
“Elegant” Erototoxins and Current Science: “Overwhelming Scientific Evidence?”

Donald L. Hilton, Jr. MD

In 2004 Dr. Judith Reisman testified before the United States Senate, Subcommittee on Science, Technology, and Space of the Committee on Commerce, Science, and Transportation on "The Brain Science Behind Pornography Addiction and the Effects of Addiction on Families and Communities." She coined the term “erototoxins,” and used it to describe endogenous chemicals associated with sexual arousal synergistically working to induce an addictive milieu in the brain.

Not surprisingly, those defending pornography have demurred accepting the idea of “endogenous addiction.” A recent example of criticism is found in an address by Nair, Friedman, and Maram given at the American Academy of Forensic Sciences, 63rd Annual Scientific Meeting, February 2010. The theme of the paper is that there is no evidence that pornography causes any harm whatsoever, and the authors use the euphemism “elegant” in deriding the concept of erototoxins. They also claim an inverse relationship between pornography and the number of sex crimes committed. Indeed, the premise of their paper seems to be that the solution to rape is to increase pornography. This ludicrous and irresponsible assertion ignores, for instance, the Bourke/Hernandez paper which revealed that an astounding 85% of men arrested for child pornography also had physically abused children.

It is not surprising that there was an attempt to suppress publication of this paper even after it had been accepted. The reason for the suppression was not the veracity of the data; rather, it was a concern that the results would be “misinterpreted,” as reported in the New York Times exposé of the cover-up. That this assertion ignores a plethora of overwhelming evidence to the contrary is peripheral to this report; we will consider the term ‘erototoxin’ from the perspective of current science regarding addiction, and see if peer-reviewed studies since 2004 when this term was first used are supportive or contradictory.

Let us first consider the word toxin. While a purist definition would be confined strictly to an antigenic substrate, or antibody-producing substance which causes harm to the homeostasis of the organism, we return to the original derivation of the word from the Latin toxicus, or “imbued with poison”, from which we get the word toxic, as defined by the Oxford English Dictionary, “caused or produced by a poison.”

Poison is “any substance which, when introduced into or absorbed by a living organism, destroys life or injures health.” Whether exogenous or endogenous, by these definitions “any substance” destroying homeostasis or altering normal brain anatomy becomes pathologic and thus toxic.

In considering this, consider that in the past, exogenous agents taken into the body compulsively which were detrimental were considered addictive, in that they alter the mesolimbic dopaminergic reward pathways from the ventral tegmental areas of the midbrain to the nucleus accumbens. A second, related process occurs in the frontal areas, as pre-frontal areas associated with judgment become atretic, and shrink. The metabolic changes have been seen in multiple drug addictions, such as to cocaine.

Frontal shrinkage has been seen both in cocaine and methamphetamine. It can be plausibly argued that chemicals which disrupt the normal reward pathways in the brain, and shrink the frontal lobes, are toxic, and thus poisonous, in that they “cause injury.” Also, a transcriptional product named Δ FosB has been found exclusively in the brain cells of addicted animals. It is a marker of addiction, but is also likely involved in the pathologic functioning of the addicted cell. Is it, then, a toxic neuropeptide, in that it contributes to a dysfunctional neuronal state?

What if it could be shown that natural rewards such as food and sex could cause these same changes in the brain? This has been demonstrated, and frontal shrinkage has actually been found in overeating causing obesity, in obsessive destructive sexual behavior, and pathologic dopaminergic downgrading has also been found in obesity. Even pathologic gambling causes dysfunction in the dopaminergic reward systems. Furthermore, Δ FosB (the addiction marker) has been found in the neurons of naturally addicted animals in models examining obesity and hypersexuality! These studies and others have precipitated a new perspective and direction in the field of addiction, prompting the head of the National Institute of Drug Abuse, Dr. Nora Volkow, to call for a name change of the institute to the “National Institute on Diseases of Addiction.”¹ She wanted the name to “encompass addictions such as pornography, gambling, and food.”²

Sexual addiction may get an additional addictive boost from the oxytocin/vasopressin axis. When oxytocin’s function is blocked in monogamous prairie voles they become promiscuous, and the females leave their young. Oxytocin has also been shown to directly increase trust in humans. The formation of a “virtual mistress” of sorts is not out of the question for those who prefer masturbating to pornography to sexual relations with actual humans. Norman Doidge, in *The Brain That Changes Itself*,³ and Pamela Paul, in *Pornified*,⁴ both describe the growing phenomenon of “porn impotence,” where men need pornography to function sexually, as first described by Victor Cline.

Erototoxin, then, seems to be an even more viable term than it was 6 years ago. Current evidence is eliminating the distinction between exogenous and endogenous brain drugs causing addiction. Considering this, it appears more likely than not that pornography addiction is a triple hook, consisting of cortical hypofrontality, dopaminergic downgrading, and posterior pituitary axis (oxytocin/vasopressin) bonding. Ironically, ignoring this growing evidence makes those who choose to be blind to any negatives associated with pornography as biased as those they ridicule!