

# Addicted to Love?

By

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The experience of being in love has been likened to an illness, an addiction, and even insanity. Certainly people can become as obsessed with other people as an addict does with drugs. Love and addiction share a loss of reason, an absence of self-control, and an obsessive longing that *must* be satisfied. Neuroscientist, Paul MacLean suggested that substance abuse might be an attempt to compensate for a lack of the satisfying biochemicals stimulated by positive relationships. Drug addicts may satisfy their need for intimacy by manipulating the biochemistry of bonding and attachment. Think of how drug-addicted individuals often become indifferent to other people.

We all have what is called an *internalized mother*, a network of visceral, somatic, and emotional memories of our earliest interactions with our mothers. These unconscious memories serve as the core of self-esteem, our ability to self-soothe, and the nature and quality of our adult relationships. This foundational relationship establishes the biological, behavioral, and psychological structure of our expectations about the world and hope for the future. This internalization process of early relationships is a central aspect of the consolidation of the self and our ability to cope with challenge, stress, and trauma.

Withdrawal, on the other hand, from those on whom a baby depends for biological stimulation and growth causes distress, pain, and anxiety. Face-to-face interactions activate the child's sympathetic nervous system and increase oxygen consumption, energy metabolism, and gene expression. These higher levels of activation correlate with increased production of oxytocin, prolactin, endorphins, and dopamine: some of the same biochemical pathways involved in addiction. Early successful attachments set the stage for the social regulation of biological processes throughout life.

Relationships and addictive drugs both modulate the levels of neurochemicals in our brains, making us feel everything from misery to ecstasy. Warm and happy feelings, the desire to hold, touch, and nurture, the pain of separation and the joy of reunion have neurochemical correlates driving these powerful emotions. Neuropeptides (oxytocin, vasopressin and endorphins) mediate systems of intimate "close-up" caretaking, such as nursing, fondling and cooing, and they modulate pleasure, pain, attachment, and sexuality. The monoamines (dopamine, norepinephrine, and serotonin) regulate our energy, activity level, and sense of well-being; dopamine is a key neurotransmitter in human reward systems; norepinephrine modulates arousal and flight/fight reactions; and serotonin mediates mood, sense of safety, danger, despair, and joy. Their production and availability determine our background affect, our desire to form relationships, and our ability to cope with day-to-day stress.

From our own internal pharmacopia the secretion of endogenous opioids, such as endorphins, reduces pain and creates a feeling of well-being and elation. The central nucleus of the amygdala, a key component of fear circuitry, has a high density of opioid receptors. Thus, part of the emotional impact of endorphins is the inhibition of amygdala activation, making us feel calm, safe, and less vigilant. Cocain also causes decreased activation of the core components of the social brain, suggesting that part of its intoxicating effect involves turning off the machinery of social evaluation, interpersonal vigilance, and the experience of shame. No wonder cocain and heroine are experienced as an emotional revelation to those with histories of abuse, low self-esteem, and sensitivity to criticism.

The idea of being addicted to love may be more than a metaphor. The biochemical systems regulated by relationships are the same as those impacted by cocain and heroine, and the experiences of craving, dependency, and withdrawal are similar in both romance and addiction. The neural networks involved in the regulation and release of motivational biochemicals are triggered from multiple brain regions involved in everything from primitive reproductive processes (thalamus), to fear and anxiety regulation (amygdala), to moral and aesthetic judgments (prefrontal cortex). Whereas processes of bonding, attachment, and caretaking are initially regulated by the biology of reward, *relationships* come to regulate us as these biochemical processes become entrained with social interactions.

Given the complex mixture of motivations and rewards in relationships, it is not surprising that they can be wonderful, difficult, and an endless source of fascination. Each relationship carries some combination of reinforcers that include love, lust, safety, status, danger, calm, and peril. Mediated by a variety of neural systems, each ranks differently in our personal hierarchies of needs, interests, and desires. But in the end, we might as well face it, *we're addicted to love.*