**THE BIOLOGICAL EXPLANATION OF GAMBLING ADDICTIONS**

**Initiation**

The biological explanation of the initiation of problem gambling behaviour is closely tied to the physical response gambling generates in the body of those that gamble.

Adrenaline is part of the natural fight-or-flight response of the body, and release of this hormone is a normal and healthy reaction to an acute stressor. However, there is considerable evidence that the burst of energy associated with its release is highly addictive. This positive reward of adrenaline need not come only from an anticipation of a race, or event upon which the person has placed money. An immediate response

can come from something as simple as placing money into a slot machine. So, the initiation of a gambling addiction is directly related to this positive reward of an adrenaline ‘rush’ which occurs with gambling behaviour. For a gambler, to gain the positive feeling again is very easy – it is enough simply to place another bet, or slide another coin into the fruit-machine. Furthermore, it is also thought that gambling also taps into the same dopamine reward system as nicotine.

Bergh et al (1997) say that there is a link between pathological gambling, the reward-system, genetics and impulsive behaviour.

Comings et al (1996) for example showed that there is evidence from genetic studies that pathological gamblers are more likely to carry a gene called D2A1 than those who do not engage in this problem behaviour. On this basis, it could well be that some people are born more likely to become problem gamblers than others.

There is also interesting evidence from Rugle and Melamed (1993). They showed that electroencephalogram (EEG) patterns of problem gamblers were similar to those of children with attention deficit hyperactivity disorder. This suggests that those with a gambling problem show similar brain activity to children who have trouble controlling their attention and behaviour. All of this research suggests a possible biological basis, or at least a biological weakness, as being responsible for initiating

addictive gambling behaviour.

**Maintenance**

Wray and Dickerson (1981) reported that gamblers who are prevented from gambling often report changes that resemble withdrawal symptoms. Although these symptoms may not be as intense as those following sustained smoking behaviour, they are still withdrawal symptoms, and as such they are highly influential in determining whether a gambler maintains his/her behaviour. Avoiding withdrawal symptoms is

simple: keep gambling and they will not appear.

Similarly, Orford et al (1996) compared alcoholics and problem gamblers. The two groups reported similar levels of perceived strength of addictions, even though problem gamblers reported less intense withdrawal and less dependence.

Some investigations have examined how brain activities differ in individuals with a gambling addiction compared to those without. One study used functional magnetic resonance imaging (fMRI) which shows how blood flow in the brain changes when people experience different emotions and stimuli.

Potenza et al (2003) investigated urge or craving states in men diagnosed with pathological gambling disorder. When viewing gambling tapes, and just before they began to feel an emotional response, the gamblers showed different blood flow in their brains when compared to non-gamblers. These differences were not observed during viewing of videotapes with happy or sad situations, so it must have been something to do with the fact that the tapes were concerned with gambling. An addiction to gambling could have something to do with an inability to control behaviour. The results of Potenza et al are consistent with those from studies of people who lack control in other behavioural areas, including aggression (New et al 2002) and decision-making (Bechara 2003). It seems likely, then, that the parts of the brain responsible for dealing with control of decision-making are involved in addictive gambling behaviour.

**Relapse**

Just as with other addictive behaviours such as smoking, relapse into gambling behaviour can be explained from a biological perspective. We have already seen that those with gambling addictions experience similar, if milder, withdrawal symptoms to those felt by people addicted to drugs such as nicotine. In many ways, it is easy to stop the withdrawal symptoms by re-engaging in the addictive behaviour. If, once the behaviour is stopped, the gambler feels anxious and experiences an increased heart-rate and raised blood pressure and even mild tremors and sweating, then placing a bet may remove these withdrawal feelings.

Ciarrochi et al (1987) note another point that is relevant here. Those addicted to gambling often have other problems such as addictions to alcohol or even shopping. It has been reported that, when giving up gambling, people may switch attention to another of their addictive behaviours. Similarly, when that behaviour becomes too much of a problem in their lives, they may switch back to gambling, as a means of maintaining the positive feelings received from engaging in one or other of the addictive behaviours.