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EDITORIAL

Behavioural (non-chemical) addictions

Abstract

'Addiction' denotes repetitive routines that aim to obtain chemicals and, less often, routines without that aim. The latter are behavioural addictions. They include obsessive-compulsive disorder (OCD), compulsive spending (including gambling), overeating (bulimia), hypersexuality (straight or deviant), and kleptomania. Common across dependence syndromes is: a repeated urge to engage in behaviour known to be counterproductive; mounting tension until it is completed; rapid temporary switching off of the tension by completing the behaviour; gradual return of the urge; syndrome-specific external and perhaps internal cues for the urge; secondary conditioning of the urge to external and internal cues; similar strategies for relapse prevention by cue exposure and stimulus control. The urge to complete a behaviour and discomfort if prevented from this resemble the craving and the withdrawal (WD) symptoms of substance abusers. Some WD symptoms are common to several addictive syndromes while others may be more specific. Addiction (pull) and compulsion (push) overlap and can occur sequentially or concurrently. Different addictions occur with varying amounts of pleasure at various stages. Prolonged exposure can enduringly reduce the urge and discomfort in OCD, and may help some other addictions. Conditioned cues are important and for lasting efficacy a therapist may need to know their details for each syndrome. There may be some similarities in the early management and prevention of relapse of behavioural and chemical addictions.

Normal 'addictions'

Life is a series of addictions and without them we die. They have varying time-scales. Every few moments we inhale air. If deprived of it, within seconds we strive to breathe, with immense relief when we succeed. More prolonged deprivation causes escalating tension, severe withdrawal symptoms of asphyxiation and death within minutes. On a longer time scale, eating, drinking, defaecation, micturation and sex also involve rising desires to perform an act; the act switches off the desire, which returns within hours or days.

Such normal biological cycles are like chemical addictions in their mounting urge to do something that stops the urge, which increases again as time goes on. Whether they are to obtain chemicals (oxygen, food and drink) or do something else, the behavioural cycles involve inbuilt homeostatic mechanisms but are partly modifiable by experience. We are also programmed to be able to learn other normal behavioural routines which begin, are maintained and modified by intermediate outcomes, end on achieving the goal and restart when appropriate. The routines are reined in by competing repertoires that are prioritized according to current needs and dimly understood processes of habituation and boredom. Inability to engage in rewarding routines—being with family and friends, jogging, gambling, gardening—brings on withdrawal symptoms called grief, homesickness, nostalgia or other sense of missing old pleasures. We may then seek to regain our lost routine.

Repetitive routines are not called addictions until their frequency/intensity leads to handicap, and then usually only when they aim at obtaining chemicals. Less often the addiction label is also given to behavioural excesses that have no external substance as a goal. They can be called *behavioural* (non-chemical) *addictions*.

Similarity of behavioural and chemical addictions

Syndromes of behavioural addiction share features with those of substance abuse which may point to overlapping pathophysiologies (Table 1). The syndromes are disorders of impulse control and self-regulation. They include obsessive–compulsive

Table 1. *Similarities and differences across syndromes of addiction*

	Addiction syndrome								
		Behavioural							
Addiction feature*	Chemical	OCD	SPE	BUL	SEX	KLE	TRI	TIC	TOU
1. Urge to engage in a counterproductive behavioural sequence (=*craving*)	+	+	+	+	+	+	+	+	+
2. Mounting tension unless the sequence is completed	+	+	+	+	+	?	±	−	−
3. Completing the sequence rapidly switches off the tension temporarily (=quick fix)	+	+	+	+	+	?	±	−	−
4. Return of the urge and tension over hours, days or weeks (=*withdrawal symptoms*)	+	+	+	+	+	?	+	+	+
5. External cues for the urge unique to a given addictive syndrome	+	+	+	+	+	+	+	+	+
6. Secondary conditioning of the urge to external cues and to internal cues (dysphoria, boredom)	+	+	+	+	+	+	?	±	?
7. Hedonic tone in early stage of addiction (p=pleasant, a=aversive, 0=neutral)	‡	a	p	?	p	0	?	0	0
8. Habituation of craving and withdrawal by cue exposure	+	+	?	+	?	?	?	?	?
9. Multiple addictions (C=many chemicals; #=tics and OCD)	C	−	?	−	?	−	−	−	#

*+=present, −=absent.
†OCD=obsessive-compulsive disorder; SPE=compulsive spending; BUL=bulimia; SEX=hypersexuality, voyeurism, exhibitionism, paedophilia, fetishism
TRI=trichotillomania (hair-pulling); KLE=kleptomania (compulsive shoplifting); TIC=tics; TOU=Tourette syndrome; ‡=0 for benzodiazepines.

disorder (OCD), compulsive spending (including gambling), overeating (±bulimic binges), hypersexuality [whether straight (see Orford, 1978—compulsive promiscuity) or deviant (e.g. exhibitionism, paedophilia, fetishism)], kleptomania, and perhaps trichotillomania, tics and the Tourette syndrome, in which features (5) and (6) below may be lacking. The common aspects feature in the WHO definition of a dependence syndrome (Edwards, 1986):

(1) repeated urges to engage in a particular behavioural sequence that is counterproductive,
(2) mounting tension until the sequence is completed,
(3) rapid but temporary switching off of the tension by completing the sequence (a 'quick fix'),
(4) gradual return of the urge over hours, days of weeks,
(5) external cues for the urge unique to the particular addictive syndrome,
(6) secondary conditioning of the urge to both environmental and internal cues,
(7) similar strategies for relapse prevention: (a) training in impulse control by prolonged cue exposure in order to habituate cue-evoked craving and withdrawal and (b) stimulus control (environmental management).

The urge of behavioural addicts to engage in their behavioural routine, and the discomfort ensuing if prevented from completing it, respectively resemble the craving and the withdrawal symptoms of substance abusers. Some withdrawal symptoms (e.g. those of anxiety) are identical across certain behavioural and chemical addicts, while others (e.g. runny nose, gooseflesh) may be substance-specific (J. Powell, personal communication).

Both the urge and the discomfort habituate to prolonged exposure in the behavioural addiction of OCD; there is little data about this for other syndromes apart from a few studies of bulimia which found some response decrement to prolonged exposure. It is unclear if there are major differences in the habituation of urges driven by appetite rather than by relief of discomfort, even where two such types of urges can be clearly distinguished.

Addiction versus compulsion

Behavioural addictions are often called compulsions to denote coercion from a discomfort that has to be allayed, whereas addiction more implies attraction towards something. Craving suggests both pull and push—desire so urgent that if it is not soon met discomfort will follow. Pull involves a search for a good feeling. Push comes from unmet strong desire and/or a quest for relief from withdrawal symptoms. Pull and push can occur sequentially. We are irresistibly drawn to our beloved, and have pangs of pain when separated; people enjoy tobacco or cocaine and are distressed by its absence. Pull and push can also be concurrent. Alcoholics, smokers and sexual deviants can simultaneously like and dislike what they are doing. We have no universally accepted use of terms like addiction, craving and compulsion [see the critique by Kozlowski & Wilkinson (1987) and comments on it].

Some addictions may give pleasure at an early stage though not necessarily at the very start (alcohol, nicotine, opiates, cocaine, amphetamine, temazepam, gambling). In various argots and epochs this euphoria is a rush, buzz, gouching out, etc. In some addicts the good feeling may only be intermittent. In others it may disappear later, the behaviour continuing to avoid the distress of withdrawal symptoms, though only 28% of street opiate addicts noted conditioned withdrawal sickness (McAuliffe, 1982). Except for tension relief, pleasure is not a major feature of addictions such as OCD, or of repetitive behaviours such as trichotillomania, repeated scab-picking, tics or Tourette's syndrome. Is hedonic tone important? We surmise that it is harder to give up a pleasurable than a neutral or unpleasant activity, but this is speculative.

Brain mechanisms

Desire and discomfort often coexist, though the brain has distinguishable systems for reward and for punishment (Gray, 1987). Still unclear is how much separates the mechanisms driving aversion relief versus reward, and driving non-reward versus punishment. Other substrates, too, might be involved.

Some brain mechanisms may be common to the establishment and maintenance of all addictions, be they chemical or behavioural, while other mechanisms may differ from one addiction to another. We expect some differences in the pathophysiologies of heroin versus cocaine versus amphetamine versus benzodiazepine addiction, and some differences are likely in pathophysiologies across various behavioural addictions. To speculate, is there more involvement of compulsive gambling with mechanisms for intermittent reinforcement, and of compulsive rituals with comparator systems (in the

septohippocampal system—Gray, 1987) that compute when an activity's goal has been reached (William James's 'fiat'). Such questions must be answered before we can chart detailed brain maps of the various substrates involved in particular addictive routines.

A few tantalizing clues lead us on. In animals, acute heroin and cocaine administration appear to cause dopamine release in the nucleus accumbens, whereas benzodiazepines do not (Imperato, Mulas & DiChiara, 1986). Is this distinction also true for chronic administration? Conditioned passive avoidance bears some resemblance to compulsive rituals; does its extinction by exposure therapy release dopamine in the nucleus accumbens? Questions abound.

Conditioning of addicts

Substance abusers usually become both behavioural and chemical addicts. They condition to cues connected with their drug taking, becoming turned on not only by smoking, drinking or injecting the substance itself, but also by the routine of preparing and administering it, and by other external cues concerning people, places and things associated with it. This conditioning can become so strong that the context in which the drug is taken alters the lethal dose in animals (Siegel, 1989). Strong conditioning to external cues also occurs in behavioural addictions. Both chemical and behavioural addictions may also come to be prompted by internal cues of boredom or depression (Bradley *et al.*, 1989; Carnes, 1989, 1989; Marks, 1987; Heather & Stallard 1989; Powell, 1990; Rooth & Marks, 1973) and even by feelings of well-being (J. Strang, personal communication).

External cues for the various behavioural and chemical addictions differ according to syndrome. They vary according to the context of each addiction. Compulsive ritualizers have an urge to wash on seeing 'dirt' or to check on leaving their home. Gamblers are lured when in the vicinity of a betting shop. Bulimics binge on seeing or smelling food. Exhibitionists exhibit on seeing a female on her own. Smokers reach for a cigarette when sitting in a waiting room, when coffee is served after a meal or as they ponder what to write at their desk. A heroin smoker wanted to use on seeing a biscuit foil wrapper at a friend's; a heroin injecter wanted to use on seeing an anti-AIDS poster depicting a close-up photo of someone injecting (S. Dawe, personal communication).

The internal cues that condition to addiction seem similar across the various syndromes. Dysphoria is the chief one. Addicts of most kinds are more likely to indulge when they feel miserable or bored (see the references above).

Conditioned cues are so important that to be enduringly effective a therapist has to know about their detailed minutiae as well as about prescriptions and withdrawal schedules. To attain a lastingly successful outcome a clinician must appreciate the multifarious cues that prompt addictive routines in order to teach sufferers how to develop appropriate *long*-term therapeutic strategies for stimulus and impulse control.

Relapse prevention in long-term management

Both behavioural and chemical addictions are easy enough to stop for a while. The real test is maintaining control for years until it becomes second nature. Clients have to identify triggers, high-risk environments and feelings, learn to resist these, carry out 'fire-drill' to nip slips (set-backs) in the bud, and to nuture new social bonds and activities to replace destructive ones. As control is acquired clients carefully enter progressively more difficult (tempting) situations in order to strengthen control. In this extended process the patient is the player while the therapist acts as coach and cheerleader. Relapse prevention has also been likened to a car journey on which the driver must plan ahead carefully, anticipate rough roads, dangerous curves, critical intersections and alternative routes, know the limitations of his/her skills and of the vehicle, and obtain help from an instrucor, guide or experienced traveller (Cummings, Gordon & Marlatt, 1980). Detailed suggestions for sexual addicts appear in Carnes (1989) and for anxiety disorders in Marks (1980, 1987).

Despite their overlap each of the various behavioural and chemical addictive syndromes has its own particular patterns to be reckoned with. When upset exhibitionists need to learn alternative comforting activities to exhibiting. Compulsive ritualizers may have to start new useful pursuits to fill the vacuum left on abandoning day-long washing and checking. Teenage smokers should acquire the skill of saying 'no' without giving offence or losing status; role rehearsal can help. Heroin addicts are required to cultivate new friendships to replace former ones with drug users.

Acute phase of therapy

There may also be similarities in the early management of behavioural and chemical addictions. A major advance in the treatment of anxiety disorders came when it was realized that panic is switched off only temporarily by the quick fix of escape, avoidance, reassurance, rituals or dissociation. That fix actually raises the chance of panic recurring soon after and must be prevented to break the cycle permanently. The client learns to deliberately confront feared situations which induce discomfort, and to allow this discomfort to continue without hurriedly switching off. S/he discovers that if panic is allowed to go on long enough without being turned off by escape, rituals or dissociating, then it will subside eventually anyway within an hour or longer without any rituals having been carried out. This exposure exercise breaks the addictive cycle. As the exercise is repeated time and time again, permanent habituation to the triggering cues sets in. Exposure therapy is voluntary, carried out by the patient without coercion.

Does exposure therapy relate to the acute treatment of chemical addicts? Some withdrawal symptoms may be partly a product of conditioning and of expectation. Detoxification programs try to switch off such symptoms by a quick fix of medication cover, e.g. methadone, clonidine or benzodiazepines. Perhaps outcome would improve if such escape were discouraged and addicts were instead persuaded to ride through withdrawal symptoms without medication cover, just as panic patients can learn to master their panic without running away from it, unaided by pills, and thus achieve long-term habituation. Some substance abusers might agree to undergo withdrawal while deliberately bringing on withdrawal symptoms without suppressing them, learning to endure them until they subside, which could take days. Thereafter if they slip, use their substance for a while, and then have further withdrawal symptoms, these might be easier to accept without yet more using. Patients' prior agreement to exposure is vital; forcing it on them would be unethical and could make them worse, as is true too in anxiety disorders.

Thus some chemical as well as behavioural addicts might benefit not only from cue exposure to control and extinguish craving responses in long-term management, but also from learning to control and habituate to withdrawal symptoms in the acute phase. Many addicts have tried such cold-turkey treatment on their own, failing when it is not done sufficiently systematically. Anxiety disorder patients fail too if exposure attempts are half-hearted, and only succeed permanently when the exposure is done in a proper detailed program. A program for opiate addicts might include repeated precipitation of withdrawal symptoms for a few hours by means of naltrexone.

Some will argue that few chemical addicts accept unmedicated withdrawal. Agreement might come more readily, however, if the expectations of addicts and clinicians change as they have in anxiety disorders. Thirty years ago few patients were asked to have deliberate cold-turkey encounters with panic, yet today this is part of routine self-exposure therapy that most anxiety disorder patients accept and benefit from. As clinicians get used to procedure, so do their patients.

Another objection is that withdrawal symptoms may persist for days, whereas panic usually abates within hours of exposure. However, in a few sufferers anxiety persists during 1–3 days of exposure before subsiding, yet they continue exposure and improve. Moreover, current expectations and medication cover during detoxification could, by promoting avoidance, acually prolong withdrawal symptoms that might otherwise decrease more rapidly without such cover.

Another argument against inducing habituation to withdrawal symptoms might be that fear of such symptoms can deter relapse. However, impulse control may be superior without than with fear.

Differences between behavioural and chemical addicts

Behavioural addicts try to alter their mental state mainly by a behavioural routine such as washing, checking or gambling, without taking any particular chemical. In anxiety disorder clinics fairly few obsessive–compulsives, agoraphobics or social phobics become dependent on alcohol or drugs (though a sizeable number of alcholics in alcohol clinics also have social phobia ± agoraphobia).

Although multiple drug addictions are usual, with concurrent and/or sequential abuse of alcohol, tobacco, cannabis, heroin, cocaine and amphetamine, multiple behavioural addictions are less common. One rarely sees compulsive gambling plus bulimia plus exhibitionism. Multiple sexual deviancies can coexist, and Tourette's patients have tics and compulsive rituals, but few obsessive–compulsives have Tourette's syndrome or tics.

Unlike most other addicts, OCD patients often have complex beliefs related to their compulsive acts and/or thoughts.

The addiction label is most questionable in trichotillomania, tics and Tourettes syndrome, which have the simplest behavioural sequences and least mounting tension that is switched off by an addictive act.

The motivation to seek, accept and complete treatment may be greater in some behavioural than chemical addicts—a crucial issue for therapeutic success.

Conclusion

It is useful heuristically to regard a wide range of repetitive behaviours as addictive syndromes, whatever their external triggers. These syndromes share many similarities and have some important differences. Some therapetuic and preventive ideas follow from such a perspective.

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