."

(Female, 31-50 years old, 20 years EGM experience).

Irrational cognitions / beliefs such as these have been well described in the literature, with a positive relationship being found between such erroneous cognitions and gambling problems (Delfabbro & Winefield, 2000). These suggestions correspond with the domain of item 34, concerning compulsive machine belly rubbing, however, the above suggests staff may not always extrapolate to similar behaviours without specific examples being provided for a few different behaviours.

Money Seeking: Concealed winnings

A staff member pointed out that some customers concealed winnings from their partner who was at the venue with them, and that this was a potential problem behaviour not covered by the checklist.

A: "Yeah. I mean I get people in the gaming room whose wife might be down one end of the room and he's at the other, and he'll go "don't tell her I just had a win." You get that quite often." (Female, 51+ years old, 5 years EGM experience)

This suggestion appears related to Money Seeking item 18 'Puts large wins back into the machine and keeps playing'.

Loss of Control: Reserving machines for extended periods

When discussing item 12, 'Gambles right through meal times', a staff member made the observation that some customers stopped to eat but will put reserved signs on their machines:

A1: "They go in for dinner, and then they're back, and the number of people that play a machine and they put a reserved sign, hoping it'll still be reserved when they come back from dinner, that happens quite a lot. And they'll leave one or two credits on it. Yeah, it happens, especially with the 1c machines and 2c machines, with leaving small credits on it. It's always under a dollar."

(A1: Female, 51+ years old, 11 years EGM experience; A2: Female venue manager, 31-50 years old, 20 years EGM experience)

This reserve behaviour is closest in similarity to Loss of Control item 12 concerning gambling during meal times.

In another venue, a staff member described how some customers called ahead to ask whether there was anyone playing on "their" machine and asked staff to reserve it:

A: "We will have them ring and ask to see if their machine is vacant, and if it's not, [they will ask] "Can we put a reserve sign on the machine?"

This behaviour shares similarity with items in the Loss of Control category and item 14 in particular, "Tries obsessively to win on a particular machine":

It is not known at this stage whether these potential new items or exemplars are commonly seen in problem gamblers, nor whether they are good discriminators. For example, while irrational cognitions are often more prominent in problem gamblers, they are also quite common in non-problem gamblers (Walker, 1992) so may not discriminate well. It is therefore recommended that any of these potential new items/examples which are added to the checklist are tested for applicability. As can be seen from Table 34, some of the suggestions are quite similar to existing items, so where possible any additions are to expand the coverage of an existing item (more varied examples of core behaviours) rather than adding additional items.

3.2.6 Refinements to the Gambling Behaviour Checklist (GBC-EGM): The GBC-EGM-SV for Staff in Victoria, GBC-EGM-S for Saff elsewhere, and GBC-EGM-R for Researchers

The results for Stage Two showed that the checklist was useful for staff and the majority of items were easy for staff to observe and interpret in terms of normal versus problematic behaviour. However, some items were identified by staff as being potentially problematic in their current form. Drawing on the analysis of data from focus groups, we made a series of decisions and modifications to the checklist to increase its practical utility for EGM staff working in Victorian venues, staff in other jurisdictions and countries, and for researchers interested in EGM gambling behaviour observation.

Three simple variations on the checklist were developed to meet these ends: (1) The GBC-EGM-SV for staff in Victoria, (2) The GBC-EGM-S for staff located in other countries or Australian jurisdictions, and (3) The GBC-EGM-R for researchers interested in collecting a larger range of observational gambling behaviour data. Each checklist item was considered on its individual merits, including its contribution to the behaviour category and severity class it belonged to, and relevance to each respective checklist version. The similarities and differences between the three versions are explained below. All three versions appear in Appendix B and are formatted for use.

GBC-EGM-SV (30-items) for Staff in Victoria

We developed the GBC-EGM-SV for ease of use by EGM staff working in the Victorian gambling environment. Of the three versions it contains the fewest number of items. This version most deeply integrates the findings of Stage One and Two presented in the current report. Following staff feedback in Stage Two, Pilot GBC-EGM-SV items 2 and 3 were merged into one item to alleviate repetition, confusion or potential duplicate responses for observations of customers who gamble continuously for extended periods. Items 30 and 32 were merged to address the difficulty many staff had in distinguishing between distress and anxiety. Item 22 was modified, with poor general

hygiene emphasised. Items 23 and 24 were merged and had talking or making mobile calls outside the venue added to broaden the applicability of behaviours designed to conceal gambling behaviour from close others. Item 34 was expanded to include a broader array of irrational behaviours. Item 15 was reworded to include third party accounts of borrowing money and item 29 was removed due to rarity and visibility in EGM venues. Items 5, 22, 27, 28 were highlighted for staff awareness training in the instructions to accompany the checklist. The effect of these revisions was to reduce the Pilot GBC-EGM checklist modified for Staff in Victoria in Stage Two from 34 to 30 items. Table 35 shows a summary of the decision-making rationale for each item and resulting modifications. The Final GBC-EGM-SV is an example of how the GBC-EGM-S can be modified to encompass any jurisdiction-specific conditions within which staff work. The GBC-EGM-SV is formatted for use in Appendix B.

Table 35: Refinement of the Pilot into the Final Gambling Behaviour Checklist for Staff in Victoria (GBC-EGM-SV)

Pilot GBC-EGM-SV Item No	Revised behaviour	Category	Stage 1 Odds Ratio	Stage 2 Observability [a]	Stage 2 Times observed [b]	Staff feedback	Decision
1	Gambles intensely without reacting to what's going on around him/her	I&D	3.26	10	5	Repetitious 1,2,3; 1,27; Easily observed	Retain

Pilot GBC-EGM-SV Item No	Revised behaviour	Category	Stage 1 Odds Ratio	Stage 2 Observability [a]	Stage 2 Times observed [b]	Staff feedback	Decision
12	Gambles right through normal meal times	LC	4.55	9	12	Shift dependent; Easily observed	Retain

Pilot GBC-EGM-SV Item No	Revised behaviour	Category	Stage 1 Odds Ratio	Stage 2 Observability [a]	Stage 2 Times observed [b]	Staff feedback	Decision
		Rarely observed;					

Pilot GBC-EGM-SV Item No	Revised behaviour	Category	Stage 1 Odds Ratio	Stage 2 Observability [a]	Stage 2 Times observed [b]	Staff feedback	Decision
32	Shows signs of distress after gambling (looks sad/depressed, crying, holding head in hands, nervous/edgy, shaking, sweating)	ER	5.24	9	6	Easily observed	Incorporate item 30

[a] Observability = number out of 11 focus group participants who found the item easy to observe during a typical shift. [b] Total number of times checklist behaviours were observed across 23 customers = 216. [C] Item content aligned to Victoria. I&D: Intensity and duration; LC: Loss of control; MS: Money seeking; SB: Social behaviours; ER: Emotional responses; IB Irrational behaviours

GBC-EGM-S (32-items) for Staff in other jurisdictions and countries

While the GBC-EGM-SV was calibrated to Victorian staff, we designed the GBC-EGM-S (32-items) for use by staff in EGM venues in jurisdictions beyond Victoria including other countries. To this end we reinstated two Money Seeking items from the GBC-EGM developed in Stage One that were not applicable to the 2012-13 Victorian gambling environment but were applicable to other jurisdictions. These included Item 19, 'Avoids cashier and only uses cash facilities', and Item 20, 'Uses coin machine at least 4 times'. Secondly, we reverted two items that had been modified to fit the Victorian gambling environment to their original GBC-EGM wording. Item 17, 'Gets cash out on 2 or more occasions through EFTPOS' was reverted to 'Gets cash out on 2 or more occasions through *ATM or* EFTPOS'. Item 5, 'Bets $3 or more per spin most of the time' was reverted to 'Bets *$2.50* or more per spin most of the time). We retained the refinements to item sequence, wording and exemplification made to the Victorian version. The GBC-EGM-S is formatted for use in Appendix B.

Future users of the GBC-EGM-S should ensure that each item is suited to the gambling environment in which they intend to use it. A small number of changes to the checklist items may be necessary. For instance, the item, 'Finds it difficult to stop gambling at closing time', would be redundant for staff working in a 24-hour Las Vegas casino. It should therefore be removed from a staff checklist used in that environment.

GBC-EGM-R (36-items) for Researchers

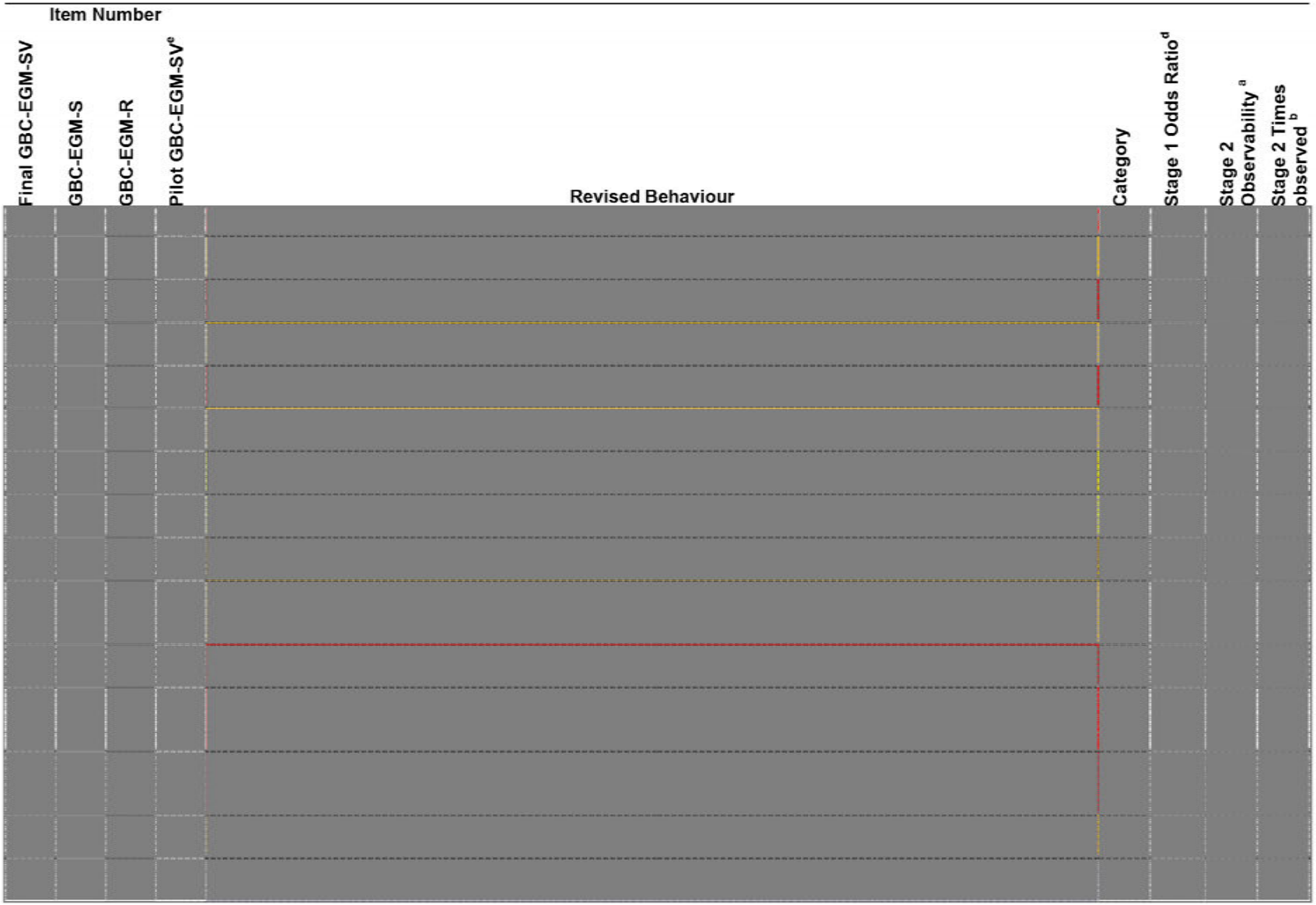
The GBC-EGM-R (36-items) for researchers carried forward the 36 GBC-EGM items from Stage One. This version was intended for data collection of a greater range of visible customer behaviours than the staff versions. It was also designed for ease of data comparison with Delfabbro et al 2007, with Stage One of the current report and with research papers arising. Items were not merged or deleted as this was done to facilitate ease of staff use in the SV and S versions. However, refinements to item

sequence, wording and exemplification arising from Stage Two were integrated where applicable.

Items comprising each version of the Gambling Behaviour Checklist are displayed together in Table 36. The table facilitates ease of content examination across the different versions. Formatted versions including instructions for staff are provided in Appendix B. Items are numbered and displayed in their recommended sequence. The categories of behaviours most likely to be seen by staff are located earlier in the list, followed by the behaviours most likely to be seen, followed by those which are easiest to observe. Behaviours that are rarer and/or more difficult to observe are still retained but located closer to the bottom of the checklist. We believe this sequencing will contribute to quicker identification of problem behaviours, and enhance checklist efficacy in busy periods.

Table 36: The Gambling Behaviour Checklist

Item Number									
Final GBC-EGM-SV	GBC-EGM-S	GBC-EGM-R	Pilot GBC-EGM-SV[e]	Revised Behaviour	Category	Stage 1 Odds Ratio[d]	Stage 2 Observability[a]	Stage 2 Times observed[b]	
1	1	1	14	Tries obsessively to win on one machine	LC	1.55	11	14	


Item Number
Final GBC-EGM-SV
GBC-EGM-S
GBC-EGM-R
Pilot GBC-EGM-SV[e]
Revised Behaviour
Category
Stage 1 Odds Ratio[d]
Stage 2 Observability[a]
Stage 2 Times observed[b]

Item Number									
Final GBC-EGM-SV	GBC-EGM-S	GBC-EGM-R	Pilot GBC-EGM-SV[e]	Revised Behaviour	Category	Stage 1 Odds Ratio[d]	Stage 2 Observability[a]	Stage 2 Times observed[b]
26	28	31	25	Is rude or impolite to venue staff	SB	5.7	9	5
30	32	36	24	Conceals presence at venue (doesn't answer mobile phone, takes or makes calls outside venue, asks staff not to let others know they are there, people contact or visit venue looking for person)	SB	7.75	5	0

[a] Observability = number out of 11 focus group participants who found the item easy to observe during a typical shift. [b] Total number of times checklist behaviours were observed across 23 customers = 216. [C] Item content aligned to Victoria. [d] Odds that behaviour is performed by a problem gambling customer compared to other customers. [e] The Pilot version refers to the original GBC-EGM-SV piloted on staff in Stage 2. I&D: Intensity and duration; LC: Loss of control; MS: Money seeking; SB: Social behaviours; ER: Emotional responses; IB Irrational behaviours.

Overall, similar yet subtly different content is presented across all three versions deriving from the pilot version. The GBC-EGM-SV is calibrated for ease of use by staff working in the Victorian gambling environment. It has fewer items than the jurisdictionally broader GBC-EGM-S or research-focused GBC-EGM-R. The GBC-EGM-S is calibrated for ease of use by staff as well, but has more items than the Victorian-specific GBC-EGM-SV. This broader range of items can be reduced or modified to represent the gambling environment within which staff work. The GBC-EGM-R or research version maintains as separate the items that were merged in the other two versions while integrating the item wording and sequencing refinements from Stage Two. It is designed for circumstances in which ease of use by staff is not the priority, and distinguishing between relatively similar customer behaviours is a priority, such making a distinction between 'gambling continuously' and 'gambling for long periods without a break'. The items are also most easily comparable with the data presented in Delfabbro et al. (2007), this report, and papers arising from this report.

3.2.7 Strategies for successful implementation

As well as contributing to the checklist revision process, staff made a series of suggestions for successful implementation of the checklist into regular daily use within EGM venues. The suggestions included staff training, staff mentoring, and high visibility and accessibility.

Formal training

A number of staff suggested that the checklist be part of training to complement existing mandated responsible service of alcohol and gaming training. This could be a face-to-face session or a training video. Staff generally thought full training would be

most useful for people new to the industry, with more experienced staff explaining that they were well aware of most problem behaviours and may simply need an occasional refresher:

A1: "Well new staff, I think you should have like a thing that they attend, or a…"

A2: "Training."

A1: "A training thing, or even a video."

A1: "I reckon a video's the way to go."

(A1: Female, 51+ years old, 11 years EGM experience; A2: Venue manager, 31-50 years old, 20 years EGM experience)

Q: " Would you have a suggestion as to how it might work?"

A: "How it might, well like I said if they do like—you know, like we have our responsible gaming, responsible alcohol, if we had something like that, I think a meeting of two hours once every—once every couple of years or something, I think that would help than doing these."

Q: "Yep, so…"

A: "Nobody wants to do these it's…"

Q: "Training rather than…"

A: "Training them, yeah." (Female, 51+ years old, 9 years EGM experience).

An important benefit of incorporating the checklist into pre-existing training is that it would allow the trainer to incorporate appropriate context and sensitivity into problem gambling identification:

A: To me it's like you're almost assuming that most of the customers that come in have a gambling problem, that's how I read it when I picked this up. I think if you give that to new people straight away they're going to think everyone's a pack of losers in here, the customers. Maybe once they do a self-exclusion course or gamblers anonymous then this could be something that

could be added on because they talk about behaviours and stuff like that in those courses, maybe this could be an add-on after they do something like that. (Female, 31-50 years old, 21 years EGM experience)

Staff mentoring

Another suggestion for training new staff in a more venue-integrated manner was to incorporate the checklist behaviours into in-house mentoring. Experienced staff could assist new staff to become aware of, and correctly identify, problem behaviours, and to profile customer risk from the aggregation of their behaviours. This approach was seen as more attractive than having to fill in the checklist as regular paperwork.

A: I wouldn't just give them something like that, not paperwork. Nothing to sit down like that with because I think it's better to have someone out there standing up in a casual thing and just doing a few little things, letting them know the difference and when someone starts to get agro and all the different signs… you need to do it face to face because that's how they have to do it out there, you know [observe and response to customers]. The paper bit doesn't – Yeah bring it to life, in real life. (Female, 51+ years old, 9 years EGM experience).

Brevity and simplicity

Staff were asked to fill in the checklist and some basic demographic data whenever they saw a behaviour they thought may suggest gambling problems. This was done to encourage staff to think about all the behaviours on the checklist whenever they saw someone displaying any problem indicators. We then probed staff on the usefulness of each item in focus groups. As demonstrated in the previous quote, responses from staff suggest that it would be inappropriate to expect staff to use the checklist in this manner long-term unless it was carefully streamlined. If it is too onerous it is unlikely to be used effectively.

A: I think no more than this one sheet and one sheet on the front because if people have to read too much they don't want to do it, they don't bother and they think "Oh no it's another thing we have to fill out."
(Female, 31-50 years old, 20 years EGM experience).

Staff are busy and have limited time to invest in performing additional procedures, particularly if these are seen as beyond their role:

A: Some of them just come in here, just do their job, and just get out too. I'm sorry, I don't know if that's giving you a bad [impression], some people just come in and do their work. They don't care. I think on paper people don't want to do it, even I find that frustrating, like when I was told to observe these people, because it's quite busy in there and we're short-staffed. (Female, 51+ years old, 9 years EGM experience).

One way of achieving a balance between maintaining staff awareness of indicators and minimising the workload would be to require initial formalised training supplemented by a program of staff mentoring with the checklist as a point of reference (rather than requiring staff to fill in the checklist). For this type of system to be effective long-term the checklist would need to be readily accessible and highly visible.

Visibility and Accessibility

Staff are more likely to recognise and recall specific indicators on a daily basis if they are highly visible and constantly available for easy reference. However there needs to be careful consideration about how and where to display the checklist. Having the checklist displayed on a staff notice board, for example, would mean it was constantly available but it may become gradually less visible given the stream of notices that change over in that small space. A dedicated permanent display may be required:

Q: If this was going to be useful, how would we put this into a venue?

A1: We don't have much room for that sort of thing.

A1:…Unless you laminate it and put it on the bench.

A2: Well that would be your only option. I mean, we sometimes have no memo's for a week and then have three in a week and I've just got to take them to the bench behind cashiers, because we don't have anywhere else.

Q: Would you make it smaller, would you put it behind the bar, would you put it next to the EFTPOS or?

A: I think it's something that should be displayed definitely because we don't have them on display. We were told about these things and we got our folders and they're put in a draw and then we go back to them once a week and about half the time you forgot.

The colour coding introduced to this version of the checklist was appreciated by staff as it provided a good visual guide and quick reference to the level of problem. However, a reduction in the intensity of colours was recommended by staff to aid readability.

3.3 Discussion and Conclusions

Stage Two achieved its aim of performing a practical validation of the Gambling Behaviour Checklist (GBC-EGM) under real conditions of use. Three Melbourne EGM venues incorporated the checklist into current venue protocols used by staff to identify and intervene with problem gamblers. After a three-month trial, eleven staff from the three venues participated in focus groups to evaluate the practical utility of the checklist and individual items as a tool for identifying potential problem gamblers.

Semi-structured focus group discussions provided valuable data on 1) the usefulness of the checklist in the identification of problem gambling behaviours under real conditions of use, 2) the relative value of each individual checklist item, 3) impediments

to using the checklist such as shift times, 4) outcomes of identification in terms of staff follow-up actions, 5) potential improvements to the checklist, and 6) strategies for successful implementation into venues. Incorporation of these data facilitated development of a revised checklist, the GBC-EGM-S, which is ready for use by staff in EGM venues.

3.3.1 Usefulness

Staff generally found the checklist clear, relevant and comprehensive in listing problem behaviours they were familiar with. For experienced staff, the checklist facilitated quick and easy identification of problem gamblers, reminding them at a glance of problem behaviours. For less experienced staff, the checklist assisted in proactive identification and increased the confidence of staff when managing interactions with customers who may have problems. Use of the checklist was also linked to improved customer observation and awareness of problem behaviours that were previously unknown to staff. Adoption of the checklist may help industry to take a more proactive role in responding to problem gamblers as is increasingly emphasised in policy and legislation (Griffiths, 2009; Delfabbro, King & Borgas, 2011).

Use of the checklist introduced staff to some new behaviours they had either not observed previously or had not considered to be indicators of problem gambling. Half of these concerned behaviours which we both rare and almost certainly indicative of problems. Four of these six behaviours also featured in the list of items that staff found the most difficult to observe in Stage Two. In most cases these behaviours required greater levels of attention to customers than was normal practice. Other, more common behaviours, such as changing large notes or staying on to gamble after friends left the venue, had not previously been thought of as problematic by some staff. Moreover, some staff were resistant to label these items problem behaviours, in some instances

believing that problematizing the behaviour was a value judgement. These findings emphasise the importance of integrating and contextualising these behaviours in staff training on problem gambler identification.

3.3.2 Individual item analysis

Each staff member made clear distinctions between behaviours on the checklist that were easy or difficult to observe in their venues. Seventy per cent of behaviours were considered easy to observe by almost all staff. The easiest behaviours to observe were those relating to intensity and duration of gambling, such as gambling very frequently or for long periods and spending more than $300 in a session. EFTPOS use was especially easy to observe as well, as were expressions of rudeness or anger towards other customers, and superstitious rituals.

In Schellnick and Schrans' (2004) study, an examination of combinations of predictors found that the most consistent indicators of problem gambling involved long gambling sessions, continuous gambling, money seeking, displays of anger/disorderly conduct, having trouble quitting, and playing two machines. Our findings extend on these, revealing that most of these behaviours are also easily observed and frequently seen in Victorian hotels, especially EFTPOS use. EFTPOS has been the only means to withdraw cash within Victorian EGM venues since July 2012, and is most frequently practiced by higher risk gamblers (Thomas, Pfeifer, Moore, Meyer, Yap & Armstrong, 2013). This suggests that appropriately trained staff should be able to identify customers with problem gambling habits using the checklist as a reference point.

While most listed behaviours were easy to observe, ten were described as difficult to observe by at least a third of staff. Not surprisingly, half of these concerned behaviours which are rarely seen (Delfabbro et al. 2007; Stage One current study). Six of the eight

social behaviours were included in this grouping. Those which are not rare may still be less obvious to staff without specific training (Cosic, 2012).

Reasons for observational difficulties extended beyond rarity. Some checklist items required that staff pay more attention to customer behaviours than was normal. A few behaviours were difficult for staff to interpret, such as whether a particular behaviour was normal or problematic. Determining whether an increase in customer spending was problematic, for example, with difficult if the staff member did not have a good personal knowledge of the customer. This again highlights the need for good initial training to enhance the usefulness of the checklist as a staff tool.

The visibility of checklist behaviours under real conditions of use demonstrated in this study are consistent with the frequency of problem gambling behaviours recalled by staff in Delfabbro et al.'s (2007) industry survey. Those behaviours that were easiest to see in our study corresponded with those most frequently recalled in Delfabbro et al. This correspondence is important, given that staff confidence in identifying problem gamblers is typically low (Delfabbro et al. 2007). The combined findings show that most staff are clearly able to observe the majority of behaviours that constitute problem gambler identification. However, without aids such as the checklist, staff are liable to underestimate the severity of gambling issues, or lack the confidence to pull their observations together to be definitive in problem identification. This speaks to the value of regular training and having the checklist on hand to confidently profile customers and perform follow-up actions to ensure the safety of those exhibiting difficulties.

3.3.3 Practical difficulties with the checklist

Staff raised a number of practical difficulties in their use of the checklist. Some items were only observable by staff in particular locations of the venue. For instance, staff on

the gaming floor could more easily observe whether customers were betting more than $3 a spin than those located at the service area. Other behaviours were observable by staff on particular shifts but not others, such as whether customers struggled to stop gambling at closing time. Busy periods also limited sustained observation of customers. These difficulties were also raised in Delfabbro et al. (2007). These limitations could be minimised if staff were able to share concerns about particular customers so that multiple staff could contribute to identifying problems. The involvement of a senior staff member who worked multiple shifts may assist.

These difficulties nevertheless pertained to a relatively small set of items. The findings run contrary to the pessimism expressed by some researchers who thought that staff would not be able to effectively utilise problem gambling indicators given the practical constraints associated with working in venue environments (Allcock, 2002; Blaszczynski, 2002; Ladouceur, 2002; Lesieur, 2002).

3.3.4 Outcomes of identification

Staff followed up in multiple ways with 22 of 23 customers who were identified as exhibiting multiple problem behaviours. Staff actions were most likely to follow customer behaviours which had been designated as frequent high severity items (i.e., red flagged items). This supports the value of the severity classes assigned to items in Stage One. The most common staff response was to initiate a general conversation with the customer, engaging with the problem behaviours only when the customer raised these. Continued observation of customers using the checklist was another common response from staff. Managers or senior staff were approached for advice in around a quarter of cases.

The preference for general chat and observation is consistent with current staff training with recent training materials suggest pro-active approaches to possible problem gambler be of a more subtle nature over direct customer confrontation. That said, younger and less experienced staff felt unprepared to directly approach customers exhibiting problem behaviours and were anxious about potential customer rudeness or anger. This may explain in part why the participants in our study only recorded and followed up with customers exhibiting quite a large number of problem behaviours (usually around 10). Our findings correspond with research showing that staff do not feel confident about how customers will respond if they are approached (Delfabbro et al. 2007; Hing, Nisbet & Nuske, 2010). The findings are also consistent with research showing that staff often need to observe many indicators before being confident that they have identified a problem gambler (Schellick & Schrans, 2004; Delfabbro et al. 2012).

3.3.5 The GBC-EGM-S, SV and R: Revised checklists for EGM staff and researchers

We discovered that, although there was value in the wide array of items presented, particularly at the research level, almost half of the focus group participants preferred a shorter checklist for practical use in a busy working environment. We further found that some items were viewed as repetitious or redundant, while others were rarely seen, difficult to observe or hard to interpret. We also learned of additional problem behaviours that staff did not feel were adequately represented on the checklist. We considered these findings in the context of the data collected in Stage One, and made final refinements to the GBC-EGM in terms of recommendations as to the modification, expansion and removal of existing items.

On the basis of our findings, we developed three versions of the checklist, one for staff in Victoria, one for staff located in other Australian jurisdictions or internationally, and one for researchers. Practical validation and refinement of the GBC-EGM for staff use

was the greater priority and focus, however we also saw the merit in moving a research version forwards as well on the basis of the findings. The 'GBC-EGM-SV' was calibrated for ease of use by staff working in the Victorian gambling environment. It has fewer items than the jurisdictionally broader GBC-EGM-S or research-oriented GBC-EGM-R. It draws most deeply on the findings of Stages One and Two. It serves as an example of how the GBC-EGM-S can be modified to the jurisdiction-specific gambling environments within which staff work.

The 'GBC-EGM-S' was designed for ease of use by staff as well, but has more items than the Victoria-specific GBC-EGM-SV. This broader range of items can and should be reduced or modified to represent the gambling environment within which staff will use it.

The 'GBC-EGM-R' or research version maintains the items that were merged or deleted in the two staff versions while benefiting from the item wording and sequencing refinements from Stage Two. It was designed for circumstances where the priority is making data comparisons with Delfabbro et al. (2007) and current report or papers arising, or where observational data on a greater range of visible customer behaviours is a priority.

3.3.6 Successful implementation

With respect to practical implementation of the checklist in venues, we emphasise the value of integrating formal training in the need for, and use of, the checklist. This is particularly important for new staff and should be supplemented by ongoing informal training with senior staff acting as mentors to the newer staff. As discussed above training would ensure staff understand that the checklist is there as a tool to assist them and that identification and intervention is part of their normal work practices. It will

also ensure staff are aware of rare indicators in addition to more common indicators of harm, and of the importance of considering any single behaviour in the context of overall patron behaviour. Finally, the findings suggested that staff are often reluctant to take any action until they are very confident there is a problem. Training could improve early intervention by emphasising the importance of having regular, informal interactions with customers at the first indication of any gambling issues. While this method is less direct in terms of intervention, it will be more palatable for both staff and patrons and so compliance is more likely, particularly where the presence of problems is not clear-cut. This method will increase the chances that staff notice escalations in behaviour and are able to instigate more direct reference to issues when the customer appears ready.

In addition to training, it is vital that the checklist is highly visible and easily accessible to staff. For example putting it on permanent display in multiple locations frequented by staff within the venue.

3.3.7 Limitations and future research

One of the goals of Stage Two was to compare staff who had been formally trained in use of the checklist with those who had not, in terms of ease and frequency of behaviour observation, item interpretation, follow-up actions and so forth. However, due to high staff turnover at the venues, particularly amongst newer workers who were more likely to have received the formal training, it was not possible to conduct these comparisons. Only one staff member who received the formal training volunteered to participate in a focus group. This is an important consideration because training may have alleviated a number of the item difficulties reported by staff. Thus, the results of Stage Two primarily derive from the experiences of staff that were introduced to the checklist by their managers (with the support of written instructions), the face validity of

the items as they stood, and the clarity of the instructions provided with the checklist. The absence of formal training may, in part, account for the fact that direct action only occurred where staff had identified a large number of indicators despite written instructions suggesting staff commence observations and interactions after 4-5 potentially problematic behaviours had been observed. The absence of formal training may also account for some staff's perception of the checklist as a chore to be performed. It is important for future research to test the usefulness and clarity of the checklist with trained and untrained staff to determine how important it is for the checklist to be introduced within the broader context of formal face-to-face training.

A further set of limitations concerns the sample representativeness on the revisions and recommendations made. The sample size of eleven hotel workers was adequate to qualitatively explore the practical validity of the checklist for use in EGM venues (Nixon & Wild, 2008) which was the aim of the present study. However, the visibility and frequency with which particular checklist behaviours are seen may differ across venue type or locality. For instance, friends or relatives of customers might contact casinos or regional clubs more often than suburban hotels, with the added consequence that customers might be more likely to ask staff in those venues to conceal their presence. Bragging about winnings might also be seen at casino gaming tables, whereas it was only observed once in 216 observations made by our hotel staff.

Impediments to identification may differ between venue type as well. For instance, items which require sustained customer observation, such as witnessing a significant increase in spending pattern over a number of days, might be more visible to staff at social clubs. Customers might also be observed attempting to borrow money in a small or social club environment. Future research may reveal that the relevance of certain behaviours varies between venue types and localities and lead to further checklist refinements.

The eleven volunteers for our Stage Two sample comprised women and mostly experienced staff. Male staff and less experienced staff may have different experiences in terms of visibility and frequency of particular checklist behaviours as well as impediments to checklist use. For instance, rudeness might be more commonly experienced by younger female staff than older male staff when dealing with male customers. Customers might be less inclined to disclose problem gambling distress to less experienced and less well-known staff. Incorporation of feedback from broader staff samples would enrich and extend on the current findings relating to these issues.

Conclusions

In Stage One, a national sample was used to validate a set of problem gambling behaviour indicators (from the *Checklist of Visible Indicators*) developed in 2007 by Delfabbro et al. to identify people who are experiencing problems with gambling (in particular, electronic gaming machines). The results generally confirmed the types of behaviour and indicators identified in the previous study and extended the analysis to include comparisons of people with different levels of gambling-risk based on the PGSI. The report documents the prevalence of these indicators in different gambler risk groups and the extent to which they were able to discriminate between them. Based on these detailed analyses, we developed the Gambling Behaviour Checklist (the GBC-EGM) to assist staff in EGM venues to identify and assist at-risk customers.

In Stage Two the GBC-EGM was piloted by staff in three Melbourne hotels to assess the practical validity of the checklist under real conditions of use. Our findings demonstrated that venue staff were able to observe and consolidate information about customer gambling behaviour using the GBC-EGM in a typical EGM venue

environment with existing levels of training[13]. Based on the feedback from venue staff, we further refined the checklist into the GBC-EGM-S its usability and relevance to venue operational environments. These changes included the removal of redundant items, greater exemplification of rarer and more difficult to observe behaviours and a greater emphasis on items that are most likely to be observed in the venue and therefore of greatest practical value to staff. This revised version is recommended for future staff use.

Finally, the study provides greater detail concerning the ways in which the checklist should be used. For example, it can be used as a powerful tool in staff training to educate on the range of indicators and the need to look for additional indicators when observing any sign of gambling issues. Staff are encouraged to be more proactively engaged with customers using when they are confident that multiple strong problem gambling indicators are present. Use of the checklist appeared to increase staff confidence in identification and thus in the likelihood they engaged with customers who are at-risk.

In sum, we believe the evaluation has provided a valuable evidence base to support the translation of problem gambling theory into staff practice under typical working conditions in EGM venues. Early identification of key problem gambling behaviours using the checklist can facilitate confident proactive interaction with customers before they ask for help. Early intervention can reduce the severity of problem gambling behaviour and outcomes in both the short and long term. In some jurisdictions, this tool will assist the industry to comply with legislative requirements relating to identification of problem gamblers. In all jurisdictions (as well as internationally) this tool may assist

[13] It should be noted that staff in Victorian EGM venues currently receive training from venue support workers in identifying gamblers in venues and ways to approach possible problem gamblers. Therefore, staff in other States and Territories may require similar training to effectively use this tool.

in providing a focal point for responsible gambling training and could also be used in conjunction with technology-based systems designed to track the objective behaviour of gamblers in venues.

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APPENDIX A: Tables of Results from Stage One

A.1 The prevalence of single indicators

Please note for tables 27-78 below Chi-squared analyses confirmed that the prevalence of *'frequent'* and *'always'* responses were significantly higher for higher risk gamblers compared to lower risk gamblers for all of the behaviours and indicators.

A.1.1 Frequency, Duration and Intensity Indicators

Table 37: N (%) of gamblers engaging in everyday gambling

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	110 (73.8)	33 (22.1)	5 (3.4)	1 (0.7)	0 (0.0)
Moderate risk (n = 148)	90 (61.2)	34 (23.1)	16 (10.9)	7 (4.8)	0 (0.0)
Problem (n = 201)	52 (26.0)	53 (26.5)	50 (25.0)	36 (18.0)	9 (4.5)

Table 38: N (%) of gamblers who reported they gambled for three or more hours without a proper break

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	104 (69.8)	29 (19.5)	10 (6.7)	4 (2.7)	2 (5.3)
Moderate risk (n = 148)	55 (37.2)	39 (26.5)	30 (20.3)	19 (12.8)	5 (3.4)
Problem (n = 201)	19 (9.5)	42 (20.9)	52 (28.3)	50 (24.9)	33 (16.4)

Table 39: N (%) of gamblers who reported gambling for 5+ hours without a proper break

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	136 (91.3)	10 (6.7)	2 (1.3)	0 (0.0)	1 (0.7)
Moderate risk (n = 148)	100 (67.4)	31 (20.9)	12 (8.1)	3 (2.0)	2 (1.4)
Problem (n = 201)	57 (28.4)	56 (27.9)	39 (19.4)	28 (13.9)	21 (10.4)

Table 40: N (%) of gamblers who reported gambling so intensely that they lost track of things going on around them

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	132 (88.6)	13 (8.7)	3 (2)	1 (0.7)	0 (0.0)
Moderate risk (n = 148)	90 (61.2)	36 (24.5)	14 (9.5)	6 (4.1)	1 (0.7)
Problem (n = 201)	37 (18.4)	47 (23.4)	41 (20.4)	44 (21.9)	31 (15.9)

Table 41: N (%) of gamblers who reported gambling very fast

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	108 (72.5)	27 (18.1)	8 (5.4)	15 (3.4)	1 (0.7)
Moderate risk (n = 148)	62 (41.9)	37 (25.0)	34 (23.0)	14 (9.5)	1 (0.7)
Problem (n = 201)					

Table 42: N (%) of gamblers who reported betting $2.50+ per spin most of the time

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	88 (59.1)	42 (28.2)	13 (8.7)	6 (4.0)	0 (0.0)
Moderate risk (n = 148)	72 (48.6)	43 (29.1)	18 (12.2)	12 (8.1)	3 (2.0)
Problem (n = 201)	23 (11.5)	47 (23.5)	54 (27.0)	46 (23.0)	30 (15.0)

Table 43: N (%) of gamblers who reported playing on without stopping to listen to jingle

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	74 (49.7)	38 (25.5)	21 (14.1)	12 (8.1)	4 (2.7)
Moderate risk (n = 148)	34 (23.0)	36 (24.3)	49 (33.1)	21 (14.2)	8 (5.4)
Problem (n = 201)	18 (9.0)	26 (12.9)	43 (21.4)	50 (24.9)	64 (31.8)

Table 44: N (%) of gamblers who reported rushing from one machine to another

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	98 (65.9)	38 (25.5)	8 (5.4)	4 (2.7)	1 (0.7)
Moderate risk (n = 148)	58 (39.5)	53 (36.1)	28 (19.0)	8 (5.4)	0 (0.0)
Problem (n = 201)	30 (15.0)	44 (22.0)	58 (29.0)	43 (22.5)	23 (11.5)

Table 45: N (%) of gamblers who reported gambling on more than one machine at a time

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 148)	112 (25.2)	15 (10.1)	3 (2.0)	1 (0.7)	0 (0.0)
Moderate risk (n = 149)	90 (60.8)	28 (18.9)	9 (6.1)	5 (3.4)	0 (0.0)
Problem (n = 201)	80 (39.8)	45 (22.4)	27 (13.4)	15 (7.5)	10 (5.0)

Table 46: N (%) of gamblers who reported gambling continuously

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	116 (77.9)	25 (16.8)	4 (2.7)	2 (1.3)	2 (1.3)
Moderate risk (n = 148)	52 (35.4)	55 (37.4)	29 (19.7)	9 (6.1)	2 (1.4)
Problem (n = 201)	19 (9.5)	32 (15.9)	53 (26.4)	60 (29.9)	37 (18.4)

Table 47: N (%) of gamblers who reported spending more than $300 in a session of gambling

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	123 (82.6)	20 (13.4)	3 (2.0)	2 (1.3)	1 (0.7)
Moderate risk (n = 148)	73 (44.3)	52 (35.1)	13 (8.0)	8 (5.4)	2 (1.4)
Problem (n = 201)	27 (13.4)	47 (23.4)	49 (24.4)	52 (25.9)	26 (12.9)

Table 48: N (%) of gamblers who reported significantly changing their expenditure pattern

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	106 (71.1)	32 (21.5)	8 (5.4)	3 (2.0)	0 (0.0)
Moderate risk (n = 148)	52 (35.1)	60 (40.5)	26 (17.6)	8 (5.4)	2 (1.4)
Problem (n = 201)	21 (10.4)	43 (21.4)	68 (33.8)	44 (21.9)	25 (12.4)

A.1.2 Indicators of Impaired Choice or Control

Table 49: N (%) of gamblers who reported gambling when the venue was closing

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	129 (866)	12 (8.1)	3 (2.0)	2 (1.3)	3 (2.0)
Moderate risk (n = 148)	96 (64.9)	30 (20.3)	12 (8.1)	6 (4.1)	4 (2.7)
Problem (n = 201)	55 (27.4)	54 (26.9)	37 (18.4)	37 (18.4)	18 (9.0)

Table 50: N (%) of gamblers who reported gambling through meal times

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	140 (94.0)	5 (5.4)	4 (2.7)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	111 (75.0)	23 (15.5)	11 (7.4)	2 (1.4)	1 (0.7)
Problem (n = 201)	59 (29.5)	46 (23.0)	48 (24.0)	28 (14.0)	19 (9.5)

Table 51: N (%) of gamblers who reported finding it difficult to stop at closing time

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 148)	143 (96.0)	5 (3.4)	4 (2.7)	0 (0.0)	0 (0.0)
Moderate risk (n = 149)	107 (72.3)	27 (18.2)	9 (6.1)	5 (3.4)	0 (0.0)
Problem (n = 201)	63 (31.3)	39 (19.4)	37 (18.4)	41 (20.4)	21 (10.4)

Table 52: N (%) of gambler who reported trying obsessively to win on a machine

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	88 (59.1)	43 (28.9)	12 (8.1)	6 (4.0)	0 (0.0)
Moderate risk (n = 148)	28 (18.9)	51 (34.5)	51 (34.5)	13 .0 (8.8)	5 (3.4)
Problem (n = 201)	11 (5.5)	29 (14.4)	51 (25.4)	58 (28.9)	52 (25.9)

Table 53: N (%) of gamblers who reported gambling as the venue was opening

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	138 (92.6)	10 (6.7)	1 (0.7)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	104 (70.3)	32 (21.6)	10 (6.8)	2 (1.4)	0 (0.0)
Problem (n = 201)	87 (43.4)	53 (26.4)	37 (18.4)	18 (9.0)	6 (3.0)

A.1.3 Social Indicators of Problem Gambling

Table 54: N (%) of gamblers who reported asking staff to tell others they were not at venue

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	148 (99.3)	0 (0.0)	1 (0.7)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	177 (92.6)	9 (6.1)	2 (1.4)	0 (0.0)	0 (0.0)
Problem (n = 201)	138 (69.0)	22 (11.0)	25 (12.5)	10 (5.0)	5(2.5)

Table 55: N (%) of gamblers who reported having friends or relatives call into venues

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	143 (96.0)	6 (4.0)	0 (0.0)	0 (0.0)	0 (0.0)

Moderate risk (n = 148)	130 (87.8)	13 (8.8)	5 (3.4)	0 (0.0)	0 (0.0)
Problem (n = 201)	114 (56.7)	36 (17.9)	34 (16.9)	12 (6.0)	5 (2.5)

Table 56: N (%) of gamblers who reported acting rudely or impolitely to staff

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 148)	147 (98.7)	2 (1.3)	0 (0.0)	0 (0.0)	0 (0.0)
Moderate risk (n = 149)	132 (89.2)	13 (8.8)	3 (4.0)	0 (0.0)	0 (0.0)
Problem (n = 201)	131 (65.2)	32 (15.9)	25 (12.4)	8 (4.0)	5 (2.5)

Table 57: N (%) of gamblers who avoided social contact

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	117 (78.5)	20 (13.5)	6 (4.0)	6 (4.0)	0 (0.0)
Moderate risk (n = 148)	81 (54.7)	37 (25.0)	20 (13.5)	8 (5.4)	2 (1.4)
Problem (n = 201)	43 (21.4)	47 (23.4)	51 (25.4)	37 (18.4)	23 (11.4)

Table 58: N (%) of gamblers who reported staying to play while friends had left venue

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	135 (90.6)	11 (7.4)	3 (2.0)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	81 (54.7)	42 (28.4)	22 (14.9)	3 (2.0)	0 (0.0)
Problem (n = 201)	55 (27.4)	45 (22.4)	61 (30.3)	23 (11.4)	17 (8.5)

Table 59: N (%) of gamblers who reported becoming angry if someone too their spot

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	137 (91.9)	8 (5.4)	4 (2.7)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	102 (68.9)	33 (22.3)	16 (7.4)	2 (1.4)	0 (0.)
Problem (n = 201)	67 (33.3)	52 (25.9)	45 (22.4)	23 (11.4)	14 (7.0)

Table 60: N (%) of gamblers who reported bragging about winning

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	116 (77.9)	25 (16.8)	5 (3.7)	3 (2.0)	0 (0.0)
Moderate risk (n = 148)	87 (58.8)	39 (26.4)	15 (10.1)	6 (4.1)	1 (0.7)
Problem (n = 201)	73 (38.3)	45 (22.4)	41 (20.4)	24 (11.3)	14 (7.0)

Table 61: N (%) of gamblers who reported standing over other players to get spot

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	138 (92.6)	10 (6.7)	1 (0.7)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	122 (62.9)	15 (10.1)	10 (6.8)	1 (0.7)	0 (0.0)
Problem (n = 201)	108 (53.7)	34 (16.9)	28 (13.9)	25 (12.4)	6 (3.0)

A.1.4 Indicators related to Raising Funds or Chasing Behaviour

Table 62: N (%) of gamblers who reported getting cash out 2 or more times at venue

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	104 (69.8)	41 (27.5)	4 (2.7)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	45 (30.4)	61 (41.2)	34 (23.0)	7 (4.7)	1 (0.7)
Problem (n = 201)	16 (8.0)	35 (17.4)	63 (31.3)	57 (28.4)	30 (14.9)

Table 63: N (%) of gamblers who reported changing large notes at venue

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	106 (71.1)	25 (16.8)	13 (8.7)	3 (2.0)	2 (1.3)
Moderate risk (n = 148)	70 (47.3)	45 (30.4)	72 (14.9)	9 (6.1)	2 (1.4)
Problem (n = 201)	49 (24.4)	45 (22.4)	59 (29.4)	30 (14.9)	18 (9.0)

Table 64: N (%) of gamblers who reported borrowing money from others at venue

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 148)	145 (47.3)	4 (2.7)	0 (0.0)	0 (0.0)	0 (0.0)
Moderate risk (n = 149)	133 (89.9)	9 (6.1)	5 (3.4)	1 (0.7)	0 (0.0)
Problem (n = 201)	116 (57.7)	40 (19.9)	25 (18.4)	15 (7.5)	5 (2.5)

Table 65: N (%) of gamblers who reported asking for a loan or credit at venue

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	148 (49.3)	1 (0.7)	0 (0.0)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	143 (96.6)	2 (1.4)	3 (2.0)	0 (0.0)	0 (0.0)
Problem (n = 201)	150 (74.6)	15 (7.5)	20 (10.0)	11 (5.0)	5 (2.5)

Table 66: N (%) of gamblers who reported putting large amounts back into machine

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	119 (79.9)	25 (16.8)	5 (3.4)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	59 (59.9)	52 (39.9)	32 (35.1)	3 (2.1)	2 (2.0)
Problem (n = 201)	14 (7.0)	36 (17.9)	60 (29.9)	59 (29.4)	32 (15.9)

Table 67: N (%) of gamblers who reported leaving the venue to find money

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	141 (94.6)	7 (4.7)	1 (0.7)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	104 (70.3)	29 (19.6)	15 (10.1)	0 (0.0)	0 (0.0)
Problem (n = 201)	39 (19.7)	54 (26.9)	58 (28.9)	34 (16.9)	16 (8.0)

Table 68: N (%) of gamblers who reported rummaging around for more money

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	95 (63.8)	40 (26.8)	13 (8.7)	0 (0.0)	1 (0.7)
Moderate risk (n = 148)	55 (37.2)	45 (30.4)	37 (25.0)	9 (6.1)	2 (1.4)
Problem (n = 201)	23 (11.4)	41 (20.4)	59 (29.4)	41 (20.4)	37 (18.4)

Table 69: N (%) of gamblers who reported running out of all their money

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	117 (98.5)	28 (18.8)	4 (2.3)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	46 (31.1)	58 (39.2)	29 (19.6)	13 (8.8)	2 (1.4)
Problem (n = 201)	9 (4.5)	30 (14.9)	59 (29.4)	69 (34.3)	34 (16.9)

Table 70: N (%) of gambler who reported using the coin machine 4+ times

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	93 (62.4)	17 (11.4)	7 (4.7)	3 (2.0)	0 (0.0)
Moderate risk (n = 148)	53 (35.8)	33 (22.3)	16 (10.8)	5 (3.4)	1 (0.7)
Problem (n = 201)	30 (14.9)	38 (18.9)	40 (19.9)	26 (10.4)	16 (8.0)

A.1.5 Emotional and Physiological Indicators of Problem Gambling

Table 71: N (%) of gamblers who reported shaking while gambling

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	138 (92.6)	10 (6.7)	1 (0.7)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	127 (85.8)	16 (10.8)	4 (2.7)	1 (0.7)	0 (0.0)
Problem (n = 201)	77 (78.3)	50 (24.9)	44 (21.9)	20 (10.0)	10 (5.0)

Table 72: N (%) of gamblers who reported sweating a lot while gambling

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	139 (93.3)	10 (6.7)	0 (0.0)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	119 (80.4)	24 (16.2)	4 (2.7)	1 (0.7)	0 (0.0)
Problem (n = 201)	79 (39.3)	50 (24.9)	39 (19.4)	22 (10.9)	11 (5.5)

Table 73: N (%) of gamblers who reported feeling nervous / edgy

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 148)	125 (83.9)	20 (13.4)	4 (2.7)	0 (0.0)	0 (0.0)
Moderate risk (n = 149)	81 (54.7)	49 (33.1)	17 (11.5)	1 (0.7)	0 (0.0)
Problem (n = 201)	41 (20.4)	48 (23.9)	62 (30.8)	32 (15.9)	18 (9.0)

Table 74: N (%) of gamblers who reported displaying their anger in venues

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	128 (85.9)	19 (12.8)	2 (1.3)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	88 (59.5)	46 (31.1)	10 (6.8)	4 (2.7)	0 (0.0)
Problem (n = 201)	62 (30.8)	39 (39.4)	55 (27.4)	29 (14.8)	16 (8.0)

Table 75: N (%) of gamblers who reported kicking or striking machines

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	147 (98.7)	2 (1.3)	0 (0.0)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	12 (86.5)	12 (8.1)	6 (4.1)	2 (1.4)	0 (0.0)
Problem (n = 201)	117 (88.2)	33 (16.4)	27 (13.4)	17 (8.5)	7 (3.5)

Table 76: N (%) of gamblers who reported feeling sad or depressed

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	122 (81.9)	23 (15.4)	3 (2.0)	1 (0.7)	0 (0.0)
Moderate risk (n = 148)	44 (29.9)	68 (41.9)	23 (15.5)	13 (8.8)	0 (0.0)
Problem (n = 201)	10 (5.0)	30 (14.9)	40 (19.9)	65 (32.3)	56 (27.9)

Table 77: N (%) of gamblers who reported crying after losing a lot of money

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	147 (98.7)	1 (0.7)	1 (0.7)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	126 (85.1)	16 (10.8)	5 (3.4)	1 (0.7)	0 (0.0)
Problem (n = 201)	77 (38.3)	35 (17.4)	41 (20.4)	31 (15.4)	17 (8.5)

Table 78: N (%) of gamblers who reported sitting with head in hands after losing

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	141 (98.7)	2 (1.3)	0 (0.0)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	121 (81.8)	15 (10.4)	11 (7.4)	1 (0.7)	0 (0.0)
Problem (n = 201)	84 (41.8)	44 (21.9)	37 (18.4)	23 (11.4)	13 (6.5)

Table 79: N (%) of gamblers who reported playing machines very roughly

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	139 (93.3)	9 (6.0)	1 (0.7)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	117 (79.1)	21 (14.2)	7 (4.7)	2 (1.4)	1 (0.7)
Problem (n = 201)	93 (46.3)	36 (17.9)	45 (22.4)	17 (8.5)	10 (5.0)

Table 80: N (%) of gamblers who reported groaning repeatedly while gambling

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	127 (85.2)	20 (13.4)	2 (1.3)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	107 (72.3)	28 (18.9)	11 (7.4)	1 (0.7)	1 (0.7)
Problem (n = 201)	75 (37.3)	48 (23.9)	45 (22.4)	26 (12.9)	7 (3.5)

Table 81: N (%) of gamblers who reported feeling a significant change in mood during sessions

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	113 (75.8)	31 (20.8)	4 (2.7)	1 (0.7)	0 (0.0)
Moderate risk (n = 148)	57 (38.1)	57 (38.5)	27 (18.2)	6 (4.8)	1 (0.7)
Problem (n = 201)	16 (8.0)	34 (16.9)	64 (31.8)	52 (25.9)	35 (17.4)

A.1.6 Other Behavioural Indicators

Table 82: N (%) of gamblers who reported gambling after drinking a lot of alcohol

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	98 (65.8)	27 (18.1)	14 (9.4)	7 (4.7)	3 (2.0)
Moderate risk (n = 148)	65 (43.9)	29 (19.6)	38 (25.7)	12 (8.1)	4 (2.7)
Problem (n = 201)	76 (37.8)	30 (14.9)	42 (20.9)	28 (13.9)	25 (12.4)

Table 83: N (%) of gamblers who reported avoiding the cashier

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	139 (93.3)	6 (4.0)	3 (2.0)	0 (0.0)	1 (0.7)
Moderate risk (n = 148)	105 (70.9)	28 (18.9)	12 (8.1)	1 (0.7)	2 (1.4)
Problem (n = 201)	57 (28.5)	47 (23.5)	49 (24.5)	27 (13.5)	20 (10.0)

Table 84: N (%) of gamblers who reported a decline in grooming/ appearance

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 148)	148 (99.3)	1 (0.7)	0 (0.0)	0 (0.0)	0 (0.0)
Moderate risk (n = 149)	134 (90.5)	9 (6.1)	4 (2.7)	1 (0.7)	0 (0.0)
Problem (n = 201)	88 (43.8)	35 (17.4)	35 (17.4)	27 (13.4)	16 (8.0)

Table 85: N (%) of gamblers who reported blame venues or machines for losing

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	132 (88.6)	16 (10.7)	0 (0.0)	0 (0.0)	1 (0.7)
Moderate risk (n = 148)	91 (61.5)	36 (24.3)	14 (9.5)	6 (4.6)	1 (0.7)
Problem (n = 201)	62 (30.8)	41 (20.4)	40 (19.9)	35 (12.4)	23 (11.4)

Table 86: N (%) of gamblers who complain to staff about losing

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	144 (96.9)	5 (3.4)	0 (0.0)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	128 (86.5)	12 (8.1)	5 (3.4)	3 (2.0)	0 (0.0)
Problem (n = 201)	120 (59.7)	28 (13.4)	32 (15.9)	16 (8.0)	5 (2.5)

Table 87: N (%) of gamblers who reported that they swear at machines/ staff if they lose

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	138 (92.6)	11 (7.4)	0 (0.0)	0 (0.0)	0 (0.0)
Moderate risk (n = 148)	130 (87.8)	11 (7.44)	4 (2.7)	2 (1.4)	1 (0.7)
Problem (n = 201)	116 (57.7)	28 (13.9)	28 (13.9)	21 (10.4)	8 (4.0)

Table 88: N (%) of gamblers who reported that they compulsively rub machines

Total sample	Never 0% N (%)	Rarely 0-25% N (%)	Occasionally 25-50% N (%)	Frequently 50+ N (%)	Always 100% N (%)
No & Low risk (n = 149)	130 (87.2)	16 (20.0)	1 (0.7)	2 (1.4)	0 (0.0)
Moderate risk (n = 148)	95 (64.2)	32 (21.6)	12 (8.1)	5 (3.4)	4 (2.7)
Problem (n = 201)	103 (51.2)	32 (15.9)	34 (16.9)	15 (7.5)	17 (8.5)

A.2 Relative probabilities of behaviours:

A.2.1 Comparison of problem vs non-problem gamblers

Table 88 below shows the relative prevalence of behaviours in problem gamblers as opposed to other players. Columns 3 and 4 indicate the respective percentage of PGs vs. other gamblers, and the final column provides an odds-ratio based on the two proportions, indicating how much more likely that this particular behaviour or indicator would be observed at any occasion in problem gamblers.

Table 89: Comparison of problem and non-problem gamblers on behaviours shown

		Problem gamblers (n=201) N (%)	Non-problem gamblers (n=297) N (%)	Ratio (PG/ NPG)
	Frequency, intensity, duration			
1	Gambled every day of the week	148 (74.0)	96 (32.4)	2.28
2	Gamble for three hours or more without a break of 15 minutes or longer	182 (90.5)	138 (46.5)	1.95
3	Gamble for 5 or more hours without a break of 15 minutes or longer	144 (71.6)	61 (20.5)	3.49
4	Gamble so intensely that you barely react to what was going on around you	164 (81.6)	74 (25.0)	3.26
5	Play very fast (e.g., insert large numbers of coins/notes into the machine very rapidly, press the buttons very rapidly so that the spin rate is very fast)	174 (86.6)	127 (42.8)	2.02
6	Bet $2.50 or more per spin most of the time	177 (88.5)	137 (46.1)	1.92
7	After winning on poker machines, play on quickly without even stopping to listen to the music or jingle	183 (91.0)	189 (63.6)	1.43
8	Rush from one machine to another	170 (85.0)	140 (47.3)	1.80
9	Gamble on 2 or more machines at once (select not applicable if this is not allowed in venues you visit)	97 (54.8)	61 (23.2)	2.36
10	Gamble continuously	182 (90.5)	128 (43.2)	2.09
11	Spend more than $300 in one session of gambling	174 (86.6)	101 (34.0)	2.55

12	Significantly change your expenditure pattern, e.g., sudden increases in spending	180 (89.6)	139 (46.5)	1.91
		Problem gamblers (n=201) N (%)	Non-problem gamblers (n=297) N (%)	Ratio (PG/ NPG)
	Impaired control			
13	Stop gambling only when the venue is closing	146 (72.6)	72 (24.2)	3.00
14	Gamble right through your usual lunch break or dinner time	141 (70.5)	46 (15.5)	4.55
15	Find it difficult to stop gambling at closing time	138 (68.7)	47 (15.8)	4.35
16	Try obsessively to win on a particular machine	190 (94.5)	181 (60.9)	1.55
17	Start gambling as the venue is opening	114 (56.7)	55 (18.5)	3.06
	Social Behaviours			
18	Ask venue staff to not let other people know that you were gambling there	62 (31.0)	12 (4.0)	7.75
19	Have friends or relatives call or arrive at the venue asking if you are still there	87 (43.3)	24 (8.1)	5.35
20	Act rudely or impolitely to venue staff	70 (34.8)	18 (6.1)	5.70
21	Avoid contact, or communicate very little with anyone else	158 (78.6)	99 (33.3)	2.36
22	Stay on to gamble while your friends leave the venue	146 (72.6)	81 (27.3)	2.66
23	Become very angry if someone takes your favourite machine or spot in the venue	134 (66.7)	58 (19.5)	3.42
24	Brag about winning or make a big show relating to how skilful you are as a gambler	124 (61.7)	94 (31.6)	1.95
25	Stand over other players while waiting for your favourite machine	93 (46.3)	37 (12.5)	3.70
	Raising funds/ Chasing behaviour			
26	Get cash out on 2 or more occasions in a single session to gamble using an ATM or EFTPOS at venues	185 (92.0)	148 (49.8)	1.85
27	Ask to change large notes at venues before gambling	152 (75.6)	121 (40.7)	1.56
28	Borrow money from other people at venues	85 (42.3)	19 (6.4)	6.61
29	Ask for a loan or credit from venues	51 (25.4)	6 (2.0)	12.7
30	Put large win amounts back into the machine and continue playing	187 (93.0)	119 (40.1)	2.32
31	Leave the venue to find money to continue gambling	162 (80.6)	52 (17.5)	4.61
32	Rummage around in your purse or wallet for additional money	178 (88.6)	147 (49.5)	1.79
33	Run out of all money including all money in your purse or wallet when you leave the venue	192 (95.5)	134 (45.1)	2.11
34	Use the coin machine at least 4 times in a session (select not applicable if coin machines are not available in venues you visit)	115 (79.3)	82 (36.0)	2.20
	Emotional responses			
35	Find yourself shaking (while gambling)	124 (61.7)	32 (10.8)	5.71
36	Sweat a lot (while gambling)	122 (607)	39 (13.1)	4.63
37	Feel nervous/ edgy (e.g., leg switching, bites lip continuously)	160 (79.6)	91 (30.6)	2.60
38	Display your anger (e.g., swearing to	139 (69.2)	81 (27.3)	2.53

	yourself, grunts)			
39	Kick or violently strike machines with fists	84 (41.8)	22 (7.4)	5.65
		Problem gamblers (n=201) N (%)	Non-problem gamblers (n=297) N (%)	Ratio (PG/ NPG)
40	Feel very sad or depressed (after gambling)	191 (95.0)	131 (44.1)	2.15
41	Cry after losing a lot of money	124 (61.7)	24 (8.1)	7.62
42	Sit with your head in hands after losing	117 (58.2)	29 (9.8)	5.94
43	Play the machine very roughly and aggressively (e.g., with fists or slaps)	108 (53.7)	41 (13.8)	3.89
44	Groan repeatedly while gambling	126 (62.7)	63 (21.2)	2.96
45	Feel a significant change in your mood during sessions	185 (92.0)	127 (42.8)	2.15
	Other behaviours			
46	Gamble after having drunk a lot of alcohol	125 (62.2)	134 (45.1)	1.38
47	Avoid the cashier and only use cash facilities	143 (71.5)	53 (17.8)	4.02
48	Notice decline in grooming/ appearance	113 (56.2)	15 (5.1)	11.0
49	Blame venues or machines for losing	139 (69.2)	74 (24.9)	2.78
50	Complain to staff about losing	81 (40.3)	25 (8.4)	4.80
51	Swear at machines or venue staff because you are losing	85 (42.3)	29 (9.8)	4.32
52	Compulsively rub the machine	98 (48.8)	72 (24.2)	2.02

Note: All ratios are significantly different to each other at p<.05

A.2.2 Comparisons across other risk levels

Table 89 below uses the same method as table 79 but with problem gamblers, moderate risk gamblers and no-low risk gamblers to indicate how much more likely each indicator would be observed at any occasion, comparing

- In column 5: problem gamblers compared to moderate risk gamblers,
- In column 6: moderate risk gamblers compared to no/low risk gamblers
- In column 7: problem/moderate risk gamblers compared to no/low risk gamblers

Table 90: Self-report prevalence of indicators by risk level

	PGs N (%)	MRG N (%)	LRG N (%)	PG/ Mod	Mod/ LRG	PG+ Mod/ LRG
Frequency, intensity, duration						
Gambled every day of the week	148 (74.0)	57 (38.8)	39 (26.2)	1.91	1.48	2.26
Gamble for three hours or more without a break of 15 minutes or longer	182 (90.5)	93 (62.8)	45 (30.2)	1.44	2.08	2.61
Gamble for 5 or more hours without a break of 15 minutes or longer	144 (71.6)	48 (32.4)	13 (8.7)	2.21	3.72	6.32
Gamble so intensely that you barely react to what was going on around you	164 (81.6)	57 (38.8)	17 (11.4)	2.10	3.40	5.57
Play very fast (e.g., insert large numbers of coins/notes into the machine very rapidly, press the buttons very rapidly so that the spin rate is very fast)	174 (86.6)	86 (58.1)	41 (27.5)	1.49	2.11	2.71

Bet $2.50 or more per spin most of the time	177 (88.5)	76 (51.4)	61 (40.9)	1.72	1.26	1.78
	PGs N (%)	MRG N (%)	LRG N (%)	PG/ Mod	Mod/ LRG	PG+ Mod/ LRG
After winning on poker machines, play on quickly without even stopping to listen to the music or jingle	183 (91.0)	114 (77.0)	75 (50.3)	1.18	1.53	1.69
Rush from one machine to another	170 (85.0)	89 (60.5)	51 (34.2)	1.40	1.77	2.18
Gamble on 2 or more machines at once (select not applicable if this is not allowed in venues you visit)	97 (54.8)	42 (31.8)	19 (14.5)	1.72	2.19	3.10
Gamble continuously	182 (90.5)	95 (64.6)	33 (22.1)	1.40	2.92	3.60
Spend more than $300 in one session of gambling	174 (86.6)	75 (50.7)	26 (17.4)	1.71	2.91	4.10
Significantly change your expenditure pattern, e.g., sudden increases in spending	180 (89.6)	96 (64.9)	43 (28.9)	1.38	2.25	2.74
Impaired control						
Stop gambling only when the venue is closing	146 (72.6)	52 (35.1)	20 (13.4)	2.07	2.62	2.84
Gamble right through your usual lunch break or dinner time	141 (70.5)	37 (25.0)	9 (6.0)	2.82	4.12	8.52
Find it difficult to stop gambling at closing time	138 (68.7)	41 (27.7)	6 (4.0)	2.48	6.93	12.8
Try obsessively to win on a particular machine	190 (94.5)	120 (81.1)	61 (40.9)	1.17	1.98	2.17
Start gambling as the venue is opening	114 (56.7)	44 (29.7)	11 (7.4)	1.91	4.01	6.12
Social Behaviours						
Ask venue staff to not let other people know that you were gambling there	62 (31.0)	11 (7.4)	1 (1.7)	4.19	10.6	30.0
Have friends or relatives call or arrive at the venue asking if you are still there	87 (43.3)	18 (12.2)	6 (4.0)	3.55	3.05	7.53
Act rudely or impolitely to venue staff	70 (34.8)	16 (10.8)	2 (1.3)	3.55	3.05	18.92
Avoid contact, or communicate very little with anyone else	158 (78.6)	67 (45.3)	32 (21.5)	1.74	2.11	3.00
Stay on to gamble while your friends leave the venue	146 (72.6)	67 (45.3)	14 (9.4)	1.60	4.81	6.49
Become very angry if someone takes your favourite machine or spot in the venue	134 (66.7)	46 (31.1)	12 (8.1)	2.14	3.83	6.37
Brag about winning or make a big show relating to how skilful you are as a gambler	124 (61.7)	61 (41.2)	33 (22.1)	1.50	1.86	2.99
Stand over other players while waiting for your favourite machine	93 (46.3)	26 (17.6)	11 (7.4)	2.63	2.38	4.61
Raising funds/ Chasing behaviour						
Get cash out on 2 or more occasions in a single session to gamble using an ATM or EFTPOS at venues	185 (92.0)	103 (69.6)	45 (30.2)	1.32	2.30	2.73
Ask to change large notes at venues before gambling	152 (75.6)	78 (52.7)	43 (28.9)	1.43	1.82	2.28

Borrow money from other people at venues	85 (42.3)	15 (10.1)	4 (2.7)	4.19	3.74	10.62
	PGs N (%)	MRG N (%)	LRG N (%)	PG/ Mod	Mod/ LRG	PG+ Mod/ LRG
Ask for a loan or credit from venues	51 (25.4)	5 (3.4)	1 (0.7)	7.47	4.86	22.86
Put large win amounts back into the machine and continue playing	187 (93.0)	89 (60.1)	30 (20.1)	1.55	2.99	3.94
Leave the venue to find money to continue gambling	162 (80.6)	44 (29.7)	8 (5.4)	2.71	5.50	10.92
Rummage around in your purse or wallet for additional money	178 (88.6)	93 (62.8)	54 (36.2)	1.41	1.73	2.15
Run out of all money including all money in your purse or wallet when you leave the venue	192 (95.5)	102 (68.9)	32 (21.5)	1.39	3.20	3.92
Use the coin machine at least 4 times in a session (select not applicable if coin machines are not available in venues you visit)	115 (79.3)	55 (50.9)	27 (22.5)	1.56	2.26	2.99
Emotional responses						
Find yourself shaking (while gambling)	124 (61.7)	21 (14.2)	11 (7.4)	4.34	1.92	5.61
Sweat a lot (while gambling)	122 (60.7)	29 (19.6)	10 (6.7)	3.10	2.93	6.46
Feel nervous/ edgy (e.g., leg switching, bites lip continuously)	160 (79.6)	67 (45.3)	24 (16.1)	1.76	2.81	4.04
Display your anger (e.g., swearing to yourself, grunts)	139 (69.2)	60 (40.5)	21 (14.1)	1.71	2.87	4.04
Kick or violently strike machines with fists	84 (41.8)	20 (13.5)	2 (1.3)	3.10	10.38	22.92
Feel very sad or depressed (after gambling)	191 (95.0)	104 (70.3)	27 (18.1)	1.35	3.88	4.67
Cry after losing a lot of money	124 (61.7	22 (14.9)	2 (1.3)	4.14	11.46	32.15
Sit with your head in hands after losing	117 (58.2)	27 (18.2)	2 (1.3)	3.20	14.0	31.77
Play the machine very roughly and aggressively (e.g., with fists or slaps)	108 (53.7)	31 (20.9)	10 (6.7)	2.57	3.22	5.94
Groan repeatedly while gambling	126 (62.7)	41 (27.7)	22 (14.8)	2.26	1.87	3.23
Feel a significant change in your mood during sessions	185 (92.0)	91 (61.5)	36 (24.2)	1.50	2.54	3.27
Other behaviours						
Gamble after having drunk a lot of alcohol	125 (62.2)	83 (56.1)	51 (34.2)	1.11	1.64	1.74
Avoid the cashier and only use cash facilities	143 (71.5)	43 (29.1)	10 (6.7)	2.46	4.34	7.97
Notice decline in grooming/ appearance	113 (56.2)	14 (9.5)	1 (0.7)	5.92	13.60	52.0
Blame venues or machines for losing	139 (69.2)	57 (38.5)	17 (11.4)	1.79	3.38	4.93
Complain to staff about losing	81 (40.3)	20 (13.5)	5 (3.4)	2.99	3.97	8.50
Swear at machines or venue staff because you are losing	85 (42.3)	18 (12.2)	11 (7.4)	3.47	1.65	3.99
Compulsively rub the machine	98 (48.8)	53 (35.8)	19 (12.8)	1.36	2.80	3.38

A.3 Logistic Regression Analysis of Indicator Clusters

A.3.1 Initial models: Predicting problem gambler status within each group of indicators

Logistic regression was undertaken to determine which variables were the best predictors of problem gambler status. Initial regression analyses were conducted for each grouping of indicators (eg., Intensity, duration, social behaviours). For each model, problem gambling status (0 = Non problem gambler, 1 = Problem gambler, PGSI 8+) was the dependent grouping variable and all indicators for the respective cluster were entered as predictors. This initial model was used as the basis of identifying the significant predictors at a multivariate level. Those variables which did not prove to be significant at p< .1 were dropped from the model. The results of each of these models are described in Tables 81-86.

Table 91: Intensity and frequency indicators of problem-gambler status

	B	SE	Wald	Odds ratio	95% CI
Constant	-4.38				
Gambled every day of the week	.85	.26	10.6	2.34	1.41-3.91
Gambled 3 hours or more	1.07	.33	10.5	2.90	1.52-5.52
Gambled intensely/ Loss awareness	1.16	.29	16.4	3.17	1.82-5.55
Bet $2.5 per spin most times	1.29	.30	18.2	3.65	2.02-6.61
Gambled continuously	.76	.34	5.0	2.13	1.10-4.16
Changed expenditure pattern	.94	.32	8.7	2.57	1.37-4.80
82.2% of cases correctly classified, Nagelkerke R = .56					

Table 92: Impaired control indicators of problem-gambler status

	B	SE	Wald	Odds ratio	95% CI
Constant	-2.71	.30			
Stop gambling when venue closing	.65	.26	4.7	1.92	1.07-3.46
Gambling through meal breaks	1.54	.32	33.7	4.64	2.76-7.79
Difficult to stop at closing time	.96	.36	9.4	2.62	1.41-4.86
Try to win obsessively on machine	1.12	.33	11.1	3.36	1.65-6.86
79.1% of cases correctly classified , Nagelkerke R = .48					

Table 93: Social behavioural indicators of problem-gambler status

	B	SE	Wald	Odds ratio	95% CI
Constant	-2.18	.24			
Avoid contact with others	1.23	.24	26.4	3.42	2.14-5.47
Stay on after friends leave	1.08	.24	20.6	2.95	1.85-4.72
Angry if machine taken	1.32	.21	30.4	3.73	2.34-5.95
75.9% of cases correctly classified, Nagelkerke R = .41					

Table 94: Raising funds indicators of problem gambler status

	B	SE	Wald	Odds ratio	95% CI
Constant	-3.59				
2+ ATM or EFTPOS withdrawals	1.27	.34	13.8	3.55	1.82-6.93
Putting wins back in to keep playing	1.67	.34	23.7	5.34	2.72-10.47
Leave venue to find more money	2.12	.26	66.4	8.33	5.01-13.88
83.1% of cases correctly classified, Nagelkerke R = .56					

Table 95: Emotional responses as indicators of problem gambler status

	B	SE	Wald	Odds ratio	95% CI
Constant	-3.69				
Shaking while gambling	1.64	.27	38.5	5.17	3.03-8.81
Sad and depressed after gambling	2.08	.38	29.3	8.00	3.77-16.97
Play machine roughly	1.00	.27	13.6	2.72	1.60-4.64
Change in mood during sessions	1.16	.34	11.9	3.20	1.65-6.19
80.7% of cases correctly classified, Nagelkerke R = .56					

Table 96: Other behaviours as indicators of problem gambler status

	B	SE	Wald	Odds ratio	95% CI
Constant	-1.99				
Avoid the cashier	1.49	.25	34.7	4.44	2.71-7.30
Decline in grooming/ appearance	2.22	.33	45.0	9.16	4.98-17.50
Blame machines for losing	.98	.25	15.6	2.67	1.64-4.34
81.1% of cases correctly classified, Nagelkerke R = .51					

A.3.2 Further modeling: Predicting risky gambling

Although the principal focus of this investigation is on the identification of problem gamblers, it is also useful consider which factors best differentiate between problem + moderate risk gamblers and lower risk gamblers. This is because there appears to be considerable similarity between problem and moderate risk gamblers. The relative prevalence of risk factors is higher in these groups vs. low risk gamblers than in comparisons between problem gamblers vs. all other gamblers (the analyses conducted so far).

Accordingly we have extended the 2007 analysis in the current study within this appendix by conducting logistic regression analyses involving PG +MR gamblers vs. LR gamblers. These results (summarized in Tables 87-92) show that moderate risk and problem gamblers: gambled more intensively; gambled at statistically unusual hours; tend to avoid or be rude to venue staff; show visible signs of being short of money to gamble; and, to report changes in mood states and in their appearance.

Table 97: Intensity and frequency indicators of at least moderate risk status

	B	SE	Wald	Odds ratio	95% CI
Constant	-1.66				
Gamble 3+ hours without break	1.02	.27	13.7***	2.76	1.61-4.73
Gamble very intensely	1.13	.34	11.16**	3.09	1.59-5.98
Rush from one machine to another	.63	.27	5.50*	1.89	1.11-3.20
Gamble continuously	1.29	.29	20.32***	3.64	2.08-6.38
Change expenditure patterns	1.04	.28	14.05***	2.83	1.64-4.86
82.6% of cases correctly classified, Nagelkerke R = .52					

Table 98: Impaired control indicators of at least moderate risk status

	B	SE	Wald	Odds ratio	95% CI
Constant	-1.11				
Gamble through meal times	1.29	.41	9.68**	3.61	1.61-8.12
Difficult to stop at closing times	1.76	.47	13.86**	5.79	2.30-14.59
Try to win obsessively on machine	1.64	.26	40.26***	5.14	3.10-8.52
Gamble when venue is opening	1.07	.38	7.66**	2.92	1.37-6.22
81.3% of cases correctly classified , Nagelkerke R = .48					

Table 99: Social behavioural indicators of at least moderate risk status

	B	SE	Wald	Odds ratio	95% CI
Constant	-.58				
Act rudely to venue staff	1.97	.77	6.57*	7.17	1.59-32.31
Avoid contact with others	.93	.26	12.45***	2.52	1.51-4.22
Stay on to gamble after friends leave	1.92	.32	35.84***	6.81	3.63-12.76
Angry if others take spot	1.46	.35	17.47***	4.23	2.18-8.59
80.1% of cases correctly classified, Nagelkerke R = .44					

Table 100: Raising funds indicators of at least moderate risk status

	B	SE	Wald	Odds ratio	95% CI
Constant	-1.76				
Got cash out 2+ times at venue	1.48	.28	28.36***	4.37	2.54-7.53
Put large wins back into machine	1.37	.30	21.26***	3.92	2.19-6.99
Run out of all money in wallet	2.02	.29	49.67***	7.51	4.29-13.16
84.9% of cases correctly classified, Nagelkerke R = .56					

Table 101: Emotional responses as indicators of at least moderate risk status

	B	SE	Wald	Odds ratio	95% CI
Constant	-1.37				
Nervous/ edgy when gambling	1.23	.30	16.49***	3.42	1.89-6.21
Sad and depressed after gambling	2.80	.29	67.66***	10.79	6.12-19.03
Change in mood when gambling	1.00	.30	11.42**	2.71	1.52-4.83
84.5% of cases correctly classified, Nagelkerke R = .55					

Table 102: Other behaviours as indicators of at least moderate risk status

	B	SE	Wald	Odds ratio	95% CI
Constant	-.47				
Avoid the cashier	1.80	.37	23.9***	6.06	2.95-12.48
Decline in appearance/ grooming	3.08	1.03	8.92**	21.76	2.88-164.22
Blame venue for losing	1.53	.30	25.36***	4.61	2.55-8.38
Compulsively rub the machine	.87	.31	7.86**	2.38	1.30-4.37
79.1% of cases correctly classified, Nagelkerke R = .45					

Following the same procedure adopted above, all of the strongest predictors identified in Tables 87 to 92 were included in a final model to determine the best overall predictors of problem+ moderate risk status. These final models are summarised in Tables 93-95.

Table 103: Final model: Overall best predictors of problem + moderate risk status

	B	SE	Wald	Odds ratio	95% CI
Constant	-2.32				
Got cash out from ATMs 2 + times	1.44	.30	23.84***	4.24	2.37-7.56
Ran out of all money at venue	2.05	.30	47.96***	7.77	4.35-13.88
Felt sad and depressed after gambling	2.39	.30	64.73***	10.94	6.11-19.59
87.1% of cases correctly classified, Nagelkerke R = .64					

Table 104: Final model: Overall best predictors of problem + moderate risk status (males only)

	B	SE	Wald	Odds ratio	95% CI
Constant	-2.21				
Stay on to gamble after friends leave	2.19	.67	10.57**	8.89	2.36-33.19
Angry if spot taken	1.84	.72	6.49*	6.32	1.53-26.13
Got cash out from ATMs 2+ times	1.95	.42	21.16***	7.01	3.06-16.08
Felt sad and depressed after gambling	1.34	.47	8.11**	3.84	1.52-9.68
Mood change during sessions	1.01	.46	4.92*	2.75	1.12-6.73
87.3% of cases correctly classified, Nagelkerke R = .70					

Table 105: Final model: Overall best predictors of problem + moderate risk status (females only)

	B	SE	Wald	Odds ratio	95% CI
Constant	-2.55				
Gambled 3 hours+ without break	1.29	.46	7.90**	3.63	1.48-8.93
Ran out of money at venue	2.47	.46	28.66***	11.81	4.78-29.18
Felt sad and depressed after gambling	2.46	.45	29.37***	11.73	4.82-25.59
88.7% of cases correctly classified, Nagelkerke R = .68					

The final sets of predictors were used to calculate the probability of being at least a moderate risk gambler in the overall sample and in males and females separately. As indicated in Tables 62a-c, these models were generally stronger than those calculated

for problem gamblers vs. other gamblers. Fewer indicators were generally required to elevate the probabilities to a very high level. For example, in all three models, the presence of three indicators was sufficient to elevate the probably to almost 100%. Multiple ATM withdrawals was the most consistent predictor along with feeling sad and depressed. For men, staying on after friends had left, getting angry when one's spot was taken was also important, whereas women who gambled for three or more hours or who ran out of money were more likely to be at least moderate risk gamblers.

Table 106: Probability of being classified as at least a moderate risk gambler (overall)

	Probability
Got cash out from ATMs 2 + times	.29
+ Ran out of all money at venue	.76
+ Felt sad and depressed after gambling	.97

Table 107: Probability of being classified as at least at moderate risk gambler (males only)

	Probability
Stay on to gamble after friends leave	.49
+ Angry if spot taken	.77
+ Got cash out from ATMs 2+ times	.98
+ Felt sad and depressed after gambling	.99

Table 108: Probability of being classified as at least a moderate risk gambler (females only)

	Probability
Gambled 3 hours+ without break	.22
+ Ran out of money at venue	.77
+ Felt sad and depressed after gambling	.98

APPENDIX B: The Gambling Behaviour Checklist

Important information for users of the Gambling Behaviour Checklist

Appendix B contains three versions of the Gambling Behaviour Checklist:

(1) The first version is for use by EGM staff in in Victorian venues (GBC-EGM-SV; 30 items).

(2) The second version is for use by EGM staff located elsewhere in Australia or in other countries (GBC-EGM-S; 32 items). Users of the checklist may find that they need to modify some items to reflect the characteristics of the gambling jurisdiction in which their research is undertaken. For example, the item, 'Finds it difficult to stop gambling at closing time' would not be useful for staff working in a 24-hour Las Vegas casino and should be removed from the checklist for use in that environment.

(3) The third version is for researchers (GBC-EGM-R; 36 items) interested in a checklist that carries forward the improvements to item wording, sequencing and exemplification improvements made in Stage Two of this report, a greater range of distinct behaviours than that offered by the staff versions, and checklist findings that are easy to compare with the data presented in Delfabbro et al 2007, the current report and papers arising, due to the retention of the Stage One GBC-EGM item distinctions.

The Gambling Behaviour Checklist

Instructions for staff

Use the checklist to help you think about **ALL** behaviours you may have seen in this person, now or in the recent past.

There are six different types of signs to look out for, colour coded to indicate riskiness of behaviour.

- **PURPLE = gambling problems highly probable.** These behaviours are uncommon but if you see them it is very likely to be a problem gambler. If you have seen purple flagged behaviours on more than one occasion you should consider organizing for someone to approach this patron.

- **RED = gambling problems probable.** These behaviours are more commonly observed than purple flagged behaviours. They are much more likely to be shown by people experiencing gambling problems and are good predictors of problem gambling.

  People displaying any red flag behaviours should be observed over a period of time at a minimum. If you have observed several red indicators or a mix of red and orange indicators over a period of time, this person is likely to be experiencing gambling problems and an approach should be considered.

- **ORANGE = possible gambling problems.** These behaviours are at least twice as likely to be seen in problem gamblers.

  Someone displaying several of these behaviours, especially across different areas may be experiencing some problems with their gambling.

- **YELLOW = early warning signs.** These behaviours are at least twice as likely to be seen in higher risk gamblers (compared to low risk gamblers).

  Seen by themselves these behaviours may be an early warning sign that gambling is moving out of control.

GBC-EGM-SV: The Gambling Behaviour Checklist for EGM Staff in Victoria

	Loss of Control	Tick
1	Tries obsessively to win on one machine	
2	Gambles right through normal meal times	
3	Finds it difficult to stop gambling at closing time	
4	Starts gambling when the venue is opening or only stops when venue is closing	
	Money Seeking	**Tick**
5	Gets cash out on 2 or more occasions through EFTPOS	
6	Puts large wins back into the machine and keeps playing	
7	Has run out of all money when he/she leaves venue	
8	Leaves venue to find money to continue gambling	
9	Asks to change large notes at venue before gambling	
10	Rummages around in purse or wallet for additional money	
11	Witnessed or heard that a customer was trying to borrow money from other people at venue or asking for credit from venue	
	Intensity and Duration	**Tick**
12	Spends $300 or more in a session	
13	Often gambles for long periods (3+ hours) without a proper break	
14	Bets $3 or more per spin most of the time	
15	Plays very fast	
16	Gambles on 2 or more machines at once	
17	Gambles intensely without reacting to what's going on around him/her	
18	Gambles most days	
19	Rushes from 1 machine to another	
20	Significant increase in spending pattern	
	Irrational and Superstitious Behaviour	**Tick**
21	Complains to staff about losing, or blames venue or machines for losing	
22	Rituals or superstitious behaviours such as rubbing belly of machine or screen, talking to machine, spitting on machine, use of luck charms	
	Emotional Responses	**Tick**
23	Shows signs of distress after gambling (looks sad/depressed, crying, holding head in hands, nervous/edgy, shaking, sweating)	
24	Gets angry while gambling (kicking, hitting machines, swearing, grunting or groaning, playing roughly/aggressively)	
	Social Behaviour	**Tick**
25	Stays on to gamble when friends leave venue	
26	Is rude or impolite to venue staff	
27	Becomes angry or stands over others if someone takes their favourite machine/spot	
28	Avoids contact or conversation with others	
29	Generally poor hygiene, or, significant decline in personal grooming or appearance over several days (body odors, dirty or unchanged clothes, messy greasy hair)	
30	Conceals presence at venue (doesn't answer mobile phone, takes or makes calls outside venue, asks staff not to let others know they are there, people contact or visit venue looking for person)	

GBC-EGM-S: The Gambling Behaviour Checklist for EGM Staff

	Loss of Control	Tick
1	Tries obsessively to win on one machine	
2	Gambles right through normal meal times	
3	Finds it difficult to stop gambling at closing time	
4	Starts gambling when the venue is opening or only stops when venue is closing	
	Money Seeking	**Tick**
5	Gets cash out on 2 or more occasions through ATM or EFTPOS	
6	Avoids cashier and only uses cash facilities	
7	Uses coin machine at least 4 times	
8	Puts large wins back into the machine and keeps playing	
9	Has run out of all money when he/she leaves venue	
10	Leaves venue to find money to continue gambling	
11	Asks to change large notes at venue before gambling	
12	Rummages around in purse or wallet for additional money	
13	Witnessed or heard that a customer was trying to borrow money from other people at venue or asking for credit from venue	
	Intensity and Duration	**Tick**
14	Spends $300 or more in a session	
15	Often gambles for long periods (3+ hours) without a proper break	
16	Bets $2.50 or more per spin most of the time	
17	Plays very fast	
18	Gambles on 2 or more machines at once	
19	Gambles intensely without reacting to what's going on around him/her	
20	Gambles most days	
21	Rushes from 1 machine to another	
22	Significant increase in spending pattern	
	Irrational and Superstitious Behaviour	**Tick**
23	Complains to staff about losing, or blames venue or machines for losing	
24	Rituals or superstitious behaviours such as rubbing belly of machine or screen, talking to machine, spitting on machine, use of luck charms	
	Emotional Responses	**Tick**
25	Shows signs of distress after gambling (looks sad/depressed, crying, holding head in hands, nervous/edgy, shaking, sweating)	
26	Gets angry while gambling (kicking, hitting machines, swearing, grunting or groaning, playing roughly/aggressively)	
	Social Behaviour	**Tick**
27	Stays on to gamble when friends leave venue	
28	Is rude or impolite to venue staff	
29	Becomes angry or stands over others if someone takes their favourite machine/spot	
30	Avoids contact or conversation with others	
31	Generally poor hygiene, or, significant decline in personal grooming or appearance over several days (body odors, dirty or unchanged clothes, messy greasy hair)	
32	Conceals presence at venue (doesn't answer mobile phone, takes or makes calls outside	

	venue, asks staff not to let others know they are there, people contact or visit venue looking for person)	

GBC-EGM-R: The Gambling Behaviour Checklist for EGM Researchers

	Loss of Control	Tick
1	Tries obsessively to win on one machine	
2	Gambles right through normal meal times	
3	Finds it difficult to stop gambling at closing time	
4	Starts gambling when the venue is opening or only stops when venue is closing	
	Money Seeking	**Tick**
5	Gets cash out on 2 or more occasions through ATM or EFTPOS	
6	Avoids cashier and only uses cash facilities	
7	Uses coin machine at least 4 times	
8	Puts large wins back into the machine and keeps playing	
9	Has run out of all money when he/she leaves venue	
10	Leaves venue to find money to continue gambling	
11	Asks to change large notes at venue before gambling	
12	Rummages around in purse or wallet for additional money	
13	Witnessed or heard that a customer was trying to borrow money from other people at venue or asking for credit from venue	
	Intensity and Duration	**Tick**
14	Spends $300 or more in a session	
15	Often gambles for long periods (3+ hours) without a proper break	
16	Gambles continuously	
17	Bets $2.50 or more per spin most of the time	
18	Plays very fast	
19	Gambles on 2 or more machines at once	
20	Gambles intensely without reacting to what's going on around him/her	
21	Gambles most days	
22	Rushes from 1 machine to another	
23	Significant increase in spending pattern	
	Irrational and Superstitious Behaviour	**Tick**
24	Complains to staff about losing, or blames venue or machines for losing	
25	Rituals or superstitious behaviours such as rubbing belly of machine or screen, talking to machine, spitting on machine, use of luck charms	
	Emotional Responses	**Tick**
26	Shows signs of anxiety while gambling (shaking, sweating, looking nervous/edgy)	
27	Shows signs of distress after gambling (looks sad/depressed, crying, holding head in hands)	
28	Gets angry while gambling (kicking, hitting machines, swearing, grunting or groaning, playing roughly/aggressively)	
	Social Behaviour	**Tick**
29	Stays on to gamble when friends leave venue	
30	Brags about winning or makes a big show about their gambling skills	
31	Is rude or impolite to venue staff	
32	Becomes angry or stands over others if someone takes their favourite machine/spot	
33	Avoids contact or conversation with others	
34	Generally poor hygiene or significant decline in personal grooming or appearance over several days (body odour, dirty or unchanged clothes, messy greasy hair)	
35	Has friends or relatives contact or visit the venue asking for customer	
36	Conceals presence at venue (Doesn't answer mobile phone, takes or makes calls outside the venue, asks	

	staff not to let others know they are there)	