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Sympathetic magic and perceptions of randomness: 
The hot hand versus the gambler’s fallacy

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The gambler’s fallacy and hot hand were studied in predictions about outcomes of coin tosses. A critical trial occurred when participants made predictions after a “run” of four heads or tails. Participants’ attention was manipulated to focus on the person flipping the coin, the coin, or neither (control group) as a possible cause of the run. We also manipulated whether or not there was a change in who tossed the coin. In the control condition the standard reversal was observed (gambler’s fallacy); however, when participants focused on the person, and it was that same person who conducted the run and critical coin toss, more people chose in the direction of continuation (hot hand). Directing attention to the person tossing the run seemed to prompt participants to behave as if that individual was “hot” in terms of getting a specific outcome (e.g., heads), as if by sympathetic magic, thus eliminating the gambler’s fallacy.

Keywords: Judgements; Gambler’s fallacy; Hot hand.

When people make predictions about sequences of events, two different tendencies have been observed. One is the gambler’s fallacy, the expectation of a reversal following a run of one outcome. The gambler’s fallacy would lead individuals to expect “heads” after a run of tails in coin flips, as if the outcomes were balancing out. The other tendency is the hot hand. The hot hand occurs when individuals expect a run of events to continue. For example, the hot hand would lead an observer to expect a basketball player
who has made five successive shots to be successful on the next shot, ostensibly because the player was having a “hot streak”. Although the gambler’s fallacy and hot hand predict opposite outcomes (reversals as opposed to continuations), existing explanations for these phenomena suggest that the two tendencies should never compete because they occur in different situations: the gambler’s fallacy occurs with random outcomes such as coin flips and the hot hand occurs with outcomes that involve skill and active agents such as basketball players (e.g., Ayton & Fischer, 2004; Burns & Corpus, 2004). In this paper we argue that there are some situations where the hot hand can moderate and even partially eliminate the gambler’s fallacy—even for such a paradigmatic random event as a coin toss. In this study, by manipulating the focus of attention, we encourage participants to see agency in random events, seeing a spurious connection between a person and an object (cf., sympathetic magic, Rozin, Millman, & Nemeroff, 1986). To develop this argument we will first discuss the gambler’s fallacy and hot hand in isolation, and then consider situations in which the two effects might counteract one another when participants predict the outcomes of random events.

The gambler’s fallacy has been studied for many years. Early experiments investigated the gambler’s fallacy as it affected two-choice probability learning (see e.g., Anderson, 1960; Anderson & Whalen, 1960; Jarvik, 1951; Nicks, 1959). However, it has also been documented in actual gambling situations, for example at the racetrack (Metzger, 1985; Terrell, 1998) or at the roulette or blackjack table at the casino (respectively, Croson & Sundali, 2005; Keren & Wagenaar, 1985). There is even evidence of the gambler’s fallacy when people choose lottery numbers (Clotfelter & Cook, 1993). The gambler’s fallacy is a robust phenomenon that seems to emerge whenever individuals make predictions about random events.

One explanation for the gambler’s fallacy is that when people make judgements about the probability of uncertain events, they appeal to the law of small numbers (Tversky & Kahneman, 1971). The law of small numbers is the erroneous belief that the balance of random outcomes that occurs in very large samples will also occur in small samples. For example, in a sample of 10 coin tosses a person might erroneously believe that the probability of tossing heads increases after a sequence of 7 tails, because in the population of coin tosses, 50% of the time the outcome is heads. However, grouping is also a critical part of the gambler’s fallacy. Roney and Trick (2003) were interested in understanding why people treat independent events (such as coin tosses) as if they were somehow connected (i.e., as if the outcome for the current trial is somehow related to prior outcomes). They found that the gambler’s fallacy could be eliminated if the critical trial after the run was arbitrarily labelled as the first trial in a new block; in contrast, the gambler’s fallacy emerged as usual if that same trial was labelled as the last trial of the
previous block (the block where the run occurred). Thus, before outcomes can be balanced (using the law of small numbers heuristic, for example), an important initial phase is the decision about which outcomes are to be balanced (see also Gold, 1998).

Research on the hot hand began more recently. Gilovich, Vallone, and Tversky (1985) studied perceptions that an athlete is “hot” (i.e., more likely to succeed if they have been recently successful) in the context of basketball shooting. Their analyses suggest that this perception is also a fallacy, as there is no evidence that a “hot” athlete is more likely to succeed. Although Gilovich et al. (1985; see also Adams, 1992, Tversky & Gilovich, 1989a, 1989b) suggest that the belief in “hotness” as a temporary state is fallacious, some have suggested that the belief may actually be logical, in as much as a streak may be informative of ability or improvement (Burns, 2004; Gilden & Wilson, 1995). Johnson and Tellis (2005), argue that the hot hand effect is also evident when people make predictions about the stock market given that there is no evidence that “hot” runs actually predict stock prices. Alter and Oppenheimer (2006) concluded their review of hot hand research by arguing that there is a need to move beyond questions of whether the hot hand truly occurs in domains such as sports, to a more careful examination of how and when the phenomenon occurs. The present paper does this by examining the hot hand when predicting the outcomes of coin tosses. According to existing theories (Ayton & Fischer, 2004; Burns & Corpus, 2004) the coin toss paradigm should be dominated by the gambler’s fallacy rather than the hot hand.

There have been attempts to clarify when and why these two different phenomena occur. One idea is that the gambler’s fallacy occurs primarily in situations where people believe that outcomes are random (Ayton & Fischer, 2004; Burns & Corpus, 2004), as occurs in a coin toss or the turn of a roulette wheel. In contrast, the hot hand is thought to occur in the context of human performance, where outcomes could be affected by factors such as confidence or learning. In the hot hand the focus is very much on the human agent, whereas in the gambler’s fallacy the focus is on an object at the mercy of random processes. Summarising the two situations, Ayton and Fisher (2004) note “people seem to believe that people can get ‘hot’ . . . but that inanimate devices cannot” (p. 1370).

Interestingly, although the gambler’s fallacy emerges when people predict the outcome of random effects, the hot hand effect is apparent in people’s expectations regarding the accuracy of their own predictions about random events (Ayton & Fisher, 2004; Croson & Sundali, 2005). This surprising paradox, the fact that people see that their ability to predict an event accurately is non-random—even if the event is random—is consistent with the illusion of control (e.g., Langer & Roth, 1975). The desire to perceive ourselves as having control over our own outcomes presumably leads us to
see ourselves as capable of developing a hot streak, even when predicting random outcomes. Another example of the illusion of control can be seen in Wohl and Enzle (2002) who present results from three studies suggesting that people behave as if their odds of winning a game of chance are increased when they have contact with the apparatus generating the random outcome. For example, in one study they found that people who had the opportunity to buy their own lottery ticket had higher expectations of winning than did people who did not buy their own ticket. People thus behaved as if they believe luck is something they possess, and direct involvement in a random activity (i.e., choosing their own lottery ticket) affects the outcome. This may reflect belief in a form of “sympathetic magic” (Rozin et al., 1986), whereby they feel that they can control the outcomes of random events in ways that defy the laws of physics.

Although we do not question the importance of the illusion of control when making self-related judgements, we believe that there may be a more general principle at work: one that also applies whenever attention is focused on the agent of an action. Consequently, we propose that it may be possible to counter the gambler’s fallacy by having people focus on the person tossing the coin. In the present study we attempted to engage the hot hand heuristic by focusing participants on the person doing the coin toss as a possible explanation for the run (i.e., they are “hot” at producing a certain outcome when tossing a coin). This would be generally consistent with the “sympathetic magic” aspects of Wohl and Enzle’s (2002) research, because the idea that a particular person can be “hot” at tossing a specific randomly determined outcome seems physically impossible. It would, however, extend their ideas beyond the case of one’s own personal control, to include observations of others.

To test this idea we used a paradigm where a run of a particular outcome (e.g., heads) was indicated via false feedback, and then participants had to make a judgement about the outcome of a critical coin toss that occurred immediately after the run. Two variables were manipulated: focus and person. The focus manipulation was used to direct attention to different aspects of the coin-tossing situation. There were three conditions: a Person Focus condition, in which the person who tossed the coin mentioned that she was tossing a lot of heads (tails); a Coin Focus condition, in which the person who tossed the coin mentioned that the coin was coming up with a lot of heads (tails); and a Control condition in which nothing was said.

In order to assess the degree to which a particular outcome was associated with a specific person it was necessary to manipulate the person who carried out the coin toss. The second independent variable was the person condition, and it related to whether the critical coin toss was carried out by the same individual who had tossed the coin during the run, or a different person. Thus, for half of the participants the same experimenter
performed all coin tosses (Same Person condition). For the other participants half of the tosses were performed by one experimenter and the other half (beginning with the critical trial after the run) were performed by another experimenter (Different Person condition).

The predictions can be derived by considering the two variables in combination. The main prediction involved the Person Focus condition, where attention was drawn to the possibility that the person tossing the coin was “hot” in so far as they consistently got the same outcome (e.g., heads). If participants believed the “hot” explanation for the run then they would expect that person to continue getting the same outcome (heads) on successive trials after the run. This tendency would conflict with the gambler’s fallacy, and consequently in this situation the gambler’s fallacy should be reduced or moderated—but only if the critical trial was performed by the same person who had the run (the Same Person condition). This is only expected in the same person condition because that is the only time the person who is “hot” will conduct the critical coin toss. In the other conditions the gambler’s fallacy should occur because the gambler’s fallacy is expected to be the dominant tendency when predicting random outcomes.

The Coin Focus condition was added as a control. Drawing attention to the run by a verbal remark, as in the Person Focus condition, might encourage people to prematurely jump to the conclusion that the coin was biased (a tendency called the Type II gambler’s fallacy by Keren & Lewis, 1994). In both the Person and Coin Focus conditions, the researcher mentioned the run of similar outcomes. If participants jumped to the conclusion that the coin was weighted, then the gambler’s fallacy should have been eliminated in both the Person and Coin Focus conditions. Moreover, it should have been eliminated regardless of who tossed the coin (the Person condition). When a coin is biased, it does not matter who tosses it.

To summarise, our primary predictions were as follows: (1) The Control group should show the gambler’s fallacy (a reversal of the run) regardless of who tosses the coin. (2) The belief in the hot hand should moderate or reverse the gambler’s fallacy in the Person Focus condition—but only when the critical trial was administered by the same person who threw the run (Same Person condition).

**METHOD**

**Participants**

A total of 124 undergraduates from the University of Guelph participated in this study in partial fulfilment of a course requirement. A post-experiment verbal check for suspicion found that four participants did not believe that the experimenters were announcing true coin toss outcomes, and these
people were dropped from the sample. This left a sample of 120 participants for inclusion in analyses.

*Design.* There were two main between-participants factors: Focus (Person Focus, Coin Focus, Control), and Person (Same Person, Different Person). Participants were randomly assigned to conditions. We also counterbalanced whether the run was of heads or tails: half the participants had a run of heads and half had a run of tails. This variable had no significant effect and it will be given no further discussion.

Two types of dependent measure were used to assess the impact of the manipulations on the critical trial. The critical trial was the one that occurred after the run (sequence of heads or tails), and immediately after the Focus and Person manipulations. First, a simple categorical measure was used to indicate the direction of the participant’s pick for the critical trial (in the direction of a reversal, reflecting the gambler’s fallacy, or of continuation). In addition, for each trial participants were asked to place a hypothetical bet on the outcome of that specific coin toss, and rate their confidence in their pick. Continuous measures were constructed by multiplying the amount bet and the confidence rating by the direction of their pick, coded as \(+1\) for the gambler’s fallacy (reversal) and \(-1\) for a continuation. The resulting value would thus present a continuous value where the highest value (\(+\$1.00\) for the bet, and \(+7\) for the confidence rating) would represent the strongest expectation of a reversal (consistent with the gambler’s fallacy) and the lowest score (\(-\$1.00\) and \(-7\)) would represent strongest expectation of continuation (consistent with the hot hand). The latter continuous measures were included to provide a more sensitive test of hypotheses than the dichotomous variable. Both types of measure allowed for tests of deviation from chance (represented as a similar number of picks in the direction of reversal or continuation on the categorical measure, and as a significant deviation from zero on the continuous measure). It was therefore possible to examine the conditions in which the gambler’s fallacy occurred.

*Materials and procedure*  
Participants were tested individually in a small room by two female experimenters. The experimenters were blind to the purpose and hypotheses of the study. In order to further ensure that the experimenters were unaware of the manipulation and hypotheses, they were not even allowed to see the debriefing forms. Debriefing forms were kept in sealed envelopes. The study was described as an investigation of betting behaviour. Participants were told that they would be making hypothetical bets on the outcome of a series of coin tosses. Although the bets were hypothetical
(up to $1.00 per bet), participants were asked to treat the bets as if they were actually betting with their own money.

A two-page booklet was provided at the beginning of each session. The first page asked questions about the amount of previous gambling experience. The second page was designed to record participants’ responses to the betting trials. For each trial there was a place for participants to indicate their choice for that trial (heads or tails). Next were spaces for them to indicate their bet for that trial (up to $1.00) and their confidence in their bet rated on a 7-point scale ranging from not at all confident (1) to extremely confident (7). Finally, there was a space for participants to record the actual outcome for the trial (heads or tails). Participants were asked to record the actual outcomes, ostensibly to enable them to tally up their overall winnings at the end of the study. The real reason was to ensure that they attended to the run when it occurred.

The room was arranged such that the participant did not actually see the coin after each toss. In this way it was possible to present all of the participants with the same sequence of trials: an alternation and then a run of four similar outcomes. Participants were randomly assigned to experience one of two sequences of coin tosses for the first seven trials: HTHTTTT or THTHHHH. The eighth trial was the critical one, following immediately after the run of four heads or tails. Both the Focus and Person manipulations occurred immediately prior to this critical trial.

The focus manipulation directed attention to possible agency for the run of outcomes. This manipulation involved a casual comment by the experimenter who had obtained the run. In the Person Focus condition the experimenter said, “Wow, I am really throwing a lot of heads (tails).” In the Coin Focus condition the experimenter said, “Wow, this coin is really coming up with a lot of heads (tails).” The experimenter said nothing in the Control condition.

At the outset of the experiment participants were told that the study was a joint project and the two experimenters would be sharing duties. There were two tasks to be performed: tossing the coin and recording the outcomes of the coin toss in a table on the blackboard. The way that the experimenters shared their duties was critical to the second manipulation. Specifically, in the Same Person condition one experimenter tossed the coin and the other recorded the outcomes. In this way the person who obtained the run of similar outcomes was also the person who made the comment and performed the critical coin toss. In the Different Person condition the experimenters took turns tossing the coin and recording the results. The experimenter who had been recording the outcomes took over tossing the coin just before the critical trial. This meant that the person who had tossed the run did not do the coin toss for the critical trial in this condition. The experimenters were trained to make the change seem casual, with the
recording experimenter asking the experimenter tossing the coin if she wanted to switch. Although participants were not specifically asked about this, there was no evidence that they found this suspicious during the debriefing.

RESULTS AND DISCUSSION

The independent variables in this study were Focus (Person Focus, Coin Focus, and Control) and Person (Same Person, Different Person). There were three dependent variables. The first was a categorical measure of direction of the pick for the critical eighth trial (gambler’s fallacy, hot hand). There were also two continuous measures. One was calculated by multiplying the direction of pick with the confidence rating and the other was calculated by multiplying the direction of pick with the size of the bet. The overall pattern of results was the same using either of the continuous measures, but results were stronger for the confidence measure; in the interest of brevity, only the confidence measure results are reported here.

Overall pattern of results

Table 1 summarises the results using the categorical measure of the direction of participants’ choices on the critical trial. The numbers of participants choosing reversals (consistent with the gamblers fallacy) or continuations (consistent with the hot hand) are listed. Significant deviations from chance in direction of the pick were tested using a sign-test for all cells in the experimental design. First, it can be seen that there were significant reversals, as would be expected with the gambler’s fallacy in the control group, regardless of whether the person tossing the coin changed or not.

<table>
<thead>
<tr>
<th>Person condition</th>
<th>Same person</th>
<th>Different person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus condition</td>
<td>Reverse</td>
<td>Continue</td>
</tr>
<tr>
<td>Control</td>
<td>16 &gt;</td>
<td>5</td>
</tr>
<tr>
<td>Person</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Coin</td>
<td>9</td>
<td>6</td>
</tr>
</tbody>
</table>

Number of participants choosing reversals or continuation of runs as a function of outcome focus condition and person condition.

> Indicates cell count differs significantly from 50% (p < .05).

A reversal indicates a decision consistent with the gambler’s fallacy.
remained the same. However, in the Person and Coin Focus conditions there was only a significant gambler’s fallacy if the person who tossed the coin changed between the run and critical trial. The gambler’s fallacy (which would predict reversals) was not evident when attention was focused on the person or coin and that same person carried out the critical trial as the earlier trials.

Table 2 presents the results using the index calculated by multiplying rated confidence by direction of the pick (with a high score indicating great confidence in a gambler’s fallacy pick). One-sample \( t \)-tests, comparing the average gambler’s fallacy index against zero, again revealed a significant gambler’s fallacy in the control condition regardless of who tossed the coin. In contrast, when attention was focused on the person or coin, the gambler’s fallacy only emerged when the critical trial was performed by someone other than the one who had obtained the original run of outcomes.

**Main prediction: Person focus**

Of greatest importance for testing the main hypotheses, within the Same Person condition more people chose in the direction of the “hot hand” (i.e., for continuation of the run) in the Person Focus condition (56%) than in the Control condition (24%), \( \chi^2(1, 39) = 4.13, p < .05 \). Also, within the Person Focus condition significantly more people chose in the hot hand direction in the Same Person condition (56%) than in the Different Person condition (17%), \( \chi^2(1, 43) = 6.54, p < .05 \).

Using the continuous confidence measure as a dependent variable, a 2 (Focus: Person Focus, Control) \( \times \) 2 (Person: Same Person, Different Person)

<table>
<thead>
<tr>
<th>Focus condition</th>
<th>Person condition</th>
<th>Same person</th>
<th>Different person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td></td>
<td>2.76**</td>
<td>1.86**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.35)</td>
<td>(0.17)</td>
</tr>
<tr>
<td>Person</td>
<td></td>
<td>0.00</td>
<td>2.85**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>–</td>
<td>(0.41)</td>
</tr>
<tr>
<td>Coin</td>
<td></td>
<td>1.00</td>
<td>2.33**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>–</td>
<td>(0.25)</td>
</tr>
</tbody>
</table>

Mean gambler’s fallacy confidence index as a function of outcome focus condition and person condition.

**Indicates cell mean significantly different from 0 (\( p < .05 \)).

Higher positive scores indicate greater confidence for decisions in the direction of the gambler’s fallacy.
analysis of variance was conducted. This analysis revealed a significant interaction, $F(1, 80) = 4.60$, $p < .05$, indicating that the focus manipulation had a different effect depending on whether there or not there was a change in the person who tossed the coin. Consistent with the nonparametric results, this interaction reflected a significant difference between the Person Focus and Control groups when the same person continued with the coin tosses, $t(37) = 2.07$, $p < .05$, but no significant difference when a different person continued with the coin toss, $t(43) = 0.86$, ns.

These results are all consistent with our primary hypothesis, that the gambler’s fallacy could be countered, in part at least, by an opposing “hot hand” tendency if people’s attention is drawn to the “hotness” of the person tossing the coin. Although this countervailing tendency is not quite strong enough to result in a significant hot hand effect within the Person Focus, Same Person cell, there are significantly more people choosing in that direction in that cell than in the others. Given the strong tendency towards the gambler’s fallacy in random situations, this significant countering of that effect is striking.

Exploratory analyses: Coin focus

Examining the results in Table 1 and Table 2 it is apparent that people did not see the coin as biased in the Coin Focus condition. If they had, the gambler’s fallacy should have been eradicated in both the Same and Different Person conditions. It was not. Instead, the pattern was similar to that in the Person Focus condition, although the results were not quite as strong (or statistically significant). Specifically, the gambler’s fallacy was reduced somewhat in the Same Person condition. At this point it is premature to make any strong conclusion given that the results are not significant. Nonetheless, if accurate, this pattern might be explained by something akin to the fundamental attribution error (Ross, 1977), a bias towards seeing people’s attributes as the explanation for behavioural outcomes. In the Coin Focus condition the coin was highlighted as a possible cause for the run, but the participants might have automatically thought about the person who tossed the coin. Consequently, when that individual carried on flipping the coin the gambler’s fallacy was reduced. It might be interesting to test whether directing attention to a “hot” device does indeed affect attributions to a person who is controlling that device.

GENERAL DISCUSSION

In the present study we found that people generally made choices that reflect belief in the gambler’s fallacy when predicting outcomes of coin tosses.
Given that the coin toss is a paradigmatic case of a random activity, it is not too surprising that the gambler’s fallacy was never completely reversed (turned into a hot hand pattern). However, as predicted, a manipulation focusing attention on the person as the agent for the outcome moderated this tendency. It is important to note that this moderation only occurred when the same person continued tossing the coin. If a different person took over the coin toss, the gambler’s fallacy emerged. In other words, people behaved as if the person focus led them to believe the agency explaining the run resided in the person who conducted those coin tosses. This might be expected if participants were susceptible to the belief that that specific person was somehow magically influencing the coin so the outcome came out a certain way (e.g., more heads, or more tails).

Given that breaking up a group of events can eliminate the gambler’s fallacy in some situations (Gold, 1998; Roney & Trick, 2003), it is important to consider how the manipulations in this study might affect grouping. An alternative explanation for our findings could be that the focusing comment might break the set, thus reducing or eliminating the gambler’s fallacy. If that were true, however, a focusing comment and a change in the person who did the coin toss should also weaken or eliminate the gambler’s fallacy. In fact, if any change in the situation broke up the grouping of events, the gambler’s fallacy should have been eliminated in all but the control condition where there was no change in the person who did the coin toss and no focusing comments. As it turns out, the gambler’s fallacy emerged whenever a different person took over the coin toss, regardless of what was said. It seems as if the grouping of trials was unaffected by the person who was carrying out the coin toss. It only disappeared when there was a focusing comment and no change in the person tossing the coin, as we hypothesised. Why didn’t a change in the person tossing the coin break up the set? At present the factors that govern the grouping of random events are poorly understood, and would seem a fruitful avenue for future research. Arbitrarily labelling a critical trial as belonging to a new block of trials successfully broke set (Roney & Trick, 2003), but altering the coin toss situation itself, at least in the aspects manipulated here, did not.

There has been some debate about whether the gambler’s fallacy, and particularly the hot hand (e.g., see Burns, 2004), are truly irrational. We feel that the use of the coin toss task is helpful in this regard because it is illogical to expect that a person can have skill at producing a certain outcome in a coin toss. It seems as if participants may be indulging in a form of magical thinking, behaving as if some force acts to influence a current outcome making a person “hot” at throwing heads (or tails). Although it may well be the case that application of these heuristics is rational in many situations, their application to a coin toss is not.
The present findings have potentially important implications for our understanding of how people perceive random events. While results from previous research highlight the desire to see oneself as being able to predict or control random events (respectively, Ayton & Fisher, 2004; Wohl & Enzle, 2002), the present findings suggest that we are also willing to attribute control to other people. This implicates some broader motivation, possibly involving something of an unwillingness to truly see randomness and “fate” as controlling outcomes we see in the world around us. We generally agree with the argument that the gambler’s fallacy occurs for random events and the hot hand occurs for events that are perceived to reflect skill. However, we would add a qualification. Randomness is partly in the eye of the beholder, and in some situations people can come to believe that the person who “administers” the random event has some control over the outcome, as would occur if they believed in a form of sympathetic magic. Consequently, the gambler’s fallacy begins to disappear when the participant thinks of the person tossing the coin as a potential explanation for a run. A real-world illustration of this phenomenon may be seen when someone believes that a person they know is “lucky at slot machines”, as if somehow the person is able to influence random outcomes. Further research might be directed at clarifying how and when this occurs, and possibly considering individual differences in the tendency.

This study suggests that two different tendencies (the gambler’s fallacy and hot hand) may sometimes battle for dominance when people are making predictions about the same event. When this same reasoning is applied to people’s judgements about their own successes and failures, it provides an interesting way of understanding the plight of the problem gambler. Many studies have shown that people tend to focus on their own role as agent in their successes whereas they focus on the role of external factors as the cause of their failures (e.g., see Miller & Ross, 1975; Snyder, Stephan, & Rosenfield, 1976). We suggest that when problem gamblers win their success is attributed to a magical state of “hotness”, which they see themselves as possessing, and when they lose the failure is attributed to external random forces that should balance out with further gambling (the gambler’s fallacy). Unfortunately, both tendencies serve to maintain gambling behaviour. Although both may be problematic, the gambler’s fallacy seems especially dangerous, as it will encourage gambler’s to continue as their losses mount. Although attempting to eliminate such heuristics may be one way of attempting to prevent this, we suspect that this will not prove easy. A better strategy might be to alter people’s perceptions of the connectedness of events (Roney & Trick, 2003). Both the gambler’s fallacy and the hot hand require the (mis)perception that the outcome of a current independent random event is somehow related to prior outcomes. If people recognise each new event as independent they
may better be able to accurately evaluate their odds, and decide whether or not to play accordingly.

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