When the Brain Leaves the Scanner and Enters the Clinic: The Role of Neuroscientific Discourses in Producing the Problem of “Addiction”

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Abstract

Addiction neuroscience promises to uncover the neural basis of addiction by mapping changes in the “diseased brains” of people with “drug addictions.” It hopes to offer revolutionary treatments for addiction and reduce the stigma experienced by those seeking treatment for a medical, rather than moral, condition. While the promises of addiction neuroscience have received considerable attention, relatively few studies have examined how neuroscientific discourses and promises play out in drug treatment settings. Instead of asking how neuroscience might measure or treat a pre-existing addiction “problem,” we draw on poststructuralist ideas to trace how neuroscientific discourses produce addiction as a certain type of “problem” and the effects of these particular problematizations. Based on interviews with a range of different types of treatment providers working in Victoria, Australia, we discuss three themes that reveal neuroscientific discourses at work: (1) constituting pathological subjects, (2) neuroplasticity and “recovery,” and (3) the alleviation of guilt and shame via references to the “diseased brain.” On the basis of our analysis, we argue that dominant neuroscientific discourses produce patients as pathologized subjects, requiring medical treatment. We also contend that the intersection of neuroscientific and recovery discourses enacts “recovery” in terms of brain “recovery” through references to neuroplasticity. Further, when

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neuroscientific and moral discourses intersect, addicted subjects are absolved from the guilt associated with immoral behavior emerging from a “hijacked brain.” We conclude by emphasizing the need for future critical work to explore the complex ways in which neuroscientific discourses operate in localized care ecologies.

Keywords

treatment, problematization, critical neuroscience, Foucault, Bacchi

In contemporary treatment for alcohol and other drug addiction, the therapeutic promises of addiction neuroscience and the brain disease model of addiction (BDMA) have been wide ranging. They include effective pharmacological treatments with fewer side effects, such as buprenorphine, to treat opioid addiction (Veilleux, Colvin, Anderson, York, & Heinz, 2010), direct brain interventions such as deep brain stimulation (Luigjes et al., 2012) and the application of neuroimaging technologies and neurocognitive research to diagnose and treat clients with alcohol and other drug addictions (Franken & van de Wetering, 2015; Lubman, 2007). Despite almost three decades of neuroscience research on addiction, very few of these clinical promises have been realized (Hall, Carter, & Forlini, 2015; Kalant, 2010). To quote the U.S. National Institute on Drug Abuse (NIDA, 2016), the failure to translate “evidence based” neuroscientific interventions into practice has resulted in a “bench-to-bedside gap” (p. 5).

Neuroscientific interventions for addiction are often based on a one-way premise that neuroscientific knowledge discovered in the scanner or laboratory has the potential to be translated to the “bedside” for therapeutic gain. There is, however, a growing critical neuroscience literature that sets out to challenge the “perspective-bound and interest-specific constraints that belie, in some contexts at least, objectivist aspirations of neuroscience and of those enthusiastic about its applicability in everyday life” (Slaby & Choudhury, 2018, p. 35). A key function of critical neuroscience is to move beyond a simplistic translational model by interrogating the social and cultural effects of neuroscience within society and how neuroscientific interventions might be used in local treatment settings. Instead of asking how neuroscience might measure or treat addiction, a critical perspective enables us to ask how neuroscientific discourses help produce addiction as a certain type of problem. This is important because problem enactments not only constitute concerns and influence what might be validly conceptualized as a concern but also affect how people’s concerns are responded to, which concerns are responded to, and how people are enacted as “normal,” “abnormal,” or “immoral” subjects.

There is a growing corpus of literature in critical addiction studies exploring the ways in which different enactments of addiction emerge across different sites. Alcohol and other drug screening and diagnostic tools (Dwyer & Fraser, 2015, 2016b; Savic, Barker, Hunter, & Lubman, 2016; Savic & Fomiatti, 2016), policy and funding models (Lancaster, Duke, & Ritter, 2015; Moore & Fraser, 2013; Moore, Fraser, Törrönen, & Tinghög, 2015), legal processes (Seear & Fraser, 2014, 2016), online resources (Pienaar et al., 2015), and online platforms like Twitter (Dwyer & Fraser, 2016a), have all been the subject of recent critical enquiry concerning how the “problem” of addiction is constituted and what effects such constitutions entail for individuals. Further adding to this body of literature, the current study examines a key site in the production of addiction, which has rarely been the subject of critique: the alcohol and other drug treatment setting. This article adapts concepts from Bacchi’s (2009) *What’s the Problem Represented to Be?* (WPR) approach to policy analysis to examine (a) the role of neuroscientific discourses in the enactment of addiction as a serviceable problem in addiction treatment; and (b) the types of subjects produced through these enactments.

Background

While the focus of this article is neuroscientific discourses, in our analysis and in practice, these often intersect with other discourses such as recovery and moral discourses that treatment providers are exposed to, negotiate, and work with (Karasaki, Fraser, Moore, & Dietze, 2013). As such, before discussing our theoretical approach, it is necessary to introduce and map out neuroscientific, recovery, and moral discourses of addiction. For the purposes of our article, “discourse” does not merely refer to language or a linguistic analysis; rather, discourses are seen as socially produced forms of knowledge that set limits upon the way a topic can meaningfully be thought, written, or spoken about (Bacchi, 2009).

Neuroscientific Discourses

The significance of the role and effects of neuroscientific discourses within lay, professional, and policy settings continues to be the subject of historical and sociological enquiry (Dumit, 2004; Pickersgill, Cunningham-Burley, & Martin, 2011; Rose & Abi-Rached, 2013; Vidal, 2009). In regard to how neuroscience influences the way individuals understand their own subjectivity, Rose (2003) has argued that we have become “neurochemical selves” where “individuals themselves are beginning to recode their moods and their ills in terms of the functioning of their brain chemicals, and to act upon themselves in the light of this belief” (p. 59). Explaining this as not an entirely modern phenomenon, Vidal (2009) traced the history of the development of the “cerebral subject” from mid-20th century highly medicalized, industrial societies back to the 17th century, when a new form of subjectivity was influenced by neurological understandings of the self.

In contemporary alcohol and other drug addiction research and treatment, a number of prominent agencies, including NIDA (Leshner, 1997; Volkow, 2005; Volkow & Fowler, 2000; Volkow, Koob, & McLellan, 2016) and the American Society of Addiction Medicine (2011), have been strong proponents of the BDMA that characterizes addiction as a chronic, relapsing brain disease.

Historians have traced the rise of and resistance to the BDMA, situating it within a wider political context of medicalization where the positioning of the brain at the center of addiction allowed addiction researchers to access technical resources and draw upon the social authority afforded by neuroscience (Campbell, 2007; Courtwright, 2010). While supporters of the NIDA brain disease paradigm have argued that it may benefit people with addiction by reducing moral judgment and providing novel biomedical interventions (e.g., pharmacotherapies; Leshner, 1997; Volkow, Koob, & McLellan, 2016), critics have not only contested the neurobiological evidence underpinning the BDMA but also argued it may increase stigma for those with addictions and lead to a bias toward medical solutions to social problems (Fraser et al., 2017; Hall, Carter, & Forlini, 2015; Hammer et al., 2013; Midanik, 2004; Trujols, 2015).

Fraser, Moore, and Keane (2014) critically examined the effects of the BDMA and how neuroscientific discourses produce addiction as a biological process. Within this enactment of addiction as a brain disease, vivid visual representations emerging from brain imaging technologies (e.g., positron emission tomography [PET], functional magnetic resonance imaging) have been central to locating addiction within the brains of individuals (Dumit, 2004; Keane, 1999). Dumit (2004) explored how brain images come to be taken as facts about the world and how people might be placed among the different categories (e.g., normal vs. pathological) offered by the images. In regard to addiction, neuroscientific representations have been used to distinguish between the brains of “healthy controls” and those of “drug abusers,” such as in the graphics represented in NIDA’s health campaign entitled “Drugs, Brains, and Behavior: The Science of Addiction” (NIDA, 2014). While other analyses have elucidated the role of brain scans, such as in the constitution of the “teen brain” and addiction in neuroscience-informed Australian drug education (Farrugia & Fraser, 2017), our analysis provides a further empirical layer analyzing the effect of visual representations of the brain in the alcohol and other drug treatment setting.

Fraser and colleagues (2014) also drew attention to an apparent contradiction in neuroscientific accounts of addiction: while the concepts of neuroadaptation and neuroplasticity render the brain as changeable in both structure and function in response to external stimuli, the BDMA produces a “certain rigidity as characteristic of the addicted brain” (p. 52). While notions of neuroplasticity have been prominent in the public imagination via the work of, for example, Canadian psychiatrist Norman Doidge (2007) and have been the subject of various critical analyses (e.g., Choudhury & McKinney, 2013; Pickersgill, Martin, & Cunningham-Burley, 2015), the concept of neuroplasticity has been largely absent from dominant neuroscientific discourses of addiction such as those represented by NIDA (Hall, Carter, & Barnett, 2017).

Furthermore, Fraser and colleagues (2014) highlighted how the central player within neurobiological enactments of addiction has been the “hijacking” of the “brain reward system” that is cast as damaged as a result of long-term drug consumption. However, referencing Berridge’s (2007) work, Fraser and colleagues noted that rather than reward being simply characterized by pleasure or euphoria, contemporary neuroscientific discourse differentiates “liking” from “wanting” and asserts that dopamine release maintains a state of “wanting” a drug independent of “liking” its effects. As such, those with drug addictions are enacted as disordered, continuing to pursue a practice they no longer enjoy.

Recovery Discourses

While there has been considerable debate and multiple attempts to define “recovery,” often recovery is characterized by abstinence from alcohol and other drug use, improved health and well-being, and the development of a “nonaddict” identity via participation in “normal” social relationships and increased participation in work and community activities (Dahl, 2015; Fomiatti, Moore, & Fraser, 2017; Neale, Nettleton, & Pickering, 2011). The notion of recovery features prominently in contemporary alcohol and other drug policy and treatment in the United Kingdom (UK) and Australia (Fomiatti et al., 2017; Lancaster et al., 2015). However, the idea of recovery has had a fraught relationship with neuroscience (Heather et al., 2017). For example, Best and Kawalek have argued that the “emergence of the recovery paradigm has challenged the conceptualisation of addiction as a biologically-driven phenomenon rooted in human pathology” (Heather et al., 2017, p. 2), instead asserting recovery occurs in social contexts.

A wide body of research has critically examined the assumptions of the recovery paradigm and identified a number of potential effects (Fomiatti et al., 2017; Fraser & valentine, 2008; Harris & McElrath, 2012; Lancaster, 2017; Lancaster et al., 2015; Neale et al., 2011; Sedgwick, 1993). This body of scholarship has highlighted the way in which recovery discourses foreground abstinence, individual transformation, and citizenship while obscuring the role of sociostructural forces in people’s lives and the different goals and desires of those who might be concerned about their alcohol and other drug use. For instance, in their analysis of UK and Australian alcohol and other drug policy documents, Lancaster and colleagues (2015) critically examined different conceptions of recovery, its place within policy, and how recovery discourses enacted the problem of drug use. Lancaster and colleagues traced how assumptions underpinning different representations of recovery construct individual drug using subjects as “responsible agents” and “patients” in need of curative attention through respective neoliberal and medical discourses. In contrast to the biomedical discourse of contemporary neurobiological accounts of addiction, where addicted subjects are seen as “brain diseased,” Lancaster and colleagues argued that recovery discourses emphasize that people who use drugs are rational, autonomous neoliberal subjects who have agency to take control of their own health, presumably by engaging with drug treatment.

Moral Discourses

In his analysis of governing images in public discourse concerning problematic drinking, Room (2001) referred to the dynamics of competition between medical and moral discourses. He described a range of “new moral-accountability” discourses, arguing that “[l]ong after the demise of the North American temperance movement,” moral models of drinking were indeed “alive and well” (p. 41). Drawing upon Gusfield’s (1967) analysis, Room referred to the development of the moral conceptualizations of problematic drinking over time: from those of the “repentant drinker” in the initial temperance movement to the “enemy drinker” in the latter part of the 19th century, and finally to the “sick drinker” in the 1940s after the Repeal of Prohibition, essentially transitioning from one moral status to another.

Central to moral discourse lies a narrative of ethics delimiting what is right from what is wrong (Bright, Marsh, Smith, & Bishop, 2008). The kinds of subject positions made available within moral discourses relevant to addiction seemingly represent a binary opposition: a deviant, irresponsible, and immoral “addict” contrasted against a morally upstanding, nondrug using individual. Moreover, Bright and colleagues (2008) emphasized a dichotomy between abstinence/purity and use/sin, characterizing addictive behavior within moral ideology as “all or nothing.”

Importantly, Room (2001) contended that medical and moral models were not necessarily mutually exclusive. Extending this proposition, Bright and colleagues (2008), in their analysis of substance use discourses in Australian media, argued that immorality was seen as a manifestation of exposure to the pathogen represented by drug use characterized within disease representations of addiction.

In summary, we have illustrated how neuroscientific discourses enact addiction as a disease of the brain and distinguish between “healthy” and “drug abusing” subjects on the basis of differences in brain function. In contrast to dominant neurobiological accounts of addiction, many have argued how recovery discourses emphasize that drug users are rational, autonomous neoliberal subjects who have increased agency to command responsibility for their recovery. Furthermore, we have highlighted how moral discourses establish a binary between the deviant “addict” and the “moral” nondrug using subject. Through our analysis of treatment providers’ accounts, the primary aim of our study concerns the way neuroscientific discourses enact addiction as a certain type of problem and the types of subjects that are produced through these enactments. Our findings also illuminate how neuroscientific discourses intersect with recovery and moral discourses to constitute addiction in different ways, which has important implications for how service users experience treatment.

Theoretical Approach

Our analysis is framed by Bacchi’s (2009; see also Bacchi, 2018) work on poststructural policy analysis, which has been productively extended beyond policy settings to explore the ways in which addiction has been problematized in the law (Seear & Fraser, 2014), online education resources (Pienaar et al., 2015), and online counseling (Savic, Ferguson, Manning, Bathish, & Lubman, 2017). Bacchi’s (2009) WPR approach is inspired by Foucault and draws on his concept of “problematization”: that is, “how and why certain things (behaviour, phenomena, processes) become a problem” (Foucault as cited in Bacchi, 2012, p. 1).

Further elucidating the epistemological and ontological implications of this approach, Bacchi again draws upon Foucault (as cited in Bacchi, 2009, p. 35):

Problematization doesn’t mean the representation of a pre-existing object, nor the creation through discourse of an object that doesn’t exist. It is a set of discursive and non-discursive practices that makes something enter into the play of the true and the false and constitutes it as an object for thought (whether under the form of moral reflection, scientific knowledge, political analysis, etc.).

Contrary to conventional views that frame policy interventions as responding to preexisting social problems, Bacchi (2009) has argued that “problems are endogenous—created within—rather than exogenous—existing outside—the policy-making process” (p. x). In undertaking this analysis, our aim is not to downplay people’s concerns about their alcohol and other drug use. Rather, we seek to trace how people’s concerns come to be known as “addiction problems” through the enactment of neuroscientific discourses in treatment settings.

An interrogation of the effects of different types of problematization is critical to understand how specific problem representations may benefit some while harming others, and influence how people are governed (Bacchi, 2009). Bacchi identifies three types of interconnected and overlapping effects that different problem representations might give rise to: discursive effects, subjectification effects, and lived effects. Discursive effects relate to how discourses that contain problem representations impose limits on what can be thought and said about particular problems and in turn “make it difficult to think differently” (Bacchi, 2009, p. 16). Subjectification effects refer to how we become subjects of a particular kind and how social relationships take place within discourses. Lived effects turn attention to the material impact of problem representations and their direct effects on people’s lives such as reducing access to resources.

Moving from policy to interview transcripts as the site of analysis, the WPR approach guides our interrogation of the production of “problems” and “subjects” in addiction treatment providers’ practice. While Bacchi (2009) typically refers to the effects of problem representations within policy, Savic and colleagues (2017) argued that a similar application of Bacchi’s work is also useful in the context of alcohol and other drug treatment. They argued that treatment, like policy, is a site where purportedly therapeutic solutions are readily proposed, implemented, and presented as inevitable and common-sense responses to particular problems. Given the taken-for-granted assumption that solutions inevitably follow from problems, critical approaches that scrutinize how treatment constitutes problems, and the people with problems, are needed. In the context of our study, we argue that treatment interventions involving discussions of the brain or neuroscience produce addiction in important ways. Rather than responding to preexisting addiction “problems,” neuroscientific discourses are productive; they enact addiction as a certain type of treatable problem. We analyze the effects these types of problem formulations give rise to, such as constructing certain people as “ill” or “diseased” and defining what is “normal,” and how they shape the types of treatment resources made available to different individuals.

Method

In this article, we analyze data generated in interviews with treatment providers working in public and private alcohol and other drug treatment settings in Victoria, Australia. In 2015/2016, in-depth, semistructured interviews were conducted (by the first author, A.B.) with 20 treatment providers working in a variety of different settings. Potential recruitment sites were identified from the authors’ networks as well as the alcohol and other drug treatment services online listing (<https://www2.health.vic.gov.au/alcohol-and-drugs/aod-treatment-services>). Potential sites were purposively selected in order to recruit different types of treatment providers from settings with varying treatment philosophies (e.g., harm reduction, abstinence) spanning inner Melbourne and rural Victoria. A primary contact at each site, who had granted local ethics approval for the research to proceed, also advertised the study and referred treatment providers following a “gatekeeper referral” method (Jessiman, 2013). The project was granted ethics approval by the Monash University Human Research Ethics Committee (CF15/2656—2015001096).

The 20 participants (10 men and 10 women) were recruited from five sites. Participants included addiction medicine specialists, psychiatrists, nurses, social workers, psychologists and counselors, harm reduction workers, and other general workers in the addiction treatment field. Recruitment sites

included inner and outer Melbourne interdisciplinary clinics offering a range of services including counseling and pharmacotherapies, a private psychology practice, and a rural therapeutic community offering a short-term, abstinence-based program. The mean age of participants was 48 years (range: 32–66 years). Participants had been employed in their current service for a mean of 5 years (range: less than 1 year to 14 years) and had worked within alcohol and other drug treatment for a mean of 12 years (range: 1 year to 31 years). Demographic data were unavailable for one participant. A number of participants had previously trained and/or worked in other jurisdictions including the US, UK, or Asia.

The interviews were conducted as part of a wider project exploring how addiction treatment providers viewed addiction problems, treatment, and policy initiatives. The mean interview duration was 44 minutes (range = 18–69 minutes), and all interviews were conducted face-to-face on site at treatment providers' places of employment. Interviews were recorded and transcribed verbatim by an external transcription service. Transcripts were anonymized, and analysis of the data was conducted using NVivo, Version 11. The transcripts were first analyzed for themes relating to treatment providers' references to neuroscience or the brain, how they discussed the brain, and how they viewed the impact or relevance of discussing neuroscientific concepts with service users. This process was guided by the constant comparison method (Seale, 1999). Coding was conducted by A.B., and regular meetings between A.B. and the other authors were held in order to discuss categories that were emerging from the coding process. A detailed coding structure emerged following the analysis of a subset of transcripts, and this structure then provided a coding framework for the remaining analysis. The second step of the analysis involved A.B. selecting a number of treatment providers' accounts that exemplified a range of different problem enactments and their effects from across the full data set. These accounts were then subjected to Bacchi's (2009) WPR approach.

Beyond policy analysis, there are a number of recent examples demonstrating the utility of Bacchi's (2009) WPR approach in analyzing interview transcripts (Lancaster, Treloar, & Ritter, 2017) and transcripts of online counseling sessions (Savic et al., 2017). The WPR approach comprises six key questions (Bacchi, 2009, p. 2):

1. What is the "problem" represented to be in a specific policy?
2. What presuppositions or assumptions underlie this representation of this "problem"?
3. How has this representation of the "problem" come about?
4. What is left unproblematic in this problem representation? Where are the silences? Can the "problem" be thought about differently?
5. What effects are produced by this representation of the problem?
6. How/where has this representation of the "problem" been produced, disseminated and defended?

In a similar way to other applications of the WPR approach (e.g., Savic et al., 2017), we sought to address particular questions, namely, Questions 1–5. For the accounts selected for analysis using the WPR approach, initial coding focused on identifying problems (Question 1), analyzing presuppositions and assumptions that underlied these problem representations (Question 2), followed by a genealogical approach to trace the discursive and nondiscursive practices along with developments that contributed to the formation of the identified problem representations (Question 3). We then analyzed how issues were relegated to the background or silenced by particular problem representations and how they might have been thought about differently (Question 4). Finally, we identified the effects produced by particular problem enactments (Question 5).

Where possible, we also draw upon field notes that were recorded in a diary (by the first author, A.B.) to describe characteristics of the different settings in which the research was conducted. These field notes provide insights into the clinical spaces where the interviews were conducted and further contextualize treatment providers' accounts.

Analysis

We now present and discuss three themes to explore a range of problem enactments of addiction and their effects: (1) constituting pathological subjects, (2) neuroplasticity and “recovery,” and (3) the alleviation of guilt and shame via references to the “diseased brain.” We have used pseudonyms to preserve treatment providers’ anonymity.

Constituting Pathological Subjects

In exploring treatment providers’ accounts of clinical encounters in which they discuss the brain with service users, we trace how addiction emerges as a certain type of “treatable problem.” In this example, Steven, an addiction medicine specialist, recounts his experience of using a picture of the brain in the provision of a new therapeutic intervention that was being tested for its clinical utility in working with service users. When asked whether he discussed the brain with patients, Steven said:

Yeah, look, it’s interesting that when you say that question, I was thinking about, is this about whether or not we use it—in you know, consultation settings? Or in psycho-education, as they call it? [. . .] One of the things that came out was [. . . in testing the new therapeutic intervention with patients] a picture of the brain, showing the different parts of the brain and how they act in addiction and how they get deranged in addiction. The [staff] feedback, interestingly, was “well, we find that patients or the participants really like it. They like to see this stuff.”

Through Steven’s description of the picture of the brain, the problem of addiction is represented as one characterized by brain dysfunction. A key assumption underlying this problem representation is that the process of addiction leads to certain parts of the brain becoming “deranged.” This conceptual logic of the addiction problem residing within the brain is made possible by neuroscientific discourses of addiction. Consistent with dominant neuroscientific discourses of addiction, addiction is characterized as a brain disease where brain “disruption” and “damage” play central roles (Leshner, 1997; Volkow, 2005; Volkow et al., 2016).

Importantly, the picture of the “deranged” brain as an object is not only rendered legitimate and objective by neuroscientific discourses (Choudhury & Slaby, 2016; Dumit, 2004) but is also important in the problematization of addiction as a brain disease, which has consequent effects. In this problem representation, a key discursive effect limiting what might be thought about addiction occurs when neuroscientific explanations of the causes of addiction are foregrounded, and other potential social or environmental factors that might be at play in addictive behavior are obscured. Similar to Dumit’s (2004) work, in this instance, the picture of the brain makes available a certain type of category where patients become (via subjectification effects within Bacchi’s framework) pathologized subjects in need of medical treatment, that is, they now are produced as having “deranged” or diseased brains that were presumably not deranged prior to becoming addicted.

Further, within this problem representation, another important subjectification effect emerges: the “patients or the participants” are constituted as subjects who “really like” viewing the brain picture. That is, the patient is constituted as an avid, appreciative consumer of neuroscience who takes interest in being educated about the inner workings of the brain. Here, we see evidence of the way the “neurochemical self” (Rose, 2003) might be constructed in the clinic where patients form an understanding of their own addictive behavior in terms of their own neurology. In addition to the work of neuroscientific discourses, there are a range of sociomaterial factors that might be at work that aid in the constitution of these subjects. These included the clinical space of the medical clinic, which incorporates clinical aids accessible to the addiction medicine specialist (e.g., the brain picture), or even the patient waiting room, which constitutes various aspects of patienthood or what it means to be a “patient.”

Steven continues by elaborating on his own references to neuroscience in clinical practice:

I think [...] in most cases, where there's the opportunity, I would refer to brain neurology, because part of it, I think is—because I'm often engaged in trying to get people on medication treatments. That's a lot of what I do as a doctor. It's a good way to engage people.

Additionally, Steven explains how he uses neuroscience to explain possible treatments such as the use of pharmacotherapies:

[...] sometimes they [patients] say: "Why should I take more drugs?" Or "Why should I substitute this drug?" Or "I want to do it without medication." Often it's good discussion to say: "Well, studies have shown that addiction isn't just because you're weak-willed. It actually changes this part of the brain that is responsible for pleasure"—and a lot of people these days know all this stuff. [...] people appreciate being educated. But also, they might be more inclined to think: "Well, if that's the case, it's not my fault. I might benefit from treatments that address those neurological issues." So yeah, I think I do discuss it.

Through Steven's identification of the problem at hand as one of trying "to get people on medication treatments," there is an underlying assumption that patients, or pathologized subjects, require medical treatment. A potential lived effect of this problematization is that patients are encouraged to take prescribed medications (e.g., pharmacotherapies) targeting the brain where the pathology lies. In this account, questions and concerns raised by patients about treatment are discounted and silenced by scientific "facts" ("studies have shown") about the brain. This gives rise to discursive effects such as the delegitimizing of lay, nonbiomedical discourses through the greater scientific value afforded to neuroscientific discourses. As Bacchi (2009) details when discussing Foucault's work, the delegitimizing of lay discourse in this example is a form of subjugated knowledge insofar as the lay account appears to be disqualified. The epistemic authority given to dominant neuroscientific discourses over individuals' experience is described by Hall, Carter and Morley (2003, p. 867), who remark that "a 'disease' that can be 'seen' in the many-hued splendour of a PET scan carries more conviction than one justified by the possibly exculpatory self-reports of individuals who claim to be unable to control their drug use."

This enactment of addiction as a disorder of brain function reframes patients' addictive behavior from one of moral failure to a neurobiological problem caused by changes in the part of the brain responsible for pleasure. This type of reframing is consistent with a broader shift in understandings of alcohol and other drug problems from moral to neurobiological models of addiction (Carter & Hall, 2011). In contrast to common assumptions that the BDMA might reduce the stigmatization of people with addictions (Volkow et al., 2016), neurobiological enactments run the risk of stigmatizing patients as "addicts," "disordered," and "sick" in the process of seeking to treat them (Savic et al., 2017).

Neuroplasticity and "Recovery"

A number of treatment providers described discussing the concept of neuroplasticity with service users in order to create a sense of hope about the future and to create optimism about recovery. In this first example, Sarah, a staff member who provided training and education to residents at a recovery-focused therapeutic community, spoke about how she used the concept of neuroplasticity:

[When running sessions with residents] I talk a little bit about neuroplasticity, about forming new pathways [...] I do bring that in in a very simplified form, just to reinforce that with people that you can make changes, that it's not locked in, but that it's very easy to slide back into the set pathways. I do have those discussions with people... that new patterns of behaviour become, or start to become, more entrenched as your brain changes. No more scientific than that, but to know that it can.

Like Sarah, Jarrad, an addiction medicine specialist at an outer suburban interdisciplinary pharmacotherapy clinic, also used the concept of neuroplasticity to create a sense of hope about the future.

A.B.: Do you touch on concepts like neuroplasticity and how the brain might change over time?

Jarrad: Yes definitely. Definitely because I think that that's one thing that people are frightened of. One of the reasons that people use drugs is because it makes them feel better but also feel stuck, that it's always going to be like this. I think one of the things you need to maintain in drug treatment is a sense of optimism that people change all the time. People's thinking changes all the time and just because they're on this dose of methadone now and they're on this other drug and they're on this depression medication, that isn't the way it's always going to be. Because the brain changes, the brain evolves, your ability to self-manage stress, anxiety, depression, changes and it isn't entirely dependent on drugs to do that; with appropriate behavioral change, their brain will get better. That's the neuroplasticity that you were talking about, it's absolutely critical for all the maintenance of optimism and I think maintenance of optimism is a key part of our therapy.

We might begin by comparing and contrasting the different environments in which the two interviews were conducted. Firstly, in relation to treatment philosophy, the therapeutic community provided the environment for a short-term (less than two months) period of residential rehabilitation based on an abstinence model of recovery. In contrast, at the interdisciplinary pharmacotherapy clinic, while abstinence goals might be discussed as a part of treatment, a range of harm reduction interventions were also available (e.g., a needle and syringe program; opioid replacement therapy). Second, in regard to clinical spaces, service users in the rural-based therapeutic community had access to varying nonmedical forms of therapy such as gardening, cooking, and exercise. In contrast, the pharmacotherapy clinic was generally designed with a waiting room and access to varying treatment rooms more consistent with a medical practice. Interestingly, our findings provide empirical evidence that neuroscientific discourses are at work in these two vastly different treatment settings.

In both of these examples, the problem of addiction for service users is represented as one of being “locked in” an entrenched cycle of addiction. A discursive effect of this “stuck-in-addiction” problem representation is the production of addiction as an inherently rigid problem that must be fixed. This entrenchment is associated with negative affects including being “frightened” about the inability to recover from addiction in the future. In both treatment providers' accounts, the concept of neuroplasticity constituted a sense of “optimism” about recovery and the future. This kind of hope is considered a vital ingredient in recovery and one which treatment providers are encouraged to foster (Best & Lubman, 2012).

In these examples, one of the key assumptions about the representation of the problem is that being “stuck” in an entrenched addiction cycle is due to abnormal neural circuitry. Similarly, just as the central feature of the addiction problem lies within the brain, so does the way out to recovery. That is, “recovery” is defined by brain “recovery” through “forming new pathways” where the brains of service users will “get better.”

There is a complex intersection of multiple discourses at play that enable this problem representation to emerge. First, the notion of being entrenched in a cycle of addiction and not being able to change is consistent with the brain disease model's enactment of addiction as “incontrovertible” (Fraser et al., 2014, p. 55) and with a certain characteristic “rigidity” (Fraser et al., 2014, p. 52). This neuroscientific discourse also intersects with a “recovery” discourse. In our examples, “recovery,” whether it be in an abstinence-based or harm reduction setting, is made possible as a result of the operation of neuroplasticity where the brain is enacted as being changeable in structure and function.

Lancaster and colleagues (2015) argued in their policy analysis that, in contrast to biomedical discourses where subjects are seen as “brain diseased,” recovery discourse emphasizes rational and autonomous subjects taking control of their own recovery. Our analysis leads to an alternative view in

that through the operation of a discourse of neuroplasticity, recovery discourse is afforded greater weight and truth status. This does, however, open up a contradiction insofar as, in one enactment, subjects are produced as “brain diseased” while, in another enactment, subjects are produced as having highly plastic brains that can recover from addiction, seemingly through “appropriate behavior change”—a requirement that is left opaque in our example.

The Alleviation of Guilt and Shame

Treatment providers also discussed ways in which they worked with neuroscientific discourses in an attempt to reduce the shame and guilt associated with addiction. The following account exemplifies this theme. Bryce, a psychologist specializing in the treatment of addiction, described how he viewed the brain in relation to addiction:

I subscribe to Robinson and Berridge’s concept, that it’s about the frontal cortical control. So that differentiates an urge from a craving. So to me you can have weak urges or strong urges, but there’s still frontal cortical control behind it. But in addiction the frontal cortex gets disconnected. They talk about a disruption to the striato-thalamo-orbitofrontal circuit—which you’ve probably come across in your literature review. So that differentiates addiction from problematic substance use.

In Bryce’s account, addiction is problematized as a disruption of highly specified circuitry within the brain, which gives rise to discursive effects that limit how we might think about addiction. The establishment of addiction as being caused by disrupted neural circuitry occurs via the operation of a neuroscientific discourse of addiction, where findings of neuroimaging studies have indicated disruptions to the striatal, thalamic, and orbitofrontal brain regions in people diagnosed with alcohol and other drug addictions (Volkow, Ding, Fowler, & Wang, 1996; Volkow & Fowler, 2000). This problematization is consistent with Robinson and Berridge’s (1993) work where changes in specific neural systems distinguish “liking” drugs from “wanting” drugs. In Bryce’s formulation, the differentiating factor between two types of drug problems—addiction and problematic substance use—is whether or not there is a “disconnection” between these brain regions affecting cortical control. This problematization sets up addiction as distinct from problematic substance use on the basis of neurobiology, which has implications for how Bryce explains addiction to clients.

When Bryce was asked whether he discusses the brain and neurobiology with his clients, he further explains that:

Totally, yeah—well, with the ones who have got addictions. Yeah, absolutely. They have so much shame and so much confusion, and so many—even drug and alcohol workers—have set them up for such failure by saying, “okay well, next time you get the urge just do this.” It’s like, well, if it’s a craving not an urge, you can’t—the switch has gone off and you’re on autopilot. So it really helps them understand that they’re not a bad person, that they kind of—maybe I use the sort of term, you kind of become a “temporary psychopathic zombie.” Sometimes it’s just a one track mind, and psychopathic loss of conscience. Then unfortunately because it’s temporary, everyone reconnects and then you get this huge wave of guilt—remorse, fear, angst, confusion, “what the hell happened?”—and no-one can explain that, “what just happened?”

Here, Bryce suggests that he discusses the brain primarily with those he considers to have an addiction (i.e., those whose brains have been changed to “want” drugs despite no longer “liking” them), in order to alleviate the shame and guilt he sees as associated with their failure to control a craving, a failure that results from a “switch” temporarily going off in their brain. Continuing to clarify the clinical utility of discussing the brain with service users, Bryce states:

I often quote the neurology to give it legitimacy—not to teach them—but to make it sound—so that they kind of get, this actually is real. But I talk about two brains—so you’ve got your—whatever they’d like to call it: “my disease, or my addict brain”—or whatever it is. Whatever the person wants to call it, really it’s up to them—and the “you brain” and this is what your values are, what you want, blah blah blah. This little bugger just wakes up now and again and just hijacks you. We’ve got to keep him boxed up . . .

Through Bryce’s metaphorical reference to the “temporary psychopathic zombie,” the behavior he associates with addiction is represented as temporary, irresponsible, episodic behavior outside a person’s control, followed by waves of guilt, remorse, fear, and confusion. This formulation of addiction lies at the intersection between neuroscientific and moral discourses, where addiction is enacted as an issue of brain circuitry leading to irresponsible, immoral behavior. Consistent with moral discourses, Bryce’s account of the addicted person shares aspects of the notion of the “repentant drinker” (Gusfield, 1967), which casts the drinking subject as either a repentant abstaining individual or a morally condemned, out of control drinker.

In Bryce’s account, the repentant, abstinent drug using identity, and the sinful, out of control drug using identity, are both explained as being anchored in brain function with the respective comparisons of the “you brain” and the “diseased brain,” both at work in a single individual. Within this problem representation, the immoral self is cordoned off and released via a process of brain “hijacking”—a metaphor central to BDMA discourse (Fraser et al., 2014). The addicted subject is absolved from the guilt associated with their immoral behavior because it is not due to a personal moral failing or lack of appropriate values but instead to a “hijacked” brain. This enactment gives rise to subjectification effects such as the production of addicted subjects who are both essentially moral but temporarily immoral, with behaviors assigned to two dichotomous selves, disconnected in the brain. Moral behavior is attributed to the real or authentic self, and drug using behaviors attributed to an immoral “hijacked” self. The subject may well behave badly, but only during a period when their “temporary psychopathic zombie” takes over.

Importantly, within Bryce’s account, neuroscientific discourses around brain “hijacking” add legitimacy to the proposition that the drug use is outside of the drug user’s control. Similar to the way in which a recovery discourse was afforded a greater truth status through the operation of a neuroscientific discourse earlier, we observe a similar intersection of discourses in this example. The moral discourse, which splits the addicted subject between a moral and immoral self, is afforded a greater truth status as a result of the operation of a neuroscientific discourse.

The neuroscientific discourses at work in this account have the effect of constituting Bryce as an expert. Independent of the trust status of what might inform Bryce’s views or be talked about in terms of neural circuitry and the diseased brain, neuroscientific discourses may constitute those providing treatment for addiction as having certain expertise and as utilizing treatments with increased legitimacy underpinned by references to addiction neuroscience or the brain.

Conclusion

Informed by Bacchi’s (2009) WPR approach, which is underpinned by poststructuralist theory on problematization, our analysis demonstrates that rather than being preexisting objects awaiting detection or treatment by neuroscience, addiction problems emerge and are constituted through the complex intersection of neuroscientific and other discourses in addiction treatment settings.

Neuroscientific discourses appeared to be at work in different ways. In our first theme, the delegitimation of lay accounts of addiction was made possible by the greater epistemic value afforded to neuroscientific discourse. In the second and third themes, it was through the operation of the epistemic authority of neuroscientific discourses that recovery discourses and moral discourses were afforded greater truth status. In light of these findings, we argue that there is a need for critical reflexivity in

alcohol and other drug treatment and research, which would encourage treatment providers, researchers, and funders to consider how “problems” are enacted, and the ways in which they might be enacted differently (Bacchi, 2009). Furthermore, we suggest that there is an urgent need for mechanisms to enable subjugated lay knowledges to come to the fore. For instance, consumer participation in treatment, qualitative research, and public communication voicing personal stories of alcohol and other drug use (e.g., on the website www.livesofsubstance.org; Fraser et al., 2016) may unsettle the dominant discourses of addiction we have discussed in this article and afford possibilities for other discourses and enactments of alcohol and other drug use to emerge (Pienaar et al., 2015; Pienaar et al., 2017; Pienaar & Dilkes-Frayne, 2017; Treloar, Pienaar, Dilkes-Frayne, & Fraser, 2017).

In relation to recovery, our findings complicate Best and Kawalek’s (Heather et al., 2017) assertion that the recovery paradigm has challenged biological conceptualizations of addiction. Instead, our findings provide evidence that neuroscientific discourses may intersect with recovery discourses with the effect of promoting hope and optimism about recovery for addicted subjects. In regard to moral discourses, our findings are consistent with Room’s (2001) argument that medical and moral discourses are not mutually exclusive. Indeed, our results indicated that their intersection may give rise to subjects being alleviated of the guilt and shame associated with immoral behavior stemming from a “hijacked” brain.

Although our qualitative interview approach cannot provide an analysis of neuroscientific discourses at work across every type of profession present in differing clinical environments (e.g., psychiatry, addiction medicine, psychology, nursing, and social work in different types of treatment sites), our results do illuminate the work of neuroscientific discourses in multiple settings from the medical clinic and psychology practice to the therapeutic community. We have provided some indications about the varying nature of clinical spaces and their role in shaping encounters. Future qualitative research utilizing ethnographic methods in particular could build on the insights of this study to more explicitly examine how sociomaterial practices aid in the constitution of addiction as a certain type of problem and service users as different types of subjects.

As a consequence of neuroscientific enactments of addiction in our examples, other concerns regarding the social or cultural factors contributing to drug-related harm were left unaddressed and often remained silent. This silencing may give rise to what Bacchi (2009) calls “lived effects” insofar as they potentially mean that financial, housing, mental health, and/or legal issues experienced by people diagnosed with alcohol and other drug addictions may remain unaddressed. However, as Bacchi reminds us, it is vital that we remain reflexive about the limitations and effects of our own methodology and critical lens. Our analysis of treatment providers’ accounts examined how neuroscientific enactments made addiction a certain type of problem. To facilitate this analysis, we extracted treatment providers’ references to neuroscience within the interview transcripts analyzed. Other diverse themes within our data set relating to treatment providers’ views about the relevance of psychological, social, and cultural aspects of addiction for clients in treatment were not considered in this article. As others have noted, people tend to interact with an array of diverse knowledges relating to the neurobiological, psychological, and social in constituting their own and others’ subjectivities (Meurk et al., 2016; Pickersgill, Cunningham-Burley, & Martin, 2011). It is vital that readers avoid the conclusion that treatment providers in our study were neuro-essentialist in their treatment practices, that is, overly focused on neuroscience to the detriment of other factors. Instead, our poststructuralist analysis sought to analyze particular neuroscientific enactments of addiction, and we acknowledge that problems may emerge in many ways given they are situated within a complex web of entanglements or what Bacchi and Bonham (2014, p. 178) describe as “a whole package of relationships.”

Set against the context of NIDA’s claimed “bench to bedside” translational failure of addiction neuroscience, we would argue that future research should continue to move beyond simplistic translational models by examining the social effects of neuroscientific discourses. As a result of a narrow

focus guided by a neuroscientific evidence-based intervention approach, we argue that many of the unintended effects of addiction neuroscience within clinical practice have remained and continue to remain uncovered. Indeed, our findings offer a preliminary window into the ways in which neuroscientific discourses operate in treatment in varying ways and with many different effects. Such effects have the potential to lead to unintended harms and unknown benefits for people in treatment for addiction. Furthermore, policy makers involved in future knowledge translation would do better to consider how addiction neuroscience currently impacts clinical practice and how it is used in localized care settings, instead of focusing solely on what is often described as a translational failure. Such a focus tends to downplay the complexity underpinning the ways in which neuroscientific concepts are currently being adopted in localized care ecologies.

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