Addiction as a function of action system properties

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Abstract – Generalising from some previous analyses of addiction and introducing the concept of an action system which governs all actions which are focused on what Brown (1988) calls hedonic management, we argue that addictions of every kind involve an action system that displays high salience, low variety, and low vicariance. Addictions also involve what Apter (1982) calls the 'paratelic state.' A study was carried out comparing 31 drug addicts with 29 control subjects in terms of action system variables. To measure these variables, we constructed a new instrument, the Activity-System Drawing Test, and also used the Telic Dominance Scale to measure frequency of paratelic states. Dysphoria was measured by means of the BATE (anxiety), IDA-l3 (depression), SEI (self-esteem), and TAS-20 (alexithymia) instruments. Strong significant differences were found between groups for both action system variables and dysphoria. This supports the idea that addictions emerge from systemic properties of the action system.

Keywords. Dysphoria, Addiction, Hedonic management, Action system.

L'addiction comme fonction des propriétés d'un système d'actions

Résumé – A partir de l'analyse de quelques addictions et en présentant le concept d'un système d'actions qui régit toutes les actions qui concernent ce que Brown (1988) appelle la gestion hédonique, nous avançons l'idée que les addictions de toutes sortes impliquent un système d'actions, marqué par une saillance élevée, une faible variété et un bas niveau de vicariance. Les addictions impliquent également ce que Apter (1982) appelle l'état « paratélique ». Une étude a été effectuée comparant 31 toxicomanes à 29 sujets témoins, selon les variables du système d'actions. Pour mesurer ces variables, nous avons construit un nouvel instrument, le Test du Dessin du Système d'Activités, et avons aussi utilisé l'Echelle de Dominance Télique, afin de mesurer la fréquence des états paratéliques. La dysphorie a été mesurée au moyen des instruments suivants : le BATE (anxiété), l'IDA-13 (dépression), la SEI (estime de soi) et le TAS-20 (Alexithymie). Des différences significatives ont été trouvées entre les groupes, pour les variables du système d'actions et celles de la dysphorie. Ceci soutient l'idée que les addictions émergent des propriétés systémiques du système d'actions.

Mots-clés. Dysphorie, Addiction, Gestion hédonique, Système d'actions.

At the heart of all definitions of addiction appears to be a unique phenomenon which seems to be the key-concept for understanding addiction: salience. This core characteristic is described in different ways: as a behavior characterized by loss of control and its persistence (Goodman, 1990); as a critical, compulsive, repeated, and persistent behavior (American Psychiatric Association, 1994); and as an acquired and mo-

nopolizing drive (Brown, 1988). In order to put this in context, we propose introducing the psychosocial concept of an "activity system" meaning, the system which organizes and generates all the activities that the individual performs in everyday life: washing, cooking, writing letters, shopping, etc. Therefore, the addictive activity can he understood as a particular form of organization of the activity system. That's what Brown means when he says that: "the single activity becomes more and more salient as almost the sole source of reward" (Brown, 1997, p. 29). Brown's "motivational monopoly" of an activity in the activity system corresponds to the addictive solution to the problem of dysphoria. The addiction, as a highly salient action, allows the maintenance of the individual in high levels of arousal and in excited and arousal seeking states of mind. This excitement-seeking mode has been formalized in Reversal Theory (Apter, 1982) as the so-called "paratelic" state of mind, characterized by an orientation to the pleasure of activities and their concurrent sensations, spontaneity, a desire for low significance, and a desire for high arousal. Conversely, the so-called "telic" state — after the ancient Greek word "telos," meaning "far off" or "goal" — is characterized by an orientation to distant goals, by planning of the future, and by a need for high significance and low arousal. In these terms, addiction can be understood as a blockage of the individual in the paratelic state of mind and its associated need for high arousal in the form of excitement-seeking (Apter, 1989).

For these reasons, we believe that it is necessary to complement the concept of activity system with that of "action system" (Loonis, 1997, 1998; Loonis & Sztulman, 1998), which postulates that our everyday life activities fulfill two functions: (1) a pragmatic function of adaptation to the world, and (2) a "pragmalogical" function of self-adaptation, i.e., of hedonic management. In the context of this second function, we can name our activities "actions" and they form between themselves an action system that follows a particular logic (a pragma-logic, after the ancient Greek word "pragma," meaning "action") and follows systemic laws. It is precisely because all our activities are at the same time actions of hedonic management (management of arousal levels and states of mind) and activities of adaptation, that any of these activities/actions can become an addiction.

This action system can be characterized in terms of three variables: salience, variety, and vicariance. Salience can be defined as the degree of focus by the system on a particular action (which corresponds to the addictive activity) in comparison with other actions. In the case of a nonaddictive action system, no action is particularly more salient than other actions, and so the degree of salience of the whole system is low. Variety corresponds to the range of available actions in the system. When an action is salient, as in an addiction, there is a lowering of attention to the other actions and many of them are completely abandoned, so there is a lowering of degree of variety of actions in the system. Conversely, in a non- or weakly-addictive action system, there is a wide range of actions, and variety is consequently high. Finally, vicariance corresponds to the possibility for the individual to substitute personally important actions by other actions, if the previous actions become impossible to perform for one or another reason, e.g., availability of an addictive substance. In the case of an addictive type of action system, vicariance is low, because when the salient addictive action is no longer available, the individual has great difficulty in replacing this salient action with another one. On the other hand, when an action system is not addictive, the possibility exists to substitute another action (or a potentially new action) for an unavailable action, which means that

the vicariance of such a system is high. In short, an addictive action system involves high salience, low variety, and low vicariance; and the opposite is true for a system which is only weakly addictive or nonaddictive. The purpose of our study is to investigate the difference between the action systems of two populations, addicted and nonaddicted. We also want to show that the typical action system of addicted persons (characterized by high salience, low variety and vicariance, and paratelic dominance) is linked to dysphoria (anxiety, depression, low self-esteem, and alexithymia).

Method

The study compared two contrasting groups: 31 addicts (displaying multiple substance abuse, including addiction to heroin, cocaine, and cannabis), and 29 nonaddicted participants who were addicted neither to a substance, nor to an activity without substance, and who acted as a control group. Thirty-one addicted persons (16 males, 15 females, 29.9 age mean) were recruited in two urban reception centers for drug addiction, while 29 control subjects (15 males, 14 females, 30.48 age mean) were recruited in doctors' offices in general medicine. Discrimination between addicted and control groups was accomplished by means of the Addiction Severity Index drug/alcohol section (McLellan et al., 1992), French version (Grabot et al., 1993). The criterion for addiction was a severity score equal to, or higher than 6 out of a maximum score of 9. From all subjects (n = 60), we collected two groups of data: action system data and dysphoria (mental disturbance) data. To measure action systems we created and validated (Loonis, 1999) a new instrument: "Activity-System Drawing Test" (ASDT). Subjects were asked to draw their daily activities on a square surface of paper (5 cm side) with a drawing template (Rotring® 840 631, Germany, 1976) of 30 circles (1 to 30 mm diameter). The instructions were as follows: "Activities are what people do with their body and their mind. Drawing circles with the template, make a diagram of your everyday life activities, as you have experienced them in the last few days. Each circle must represent one activity, the size of the circle representing the importance of the activity during the period in question. By importance here is meant the duration and number of repetitions of the activity, and the intensity of your motivation to carry it out. Circles must not overlap, nor be drawn outside the frame."

It should be clear that the ASDT is not a projective test; rather it can be seen as providing a semistructured interview. First, we ask the subject the mean number of hours that they sleep at present and they are told that the square frame on the paper represents their number of waking hours of the day. Then, we ask what is his/her main activity, which he/she should draw as the largest circle (for an addicted subject this activity is necessarily his/her addiction). Finally, we let the subject draw all his/her activities using the template. The drawing is done with a lead pencil and an eraser in order to correct the diagram until the respondent is satisfied with his/her representation. In this way, the ASDT gives us a graphic representation, of the activity system, and this is quantifiable by the number of circles drawn and by their diameter.

Three functions allow us to extract action system measures from the activity system: (1) Salience is represented by the dispersal of the size of circles in comparison with the mean (i.e., the standard deviation). The greater the standard deviation, the more an activity is salient to the detriment of the others, implying, according to our hypothesis, that the system is addictive; (2) Variety is the quotient between what contributes to the variety of the action system by raising variety (the variety of the activity system) and

what contributes by lowering variety (salience as standard deviation). Then, for example, two activity systems with the same number of activities can display a different variety of their respective action systems, depending on their respective salience values; and (3) Vicariance is given by the simple answer to the question "If your main activity were unavailable, what other activities could easily replace it?" So, vicariance is dependent on the number of activities that the subject declares he or she can substitute for the main activity.

For measuring telic/paratelic dominance of actions system, we used the Telic Dominance Scale (TDS) (Murgatroyd, Rushton, Apter, & Ray, 1978), translated into French and validated in France by Loonis, Bernoussi, Brandibas, and Sztulman (2000). This scale measures three aspects of telic dominance: (1) seriousmindedness; (2) planning orientation; and (3) arousal avoidance. To measure dysphoria, we used four instruments in their French validated versions: (1) Bonis Anxiety Trait-State Inventory (BATE) (de Bonis, 1973), "trait" version; (2) Beck Abridged Depression Inventory, 13 items (IDA-13) (Collet & Cottraux, 1986); (3) Self-Esteem Inventory (SEI) (Coopersmith, 1984); and (4) Toronto Alexithymia Scale (TAS-20) (Loas, Fremaux, & Marchand, 1995).

Results

Table 1. Means (standard error) between addicted and control groups for action system.

	Groups		ANOVA	
	Addicted	Control		
N	31	29	(df) *F*	*P* value
DSA salience	6.80 (.30)	4.39 (.31)	(1,58) 30.26	.000
DSA variety	72.65 (6.11)	190.54 (31.8)	(1,58) 14.08	.000
DSA vicariance	1.19 (.008)	3.96 (.51)	(1,58) 30.10	.000
TDS total	15.90 (.85)	24.06 (1.24)	(1,58) 29.66	.000
TDS seriousminded	4.32 (.48)	7.03 (.45)	(1,58) 16.54	.000
TDS planning orientation	5.58 (.48)	8.63 (.50)	(1,58) 19.18	.000
TDS arousal avoidance	6.00 (.27)	8.39 (.59)	(1,58) 13.91	.000

The action systems of addicted subjects have a clearly more "addictive" profile than those of control subjects, all differences between groups being particularly significant (Table 1). These results show that addicted subjects have a different organization of their action system from control subjects, with certain actions being highly salient, to the detriment of other actions and in which the replacement of one action by another action is difficult. This addictive organization of the action system seems to be linked with a paratelic orientation which, in terms of Apter's Reversal Theory, means a state of mind oriented towards arousal-seeking, activity, and sensations in the present moment.

Table 2. Means (standard error) between addicted and control groups for dysphoria.

	Groups			
	Addicted	Control	ANOVA	
N	31	29	(df) *F*	*P* value
BATE (anxiety)	54.93 (3.14)	28.13 (3.28)	(1,58) 34.76	.000
IDA-13 (depression)	13.41 (.93)	4.27 (.86)	(1,58) 50.61	.000
SEI (self-esteem) Total	22.51 (.96)	38.31 (1.56)	(1,58) 76.12	.000
SEI general	12.06 (.46)	20.37 (.82)	(1,58) 80.24	.000
SEI social	3.87 (.30)	6.24 (.31)	(1,58) 29.27	.000
SEI family	2.51 (.27)	5.86 (.35)	(1,58) 56.17	.000
SEI workplace	4.06 (.34)	5.82 (.31)	(1,58) 14.21	.000
TAS-20 (alexithymia)	65.16 (1.76)	44.44 (2.37)	(1,58) 49.86	.000

On the whole, addicted subjects present higher levels of dysphoria than control subjects (Table 2). These results show that addicted persons are characterized by a high level of dysphoria, including anxiety and depression. They also have difficulty recognizing and verbalizing their mental disturbance (alexithymia), and their self-esteem is low.

Discussion

The principal result of this study is the demonstration that there is a significant difference between drug addicted subjects and nonaddicted (control) subjects, concerning action systems of hedonic management and dysphoria (mental disturbance).

The strong significant results we obtained are perhaps, in part, an effect of the choice of very contrasting samples. Results concerning the action system quantify what we already know at the level of clinical observation: Addicted subjects display a reduction of the number of activities (lowering of variety), producing a very exclusive concentration on the addictive activity which tends to fill their everyday life (salience). When this addictive activity is no longer accessible, it is very difficult for the addict to substitute another activity for it: That is, outside of consumption of his/her drug, the drug addict has few things to be "hooked" on. In hedonic management terms, this means that any failure in the performance of the salient action entails a failure in the hedonic management capacities of the action system, which leads to an increase in the resultant dysphoria.

From this first study we can now explore the problem of addictions in terms of action systems. All of our everyday life activities (work, studies, family and social life, leisures, sport, television), besides their pragmatic value, have a pragmalogical value of regulation of our arousal and dysphoria. Therefore, addictions seem to be distributed on

a continuum between Everyday Life Addictions and pathological addictions (Loonis, 1997, 1998) without there being a qualitative difference between them. Such differences arise from the different organization of the action system (i.e., differences in salience, lack of variety and vicariance, and paratelic dominance). It can be seen that the notion of action system as conceptualized here could have widespread application in the care and prevention of addictions, focusing attention on the organization of activities and their part in the control of mental disturbance.

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