

# COLOUR ATMOSPHERICS AND ITS IMPACT ON PLAYER BEHAVIOUR

BY MARK GRIFFITHS

Systematically researched evidence for the effects and role of colour in gambling environments has yet to be undertaken; but there are sufficient supportive studies that provide an insight into how that would likely affect the player's mood, emotion and behaviour. That, of course, has also to be seen as a design component in the gaming floor layout that helps shape player interest and attentiveness.



Researchers and those working in the gambling industry have been interested in the factors that lead to the acquisition, development and maintenance of gambling (e.g. Griffiths, 1995; Parke & Griffiths, 2007). Aside from individual differences, the combination of the situational characteristics of the environment, and the structural characteristics of the actual game being played have been highlighted as critical ingredients in determining these behaviours in relation to gambling (Griffiths & Parke 2003; Parke & Griffiths, 2006; 2007). This idea parallels with that of store designers who manipulate various features of the environment in shops to encourage purchase behaviour in consumers (Babin, Hardesty & Suter, 2003).

Situational characteristics are typically those features of the environment that may encourage people to gamble in the first place, and in some cases to keep on gambling (Griffiths & Parke, 2003). Examples of such characteristics could include accessibility (e.g., the number of outlets or opportunities to gamble, membership rules); sensory factors (e.g., atmospherics, light, colour and sound effects); the use of advertising; access to other things (e.g., cash machines, alcohol, food); physical comfort (e.g., seating, temperature); and social facilitation (the presence or absence of other people in the vicinity). These are often acquisition factors and are often important in the initial decision for an individual to gamble (Griffiths, 1999).

Structural characteristics are features of the game itself that can contribute to the development and maintenance of gambling behaviour (Griffiths, 1993). These can be reinforcing to the player as they offer constant rewards. For instance, the 'aura' of a slot machine may offer excitement,

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arousal and tension in terms of its music, lights and colour. It has also been argued that slot machines contain more gambling inducing structural characteristics than all other forms of gambling (Griffiths, 1995) and may be important factors in explaining why they tend to be more problematic than many other types of gambling. One characteristic that can impact on both a situational and structural level in gambling is colour. For instance, this can be manipulated and/or adapted in terms of the design of a slot machine or scratch card, an Internet gambling website, or the décor and ambience of a gambling environment.

In commercial environments, research has shown that desire to stay in a commercial (i.e., shopping) environment is positively associated with layout and décor (Wakefield & Baker, 1998). Other features of the commercial environment have been studied including textures (Miller, 1993), design and layout (McCann, 2000; Robson, 1999), lighting (Gorman, 1997; Block, 1998), aromas (Miller, 1991; 1993), music (Oakes, 2000; Matilla & Wirtz, 2001), and employee uniforms (Hall, 1998; Barhite, 2000). However, much less is known about gaming environments.

A number of studies have been carried out examining

the subject of casino atmospherics from the perspective of slot machine players (e.g., Mayer, Johnson, Hu & Chen, 1998). Leisure services (like gaming) usually want the player to spend longer amounts of time in the venue (Turley & Fugate, 1992) because the longer that they are in there, the more money they will spend (Johnson, Mayer & Champamer, 2004).

According to Mayer and Johnson (2003), casino operators have a number of aims. These are to get customers into the casino, maximise the overall gaming experience and keep players in the venue, and to get repeat patronage. The first aim can be achieved through such things as advertising, loyalty schemes and 'word of mouth' referrals. The second and third aims depend on many factors including the type of accommodation, the types of game offered, the opportunities to win, restaurant quality, customer-staff interactions, and casino 'atmosphere'. From the player's perspective, Mayer and Johnson argue that 'atmosphere' (including colour) may be the most difficult to understand.

Friedman (2000) has arguably conducted the most research on casino environments and his findings show that



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after location, interior design is the most important variable in increasing or decreasing the effect of the location. Friedman argues that casino design influences the decision of whether or not customers who are staying at competing properties will choose to play at another casino. His view on casinos is that design encompasses many features including the interior architectural dimensions, décor, game arrangement, traffic-flow pattern, focal points, lighting and signage. From a financial perspective, Friedman found that short line of sight, a maze-type layout, and tightly packed congested gaming areas created higher player counts than those casinos with more spacious layouts. Mayer and Johnson's (2003) findings suggest that casino atmosphere may be a much narrower construct than previous conceptualisations with floor layout and theme appearing to be the most important to players. Other studies (e.g., Wakefield & Blodgett, 1994; 1996; 1999) have also reported that casino floor layout is an important factor in how players perceive the casino atmosphere.

A study by Mayer, Johnson, Hu and Chen (1998) reported that a casino's atmosphere (which was a composite of casino theme, décor, lighting, noise levels, and smoke

effects) had the most influence on player satisfaction. A follow up study by Johnson, Mayer and Champaner (2004) examined casino atmospherics from a player perspective. The man-made physical surroundings of service settings have been referred to as 'servicescapes' (Bitner, 1992). Servicescapes comprise three important aspects, (i) ambient conditions (e.g., décor, theme, lighting, colour, noise, temperature, architecture, etc.), (ii) spatial layout and functionality (e.g., the way that seats, entrances, exits, etc. are arranged, i.e., the 'built' environment), and (iii) signs, symbols, and artefacts (Bitner, 1992; Lucas, 2003). Satisfaction with servicescape may also influence repeat patronage (Wakefield & Bodgett, 1994; 1996; 1999) although satisfaction with servicescape appears to have a stronger effect on players' desire to stay than on repeat patronage (Wakefield & Blodgett, 1996).

Lucas (2003) found that certain aspects of casino atmosphere were significantly related to player satisfaction including interior décor, navigation (i.e., floor layout), cleanliness, and seating comfort. Johnson, Mayer and Champaner (2004) examined ten elements of casino atmosphere (theme, décor, noise level, colour, ceiling



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>> A RECENT EXPERIMENTAL INVESTIGATION REPORTED THE FIRST EVER EMPIRICAL STUDY INTO THE COMBINED EFFECTS OF BOTH MUSIC AND LIGHTING COLOUR ON GAMBLING BEHAVIOUR. WHILE PLAYING AN ONLINE VERSION OF ROULETTE, PARTICIPANTS TOOK PART IN ONE OF FOUR EXPERIMENTAL CONDITIONS...[IT] REPORTED [THAT THERE WAS] A SIGNIFICANT INTERACTION BETWEEN LIGHT AND MUSIC FOR BETTING SPEED, AND THAT THE SPEED AT WHICH PARTICIPANTS GAMBLED WAS INCREASED WHILE PLAYING UNDER RED LIGHT AND FAST TEMPO MUSIC. >>

height, lighting, temperature, floor layout, employee uniforms, and smell). Using factor analysis, five factors emerged (theme/décor, noise level, ceiling height, floor layout and employee uniform). Only three of these were significantly related to player satisfaction (theme/décor, employee uniform, and noise level in that order, i.e., theme/décor being the most important variable). Overall, Johnson et al (2004) concluded there was a direct linkage between atmospheric elements of casinos and player satisfaction - at least in slot machine players.

Research more specifically into the psychology of colour has been somewhat controversial in how it affects individual emotions (Singh, 2006). The majority of the research conducted has been into the colours red and blue. Birren (1978) said that this was because red and blue were the most preferred colours. The majority of literature in the colour psychology field has come from advertising and marketing papers. This is because they are interested in colour selection in the way that it may facilitate the sale of their products (Grossman & Wisenblit, 1999). It has been speculated that learning about consumers' emotional reactions to colour can be a useful predictor of purchase behaviour. This is because certain colours can provoke a particular positive or negative reaction (Routland, 1993). Red has consistently been found to be stronger, more exciting, and more arousing than blue (Pride & Ferrell, 2003; Wilson, 2003; Yoto, Katsurra et al, 2007; Ueda et al, 2004; Birren, 1978; Bellizzi & Hire, 1992; Valdez & Mehrabian, 1994). This concept has been applied in a variety of situations in an attempt to manipulate people's behaviours. An example of this includes getting people to make quick decisions (Birren, 1978), stimulating appetites (Gorn, Chattopadhyaya, Yi & Dahl, 1997), and exciting people whilst making them feel they are not wasting a lot of time in environments such as casinos (Singh, 2006). However, a lot of this evidence is anecdotal, as it is not based on any sort of controlled experimental design.

Colour preference has been explained in terms of cultural significance and associative learning. It has been suggested that associations of colour that have been developed in the past have been forwarded as explanations of perceptions of colour today. For example, blue has been associated with night, dark and quiet (Lüscher, 1969). Warm colours, such as red, are used in order to attempt to arouse consumers such as in gambling environments (Griffiths & Swift, 1992). This idea is supported by the research of Bellizzi et al (1983). They found that participants viewed

warm colours as more exciting than cool colours. The culture in which we live can also determine how we associate colours and the different meanings they may have (Kreitler & Kreitler, 1972; Singh, 2006). However, across cultures, red has predominantly been found to be the most effective in influencing human emotions (Aaker, Bener, Martinez & Garolear, 2001).

Individual responses to colour have also been explained in relation to the arousal that they produce. It has been suggested that colours that are on the extreme ends of the colour spectrum (e.g., red and violet) generate greater arousal than those in-between (Wilson 1966). However, when red and blue have been compared in terms of their influences on arousal, differences have been found between them, with red producing greater cortical arousal (e.g. Ali, 1972).

With regards to the gambling literature in this field there has been minimal research conducted looking at the impact of colour on gambling (Griffiths & Parke, 2003). Griffiths and Swift (1992) reported in an observational study of five English amusement arcades that the interiors were generally red or towards the red end of the colour spectrum. This observation appears to suggest that gaming venue designers make use of the principle of red light exciting whilst allowing "time to fly" when decorating interiors without the consumer necessarily being aware. Light and colour effects have developed in their sophistication over recent years and the gaming and casino industry have taken advantage of this when designing machines, games, and gaming venue interiors (Parke & Griffiths, 2006).

Stark, Saunders and Wookey (1982) provide one of the few empirical contributions assessing the effects of coloured light on gambling behaviour. Their study found that compared to gambling under blue light, gambling under red light leads to more risks taken, higher stakes made, and more frequent bets. They suggested that because blue is less arousing it leads to slower performance, as their attention is not specially focused on the task. As red was highly arousing it caused participants to focus on the salient aspects resulting in faster bets. The arousing effects of red were speculated to increase overt behaviour.

Similar types of research study have also been carried out on computer gaming. For instance, Wolfson and Case (2000) examined the effects of music and lighting on computer game play. It was found that red lighting led to participants underperforming in the latter games played, compared to blue, although initially both groups improved

>> STARK, SAUNDERS AND WOOKEY PROVIDE ONE OF THE FEW EMPIRICAL CONTRIBUTIONS ASSESSING THE EFFECTS OF COLOURED LIGHT ON GAMBLING BEHAVIOUR. THEIR STUDY FOUND THAT COMPARED TO GAMBLING UNDER BLUE LIGHT, GAMBLING UNDER RED LIGHT LEADS TO MORE RISKS TAKEN, HIGHER STAKES MADE, AND MORE FREQUENT BETS. THEY SUGGESTED THAT BECAUSE BLUE IS LESS AROUSING IT LEADS TO SLOWER PERFORMANCE, AS THEIR ATTENTION IS NOT SPECIALLY FOCUSED ON THE TASK. AS RED WAS HIGHLY AROUSING IT CAUSED PARTICIPANTS TO FOCUS ON THE SALIENT ASPECTS RESULTING IN FASTER BETS. THE AROUSING EFFECTS OF RED WERE SPECULATED TO INCREASE OVERT BEHAVIOUR. >>

continuously. The red group's heart rate also decreased in line with their decline in performance. This was explained in terms of red initially being more arousing, which led to higher concentration and less error rates than blue, but as time went on they became desensitised to its arousal. Sound volume in their study was not found to be influential in terms of its effects on participant's performance.

A recent experimental investigation by Spenwyn, Barrett and Griffiths (2010) reported the first ever empirical study into the combined effects of both music and lighting colour on gambling behaviour. While playing an online version of roulette, participants took part in one of four experimental conditions; (1) gambling with fast tempo music under normal (white) light, (2) gambling with fast tempo music under red light, (3) gambling with slow tempo music under normal (white) light, and (4) gambling with slow tempo music under red light. Spenwyn, et al reported a significant interaction between light and music for betting speed, and that the speed at which participants gambled was increased while playing under red light and fast tempo music.

The literature in this field stresses the importance of these ambient features due to their capacity to affect a player's level of arousal. However, as has been highlighted in this article, there has been a general lack of experimental research concerning the combined effects of environment features in terms of their effects on gambling behaviour and there is much psychological research that could be done in the area.

It is clear that situational characteristics of gambling environments (including colour) appear to have the potential to play a role in the acquisition, development and maintenance of gambling behaviour. The success of the gambling establishment's situational and structural characteristics (where success is defined as an increase in gambling due to the situational or structural characteristic) depends upon the psycho-situational and/or psycho-structural interaction (Griffiths & Parke, 2003).

The importance of a characteristic approach to gambling is the possibility of pinpointing more accurately where an individual's psychological constitution is influencing gambling behaviour. Such an approach also allows for psychologically context specific explanations of gambling behaviour rather than explanations that focus solely on personality and individual differences.

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