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A 'components' model of addiction within a biopsychosocial framework

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Abstract

There is now a growing movement that views a number of behaviours as potentially addictive including many that do not involve the ingestion of a drug (such as gambling, sex, exercise, videogame playing and Internet use). This paper argues that all addictions consist of a number of distinct common components (saliency, mood modification, tolerance, withdrawal, conflict and relapse). The paper argues that addictions are a part of a biopsychosocial process and evidence is growing that excessive behaviours of all types do seem to have many commonalities. It is argued that an eclectic approach to the studying of addictive behaviour appears to be the most pragmatic way forward in the field. Such commonalities may have implications not only for treatment of such behaviours but also for how the general public perceive such behaviours.

Introduction

Certain individuals use certain substances in certain ways, thought at certain times to be unacceptable by certain other individuals for reasons both certain and uncertain. ([Burglass, & Shaffer, 1984, p. 19](#))

Conceptualizing addiction has been a matter of great debate for decades. Although the opening quote is not recent, it still holds true despite the enormous amount of research into addictive behaviours. Any conceptualization of addiction has implications for several groups of people (e.g. addicts, their families, researchers, practitioners, policy makers, etc.). Obviously, the needs of these groups may not be equally well served by certain models, and in some cases there will be absolute incompatibility. Any framework for the conceptualization of addiction must allow for the bottom-up development and integration of theory by each of these groups – that is, it must be flexible, accountable, integrative and reflexive.

For many people the concept of addiction involves taking of drugs (e.g. [Rachlin, 1990](#); [Walker, 1989](#)). Therefore it is perhaps unsurprising that most official definitions

concentrate on drug ingestion. Despite such definitions, there is now a growing movement (e.g. Miller, 1980; Orford, 2001; Shaffer et al., 2004) which views a number of behaviours as potentially addictive including many behaviours which do not involve the ingestion of a drug. These include behaviours as diverse as gambling (Griffiths, 1995), overeating (Orford, 2001), sex (Carnes, 1983), exercise (Terry, Szabo, & Griffiths, 2004), videogame playing (Griffiths, 2002), love (Peele, & Brodsky, 1975), Internet use (Griffiths, 2000) and work (Griffiths, 2005). Such diversity has led to new all-encompassing definitions of what constitutes addictive behaviour. One such definition is that of Marlatt, Baer, Donovan, and Kivlahan (1988, p. 224), who define addictive behaviour as:

...a repetitive habit pattern that increases the risk of disease and/or associated personal and social problems. Addictive behaviours are often experienced subjectively as 'loss of control' – the behaviour contrives to occur despite volitional attempts to abstain or moderate use. These habit patterns are typically characterized by immediate gratification (short term reward), often coupled with delayed deleterious effects (long term costs). Attempts to change an addictive behaviour (via treatment or self initiation) are typically marked with high relapse rates.

In addition, it has been argued that addiction is most usefully described as a process (Krivanek, 1988), with involvement in addictive behaviour being placed upon a spectrum of severity of use and abuse (McMurrin, 1994). The boundaries of this formulation are flexible enough to include both substance and non-substance behaviours and to account for the inclusion of a wide variety of influencing factors. However, on an ethical level, the emphasis on the 'subjective experience' of loss-of-control means that the above definition does not locate the problem entirely within the individual concerned, but nor does it preclude our attribution of some responsibility to that individual.

It is also important to acknowledge that the meanings of 'addiction', as the word is understood in both daily and academic usage, are contextual, and socially constructed (Howitt, 1991; Irvine, 1995; Truan, 1993). We must ask whether the term 'addiction' actually identifies a distinct phenomenon – something beyond problematic behaviour – whether socially constructed or physiologically based. If so, what are the principal features of this phenomenon? If we argue that it is hypothetically possible to be addicted to anything, it is still necessary to account for the fact that many people become addicted to alcohol but very few to gardening. Implicit within our understanding of the term 'addiction' is some measure of the negative consequences that must be experienced in order to justify the use of this word in its academic or clinical context. It seems reasonable at this stage to suggest that a combination of the kinds of rewards (physiological and psychological) and environment (physical, social and cultural) associated with any particular behaviour will have a major effect on determining the likelihood of an excessive level of involvement in any particular activity.

The way of determining whether non-chemical (i.e. behavioural) addictions are addictive in a non-metaphorical sense is to compare them against clinical criteria for other established drug-ingested addictions. This method of making behavioural excesses more clinically identifiable has been proposed for behavioural addictions such as 'television addiction' (McIlwraith, Jacobvitz, Kubey, & Alexander, 1991) and 'amusement machine addiction' (Griffiths, 1991, 1992). Further to this, authors such as Brown (1993) and Griffiths (1996) have postulated that addictions consist of a number of common components. Griffiths's (1996) components of addiction (modified from Brown, 1993)

are salience, mood modification, tolerance, withdrawal, conflict and relapse. These are described in more detail below with some relevant examples.

Salience

This refers to when the particular activity becomes the most important activity in the person's life and dominates their thinking (preoccupations and cognitive distortions), feelings (cravings) and behaviour (deterioration of socialized behaviour). For instance, even if the person is not actually engaged in the behaviour they will be thinking about the next time they will be. Three separate quotes from Griffiths's (1995) studies of slot machine addicts highlight the concept of salience in gambling:

If I wasn't actually gambling I was spending the rest of my time working out clever little schemes to obtain money to feed my habit. These two activities literally took up all my time (Extract 1, p. 253).

Gamble, gamble, gamble your life away...you might as well have put it down the drain. You've got to face the truth that you're having a love affair, and it's with a machine whose lights flash, takes your money and kills your soul (Extract 2, p. 253).

During four or five years of compulsive gambling I think I missed about six or seven days of playing fruit machines – keeping in mind that about four or five of those days were Christmas days where it was impossible to gain access to a gambling machine...As you have probably gathered, I ate, slept and breathed gambling machines...I couldn't even find time to spend with the people I loved...The machines were more important than anything or anyone else. All I can remember is living in a trance for four years...as if I'd been drunk the whole time (Extract 3, p. 253).

It should also be noted that some addictive behaviours such as smoking (nicotine) and drinking (alcohol) are activities that can be engaged in concurrently with other activities and therefore do not tend to dominate an addict's thoughts or lead to total preoccupation. For instance, a smoker can carry around their cigarettes and still engage in other day-to-day activities. However, if that person was in a situation that they were unable to smoke for a long period (such as a 24-hour plane flight), smoking *would* be the single most important thing in that person's life and would totally dominate their thoughts and behaviour. This is what could be termed 'reverse salience' with the addictive activity becoming the most important thing in that person's life when they are prevented from engaging in the behaviour.

Mood modification

This refers to the subjective experience that people report as a consequence of engaging in the particular activity (i.e. they experience an arousing 'buzz' or a 'high' or paradoxically a tranquillizing and/or destressing feel of 'escape' or 'numbing'). What is interesting is that a person's drug or activity of choice can have the capacity to achieve different mood-modifying effects at different times. For instance, a nicotine addict may use cigarettes first thing in the morning to get the arousing 'nicotine rush' they need to get going for the day. By the end of the day they may not be using nicotine for its stimulant qualities, but may in fact be using nicotine as a way of destressing and relaxing. It could be argued that in these situations, psychology to some extent overrides physiology because of expectation effects.

In essence, many addicts use substances and behaviours as a way of producing a reliable and consistent shift in their mood state as a coping strategy to 'self-medicate' and make themselves feel better in the process. Such mood-modifying experiences are also common in many behavioural addictions such as gambling. These have included both subjective self-reports from interviews and questionnaires ([Dickerson, & Adcock, 1987](#); [Griffiths, 1990](#)) and objective experimental studies that have measured heart rate as an indicator of arousal ([Griffiths, 1993](#); [Leary, & Dickerson, 1985](#)).

Tolerance

This refers to the process whereby increasing amounts of the particular activity are required to achieve the former effects. The classic example of tolerance is a heroin addict's need to increase the size of their 'fix' to get the type of feeling (e.g. an intense 'rush') they once got from much smaller doses. In gambling, tolerance may involve the gambler gradually having to increase the size of the bet to experience a mood-modifying effect that was initially obtained by a much smaller bet. It may also involve spending longer and longer periods gambling. Tolerance is well established in psychoactive substance addictions and there is growing evidence in the field of behavioural addictions.

For instance, [Griffiths \(1993\)](#) appeared to show that tolerance could be observed in an experimental situation involving gamblers. He found that both regular and non-regular slot machine gamblers' heart rates increased significantly during the playing period by approximately 22 beats per minute. However, the interesting finding was that after playing slot machines, regular gamblers' heart rates started to decrease at once, whereas non-regular gamblers' heart rates did not change significantly. In terms of an addictive model of gambling, both regular and non-regular gamblers get a 'high' physiologically when playing, but the non-regular gamblers stay 'higher' for longer, meaning they do not have to gamble as fast or as often to induce the arousal peaks. Regular gamblers, in contrast, could be seen as becoming more tolerant to the gambling 'highs', meaning they have to gamble either faster or more often to experience the initially desired effect. It was argued by [Griffiths \(1993\)](#) that the study could be viewed as the first to show an objective measure of tolerance in gambling.

Withdrawal symptoms

These refer to the unpleasant feeling states and/or physical effects which occur when the particular activity is discontinued or suddenly reduced. Such withdrawal effects may be psychological (e.g. extreme moodiness and irritability) or more physiological (e.g. nausea, sweats, headaches, insomnia and other stress-related reactions). Withdrawal effects are well documented in drug addictions ([Orford, 2001](#)) and there is growing evidence that behavioural addictions such as pathological gambling also feature withdrawal symptoms ([Griffiths, 2004](#)). For instance, [Rosenthal and Lesieur \(1992\)](#) found that at least 65% of pathological gamblers reported at least one physical side-effect during withdrawal including insomnia, headaches, upset stomach, loss of appetite, physical weakness, heart racing, muscle aches, breathing difficulty and/or chills. Their results were also compared to the withdrawal effects from a substance-dependent control group. They concluded that pathological gamblers experienced more physical withdrawal effects when attempting to stop than the substance-dependent group.

Conflict

This refers to conflicts between the addict and those around them (interpersonal conflict) or from within the individual themselves (intrapsychic conflict) which are concerned with the particular activity. Continual choosing of short-term pleasure and relief leads to disregard of adverse consequences and long-term damage which in turn increases the apparent need for the addictive activity as a coping strategy. The conflict in the addict's life means that they end up compromising their (1) personal relationships (partner, children, relatives, friends, etc.), (2) working or educational lives (depending on what age they are) and (3) other social and recreational activities. Intrapsychic conflict may also be experienced in the form of addicts knowing that they are engaged heavily in the behaviour and want to cut down or stop – but find they are unable to do so, experiencing a subjective loss of control.

Relapse

This refers to the tendency for repeated reversions to earlier patterns of the particular activity to recur and for even the most extreme patterns typical of the height of the addiction to be quickly restored after many years of abstinence or control. The classic example of relapse behaviour is in smokers who often give up for a period of time only to return to full-time smoking after a few cigarettes. However, such relapses are common in all addictions including behavioural addictions such as gambling (Griffiths, 2002).

Griffiths (2002) has argued that all these components need to be present for a behaviour to be operationally defined as addictive. It is clear that some individuals engage in behaviours that have addictive elements without it necessarily being a full-blown addiction. For instance, if someone has no negative withdrawal effects after stopping their excessive behaviour, are they really addicted? If the excessive behaviour does not conflict with anything else in that person's life, can it be said to be an addiction? The difference between an excessive healthy enthusiasm and an addiction is that healthy enthusiasms add to life whereas addictions take away from it.

Addictions always result from an interaction and interplay between many factors including the person's biological and/or genetic predisposition, their psychological constitution (e.g. personality factors, unconscious motivations, attitudes, expectations and beliefs, etc.), their social environment (i.e. situational characteristics) and the nature of the activity itself (i.e. structural characteristics) (Griffiths, 1999). These many factors highlight the interconnected processes and integration between individual differences (i.e. personal vulnerability factors), situational characteristics, structural characteristics and the resulting addictive behaviour. Each of these three general sets of influences (i.e. individual, structural and situational) can be subdivided much further depending on the type of addiction.

It is clear that many research paradigms are insular and inadequate in explaining addiction. Addiction is a multifaceted behaviour that is strongly influenced by contextual factors that cannot be encompassed by any single theoretical perspective. These factors include variations in behavioural involvement and motivation across different demographic groups, structural characteristics of activities/substances and the developmental or temporal nature of addictive behaviour. Research and clinical interventions are best served by a biopsychosocial approach that incorporates the best strands of contemporary psychology, biology and sociology.

Griffiths and Larkin have suggested there are core components of what a successful theory of addictions should contain (Griffiths, & Larkin, 2004; Larkin, & Griffiths, 1998). A successful theory must (1) synthesize pharmacological, cultural, situational and personality factors, (2) account for the varying nature of addiction across cultures, individuals and time, (3) account for commonalities between all addictions and (4) be faithful to lived human experience.

Larkin and Griffiths (1998; Griffiths, & Larkin, 2004) have also argued the case for a complex systems model of addiction: 'complex' for obvious reasons, and 'systems' after Davies (1992, p. 163), who argued that alternative explanations for excessive behaviour require:

...the development of a 'system' within which drug use is conceived of as an activity carried out for positive reasons, by people who make individual decisions about their substance use, and who may take drugs competently as well as incompetently.

Gambino and Shaffer (1979) have emphasized the difficulties of reintegrating research and practice in the area of addiction. On the basis of Polkinghorne's (1992) observations on the nature of such divisions, a more flexible theoretical approach, such as the complex systems model, ought to go some way toward bridging the epistemological gap.

The complex systems model corresponds well to the biopsychosocial approach to addiction (e.g. Marlatt et al., 1988; McMurrin, 1994). It may also be considered to be a descendant of previous multifactorial approaches to the addiction process (e.g. Wanberg, & Horn, 1983; Zinberg, 1984). Obviously, from the perspective of the complex systems model, it is possible to consider the interaction of both the common and the unique elements of any specific individual's situation. This includes psychological, physiological, social and cultural factors that may be particular to any individual. It also allows for consideration of the pharmacological properties of specific substances, or the reinforcing properties of certain kinds of gaming machines (see Griffiths, 1995). It is important, therefore, to point out that this is not a return to siting the property of 'addictiveness' as located within particular substances (or within particular activities). However, it is necessary to be aware of effects that may be common to certain kinds of substances or activities, but not to others.

Hopefully, what this paper has demonstrated is that addictions are a part of a biopsychosocial process and not just restricted to drug-ingested behaviours. Evidence is growing that excessive behaviours of all types do seem to have many commonalities and this may reflect a common aetiology of addictive behaviour. Such commonalities may have implications not only for treatment of such behaviours but also for how the general public perceive such behaviours.

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