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## **A focus group study of predictors of relapse in electronic gaming machine problem gambling, part 1: factors that 'push' towards relapse.**

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## **A focus group study of predictors of relapse in electronic gaming machine problem gambling, part 1: factors that 'push' towards relapse**

**Abstract** This study aimed to develop an empirically based description of relapse in Electronic Gaming Machine (EGM) problem gambling. In this paper the authors describe part one of a two part, linked relapse process: the 'push' towards relapse. In this two-part process, factors interact sequentially and simultaneously within the problem gambler to produce a series of mental and behavioural events that ends with relapse when the 'push' overcomes 'pull' (part one); or as described in part two, continued abstinence when 'pull' overcomes 'push'. In the second paper, the authors describe how interacting factors 'pull' the problem gambler away from relapse. This study used four focus groups comprising thirty participants who were gamblers, gamblers' significant others, therapists and counsellors. The groups were recorded, recordings were then transcribed and analysed using thematic, textual analysis. With the large number of variables considered to be related to relapse in problem gamblers, five key factors emerged that 'push' the gambler towards relapse. These were urge, erroneous cognitions about the outcomes of gambling, negative affect, dysfunctional relationships and environmental gambling triggers. Two theories emerged: (1) each relapse episode comprised a sequence of mental and behavioural events, which evolves over time and was modified by factors that 'push' this sequence towards relapse and (2) a number of gamblers develop an altered state of consciousness during relapse described as the 'zone' which prolongs the relapse.

### **Key Words**

Problem gambling, relapse, predictors, focus group, qualitative research, model, 'push', 'zone'

## **Introduction**

This paper is part one of two papers that describe the results of a focus group study which was one of a four-part project comprising literature review, Delphi consultation, focus group study and observational study aiming to define relapse and determine predictors of relapse in problem gambling. Problem gambling causes substantial harm (Productivity Commission 1999) and unfortunately, there is little understanding of the factors that lead to the development of gambling problems, relapse and effective clinical interventions (Sodano and Wulfert 2009). Critiques of empirical studies highlight the paucity of well-designed studies, predominantly non-standardized measures in existing studies (Pallesen et al. 2005) and the few empirical relapse studies that have directly evaluated relapse (Goudriaan et al. 2008; Oei and Gordon 2008; Daughters et al. 2005; Hodgins and el-Guebaly 2004; Echeburúa et al. 2001).

The second paper (Oakes et al. 2011) established that vigilance, motivation to commit to change, positive social support, cognitive strategies, management of the urge to gamble and urge extinction protected against relapse. Three complementary theories emerged and are reported in that paper:

1. There is a process of reappraisal of personal gambling behaviour, its consequences and commitment to change develop over time, and affects but is independent of each episode of relapse.
2. Relapse may be halted by interacting factors that ‘pull’ the problem gambler away from the sequence of mental and behavioural events, which follow the triggering of the urge and cognitions to gamble.

### 3. Urge extinction and apparent ‘cure’ is possible for Electronic Gaming Machine gambling.

In this paper where studies have specifically defined their population using DSM criteria for Pathological Gambling, the term “pathological gambling” will be retained when describing these studies. Where some other criteria are used for defining populations the more general term of “problem gambling” will be used.

#### **Relapse and Problem Gambling**

Relapse studies have focussed on single factors in isolation in respect of gambling relapse (Thomas & Jackson, 2008) and the complex interactions of facilitatory factors affecting relapse remain poorly understood (Ledgerwood & Petry, 2006). There is a need for much more direct research into relapse to gambling as specific relapse studies are limited. The following studies provide an understanding about relapse and problem gambling. In a study in Amsterdam a sample of 46 pathological gamblers 24 (52%) relapsed at 12 months. The duration of gambling, disinhibition and disadvantageous decision-making significantly predicted relapse (Goudriaan et al. 2008). Gambling urges and erroneous cognitions predicted relapse in 31 of 75 (41.3%) members of Gamblers Anonymous (Oei and Gordon 2008). In a study of 101 problem gamblers, only 8% of participants were free of gambling at 12-months. Cognitions about winning and the need to make money were risks for relapse (Hodgins and el-Guebaly 2004). Echeburua et al. (2001) reported a therapeutic failure rate of 29%, and 14.5% experiencing a relapse at 12 months, in 69 patients treated with behavioural therapy. Significant predictors of relapse were dissatisfaction with therapy, alcohol consumption, and neuroticism. A limited ability to tolerate the discomfort of abstinence has also found to lead to relapse (Daughters et al. 2005).

Gamblers with an alcohol or drug abuse diagnosis have an increased chance of experiencing gambling relapse. The presence of a mood disorder increased the time to reach continuous abstinence. Gamblers who have support during treatment may be more vulnerable to relapse if they do not have this support during follow-up (Hodgins and el-Guebaly 2010). Gamblers who did not commit to changing their behaviour have poorer outcomes (Hodgins et al. 2009) especially if they just gave up (Hodgins and el-Guebaly 2004).

### **Epidemiological Studies**

Epidemiological studies have linked increased frequency of problem gambling and therefore relapse, to financial pressure (Nelson et al. 2006), alcohol abuse and dependence (Delfabbro 2008), depression, anxiety, suicidal ideation, dissociation and poor physical health (Delfabbro 2008; Nelson 2006). Furthermore, minority and lower socio economic status (Welte et al. 2001), being young, single and male (Delfabbro 2008; Nelson et al. 2006), possessing lower levels of education (MacDonald et al. 2004; Nelson et al. 2006) and outcome expectancies (Gillespie et al. 2007) were also associated with gambling problems.

### **Gambling Environment**

Environmental factors can influence gambling behaviours. These include gambling advertisements, jackpots, attractive meals and easy wins (McMullan and Miller 2009). Features of gaming machines (including: playing alone, the fast pace, the impact of random, intermittent payouts, the rapid repetition of games that encourages sustained gambling and the pursuit of free games which increases the scale of bets) have all been found to promote gambling (Livingstone et al. 2008). It was proposed

that gambling may result in an altered cognitive state (Hodgins and el-Guebaly 2004) possibly related to features of gaming machine design.

### **Qualitative studies and Relapse**

A United States study of 84 pathological gamblers found the initiation of gambling was associated with external stimuli such as reminders of gambling (Morasco et al. 2007). Money and internal stimuli such as cravings, positive memories of gambling, emotional conflict or negative emotional states (Wood and Griffiths 2007), financial problems, access to funds and lack of structured time (Ricketts and Macaskill 2003) also initiated gambling. In an Australian study of 13 problem gamblers, gambling was maintained by positive cognitions about winning, negative cognitions and affects associated with poor social support and relationship issues especially when a local pub offered a social space to retreat from responsibilities and home stressors (Thomas et al. 2009).

In general, these studies suggest the majority of problem gamblers experience a relapse at least once and relapse involves multiple, complex factors (Hodgins and Makarchuk 2003). Relapse is associated with cognitions about winning and financial need, habitual gambling, unexpected opportunity, erroneous cognitions (Hodgins and el-Guebaly 2004), urges (Hodgins and el-Guebaly 2004; Oei and Gordon 2008), cravings, negative emotional states (Wood and Griffiths 2007) and anxiety (Echeburúa et al. 2001). Research has shown that there are many factors associated with gambling relapse. However, there is little understanding about their interactions. There is an extensive non-clinical experimental literature on personality traits linked to a proclivity for gambling and possibly relapse, which is beyond the scope of this paper.

This review has demonstrated relapse is associated with the duration of gambling, disinhibition, disadvantageous decision-making (Goudriaan et al. 2008), urges, erroneous cognitions (Oei and Gordon 2008; Hodgins and el-Guebaly 2004), financial problems, access to funds, unstructured time (Ricketts and Macaskill 2003), money, internal stimuli (Wood and Griffiths 2007) and alcohol consumption (Hodgins and el-Guebaly 2010). A limited ability to tolerate the discomfort of abstinence also leads to relapse (Daughters et al. 2005). The following factors increase problem gambling behaviour and therefore increase the risk of relapse; financial pressure (Nelson et al. 2006), alcohol abuse and dependence (Delfabbro 2008), depression, anxiety, suicidal ideation, dissociation and poor physical health (Delfabbro 2008; Nelson et al. 2006). Minority and lower socio economic status (Welte et al. 2001), being young single and male (Delfabbro 2008; Nelson et al. 2006), lower levels of education (MacDonald et al. 2004; Nelson et al. 2006) and outcome expectancies (Gillespie et al. 2007) were also associated with problem gambling. Environmental factors played a role in gambling behaviours including advertisements, jackpots, attractive meals, easy wins (McMullan and Miller 2009) and features of gaming machines (Livingstone et al. 2008). This research has shown many factors associated with gambling and relapse but little understanding about their interactions.

### **The current study**

To help address this gap this study explores the predictors and processes involved in gambling relapse and provides a framework for conceptualising this process. This paper reports results from the focus group component of the 'definition and predictors



of relapse in PG' study (Battersby et al. 2009). The Flinders University Social and Behavioural Research Ethics Committee approved this study.

## **Methods**

The study was conducted in Adelaide by researchers of the Flinders University Centre for Gambling Research, and members of the Statewide Gambling Therapy Service which is funded by the Government of South Australia to provide a comprehensive treatment service using cognitive behaviour therapy (CBT) with a focus on exposure based programs (Battersby et al. 2009). The treating team has 15 years' experience of treating EGM problem gamblers since the introduction of EGMs into hotels and clubs across the state in 1994.

## **Participants**

Four groups of people considered to have intimate knowledge of the relapse process were purposefully selected for the relapse study by liaising with key stakeholders in the clinical and community setting. This ensured the participants recruited for this study had an intimate knowledge of the relapse process and problem gambling. The thirty participants comprised 10 gamblers, five significant others, eight CBT therapists and seven counsellors (table 1). Two groups of problem gamblers and partners had been personally involved in episodes of relapse. One group had been treated with urge exposure and response prevention (Battersby et al. 2008) and the second group had been involved in self-help programs such as Pokies Anonymous (PA) (Pokies Anonymous 2010) and the Consumer Voice Program (educational). The eight CBT therapists focused on urge exposure and response prevention which is a cognitive behavioural therapy with an emphasis on exposure therapy (Oakes et al,

2008) and enables clients to slowly confront and extinguish their urge to gamble rather than using avoidance or distraction techniques to manage their urge to gamble. These participants provided their experiences of relapse after receiving treatment. Seven counsellors worked for non-government organisations using an educational and counselling approach, or for the Gambling Helpline (a government crisis intervention service).

<<<Insert here Table 1 Focus Group Participants>>>

### **Data Analysis**

The groups were conducted in a planned and standardised fashion (Breen 2006) by two researchers (JO and DS). Audiotapes were transcribed and the text was analysed using thematic analysis, within a grounded theory framework, including open coding, axial coding, constant comparative analysis, generation of theories and synthesis of the data (Strauss and Corbin 1990). The detailed description of the data analysis is provided in the report (Battersby et al. 2009). JO and RP to enhance the credibility of the data (Miles and Huberman 1994) independently coded the transcribed data. An external auditor (SL) reviewed the fidelity of the methodology and analytic process, confirming a clear audit trail. The rigour and validity of the data was enhanced by peer debriefing, reference group debates, discussions and extensive interaction with the multidisciplinary team in order to test ideas (Strauss and Corbin 1990). Saturation was reached (Strauss and Corbin 1990) after three focus groups comprising CBT therapists, clients and significant others and counsellors, as no new themes emerged from the data from the fourth group of Pokies Anonymous members and partners.

## Results

Six key themes related to the relapse process emerged during constant comparative analysis and synthesis of the data, with five themes specifically related to the 'push' to relapse. These were:

1. Environmental gambling triggers. Participants identified the extensive increase in opportunities to access gambling facilities, money, and random reinforcement of gambling by gaming machines, incentives and the ambience of the environment to increase the risk of a relapse.
2. Negative affect included sub themes of co-morbidity, stress, escape, boredom, financial stress and physical health, which shared negative affect as the central common feature.
3. Erroneous cognitions relating to gambling outcomes including the reliance on systems, lucky numbers and over-confidence in one's skill was a significant risk factor for a gambling relapse by encouraging excessive or persistent gambling.
4. The presence of an urge (psychophysiological response to an external or internal trigger) increased the risk of relapse.
5. Poor quality of relationships that were often dysfunctional and provided limited support, poor social networks and loneliness all increased the risk of relapse.
6. The sixth key factor was based on interventions:
  - Interventions based on a belief in supportive approaches leads to a reduction in relapse.
  - Urge exposure and response prevention based on the belief that gambling is a conditioned behaviour demonstrates that it can be

treated to urge extinction and mastery of the urge, at which time relapse is reduced or eliminated.

Key themes were compared with the literature to identify factors that increased the risk or 'pushed' the problem gambler toward relapse. The final synthesis of the systematic analytic process resulted in a single overarching theory: "each relapse episode comprises a sequence of mental and behaviours events, which evolves over time and is modified by factors that 'push' this sequence towards relapse" (figure 1). Each theme has been illustrated by quotations from the participants who were each given a number and code. Participant codes: (T) Therapist, (CL) Client, (SO) Significant Other, (CO) Counsellor, (PA) Pokies

<<< **Insert here Figure 1 Relapse process** >>>

## **The Push towards Relapse**

### **Initiation of relapse: triggers**

The relapse sequence began with the presence of a gambling trigger (figure 1a) which included financial difficulties and opportunities. CL5 described money as a significant trigger: "Whereas if I had come into a lot of money that was a huge trigger." Accessibility to the opportunity to gamble, visual cues, and negative affective states were triggers to gamble. For CL2 boredom was a significant trigger for relapse: "When you are bored, potentially you are in danger of relapsing." For CL3 the distress associated with a physical illness was considered a trigger: "I think a serious physical illness..... It's his second bout with cancer and a few weeks

before he went in he's on his own so he's been hitting the gambling again.” For PA1 positive experiences were gambling triggers: “If a football team won we would go down to the pokies and celebrate.” Negative experiences were a trigger for CO4 “the gambling, it’s a relief, and it’s an indicator of bigger issues in their life, like the screaming kids at home.” Similarly stress was a trigger for CL2 “There is stress that you are so busy with so much to do,” or in contrast for C04 a pleasant gambling environment and specific conditioned triggers such as smells: “There could be triggers like urges like a smell that could get the urge going again and that’s why I relapsed.”

### **Facilitation of relapse**

When the urge to gamble was triggered, the following erroneous beliefs (figure 1c) described by the participants magnified the hope of winning, increasing excitement and the risk of relapse unless counteracted. Information processing biases was evident in this quote by CL3 “When I was gambling I saw it as a way of making money” and PA4 described magical thinking “because someone else could be at your favourite machine.” An erroneous belief about outcome expectancy was described by CL2 who hoped to win money to alleviate her financial problems. “There is still that thought that this time is going to be my time and I might win this time and it will alleviate some of the problems” and the following quote by PA2 shows recall bias as he reflected on past wins and hoped he could win again: “I would say ‘Quick I need more money’. I couldn't get it into the machine quick enough.”

These cognitions heightened the urge and arousal (figure 1d) which narrowed attention as the gambler maintained their focus on winning. If the urge was not specifically mentioned it was implied by the participants. Cognitions leading to urge,

and vice versa, where each triggered by the other and heightened the gamblers urge further (figure 1d). For example CL 2 talked about the social rewards within the venue:

She's got a problem but she doesn't see it as a problem because it's with all those other wonderful things, free coffee, and plays pokies and it's a real outing.

A counsellor T6 described the exciting visual or musical stimuli: “It gets exciting, music playing.” Increased urge lead to arousal in the ‘push’ towards relapse, which was not only exciting but also aversive as shown in this quote by PA1:

It is a terrible drag once it gets into your system and I do not know what drags it, probably the thought of hitting that Jackpot or I have to get back that money that I have lost.

PA1 also commented that urge, cognitions and arousal were inseparable and difficult to resist (figure 1b, c, d):

There is nothing anybody says or does that is going to stop you. It's a build-up of intensity and a force that you just go.

This suggested arousal can be so intense that cognitive functioning becomes altered because reason is clearly not being accessed (figure 1e) resulting in relapse.

### **Cognitions and Decision Making**

After the relapse event, participants recognised their cognitive functioning was not normal at the time they made the decision to gamble (figure 1e, f). PA5 recounted how she would become irrational in thinking she would win but when the money was lost, she regretted having wasted the money, which she could have given to her children:

To think that I have wasted all that money I could have given it to my sons.

You become irrational when you get it into your system.

One participant CL3 stated that once the urge or arousal is sufficiently intense critical thinking, self-observation and decision-making are impaired:

They know all the reasons why they should not but they cannot help themselves because they still have that urge there.

Memories of previous negative consequences are ignored as CL3 described gambling as a way of making money: “I saw it as a way of making money” and PA1 demonstrated how the will to not gamble seemed to be suspended. “When you get that urge to play the machine nothing is going to stop you.” Some participants struggled to understand what happened. For example, PA4 said, “I don't understand it and I know I had absolutely no control over it.” The decision to gamble led to tension reduction for the gambler once they engage in gambling as described by PA2:

It's pretty ugly but on the exterior when you walk in its got a nice vibe, with the lights, the colours, the staff, the nice chairs and you can just drift off and escape.

When the temptation to gamble reached a level of intensity, a decision to return to gambling occurred as demonstrated by a quote from PA2:

It depends on time frames. You are not literally there 24 hours a day so there is some point where you are home or doing other things but there is a point where you decide to go.

At this time, cognitions were distorted evident by this quote by PA4: “You just sit there and it's almost as though the money loses its real sense of value.”

### **Decision Making Resulting in Relapse**

This gambler (PA1) did not appear to struggle with the decision to gamble and described an immediate relapse process where the urge was so strong he could walk through walls to gamble:

When you get that urge to play the machine, nothing is going to stop you; thoughts and all. You would walk through walls; that is how strong the urge was.

Another (PA4) gambled out of habit where there was little vacillation about the decision to gamble: “About 5 o'clock we would feed all our animals and then the night starts and I will say. ‘Do you want to go and play the pokies?’” At times PA4 would try and defer the decision to gamble with the promise to gamble at a later time: “It’s just I can't go today but I will go tomorrow.” Another PA5 would vacillate about the decision to relapse:

Even saying I am not going to go and I [imagination] am in the car park and then think I am not going, next thing you know I am getting changed. It just takes over.

Indefinite deferral enabled the gambler to reduce the likelihood of a relapse: For example PA4 would try and put off gambling each day hoping the day to gamble would not come: “One day at a time. Go tomorrow because tomorrow never comes.” This is a part of the ‘pull’ away from relapse (Oakes et al. 2011) and is fully described in that paper.



### **Altered awareness during relapse**

Participants described an altered awareness where they could not think critically once gambling behaviours started (figure 1g): For example, PA6 described being in a zone: “You just want to sit I front of the machine and enjoy yourself. You are in that zone,” and PA4 described becoming like a robot: “You become almost robot like and you just sit there and it’s almost as though the money loses its real sense of value.” A counsellor (T2) also suggested that gamblers blank out:

They blank out, they just go into a total ‘no zone’, they do not think or feel they do not do anything and that is the difference. It is like being on drugs.

C04 suggested gamblers are in a trance: “Caught in some sort of trance; they talk about a ‘zone’.” Altered awareness continued until critical thinking was restored when the gambler had run out of money as evident in this quote by PA2 “Each night when I come home I would think never again am I going to play those machines again.”

### **Synthesis of the ‘Push’ towards relapse**

Figure 1 shows each of the elements of relapse within a box. From amongst the risk factors a positive or negative trigger specific for each gambler started the ‘push’ towards relapse (figure 1a) increasing the likelihood of relapse. This was initiated by erroneous beliefs, which immediately evoked the urge to gamble (1b). Gambling erroneous cognitions were difficult to separate from the urge as these reinforced one another almost instantaneously resulting in increased arousal. This interaction of thoughts, urge and arousal comprised a dynamic ‘push’ process increasing the risk of relapse fuelled by the desire to win by unquestioningly engaging erroneous beliefs

about gambling (figure 1c). Increased autonomic and cognitive arousal (figure 1d) and narrowing of cognition followed. At a critical point, this increasing cognitive distortion led (figure 1e) to the decision to gamble. This seemed to alter the gambler's cognitive functions as if they gave themselves permission to no longer engage in self-observation, critical thinking, accessing memories of negative consequences of gambling, or exercising the will in respect of gambling cognitions, urges and behaviour. This was accompanied by a sense of relief and unreality as the gambler engaged in gambling and relapse occurred (figure 1f). When the decision was made to let go of these higher cognitive functions (figure 1g), some described this as being "in the zone."

## **Discussion**

This model provides an understanding about the process of relapse. The data that informed the model was derived from a representative group of problem gamblers and others involved in treatment services. It may not be representative of other EGM problem gamblers. Qualitative methodologies are designed to be exploratory and to offer new insights into complex social phenomena (Saks and Allsop 2007). Such an approach has been useful in exploring the complexity of gambling relapse. The model described is only one part of the complexity of relapse as this behaviour is clearly paradoxical, loathed by problem gamblers and their families and takes a long time for many to alter. The 'pull' aspect of the relapse process, which involves factors that are protective against relapse, has been extracted from the model so that it too can be described more clearly and simply in the companion paper. This process suggests that relapse may be halted by interacting factors that 'pull' the problem gambler away

from the sequence of mental and behavioural events which follow the triggering of the urge and cognitions to gamble.

Such a qualitative approach to relapse is timely, as there is increasing social morbidity resulting from EGM and similar electronic gambling opportunities such as internet gambling (Productivity Commission 2010) that have features of a developing epidemic (Valentine 2010). Once a clear description is arrived at, research into better and more targeted interventions becomes possible.

The 'Push' model suggests many of the variables leading to relapse act through social learning processes (Skinner 1953) where particular cues become meaningful. It was surprising that the many co-morbid conditions linked to problem gambling such as alcohol use and dependence (Delfabbro 2008), diagnosable affective disorders (Scherrer et al. 2007; Pietrzak et al. 2007; McCormick and Taber 1988) and general level of distress and higher levels of obsessive-compulsive symptomatology (Jiménez-Murcia et al. 2007) were not identified by participants as important in relapse. This could be understood, in part because financial and social problems, co-morbidities, boredom, conflict, stress and illness, are all associated with negative affects, which can be relieved temporarily by triggering thoughts about winning at gambling and the associated euphoria. Positive emotions and celebratory situations could become associated with episodic wins, to develop conditioned habitual responses and urges (Parke and Griffiths 2004) as these high levels of positive reinforcement results in gamblers making efforts to repeat this experience ( Jacobs 1986) . The central role for magical thinking for example in relation to luck (MacKillop et al. 2006a; MacKillop et al. 2006b) and erroneous cognitions about

winning (Bellringer 1999; Moore and Ohtsuka 1999; Walker 1992) can also lead to problematic gambling behaviours and possibly relapse.

It was less easily understood that impulsivity, one of the most important variables (Goudriaan et al. 2008) considered as central in both the development of problem gambling (MacKillop et al. 2006b) and relapse (Battersby et al. 2009; Goudriaan et al. 2008) received little mention by participants. This may have been because of selection bias within this study. The immediate pattern of relapse described by the participants of this study suggests impulsivity is associated with the “uncontrollable urge” and needs further study.

The importance of erroneous cognitions in relapse is indisputable and there is a large literature to support this (Battersby et al. 2009; Hodgins and el-Guebaly 2004; Oei and Gordon 2008). The question emerging from this study is about the importance of urge with some evidence to support its significance (Hodgins and el-Guebaly 2004; Smith et al. 2010).

Many of the focus group participants described losing contact with reality which exacerbated relapse. For example gamblers “appeared to extend gambling episodes by entering ‘the zone’ during which they could push to the background concerns about the amount of money being lost” until the session finished when money ran out (Australian Institute for Primary Care 2006 p 26). Furthermore, this ‘unthinking’ mode of behaviour characterised as the ‘zone’ resulted in individual gamblers suffering harm (Livingstone et al. 2008 pages 13 and 19 respectively). Problem gamblers experienced more symptoms of dissociation with greater narrowing of attention than occasional gamblers (Jacobs 1988; Diskin and Hodgins 1999, 2001;

Allcock et al. 2006). Altered consciousness has also been reported (Beaudoin and Cox 1999; Bergh and Kuhlhorn 1994) and higher Dissociative Experience Scores by Problem Gamblers have been reported in many forms of gambling (Kofoed et al. 1997).

The nature of this altered cognitive state is unclear and it has been suggested to have features of dissociation, narrowing of attention (Diskin and Hodgins 1999, 2001) or a process of altered decision-making (Goudriaan et al. 2008). It is not clear, whether this dissociative-like state is a specific problem for EGM gamblers or if it applies to other types of gambling. Thus, an important area for future research is to fully describe the antecedents, development and consequences of such an altered mental state including the roles of arousal, urge, cognitions and the programming of EGMs in its development. The results from the focus group qualitative analysis will be used to inform the design of the prospective quantitative observational study in a group of treatment seeking problem gamblers to test potential predictors of relapse in PG.

This study is limited by the small and non-random sample of EGM gamblers.

Problem gamblers from other locations, involved in different therapies, or who have had no contact with treatment services, may describe a different relapse process. The use of in-depth or semi-structured interviews with individual subjects would increase the truth-value (Saks and Allsop 2007) of this model by examining if the process occurs in individuals and test its applicability to other forms of gambling. In addition, the focus group process may not capture the individual experience in enough detail and the group process may impact on the depth and scope of the details provided by participants. Post hoc recall bias is a weakness inherent in the methodology chosen and near or real time techniques (McKay et al. 2006) could be used to reduce this

problem for example by speaking to gamblers about their individual experiences. This focus group data indicated relapse is a complex non-linear process involving factors that together can increase a gambler's vulnerability to relapse. It fits with the recent conceptualization of relapse in alcohol dependence (Witkiewitz and Marlatt 2007; Witkiewitz and Marlatt 2004). These authors suggest relapse is not a linear process for alcohol dependence, relapse results because a large number of factors come together to make relapse more or less likely (Witkiewitz and Marlatt 2007).

### **Conclusions**

This study provides new insight into the 'push' predictors of relapse, with five key factors predicting relapse in problem gambling: urge, cognitions, negative affect, poor quality of relationships, and environmental gambling triggers. The combined 'push' by these factors has been described in a model of relapse that needs to be tested. An altered cognitive state during relapse has been described that needs further clarification also these factors interact with opposing motivation and cognitions to create an even more complex process of gambling relapse These will be discussed in the companion paper and together they provide a model which needs to be empirically tested.

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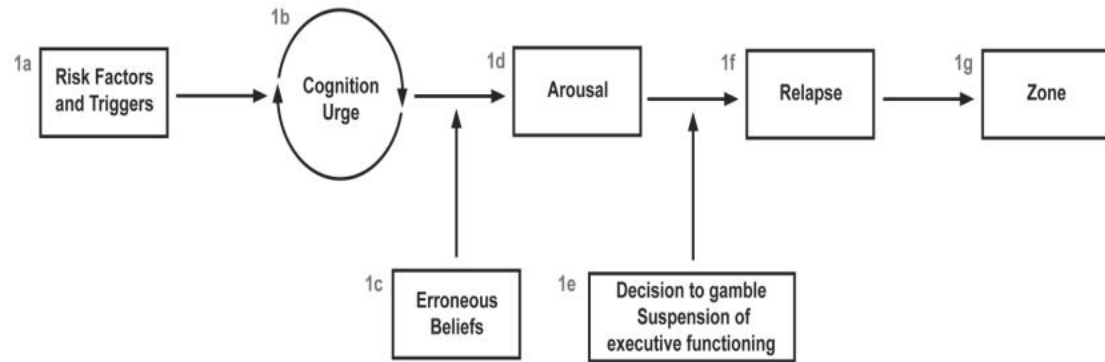
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**Figure 1 Relapse Process**

**Table 1 Focus Group Participants**

<b>Focus Group</b>	<b>SGTS: therapists</b>  Provide a specific cue exposure and response prevention treatment program	<b>SGTS: clients and significant others</b>  Clients completed the SGTS treatment program and their significant others	<b>Non-government agency counsellors</b>  Provide a range of supportive counselling approaches	<b>Pokies Anonymous members</b>  Pokies Anonymous is a self-help peer support organisation
<b>Participants</b>	Therapists	Clients Significant Others	Counsellors	Pokies anonymous Members
<b>Identified in text</b>	Counsellors	Gamblers / Significant Others	Counsellors	Gamblers
<b>Number</b>	8	10	7	5 (x1 couple)
<b>Male</b>	2	5 (3 clients 2 significant others )	0	2
<b>Female</b>	6	5 (2 clients 3 significant others)	7	3

