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## Addiction: Current Criticism of the Brain Disease Paradigm

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### Abstract

To deepen understanding of efforts to consider addiction a “brain disease,” we review critical appraisals of the disease model in conjunction with responses from in-depth semistructured stakeholder interviews with (1) patients in treatment for addiction and (2) addiction scientists. Sixty-three patients (from five alcohol and/or nicotine treatment centers in the Midwest) and 20 addiction scientists (representing genetic, molecular, behavioral, and epidemiologic research) were asked to describe their understanding of addiction, including whether they considered addiction to be a disease. To examine the NIDA brain disease paradigm, our approach includes a review of current criticism from the literature, enhanced by the voices of key stakeholders. Many argue that framing addiction as a disease will enhance therapeutic outcomes and allay moral stigma. We conclude that it is not necessary, and may be harmful, to frame addiction as a disease.

### Keywords

addiction; language

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Over the last decade, the National Institute on Drug Abuse (NIDA) has proclaimed addiction to be a chronic, relapsing brain disease caused by prolonged substance use (Leshner 2001; Volkow 2005). In the official publication “Drugs, Brains, and Behavior: The Science of Addiction,” NIDA director Nora Volkow writes, “Today, thanks to science, our views and our responses to drug abuse have changed dramatically. Groundbreaking discoveries about the brain have revolutionized our understanding of drug addiction, enabling us to respond effectively to the problem” (Volkow 2007). However, many social scientists have criticized the recent neurocentric discourse as “reductively inattentive to individual values and social context” (Courtwright 2010).

Historians and those who have long studied addiction without functional magnetic resonance imaging, gene sequencing, or other biomedical technology have understandably questioned the claim that describing addiction as a chronic, relapsing brain disease paradigm is “revolutionary” (Acker 2005; Andrews 1941; Courtwright 2010; Goodman 1965; Gough 1884; Kolb 1962; Krivanek 1988; Morse 2006; Reinerman 2005). The idea of addiction as a disease and/or a brain disease is not revolutionary; nevertheless, it is an accomplishment celebrated and complicated by numerous competing interests. Furthermore, the efficacy of NIDA’s brain disease paradigm remains to be seen, with an estimated 23 million Americans aged 12 years and older in need of substance abuse treatment and more than \$180 billion per year consumed in addiction-related expenditures in the United States (Executive Office of the President 2004).

Historian Nancy Campbell, who studies the history of scientific research on drug addiction, asserts that the brain-disease model of addiction is an attempt to create “a unified framework for a problem-based field in conceptual disarray” (Campbell 2007). The Diagnostic and Statistical Manual of Mental Disorders, 5th edition (*DSM-5*), classifies addiction according to behavioral criteria, not biological criteria. Meanwhile, addiction scientists continue to evidence a biological understanding of addiction in search of a molecular etiology. Because diseases are both socially constructed and characterized by biological features, the disease distinction may place addiction status somewhere in a middle ground, as Campbell suggests. However, whether addiction is or is not glossed as a disease bears significant weight because of the way definitions perform “cultural work” (Acker 2010). Portraying addiction as a disease can never be neutral; thus, its effect on patients and scientists alike warrants consideration.

The popularity of neuroscience in the 1990s (proclaimed by the National Institutes of Health [NIH] and George H. W. Bush as “The Decade of the Brain”; Bush 1990) led to a vernacular shift built upon language and imagery used by brain scientists. Self-help titles appeared like “How to keep from sabotaging your brain chemistry” (Ruden 2000). Jocund new terms for addicts, such as the *Economist*’s “dopamine head” (*Economist* 1993), were born. On the *Oprah Winfrey Show*, researcher Anna Rose Childress described addicts as “living subcortical lives” (Campbell 2010), suggesting that addicts are precariously controlled by their more primitive, reptilian midbrains. Attending to this vernacular shift, scholar Nicolas Rose has argued that society increasingly privileges a “molecular style of thought” in which personal identity and human behavior are understood as inextricably intertwined with one’s “neurochemical self” (Rose 2004).<sup>1</sup> Addiction is one of myriad problems attributed to neural defect, often bereft of social context.

This article reviews several contemporary criticisms of the disease model of addiction from the literature, points further enhanced in interviews with key stakeholders. Our team interviewed 63 patients from five alcohol and/or nicotine treatment centers in Minnesota, as well as 20 addiction scientists from a variety of research fields (genetic, molecular, behavioral, epidemiologic). We asked all participants to describe their understanding of addiction, including whether they considered addiction to be a disease. Interview transcripts were coded and analyzed by the team of authors, and further discussion of methods and dominant themes arising from our qualitative analysis appears elsewhere. (Dingel et al. 2012; Hammer et al., 2012)

We focus on the voices of interviewed stakeholders—patients and scientists—to demonstrate how the discourse around addiction remains contentious and complex. In the

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<sup>1</sup>For a particularly salient fictional commentary on the problem of neurochemical selfhood, see Jonathan Franzen’s *Corrections* (2001, Harper Collins).

first section, we contrast the utility of the disease construct with its potential to further stigmatize addicts. We then follow with a discussion on how well the NIDA brain disease paradigm fits criteria for disease classification. We then consider institutional incentives reinforcing the disease model among researchers and explore how translational science goals are shaped by the reductive, neurocentrist disease paradigm. We conclude with an analysis of disease metaphors to suggest that “disease” is an unnecessary and commonly negative frame that distracts from the positive and hopeful messages that can accompany a biological understanding of addiction.

## CRITICISM OF THE “ADDICTION AS DISEASE” FRAMEWORK

### Addiction as Secular Possession

Those who favor the addiction-as-disease framework often believe that the objective, biological gaze debunks the moralized argument that addiction is a problem for weak-willed people (Buchman 2010). In the same vein, opponents of the disease framework often claim that the biological understanding will remove the onus of personal responsibility and moral culpability, that patients will use their “disease” as a “crutch” (Dingel et al. 2012; Rosenberg 1992). The majority of our interviewed patients found the disease model useful. Many believed that a disease diagnosis diminishes moral judgment while reinforcing the imperative that the sick persons take responsibility for their condition and seek treatment. Paige,<sup>2</sup> in treatment for alcoholism, said:

I think understanding that it is a disease is what helps me take control over my addiction. It helps me to understand it, and if I understand it, especially, it takes away the guilt and the shame processes that we go through, and it is hard to carry that around and get into recovery.

Elise, a smoker, disclosed an ongoing argument with her husband:

He keeps telling me it is mind over matter and I keep saying “no, when I’m having physical symptoms, that is not mind over matter.” ... I would like to think that addiction is [a disease], again, to take some of the blame off myself for feeling horrible that I did this.

In addition to reducing shame, some participants believed that their addiction-as-disease could be treated with medical treatments in the same manner as one would approach the treatment of diabetes or cancer. While we shall argue that it is the biological explanation of addiction—not necessarily “disease” status—that patients find useful, this cohort did articulate the hope that Volkow likely intended when she said recent brain discoveries are “enabling.”

Scholars have theorized that addiction-as-disease finds favor among recovering addicts because it provides a narrative that allows the person “simultaneously to ‘own’ and yet disown deviant acts committed while addicted” (Davies 1992; Reinerman 2005). In other words, simultaneously responsible and not responsible. Sociologist Craig Reinerman has further noted that in its reliance upon the understanding of self as “hijacked,” the current biological model for addiction “shares certain similarities in logical structure with 17th-century theological narratives in which demonic possession was thought to be causal” (Reinerman 2005). Addiction as a brain disease is similarly construed as a sort of “secular possession” (Room 2004).

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<sup>2</sup>All participant names are pseudonyms.

Rather than a malady of the weak-willed, addiction reframed as a pathology of the weak-brained (or weak-gened) bears just as much potential for wielding stigma and creating marginalized populations. Though it was not a view held by the majority of our addicted participants, a few voiced this concern. Irene, a smoker in her fifties, did not like how addiction framed as a disease cast her and her family as the ones “with the weak genes . . . . It makes me feel bad and it makes me feel like my parents were little lepers of society.” Irene couldn’t believe the stigma she suffered: “People started making me feel like I was a convicted felon . . . . Now all of a sudden [smoking] is a filthy, dirty disease that everybody is shying away from.” Disease itself has its own stigma; whether or not leprosy is the fault of the leper seems to count little toward diminishing society’s repulsion for the condition.

Every participant believed that society, in one way or another, has a negative perception of addicted individuals. Many said society has a deeply engrained prejudice that regards addicts as inferior and inherently bad people. Mary, a news manager in treatment for alcoholism, said, “I think there is a huge stigma to [addiction]. I think there is almost as great a stigma to alcohol as there is to mental illness because you can’t really see it on the surface.” While addiction-as-disease beheld benefits for addicts’ *internal* climates, it seems not to have transformed society into a gallery providing addicts with charitable *external* reinforcement.

### A Disease Without Etiology or Diagnostic Robustness?

Historian Caroline Acker, who studies the history of opiate addiction in America, proposes the following measures to assess the value of a disease model. Acker argues a disease model should offer: (1) scientific luster, that is, an elegant explanation of the natural world, (2) diagnostic robustness, (3) groundwork for discovering new treatments, and (4) a platform for bringing incidence and prevalence for the disease under control (Acker 2010). The current model of addiction-as-disease certainly has scientific luster, and also attempts to lay a conceptual groundwork for pharmaceutical development (Kalivas 2005). But according to our scientist interviewees, it lacks diagnostic robustness and epidemiologic utility.

Although addiction is posited as a brain disease with a molecular basis, the lack of a molecular diagnosis is a point of criticism for opponents and a source of frustration for scientists. Currently, the *DSM* classifies addiction as substance dependence (though *DSM-5* proposes to revise “dependence” to “addiction”) using criteria for behavioral and physiological symptomology occurring within the time frame of 1 year. Diagnosis relies heavily upon the patient interview to determine tolerance, intake, attempts to quit, preoccupation with the substance, and continued use despite disrupted lifestyle and adverse consequences. Inter-clinician reliability with *DSM* criteria is of concern. Hence, the object of much desire among our addiction scientists was a biological marker for addiction, be it a neurotypology, endophenotype, blood assay, or other objective test that would become the *sine qua non* for addiction diagnosis and epidemiology. One scientist said:

If we are really fortunate, we would identify specific biological mechanisms, genetic mechanisms, that, you know, you could develop a therapy to counter, like a pharmaceutical agent.

Another benefit to the identification of a biological etiologic mechanism and resultant biomarker would be standardization. The study of addiction is challenged by researchers’ variable interpretations of addiction phenotypes using the *DSM* or other guidelines, particularly in addiction research using animal models and seeking behavior. This scientist, dissatisfied with the *DSM-IV* criteria, said:

I would dearly love for us to move towards developing biological markers for addiction. We have a wide array of brain changes that occur in the addictive brain

and yet actually still have not been able to standardize a biological marker. So it is all behavioral, and essentially, we use the DSM-IV criteria, which have some very definitive weaknesses.

Historically, a biological marker has long been desired for its power to make addiction as a disease seem more “real,” which is to say biological as opposed to psychosocial (Levine 1978). A biomarker would make diagnosis more robust by Acker’s criteria, could be used to generate prognostic data for relapse, and might aid public health efforts to engage in targeted prevention. At least, a biomarker would enhance the claim that addiction is a disease.

### The Draw of Disease-Labeled Research

The addiction-as-disease construct currently helps scientists legitimize requests for research funding. Congress allocates funds to disease-based institutes; currently, there is a strong focus on the rapid translation of basic science research into clinical practice (Stokes 1997). One scientist expressed frustration in how he saw government-funded research privileging targeted, as opposed to basic, research: “There is an increasing tendency to have rational drug design to try to treat disease, but most of the things that we know about are still relatively serendipitous.” He mentioned that funding was a major limitation. He believed studies that fail to “translate” into medical treatments get cut. Another scientist similarly said, “[The government] gives you the money if you compete for [biomedical project funding]. If [researchers] say [they want to study] environment, they will not get any funds from Congress.”

Several scientists also felt the classification of addiction-as-disease would help them recruit more young scientists into the field. One scientist said that the stigma of addiction is not only felt by the addicted, but by those who research addiction: “I think one of the issues that has kept scientists from working on this is the same [moral] stigma. I think if we had a way of making this process be thought of as a disease you are going to have a lot more scientists willing to roll up their sleeves to work on the problem.” Thus, addiction-as-disease was an important factor in scientists’ efforts to obtain funding and build research teams.

### The Pill to Cure Addiction

Pharmaceuticals are considered to be the prime target and most logical outcome of translational neurogenetic addiction research. Howard Kushner has described how the construction of addiction as a disease is similar to the history of depression; once understood as a disease—with the subsequent invention and marketing of Prozac to a targeted patient population—depression provided a legitimate medical indication for pharmaceuticals (Kushner 2010).

Addiction as a disease also, though somewhat ironically, encourages the production, marketing, and sales of psychoactive drugs to reduce cravings and counteract the effects of addictive drugs. Several of the scientists we interviewed affirmed pill-oriented goals. One said:

The goal of my research is to come up with a pill that will counteract some of the biological—very powerful biological forces that drive addiction. In no way will a pill ever be *the* sole treatment for an addiction . . . . Today, recidivism rates are sky high because these people are working against very powerful biological forces. So a pill will make rehabilitation efforts that much more effective.

Many patients, too, hoped for better addiction medications than are currently available. Madge, a smoker, said that if a doctor presented her with a prescription and said, ““This is what is going to do it. This is going to kill it. You will no longer smoke after you have taken this for such and such a time,’ yeah, I’d do it! You betcha I would! Because I want to quit!”

Kushner posits that the downplaying of the addictive potential of selective serotonin reuptake inhibitors (SSRIs) use is due to the designation of depression as a brain disease with a physical (as opposed to psychosocial) etiology. Similarly, scholar Helen Keane examines the ways that pain medicine practices have downplayed the risk and addictive potential of opiates because the condition the narcotics have been prescribed to treat (pain) is considered a disease with a physical etiology (Keane 2010). Keane highlights a contradiction between patients prescribed narcotics for pain and those who obtain narcotics illegally: Among the former, neuroadaptation (dependence) is considered a normal “side effect” of medication, and drug-seeking behavior understandable; for the latter, their neuroadaptation is regarded as pathological, their behavior criminal, and their compunction “hijacked.” Based upon studies such as Kushner’s and Keane’s, Courtwright rightfully argues that what we think about addiction largely depends on who is addicted and how the addicted behave (Courtwright 2010); it also depends on how “real” addiction is considered to be.

### Disease as Trope

While the “diseasing” of addiction may lure some to conceive of it as more “real” (as we have seen, a status more often linked to physiology than psychology or behavioral symptomology; Levine 1978), disease as imagined—as trope—comes with considerable metaphorical baggage and is fraught with misunderstanding. Diseases, by common definition, are impairments, sicknesses, conditions that we know to be abnormal and harmful. But metaphorically, diseases describe evil, plague, contamination, scourge, affliction, curse, blight, and bane. The persons with a disease carry with them the baggage of their culture’s associations for what a disease is, literally and figuratively.

The charged language of disease was a main reason why most scientists and some patients in our sample objected to the addiction-as-disease construct. For example, addictive substances are popularly described as “hijacking” the brain’s reward circuits in the limbic system, compromising cortical control in the frontal lobe (Nestler 2004). “Hijack” may have picked up added momentum because of its post-9/11 resonance, but it is more metaphorical than explanatory. The majority of scientist interviewees also disliked addiction-as-disease because they thought it was semantically inaccurate. They referred to addiction as a “biobehavioral disorder” or a “syndrome” rather than “disease.” One scientist explained, “I would say that [addiction] is a syndrome because the word disease implies specific knowledge of etiology. Pneumococcal pneumonia is a disease, but pneumonia is a syndrome.”

Several scientists disliked how the disease trope steers people away from the idea that addiction is a disordered form of a natural biological process, a point recently made in the work of gambling addiction scholar Natasha Dow Schull (Schull 2012). One scientist said:

Disease does imply really some pathogenesis and in the case of addiction part of the issue is we should recognize that we have been programmed to be addicted anyway. We are basically addicted to fundamental reproduction activities. We are supposed to be addicted to having sex and be addicted to looking after children and so on.

By using more accurate, neutral language, scientists believed that people would better understand the biological processes underlying addiction: that the human brain organically responds to a flood of rewarding stimulation elicited by the presence of substances interacting with receptors, and understandably orients its architecture to seek further pleasure. It is in the remodeling process of neuroadaptation that the problem of addiction lies. But addiction is not a pathology limited to the organ contained within a human skull, but rather a biopsychosocial phenomenon, a dynamic entity with variable narrative arcs

particular to periods of time, population, and location (Gladwell 2010; Heath 2000; MacAndrew et al. 2003).

## CONCLUSION: TOWARD A MORE ACCURATE INTERPRETATION

Kushner has pushed social scientists and biomedical scientists to formally engage with one another in pursuit of a “biocultural understanding of addiction” in which “seemingly contradictory social-constructionist and biologically reductionist claims about addiction” are fused to reframe addiction as a “hybrid entity” (Kushner 2010; Vrecko 2010): that is, a science integrative of biology and culture—a continuing dialogue between social scientists and neuroscientists.

Historically, and in diverse societies, diseasing and “othering” have been common human reactions to groups of people who exhibit unfavorable behavior or characteristics against the backdrop of cultural norms. Those who believe that diseasing addiction will reduce stigma fail to recognize how disease itself has its own stigma; the diseased are often just as set apart as “wretches” and “sinners.” It is, however, naive to assert that addiction stigma will slough off if the disease terminology is eschewed (MacAndrew et al. 2003). One cannot change the negative perception of addiction by changing a word, but controversy over a word can foster dialogue in which people’s underlying assumptions are revealed and cross-examined. Controversy can force critical attention to difficult matters otherwise glossed.

We are embodied beings. Biologically, that addiction rests on a neurochemical platform is evident and potentially useful. However, it is not necessary to frame addiction as a disease to access the benefits from biological addiction research.

Quite possibly, those who wish to medicalize addiction discourse hope to hold the reins of addicts’ long-term treatment and demand for pharmaceuticals. Is it necessary that addiction be labeled a “disease” to make the recommendation for long-term treatment, medication, or social support? Without an “actionable etiology” (Courtwright 2010; Satel 2009) to support the disease model of addiction, perhaps it is better to call it something else.

How then, should addiction be understood? We are embodied beings, and those bodies inhabit specific and complex social milieu. An understanding of addiction must remain broad: addiction as a possible consequence of the human desire to alter consciousness (Kushner 2010); a chief public health concern for its dramatic negative impact on society through the destructive behaviors of the addiction; a chronic, relapsing, biopsychosocial disorder that cannot be understood apart from social context—not simply as a brain disease.

Further, the complex and contested climate of addiction discourse will likely remain so. It constitutes an accurate reflection of what addiction is and also reflects the struggle to determine effective treatment for the individual. Addicts wrestle with addiction long-term; addicts commit to therapy without the guarantee that it will get easier with time and without the promise of cure. The experience of addiction hasn’t the certainty of a single definition (Schull 2012) or the simplicity of a single solution. The challenge of providing quality care for the addicted is layered not only with careful consideration of the unique experience and social context of the addicts—their ability to cope, their understanding of the nature of their illness, and their attribution of responsibility for the problem and solution (Gladwell 2010)—but also with consideration of how the addict has been affected by the notion of addiction as a disease.

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