

Chapter 2

The P.R.I.M.E. Theory of Motivation as a Possible Foundation for Addiction Treatment in the 21st Century

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Ideally, we would like to find effective “cures” for addictions, as we have for some cancers. With a cure, the addict’s disordered motivational system would be “restored to health” and the addictive behavior would no longer have a dominant place in his or her motivational hierarchy. Failing that, we strive to find effective therapies that suppress addictive disorders, like therapies we currently have for HIV infection. And if we cannot achieve that, we search for ways of “managing” addictions so that we limit the damage they cause, perhaps in the way we manage asthma.

Our success at doing any of these things depends on our understanding of what is wrong with the addict. At present we have some idea (for a comprehensive review of theories, see West, 2006). In a susceptible individual, particular behaviors (mostly drug-taking behaviors) get out of control because they change the individual’s central nervous system (CNS) and/or social and physical environment to increase the motivation to seek out and engage in the activity. This can be because an artificial “drive” is created; because abstinence becomes unpleasant; because the behavior is very rewarding; because the rewards and punishments associated with the behavior establish powerful habits of thought, feeling, or action; or because the ability or will to resist the motivation to engage in the behavior becomes diminished.

We can go beyond this and say what changes take place in the CNS, what it is about the behaviors that is rewarding, what underpins the unpleasant effects of abstinence, how the social environment changes to promote deepening dependence, and how it is that our propensity to exercise self-control is weakened. We have many plausible hypotheses at varying levels of analysis, from the biochemical to the sociological.

Where has this understanding gotten us so far? We do not yet seem to have any kind of cure for heroin addiction, but with long-term opiate substitution treatments (primarily methadone and buprenorphine) we can often keep it at bay, and with counseling and needle-exchange schemes we can sometimes reduce problematic behaviors (Lingford-Hughes et al, 2004). For cocaine addiction, we have no demonstrated cure, and no therapy to keep it at bay but counseling may help reduce problematic use (Lingford-Hughes et al, 2004). The same is probably true for amphetamine addiction. For alcohol addiction, arguably some people are cured by a combination of medication and counseling but more commonly it is kept at bay, so that even alcoholics who are “dry” are susceptible to relapse (Lingford-Hughes et al, 2004). It looks as though nicotine addiction can be cured in perhaps 5 percent of cases by a course of medication, such as nicotine replacement therapy, and in perhaps 10 percent by a combination of medication and what is termed “behavioral support”(Lingford-Hughes et al, 2004). There is little experience of trying to treat this addiction long term or to offer interventions to mitigate the harm. For gambling addiction, medications that improve or stabilize mood or control impulsiveness and psychological treatments have shown promise, at least in managing the disorder (Toneatto and Millar, 2004).

Conceptualizing Addiction

We may be able to do better than this. It is worth examining in more detail the phenomenon with which we are attempting to deal. Strangely, there does not seem to be a strong consensus concerning what the phenomenon is. Some researchers regard it as primarily a problem

of making maladaptive choices (Skog, 2000), some regard it as a problem of biases in the way people implicitly think about the costs and benefits of the activities (Brown et al, 1987), some focus on powerful feelings of compulsion that addicts experience (Jellinek, 1960), others argue that there is some kind of deficit in the mechanism we use to inhibit responses (Lubman et al, 2004), still others focus on the notion of “habit,”(O’Brien et al, 1992), and yet others place emphasis on how the addict places himself or herself in the social environment (Kearney and O’Sullivan, 2003). For some researchers and clinicians, addiction and dependence mean the same thing, while others distinguish between physical dependence and psychological addiction. And I have recently argued for a distinction between addiction (a reward-seeking behavior that has gotten out of control) and the range of different “dependence syndromes” that are associated with different drugs (e.g., tolerance, withdrawal symptoms, narrowing of repertoire, etc.; West, 2006).

It is unlikely that a consensus will emerge because there is no objective way of deciding the issue. There is no pathogen as there is with, say, malaria, and no obvious structural abnormality as there is with a bone fracture. However, we can build up a picture of the motivational system and the ways in which behavior patterns that we call “addiction” and others that are “addiction-like” emerge. In doing so, perhaps we can gain some new insights that will help us understand the limitations of the treatments we are currently using and ways in which we might improve things for the future.

Plans–Responses–Impulses–Motives–Evaluation: The P.R.I.M.E. Theory of Motivation

A great deal is known about human motivation, but surprisingly, it has not until now been put together into a synthetic theory. Thus there is a wealth of ideas on judgment and decision making, emotions, drives, habits, reflexes, and so on, but these have not been integrated into a model of the motivational system as a whole. I have attempted to draft such an integration (West,

2006). The result is necessarily complex but there are five unifying themes: the structure of the motivational system, focus on the moment, neural plasticity, and the unstable mind.

Theme 1: The structure of the motivational system. The first theme is a statement about the overall structure of the “motivational system.” It is claimed that this system operates at five levels of complexity as shown in Figure 1. At the lowest level are the responses themselves (starting, stopping, or modifying actions). At the next level are impulses and inhibitory forces. These are forces that impel and restrain specific actions and are the final common pathway through which all higher-order motivational elements operate. Environmental events, emotional states, and internal drives can generate impulses directly (e.g., frustration leading to the impulse to act aggressively, hunger leading to the impulse to eat). If impulses are uncontested we do not experience any feelings associated with them, but if they are held back for any reason, we experience them as “urges.”

FIGURE 1 here

Impulses “push” our behavior. The higher levels of motivation “pull” behavior in the sense that they are future-oriented. First, there are what may be called “motives.” These are mental representations of objects, events, etc., together with a degree of attraction or repulsion attached to them. These need not be brought to conscious awareness, but when they are we experience them as feelings of “want,” “desire,” or “need.” Attraction and repulsion arise out of anticipated feelings of contentment and distress. If we have conflicting motives, then the one that is strongest at the time will create the impulse to action. That impulse will then compete with any other impulses present at the time to generate the action.

The next level of complexity involves “evaluations.” These are propositional representations about the world as it is or might be that involve some sense of good or bad (useful/detrimental, morally right/wrong, etc.). This theory draws a fundamental distinction between motivational beliefs (evaluations) and feelings (desires and urges). A strong claim of the

theory is that evaluations have no direct effect on our actions. They must work through motives and then impulses. The hierarchy of levels of motivation confers a natural advantage on impulses over desires and desires over evaluations in the control of our moment-to-moment behavior.

The fifth and final level of complexity in the structure of motivations is the “plan.” Humans are capable of forming mental representations of actions together with a set of more or less well defined “starting conditions” and a degree of “commitment” to them. This allows for considerably more flexibility of action than would otherwise be possible. Desires that cannot be fulfilled at present because of other priorities or practicalities can be met at a future date. We can also construct plans in anticipation of future events that will deliver opportunities or threats. The main problem with plans is that they have to be remembered in order to generate the evaluations and motives necessary to control our actions.

Theme 2: The focus on the moment. The second unifying theme is the focus on the “moment.” Our actions at any one time can only be influenced by forces operating at that time. Urges, desires, plans, and evaluations can only affect behavior at the time they are active. When they are not active, all that exists is the structural configuration of synapses in the CNS that give them the potential to be generated. This self-evident thesis is largely overlooked in theories of motivation that postulate concepts such as “cognition,” “attitude,” and “intention” as stable entities of uncertain epistemological status. The focus in the p.r.i.m.e. theory is on the dynamic and fluid nature of motivation and behavior. Such consistencies as exist in the way we respond to events arise from the fact that the same CNS structural configuration is being acted on by the same inputs to regenerate the same motives.

This provides a very natural basis for explaining why, despite every “intention” to change the way one responds to a situation, very often one finds oneself doing the same thing one did before. It also highlights the critical importance of motivation to avoid or escape from unpleasant

thoughts as well as unpleasant experiences: not thinking about things is one of our most widely used coping strategies.

Theme 3: Neural plasticity. The third unifying theme concerns the ways in which the motivational system is altered in the short, medium, and long term by experience. The theory identifies three types of plasticity: habituation/sensitization, in which merely repeating a stimulus makes it less or more attractive or repellent; explicit memory, in which experiences and ideas can be regenerated in a more or less similar form given appropriate cues; and associative learning, which includes classical conditioning (stimulus-stimulus associations) and instrumental conditioning (stimulus-response-reinforcement associations). Associative learning results in causal connections between patterns of activity in the motivational system (including experiences, feelings, responses) becoming more “habitual,” i.e., rapid and involving less attention.

Theme 4: Identity, self-awareness, and self-control. The fourth unifying theme is the critical importance of “identity” and “self-awareness” and the role that these have in “self-control.” We are obviously capable of forming mental representations of ourselves and equally obviously those mental representations have a special significance. In keeping with the focus on the moment, we need to be attentive to the fact that those mental representations only exist when they are generated and the form they take depends partly on the structural configuration of our CNS and partly on whatever else is going on in our heads at the time. Like any mental representation, they can be coherent and detailed or incoherent and vague, they can be multifaceted or simple, and they can focus on one feature at one time and other features at other times.

One important influence that our self-concepts have on our motivation stems from evaluation of ourselves. This influences the contentment or distress we feel when we think about ourselves, and how much we like or dislike ourselves. This has widespread ramifications that affect all self-conscious behavior.

Self-awareness is a prerequisite for self-control. According to the p.r.i.m.e. theory, self-control consists of the operation of evaluations and motives that stem from self-awareness. In order to exercise self-control to stop myself doing something, I must be aware of myself and my desires must include myself in that mental representation. Non-self-conscious inhibition of a response (for example, because of a distracting or shock stimulus) would not count. Self-control is therefore based on a desire or evaluation concerning oneself (e.g., I want to be a nonsmoker).

This has some important and non-obvious implications. For example, if thinking about myself is distressing, I will be less inclined to entertain self-awareness and hence less likely to exercise self-control.

Under the theory, self-control requires mental effort, which in turn requires reserves of mental energy. Like physical energy this becomes depleted through use.

Theme 5: The unstable mind. The fifth unifying theme is application of “chaos theory” to the motivational system. Human motivation is much more like a weather system than it is like domestic plumbing. Motivation is inherently unstable and kept more or less in check by constant balancing input. It is continually inclined to head off down a new path unless it is kept on course. Chaos theory is a mathematical system for explaining, among other things, how systems can at one time appear to be deeply entrenched in a particular pattern of activity but suddenly switch to another. It explains how the tiniest of influences at a critical time can send the system down an ever-deepening rut. It deals with predicting over a period of time what is unpredictable at any given moment in time.

The single most useful concept for our purposes is Waddington’s visual model of the “epigenetic landscape” (originally developed to model embryological development; Waddington 1977). Waddington’s image suggests a way of modeling how environmental influences interact with the structure of the motivational system to generate behaviors (Figure 2).

FIGURE 2 here

What P.R.I.M.E. Theory Means for Addiction

Addiction metastizes into the whole motivational system. Because of the causal links between different elements in the motivational system, there will be many cases (probably the large majority) in which the distortion in priorities involves multiple levels. Strong habits are supported by and support powerful desires and these are justified by firmly held beliefs. In a “mature” addiction it will be rare that a single rogue element in the system is responsible for the addictive pattern of behavior, even though it may have been necessary for its initiation.

It is unhelpful to categorize addicts in terms of “stage of change.” Motivation to attempt to “give up” or “control” an addictive behavior pattern is fluid and highly situationally determined. Even small triggers can lead to sudden conversion-like transformations of the system, which then lead to lasting change. To label individuals in terms of their “stage of change” (Prochaska et al, 1992) is fundamentally to misrepresent the process of motivation to change addictive behaviors (West, 2005).

Clinical assessment of addicts can usefully be structured around the five themes of P.R.I.M.E. theory. The purpose of clinical assessment is to provide a basis for prognosis and treatment. The therapist needs to be aware of the prospects for the addict of cure, suppression, or management of the condition. Based on the five themes outlined above, assessment should: 1) encompass all relevant levels of motivation to gain an understanding of how far the distortions in the motivational system has become manifest in impulses, desires, evaluations, and plans; 2) delineate the pattern of environmental triggers acting on the addict to determine the momentary

environmental influences that pose a threat to change; 3) determine the results of neural plasticity in terms of acquired habits, drives, etc. to determine the importance of implicit and explicit expectancies, habits, and acquired drives in maintaining the behavior; 4) establish the involvement of identity to assess the barriers to exercise of self-control and how far embedded the addiction is in the addict's/patient's self-concept: and 5) evaluate the susceptibility of the addict to possible intervention strategies to determine what are the realistic prospects for shifting the state of the motivational system to a new pathway.

The treatment program needs to involve multiple components targeted at all the modifiable distortions in the motivational system. Because addiction will usually involve distortions across the whole system, the treatment program needs to address all elements that can be affected, for as long as is necessary either to achieve a cure or to suppress the addiction. In most cases, a cure is probably unrealistic because habits, acquired drives, expectancies, and sense of identity are too deeply established and because whatever personal and environmental characteristics made the individual susceptible to the development of addiction usually remain in place.

The focus needs to be on identifying the most appropriate targets for change, bearing in mind resources and ethical and practical limitations. Both medication and psychological techniques should be considered. Medications might be used to reduce acquired drive states, discomfort associated with abstinence, and emotional states that undermine self-control, as well as to mitigate generalized impulse control problems and to block selectively the reward provided by the activity. Psychological techniques can be used to try to engender a radical change in identity—a kind of conversion experience leading to a fundamental change in the evaluations underpinning the addiction, and to try to engender new habits of thought, feeling and behavior. A third possibility is to reshape the addict's social and physical environment as far as possible to

minimize the immediate triggers for the behavior, increase rewards for exercising control and disincentives for the addictive behavior, and provide distractions.

Many current approaches, such as nicotine replacement therapy and motivational interviewing, each address some of these targets; P.R.I.M.E. theory provides a principled basis for combining different treatment elements to achieve maximum effect and, where resources are limited, for choosing which target elements of the motivational system to focus on in which cases.

Making New Men and Women

In all this, we need to recognize that except in rare cases we are not carrying out the psychological equivalent of surgically removing a tumor from an otherwise healthy body. We are seeking to reshape the addict's motivational system—to change the addict as a person. In some cases this may go to the root of his or her being. Perhaps we had better hope that our techniques for doing this never become too successful because in the wrong hands ...

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