

Breaks in Play: Do They Achieve Intended Aims?

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Abstract Breaks in play represent a responsible gambling strategy designed to disrupt states of dissociation and enhance the likelihood of drawing attention to a player's session behaviour and expenditure with respect to time and money. The aim of the break in play is to motivate the player to modify or cease gambling so the activity remains within affordable levels. The aim of this study was to investigate whether imposed breaks in play in the absence of accompanying warning messages were effective in reducing cravings. Participants (141 university students) were randomly allocated to one of three conditions: 15 min computer simulated Black Jack play followed by no break, a 3 or 8 min break in play. Participants were administered a battery of measures to assess problem gambling card play, cravings, and dissociation to assess the effects of length of break on cravings. Results indicated that cravings increased rather than decreased with imposed breaks in play, and that the strength of cravings were higher following the eight- compared to 3-min break. It was concluded that breaks in play in isolation might produce counterproductive, unintended, and even perverse effects. The policy implications for responsible gambling strategies is that breaks in play ought to be accompanied with warning and/or personal appraisal messages if optimal effects in reducing within session gambling expenditure are to be achieved.

Keywords Responsible gambling · Black Jack · Breaks in play · Dissociation · Cravings

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Introduction

Gambling harms emerge when a gambler exceeds his/her personal disposable discretionary income and/or discretionary leisure time thresholds (Blaszczynski et al. 2008). Although the majority of gamblers gamble more than intended, at least on occasion (Blaszczynski et al. 2008), approximately 0.05–4 % of the adult general population meet past-year formal criteria for pathological gambling (renamed, gambling disorder in DSM-5 (American Psychiatric Association 2013) (Cox et al. 2005; Stucki and Rihs-Middel 2007; Wardle et al. 2011; Williams et al. 2012), and an additional 2.1 % or more experience gambling-related harms (Productivity Commission 2010; Williams 2012). These rates vary according to different methodologies, cut-off thresholds, timeframes and measures employed (Williams et al. 2012). Higher prevalence rates of 15–30 % have been reported among casino employees (Duquette 1999; Fong et al. 2011) and hotel or club venue patrons (Blaszczynski et al. 2001).

Both governments and industry operators have introduced responsible gambling strategies to minimise gambling-related harms and gambling disorder prevalence rates. These extend from public health educational campaigns and resource materials, warning messages, time and money expenditure limit setting, restrictions on marketing, restricted venue operating/trading hours, advertising and promotions, self-exclusions, removal of ATMs, modifications to gaming machine configurations (near miss, spin speed, note acceptors, and bet/prize size), breaks in play, and prevention of underage gambling (see Williams et al. 2012 for a comprehensive review). As Williams et al. (2012) note, although promising, few such strategies have strong empirical evidence supporting their effectiveness.

One responsible gambling initiative, namely ‘breaks in play’, has a conceptual basis that can be identified as being derived from a sound theoretical and empirical foundation, namely the construct of ‘dissociation’. Anderson and Brown (1984), invoking Pavlovian and operant conditioning effects, were the first to postulate that within session arousal produced by gambling was capable of narrowing a player’s focus of attention facilitating a secondary reward of escaping from emotional distressing stimuli and life situations. Extending this concept, Jacobs (1986) advanced a general theory of addiction where individuals at risk for addictions were postulated to be either chronically hyper- or hypo-aroused and, consequently, driven to engage in behaviours or substance use that would maintain homeostatic levels of arousal through generated dissociative experiences. Dissociative experiences were characterised by altered states of identity, narrowed perception, a sense of detachment, and loss of awareness of time. As a consequence, it is hypothesised that individuals experience dissociative states when gambling results in (a) continued play without full awareness of the passage of time or expenditure because players become totally immersed in the activity, and (b) persistence within and across sessions occurs because operant negative reinforcement (emotionally escaping from daily stresses) is rewarding. In this vein, Schull (2012) refers to the player-centric design of gaming machines. Here Schull argues that gaming machines are deliberately constructed and engineered, taking into account player physical, sensory and cognitive propensities, to promote the experience of being in a “...state of suspended animation that gamblers call the zone and the industry continuous gaming productivity...” (p. 68).

Evidence supporting Jacobs’ (1986) theory has been reported among individuals addicted to gambling (Diskin and Hodgins 1999) and video gaming activities (Hussain and Griffiths 2009; Kardefelt-Winther 2014; Kirby et al. 2014). In this context, consideration

has been given to the implementation of ‘breaks in play’ to disrupt the dissociative experience and return the player to a state of full awareness of their behaviour. A break in play can be defined as any action that results in a temporary interruption, suspension or cessation of play that serves to disrupt attention and the dissociative process. This typically takes the form of a suspension or interruption to play with or without a concomitant responsible gambling message appearing on the gaming machine screen. This suspension may be set to occur on a regular or intermittent set schedule or in response to a player set parameter. For example, the Association of British Bookmaker’s code of responsible gambling includes the provision of a mandatory break in play contingent on a player’s personally set limit for money or time spent playing, during which responsible gambling messages in an attempt to influence the player’s decision regarding whether or not to continue play.

However, the operational definition of a break in play or its optimal duration is yet to be adequately established. Taking time out to access additional funds from an ATM or cashier and taking a toilet or lunch break before continuing play are generally not considered to constitute a break in play. This is because interrupting the dissociation may, but does not necessarily lead to the person re-evaluating his or her gambling behaviour. The player remains motivated to resume play after the break unless the break contains a message prompting a reappraisal of his or her gambling behaviour. For example, Stewart and Wohl (2012), in a laboratory setting using a virtual gambling paradigm, found that reminder messages to set limits did increase adherence to pre-set limits. However, as in other studies demonstrating the usefulness of messages interrupting the flow of play and distracting attention (Jardin and Wulfert 2012; Monaghan and Blaszczynski 2009, 2010a, b), it remains unclear if the positive effect is limited to the nature/content of the message or the break in play specifically.

Imposing a forced break in play as an effective responsible gambling strategy may be putatively challenged on both theoretical and empirical grounds. While McConaghy (1980) advanced the Behaviour Completion Mechanism Model to explain driven behaviours, including pathological gambling, he suggested that through repetition and the effects of conditioning, the central nervous system builds a neuronal model of all habitual behaviours. Similar to the concepts underlying the orientation reflex (Sokolov 1963), exposure to a conditioned stimulus or cue results in the activation of the neuronal model. Any interference to the completion of the behavioural habit results in an aversive state of arousal. This aversive arousal drives the individual to persist in the attempt to complete the behaviour. This model explains craving (aversive state driving the individual to engage in and complete an appetitive behaviour) and the motivation to gamble despite the desire to resist, a process similar to that described by Tiffany (1990).

In the domain of video gaming, Blaszczynski et al. (2014) drew attention to a recent news article discussing the ‘addictiveness’ of the new Candy-Crush App-based game. This article attributed the in-app purchases that made it one of the most profitable iPhone and Android App in part to the inclusion of imposed breaks in play (Dockterman 2013). Once ‘lives’ are lost, play is suspended for several minutes before resumption of play is allowed but players are permitted to circumvent this break in play by immediately purchasing new lives. The Apps developer was quoted as stating. “... It’s much better from an entertainment point of view to create a more balanced experience where you have natural breaks” (Dockterman 2013). Consistent with McConaghy (1980) and Tiffany (1990) concepts, interrupting or frustrating a drive to complete a craved behaviour, may be counterproductive among individuals unmotivated to control their behaviour. Given the similarities between electronic gaming machines and video gaming, it is reasonable to

investigate the effects of a break in play on craving, urges and desire to resume play among players in the absence of confounding responsible gambling messages.

The aim of this study was to determine the effects that an imposed break in play would have on cravings and urges to continue. Based on McConaghy's (1980) and Tiffany's (1990) models, the following hypotheses were tested:

1. That breaks in play affect the craving to continue playing such that a break increases craving.
2. That longer, compared to shorter, breaks increase cravings to continue play.
3. (a) That feelings of dissociation while playing will increase cravings to continue playing, and
(b) Attempts to distract the player with breaks including non-play related thoughts will not reduce dissociative feelings.
4. That an aversive state of arousal (we label as subjective negative arousal) caused by the interruption in play mediates the relationship between breaks and reported cravings to continue playing.

Methods

Participants

A total of 141 university students (78 females, 63 males) were recruited via an on-line recruitment system. Each participant was awarded partial course credit for completing the study. Participants ranged in age from 18 to 32 years, with a mean of 21.21 ($SD = 2.43$). Participants were randomly assigned to three conditions (no break, 3 min break, 8 min break). In the no break condition, participants responded to a brief questionnaire eliciting information on their game-experience before continuing the Black Jack session. In the break conditions, participants responded to the brief questionnaire in addition to concentrating on non-game related information designed to disrupt their attention from the game. The break lasted for three and 8 min, respectively.

Measures

Gambling Craving Scale: (Young and Wohl 2009)

Cravings to continue playing Black Jack was measured using an adaption of the 9-item Gambling Craving Scale (Young and Wohl 2009). The adaption related to substituting "Black Jack" for "gambling" in each of the items. The items were measured with a 100-point continuous scale anchored with "Disagree" (0) and "Agree" (100). The Cronbach's Alpha was 0.89 for this sample on this scale.

Dissociative Experience Scale: (Jacobs 1988)

A modified version of the four questions devised by Jacobs (1988) to measure dissociation in addicts was used. The questions refer to the current play session rather than gambling generally (Diskin and Hodgins 1999, 2003), and the scale used in the current study included an additional question about time, as was incorporated into the scale used by Gupta and Derevensky (1998). To improve the validity of the time question participants

estimated how long they have been playing rather than their subjective experience of time loss (Wood and Griffiths 2007). Four of the items were measured with a five-point Likert scale. The time estimation was measured in minutes and standardised. The Cronbach's Alpha was 0.79 for 4-item scale and 0.69 for the scale including the standardised estimate of time for this sample.

Problem Card Game Playing (PCGP: King et al. 2011)

Problem card gaming was measured using the 20-item PCGP, which has been adapted from a problem video game playing scale that was validated in non-clinical samples (King et al. 2011). Items were modified to relate to card playing rather than video gaming and were measured with a five-point Likert scale. The Cronbach's Alpha was 0.93 for this sample on this scale.

In addition, a series of author constructed scales were used to assess the following variables:

1. *Familiarity with Black Jack* Participant's familiarity with the game of Black Jack was measured with a 100 point continuous scale anchored with "not at all familiar" (0) and "very familiar" (100).
2. *Enjoyment of playing* Two items assessed participant enjoyment of playing prior to the break. Items included: "I liked playing Black Jack", and "playing Black Jack was fun". Participants indicated the degree to which they agreed with the statements on a 100-point continuous scale anchored with "Disagree" (0) and "Agree" (100). The scales were summated to form a single measure as they were highly correlated, $r = 0.84$, $P = 0.0001$.
3. *Subjective negative arousal* Negative feelings toward the interruption of play were measured with four items. The items were: 'the break has been irritating', 'the break has been frustrating', 'I haven't minded the break', and 'I have felt agitated during the break'. The items were measured with a 100-point continuous scale anchored with "Disagree" (0) and "Agree" (100). The Cronbach's Alpha was 0.80 for this scale.
4. *Desire to continue playing* Whether the participant would continue playing, if there was an opportunity to do so, was measured after the second Black Jack session on a 100-point continuous scale anchored with "no way" (0) and "yes definitely" (100).

Black Jack Gambling Task

Participants were requested to play a computerised Black Jack game with each participant playing the game individually in a separate carrel (private working space). Instructions for playing the Black Jack game were displayed on a laminated sheet in each participant's carrel. The instructions included: the objective of the game, how the play would progress on the screen, value of each card, how to win or lose, restrictions on the dealer, splitting, doubling down, insurance, and the costs and payoff structure. The study administrator was available to answer any questions posed by participants.

Procedure

The institution's human research ethics committee provided approval for the study to be undertaken. The experimental procedures were completed in a laboratory setting within the university.

Participants were randomly allocated to one of three conditions: no break, three or 8 min between trial break. Participants initially completed a demographic questionnaire for age and gender, the *PCGP* scale and the Likert scale assessing familiarity with Black Jack. Participants were then provided instructions for playing Black Jack and informed that the two participants with the highest scores would be awarded a cash prize of \$40. The incentive was included to provide external validity to the game environment (Andrade et al. 2013). Participants commenced playing Black Jack. After 15 min of play the game was interrupted. During the break, material on Leonardo da Vinci adapted from Wikipedia (http://en.wikipedia.org/wiki/Leonardo_da_Vinci) was displayed on the screen for 3 min in the short, and 8 min in the long, break condition. This material had been pre-tested on 21 participants from the same subject pool to ensure that the content was at least somewhat interesting; average score = 64.32, $SD = 16.89$ on a 100-point continuous scale anchored with “not at all interesting” (0) and “very interesting” (100).

Players were then asked to complete the dissociation scale, and the enjoyment of playing scale.

In the no break condition participants completed the craving and subjective negative arousal scales before immediately resuming the Black Jack session. In the short and long break conditions participants read the da Vinci material for 3 or 8 min prior to completing the craving and subjective negative arousal scales. All participants then resumed playing for an additional 15 min. After completing the game the participants completed the scale indicating their willingness to continue to play, were thanked and debriefed.

Results

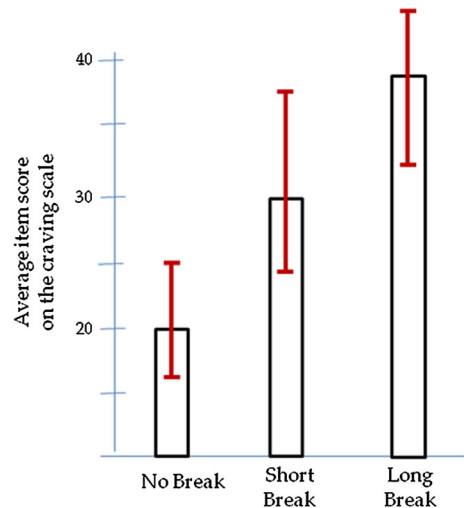
Preliminary Analyses

There was no relationship between the break condition and the Black Jack score in the first session, $t = 1.41$, $\beta = -0.12$, $P = 0.16$, gender, $X^2(2) = 2.56$, $P = 0.27$, *PCGP*, $t = -0.24$, $\beta = -0.02$, $P = 0.81$, liking of the game, $t = 1.49$, $\beta = 0.13$, $P = 0.14$, or familiarity with Black Jack, $t = -0.30$, $\beta = -0.03$, $P = 0.76$.

Effect of a Break-in-Play on Craving to Continue Play

A regression model was used to test the impact of the break condition on the craving scale with gender and Black Jack score before the break as covariates. Neither gender, $t = 0.80$, $P = 0.43$, nor Black Jack score, $t = -1.36$, $P = 0.17$, were significant. Results supported the first two hypotheses. As predicted, the craving scale was explained by the presence of a break-in-play, $t = 4.36$, $\beta = 0.35$, $P = 0.0001$ (H1 support). The scale scores were highest in the long break condition, $M = 38.80$. The reported craving in the long break condition was significantly higher than the reported craving in the short break condition, $M = 30.10$, $t = 2.01$, $P = 0.05$ and the no break condition, $M = 2.41$, $t = 4.35$, $P = 0.0001$ (hypothesis 2 supported). There was also a significant difference between the reported craving in the short and no break conditions, with participants in the short break condition reporting a higher degree of craving than participants in the no break condition, $t = 2.27$, $P = 0.03$ (see Fig. 1).

It was decided to test whether the effects of a break would persist after the second round of play had resumed. Accordingly, a regression model was run on the desire to continue

Fig. 1 Craving scale by break condition

playing after the second Black Jack session, with break condition as the independent variable, and gender and final Black Jack score as covariates. Neither gender, $t = 1.86$, $P = 0.06$, nor Black Jack score, $t = -1.03$, $P = 0.30$, explained the degree of craving. Although not significant, the desire to continue playing was greater for males most likely reflecting higher levels of risk-taking. The desire to continue playing reported at the end of the session was not explained by the break condition, $t = 0.84$, $\beta = 0.07$, $P = 0.40$. When the craving scale score was added to the regression, the reported desire to continue was still not significant, $t = -1.54$, $\beta = -0.12$, $P = 0.13$, but the craving scale reported at the end of the break was significant, $t = 7.20$, $\beta = 0.58$, $P = 0.0001$. Therefore, it appears that the craving caused by the break in play continues to affect the player even after the break has ended and play has resumed.

It has been suggested that feelings of dissociation when gambling should be reduced with pop-up messages breaking play (Monaghan 2008). Minimising dissociative feelings should decrease the likelihood of extended play. Therefore, interrupting play with a break should result in a reduction in the desire to recommence play. We tested this hypothesis and found no relationship between the break condition and feelings of dissociation $t = 0.28$, $\beta = 0.02$, $P = 0.78$, with the four- or five-item scale, $t = 0.34$, $\beta = 0.03$, $P = 0.73$. Given that breaks should reduce dissociation, and reduce cravings to continue playing, lower reported craving in the break conditions were predicted. Therefore, there is no support obtained for the proposition that breaking play will reduce feelings of dissociation. In contrast, we found that feelings of dissociation were positively correlated with cravings to continue play, independent of breaks. When the dissociation score was added to the regression model, the impact of the break condition on the craving scale with gender and Black Jack score before the break as covariates, revealed a significant positive effect for feelings of dissociation, $t = 2.84$, $\beta = 0.22$, $P = 0.005$. However, the effect of breaks remained virtually unchanged, $t = 4.40$, $\beta = 0.34$, $P = 0.0001$ (hypothesis 3 supported). The pattern was the same regardless of whether the four or five item dissociation scale was used.

To test hypothesis 4, a mediation analysis following the procedure described by Baron and Kenny (1986) was used to evaluate whether subjective negative arousal mediates the

relationship between breaks in play and craving to recommence play. The direct effect (path c in Fig. 2) has been shown in the test of hypothesis 1. The mediator should also account for variation in the dependent variable (path b in Fig. 2). A regression model testing the explanatory power of subjective negative arousal on the craving scale revealed a significant effect, $t = 9.77$, $\beta = 0.64$, $P = 0.0001$, without covariates as well as with gender and the pre-break Black Jack score, $t = 9.72$, $\beta = 0.64$, $P = 0.0001$. The independent variable, break condition, should explain subject negative arousal (path a in Fig. 2), $t = 4.56$, $\beta = 0.36$, $P = 0.0001$. Finally, when subjective negative arousal was added to the regression model testing the direct effect of the break condition on the craving scale with gender and Black Jack score before the break as covariates, the effect of breaks was reduced (path c), $t = 1.93$, $\beta = 0.14$, $P = 0.06$, while the negative subjective arousal factor was significant, $t = 8.45$, $\beta = 0.59$, $P = 0.0001$.

In addition to the Baron and Kenny's (1986) analysis, we also ran a bootstrapping analysis following Preacher and Hayes (2008), with 10,000 resamples. The total effect of the break condition on the craving scale (total effect = 9.20, $P = 0.0001$) became non-significant when subjective negative arousal was included in the model (direct effect of break condition = 3.55, $P = 0.06$). Furthermore, a bias-corrected bootstrap confirmed that the total indirect effect of the break condition on the craving scale through subjective negative arousal was significant (indirect effect = 5.65, SE = 1.33; the 95 % CI did not include zero, therefore, the null hypothesis of no indirect effect is rejected at $\alpha = 0.05$: 3.25, 8.44).

Discussion

Results of the present study are of potential relevance given that the findings challenge the concept that break in play in isolation represent effective responsible gambling initiatives. Supporting hypotheses one and two, participants interrupted by an imposed break in play during a simulated Black Jack session reported increased levels of craving to continue, with higher scores being associated with longer, compared to shorter, break periods. These findings are in concordant with predictions made by both McConaghy's (1980) and

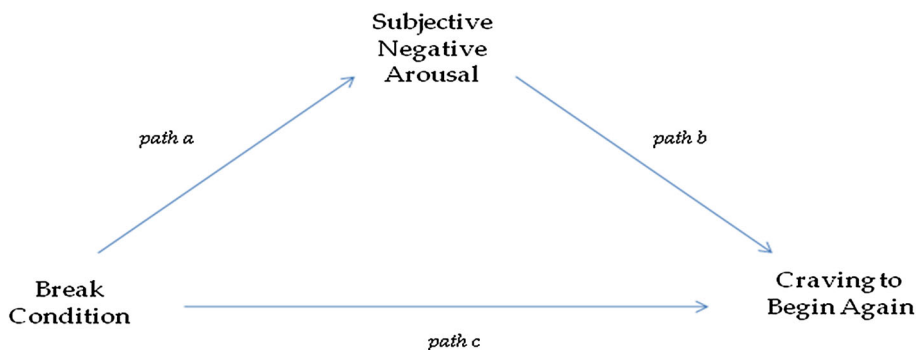


Fig. 2 Mediation analysis. *Path c* is reduced from $t = 4.36$ to $t = 1.93$ when subjective negative arousal is added to the regression testing the effect on craving to begin playing again

Tiffany's (1990) conceptual models of behavioural completion. Based on these models, it can be hypothesised that once an individual is stimulated to gamble, either as a result of exposure to external cues or in response to negative affective states, any imposed barrier in actioning and completing the motivated behaviour will result in an exacerbation of the urge or craving to gamble. This is consistent with the notion of preoccupation where individuals are constantly thinking about, and planning, where to obtain funds with which to satisfy their urges and cravings (American Psychiatric Association 2013), and withdrawal where the inability to gamble results in physical symptoms (Blaszczynski et al. 2008; Rosenthal and Lesieur 1993; Wray and Dickerson 1981).

The findings of the present study are not necessarily inconsistent with those studies demonstrating a positive response to breaks in play (Jardin and Wulfert 2012; Ladouceur and Sevigny 2003; Monaghan 2008; Monaghan and Blaszczynski 2009, 2010a, 2010b; Schellinck and Schrans 2002). In these studies, breaks in play are principally accompanied by responsible gambling messages directing players to appraise gambling behaviours and expenditure (money and time). For example, Schellinck and Schrans (2002) compared the effects of pop-up messages that froze play for 15 s after 60, 90 or 120 min of continuous play. Small reduction in session length and expenditure were found at the 60 min break but overall, approximately half the sample reportedly did not read the message and continued play, with 25 % indicating the pop-up messages had a positive effect. Similarly, fewer games were played among Ladouceur and Sevigny's (2003) procedure where messages appeared for 7 s every fifteen trials. A 15 s pop-up message accompanied by a forced break in play resulted in increased accuracy of recall of the message content (Monaghan 2008; Monaghan and Blaszczynski 2009, 2010a, 2010b; Jardin and Wulfert 2012).

Although evidence indicates that interruptions to play with accompanying warning messages are effective, the present findings can be interpreted to suggest that positive outcomes may not necessarily be caused by a breaks in play per se, but rather the content of the messages. Messages, particularly those promoting self-appraisal, are effective in directing players' attention to their behaviour and initiating cognitive processes that affect the motivation to persist in gambling. Players effectively are confronted with the need to re-evaluate actions and engage in decision-making at a higher level of executive functioning.

Accordingly, the findings of the present study have implications for policies governing breaks in play. It suggests that the imposing breaks in play in the absence of accompanying messages, might in fact produce counter-intuitive and counter-productive increases in cravings to continue rather than interrupting dissociative states and dissipating the urge to continue gambling. Individuals unmotivated to cease or reduce their involvement in gambling will perceive the imposed break in play as an irritation frustrating their drive to chase losses or the cognitive erroneous expectation of an impending win (gambler's fallacy). In this context, consistent with conceptual models (McConaghy 1980; Tiffany 1990) and demonstrated in the present study, unintended contrary outcomes are achieved.

It is important to highlight that these findings are preliminary and warrant further investigation. The research design included a simulated laboratory gambling task with university participants. Given differences in responses between university and real life gamblers (Gainsbury et al. 2014), remains to be determined if the findings can be validly extrapolated to the wider population of gamblers in in vivo settings. Further, it was found that the experience of dissociation during play was related to increased cravings to play. Dissociation has been consistently demonstrated to play a central role in narrowing foci of attention (Anderson and Brown 1984; Diskin and Hodgins 1999) and in the etiology of gambling disorders (Jacobs 1986). In this study, dissociation was not manipulated but

indirect testing suggested that dissociation effects do not appear to disappear after a short break. Accordingly, it is reasonable to advance an alternative explanation accounting for the current study's increased cravings, that is, the break exacerbating rather than reducing the desire to escape from boredom. Anecdotal evidence elicited from participants indicated that the game was reported not to be particularly enjoyable or likeable by those craving to play again. Thus, intolerance of boredom (Blaszczynski et al. 1990), as opposed to excitement/arousal may be seen to fuel cravings to re-engage behaviour. In addition, this, in conjunction with the experimenter imposing rules restricting continued play, may induce a sense of reactance, that is, resistance to regulations interpreted to compromise behavioural freedoms. Participants bored with the task or during the break could potentially experience cravings as a response to instructions limiting their choices, that is, resume their play and reduce boredom.

The concept of reactance has not been fully explored in the domain of responsible gambling. External rules or regulations, such as a break in play in isolation from warning messages, may induce reactance in gamblers. Rather than disrupt states of dissociation or promote responsible gambling patterns of behaviour, reactance resulting from externally imposed restrictions may contribute to an individual experiencing frustration and/or antagonism. The outcome could conceivably promote opposite outcomes to that intended by responsible gambling initiatives. Although speculative at this point in time, the concept warrants further investigation.

In summary, the overall conceptual framework guiding responsible gambling strategies that are designed to reduce dissociation and minimise continued play remain highly relevant and should still be considered as representing viable harm minimisation interventions. The findings of the present study, however, challenge the notion that imposed breaks in play in the absence of additional components, such as warning and self-appraisal messages, may not only be an ineffective approach to reduce feelings of dissociation, but may be counterproductive by enhancing urges and cravings to continue.

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