

## **Junk: Overeating and obesity and the neuroscience of addiction**

Over the last decade intense concern has developed in the West about what has been characterised as an obesity epidemic. The current climate of fear about obesity is producing a range of effects, including changing attitudes towards food. Some foods are no longer just foods; they are increasingly framed as illicit substances, especially for people classified as overweight. Can food really be understood as a kind of drug? This depends on the way in which the notion of the “drug” is itself defined. Drugs can be seen in terms of Mary Douglas’s definition of pollution – as matter out of place (Keane, 2002). In this sense, the category of drugs is an entirely political one: it contains all substances the consumption of which attracts social opprobrium at a given time. Indeed foods such as sugar, fat, and even staples such as bread, are coming to be described as drugs in some contexts, and overeating is increasingly framed as a form of addictive behaviour. How do new concerns about junk food, health and compulsion impact on notions of drug use and addiction? Categories of overweight and obesity capture so many individuals, pathologise so large a portion of the population, that their association with compulsivity and addiction must surely demand some drift from margin to centre for those concepts. In this article, I explore food and obesity as a case study of changing ideas about addiction, asking how this new area of public concern is reframing addiction.

Drawing on an analysis of scientific journal articles that link obesity and addiction, the article examines the assumptions that drive such linkages, and their implications and effects. As any cursory examination of the scientific literature makes clear, wherever obesity is linked to addiction, it is increasingly accounted for via

neuroscientific theories of behaviour. The brain's hedonic and reward systems are cited, along with the operations of endogenous opioids and cannabinoids, to frame "excessive" eating as addictive behaviour, and "highly palatable" or junk foods as akin to conventional drugs – that is, intrinsically addictive in their chemistry. In the process, a range of phenomena are enacted. In science studies theorist John Law's (2011) terms, numerous important "collateral realities" are produced. "Drug addiction" is referred to as though no controversy exists over its interpretation, and criteria for diagnosis as though they are no longer subject to revision. Likewise, "drugs" are produced as a homogenous group, the attributes of which, contrary to dominant accounts of drug addiction, are seen to warrant no differentiation. In the process, the limitations of such accounts of food, the body, health and well-being are exposed. Indeed, food and eating demonstrate even more clearly than does drug consumption the limits of neuroscientific accounts of complex socially embedded practices. Given this, we must ask why addiction appeals so strongly as an explanatory framework, when the epidemiology of overweight and obesity would suggest the processes at work are as normal as any that produce normatively slim bodies. Does the neuroscience of obesity require the normalisation of addiction? If so, what are the implications of this?

## **THE RISE OF THE NEUROSCIENCE OF ADDICTION**

As do all knowledges, the neuroscience of addiction has political origins. During the 1970s, illicit drug use was targeted in the United States as a primary cause of social disorder. The Nixon government responded in part by funding basic scientific research into addiction, mainly through the National Institute on Drug Abuse (NIDA). Across the

1980s and 1990s this research came to focus increasingly heavily on neuroscientific methods and frameworks. In so doing, new biological truths about the brain – about neurotransmitters and receptor sites for drugs – were created (Vrecko, 2010; Courtwright, 2010). At the same time, the advent of new imaging technologies enabled cheaper and easier study of the brain, without the need for surgical access to human brain tissue (Campbell, 2007). As Vrecko explains, these developments allowed researchers to form a “new neurobiological problem space” and situate addiction within it (p. 61). This space in turn enabled new directions in drug control, abstinence-based treatments and anti-drug education. These directions continue to develop and unfold as the neuroscientific space expands.

While social and cultural factors are sometimes acknowledged within this field as contributing to addiction, the “brain reward system” is the main focus of the new approach to addiction. According to neuroscience, the brain’s reward system evolved in order to reinforce behaviours geared towards survival – sex and eating being primary examples (Hyman, 2005). These activities prompt the release of the neurotransmitter dopamine, producing sensations of pleasure. Addictive drugs are said to “hijack” this reward system by binding to the same receptor sites in the brain and producing intense sensations of pleasure (Robinson & Berridge, 2003). As the brain adapts to the presence of a drug, its circuitry changes, further reinforcing the effects of the drug. According to NIDA scientists Volkow and Li (2004), this is “the neurobiology of behaviour gone awry” (p. 163).

Greeted by some as a valuable new approach to addiction, this neuroscience model has also prompted scepticism among clinicians and researchers. As historian

David Courtwright (2010) points out, although the brain model has achieved cultural prominence as a scientific theory, its clinical influence has so far been limited, and cannot be said to have impacted, as neuroscientists promised, on the stigmatisation of addicts or on prohibitionist drug policy in the United States. Despite these limitations, neuroscience continues to expand into the domain of addiction and compulsive behaviour, taking in so-called behavioural addictions and those that defy strict classification, such as overeating and obesity.

### **THINKING THE OBESITY EPIDEMIC**

In analysing this development, it is important to clear an epistemological space beyond scientific truths of addiction to ensure the analysis does not find itself relying on the very phenomena it seeks to unpack. Given science and its truths are made in society and culture, there is a need to situate overeating and obesity socially and culturally too. This discussion of the development of scientific accounts of obesity therefore sets off from the critical social science literature on obesity.<sup>1</sup> Social scientists have raised a range of questions and concerns about the terms of the obesity debate and its broader validity (for example, see Gard & Wright, 2001; Monaghan, 2005; Lobstein, 2006; Campos, Saguy, Ernsberger, Oliver & Gaesser, 2005; Rich & Evans, 2005; Stephenson & Banet-Weiser, 2007). They have contested the epidemiology behind claims of an obesity epidemic, questioned the negative health judgements being made about fat, and attempted to locate discussion of the meaning of weight, fat, health and fitness in its social context and in a more cautious approach to medicalisation than is found in the public health and medical literature. Gard and Wright (2001), for example, argue that a kind of premature certainty

has been generated about the effects and implications of obesity. They use the work of Ulrich Beck to explore the rise of obesity discourse to argue that obesity is now seen as a risk of modern Western life amenable to quantification. They challenge this idea particularly in relation to the body, arguing that contrary to recent efforts,

It may well be that the body is not an object that lends itself at all well to rational quantification ... we need to see scientific uncertainty about the body not as a curse but as confirmation that we are not machines. (p. 546-47)

An equally critical approach to the obesity epidemic is found in an article by Monaghan (2005). Questioning the science behind the 'war on fat', it casts doubt on the perceived epidemic of excess weight among UK men. Monaghan does not argue that high weight is never harmful to health (although he does query the assumption that it is *always* harmful to health). Instead he calls for debate that refuses the polarisation of health along slim/fat lines. His non-dualist approach recalls Gard and Wright's approach to the non-rational, careful to avoid either denigrating the usual targets (emotion, fat, the body) or inappropriately valorising them, as some have argued is not helpful (see below). Instead, Monaghan's choice of language often consciously disrupts our usual assumptions about the alignments between bodies, body size and value. In keeping with this nuanced approach to the symbolics of bodies and fat, Monaghan also pays attention to the operations of power and stigma in the debate: "'obesity epidemic talk' is inseparable from social, cultural, political and economic concerns and therefore the exercise of power" (p. 309). Likewise, he recognises that body fat invokes and relies on a series of potent social and cultural concepts and attributes, and that these are the source of our negative views on it.

Like Monaghan, Campos, Saguy, Ernsberger, Oliver and Gaesser (2005) also argue that concern about obesity is unnecessarily high in that it is not supported by

evidence. Also like Monaghan, they refer often to “the war on fat” (for example p. 57, p. 58), and offer a range of reasons for what they see as a widespread misinterpretation of data and accompanying “rhetoric”, arguing that it is driven by “cultural and political factors” (p. 55). In short, they propose a primarily economic explanation for the production of anti-fat discourse, but combine this with references to the role of “ideology”, “anxieties” and “morality”. The paper also draws out the important relationship between negative judgments about obesity and negative attitudes towards minorities and the poor, and situates these in broader social and political issues such as immigration and the economy (p. 58). Emma Rich and John Evans (2005) take an important step beyond this work in their discussion of the debate in that they accord emotions substantial power in shaping obesity discourse (p. 349). Indeed, they explicitly acknowledge the need to consider emotions, those of affected individuals and those operating in the broader social context, more closely in analysing how obesity is thought. Bethan Evans (2006) too alludes to complex emotional forces at work in how obesity is understood, referring for instance to the role of guilt in reactions to it (p. 261). She notes that the emotional aspects of eating and body size are largely ignored in policy, save to list shame and guilt as causes of overeating (p. 263).

These contributions go some way toward locating obesity and fat as social and cultural concepts, establishing that knowledge about the fat body, even apparently objective epidemiological knowledge, is itself shaped by longstanding culturally specific fears and assumptions about food and fat bodies. However, this literature leaves much unexplored. For more detailed, sophisticated analyses of the meaning of the fat body, it is useful to turn the feminist literature on gender, the body and beauty.

## **THINKING THE FAT BODY**

As the preceding section suggests, obesity and the many political, public health and medical responses to it need to be understood as emergent within complex nets of meaning, subjective experience and social relations, all informed by normative concepts of gender, race and class. This is also true of the powerfully abjected central object of the debate, fat itself. Here, feminists have made a distinctive contribution to understanding the meaning of obesity, and the responses and effects that attend it. Two decades ago, influential critic Susan Bordo (1993) made a now classic argument about the meaning of fat and the way in which it operates as a gendered figure for ambiguity, permeability and unruliness. Utilising Mary Douglas's insight that, "the 'microcosm' – the physical body – may symbolically reproduce central vulnerabilities and anxieties of the 'macrocosm' – the social body" (p. 186), Bordo argued that the contemporary attachment to the slender, toned body relates to concerns about the "'correct' management of desire" (p. 187) and the containment of threatening and unruly flesh. In her account, the bulging body is "a metaphor for anxiety about internal processes out of control" (p. 189). Much more recently, Samantha Murray (2005) has argued that we are "asked ... to read the fat body as a site of moral and physical decay" (p. 266). LeBesco and Braziel (2001) too draw attention to the meanings of fat, noting that the fat body invokes "reckless excess, prodigality, indulgence, lack of restraint, violation of order and space, transgression of boundary" (p. 3). While women have long been a particular target of these fears (Bordo, p. 206), Western social and cultural frameworks now encourage all of us to contain and control the body. While the "fat woman" has registered as particularly problematic, fat

also implicitly works to undermine or discredit masculinity. Fat, wherever it materialises, feminises and casts into doubt the rationality of anyone affected, including “fat” men and “fat” children.

Feminist challenges to normative and proscriptive representations of body size have also included celebrations of the non-normative “fat” body (see LeBesco & Braziel, 2001; Saguy & Riley, 2005). Some critics have, however, queried the move to frame fat as resistance. Yancey, Leslie, and Abel (2006) challenge the feminist focus on the perils of the slender body, arguing that fat is negatively affecting the health of the least advantaged women and that feminists are failing to address the social inequalities manifest in weight. Probyn (2008) has questioned the “semiotic reversal” suggested in the reclamation of fat (p. 402). For Probyn, “there is something seriously wrong with an analysis that leaves untouched the socioeconomic structures that are producing ever larger bodies” (p. 402). For these scholars, feminist celebrations or defences of weight against the medical and social control of bodies fail to take account of the economic and gendered inequities of fat and obesity. While Probyn’s critique raises important issues to do with disadvantage and access to health, it has also been criticised for taking the ‘obesity epidemic’ for granted (Kirkland, 2011).

Bordo’s (1993) intervention identified the complex gendered negotiations of social power in fat and slender bodies, in loose and taut flesh. Her work drew attention to the need to recognise the complexity of the meanings attributed to fat, the body, food and eating. Murray’s (2005) account of her brief immersion in the fat pride movement and of the strong negative response others have to her body weight offers a good example of this kind of recognition. As she contends, “every time the fat woman hides her eating from



others ... she is really eating other people's disgust at her body" (p. 217). Like Bordo's observations about the symbolic function of fat, Murray's work points to the profound, intricate and powerful social and cultural forces expressed in food and flesh beyond the "health" or otherwise of individual overweight bodies. As does other feminist research in the area, Murray's work makes clear that gender dynamics, values of rationality, and emotionally charged bodily ideals must be considered when understanding responses to overweight and obesity.

It is on this broad social science, and explicitly feminist, scholarship that the analysis conducted here is built. What is obesity and on what foundations are our fears about it based? What is fat? How does it function symbolically? What about food? Is it just fuel, is it a drug, or does its meaning run deeper and resonate more widely than this? These literatures offer at least four critical interventions that form the basis for this analysis:

1. The 'obesity epidemic' should not be taken for granted
2. Fears about overweight and obesity are informed by a range of factors beyond the 'pure science' of physiology, endocrinology and other health sciences. These include commercial forces, historical concepts of the proper body, and gender and class norms
3. Fat should be understood as profoundly social and symbolic, as should food
4. The politics of eating, fat and obesity are complex and cannot be easily reduced either to simple health concerns or to ideas of resistance and self-determination.

Clearly, obesity, fat and food cannot be lifted from their social and political contexts if we are to understand their significance and account for their effects convincingly. Indeed, any analysis of the scientific literature on obesity needs such insights to allow critical

purchase on issues otherwise presented as incontrovertible facts of value-free scientific method, and on phenomena otherwise treated as self-evident material objects beyond the reach of social and political forces.

## **THEORISING REALITIES OF OBESITY AND ADDICTION**

Taking on these lessons from the critical social science literature on obesity and fat requires a theoretical approach able to treat the object of analysis as social, as performed or enacted by complex social and political forces, as well as entirely material. John Law's (2011) work on collateral realities is useful here. Taking an approach he calls "ontological politics", Law argues that all phenomena (such as the body or the disease of obesity) are *made in practice* rather than given in nature. This making of phenomena entails the making of realities, including what he calls "collateral realities", those that are "made along the way" as phenomena are produced. Distinguishing the meaning of "reality" intended in the expression "collateral realities" from conventional understandings of reality, Law points out that,

If reality *appears* (as it usually does) to be independent, prior, definite, singular or coherent then this is because it is being *done* that way. Indeed these attributes or assumptions become examples, amongst others, of collateral realities [emphasis in the original]. (p. 156)

In short, reality is not given, or even "socially constructed" in the common sense, rather it is, as already suggested, "done in *practice*". It must be done again and again to remain stable; as such it is multiple and very much open to change.

Law's (2011) interest in collateral realities, and in the general multiplicity and mutability of reality, is expressly empirical. When he describes realities as made in practice, he assumes along with this formulation the need to investigate these practices empirically if we are to understand properly realities as they are made, and as they might

be made differently (p. 157). Practices, he says, are assemblages of relations. These relations can be mapped and tracked to yield knowledge about specific realities.

The practices Law (2011) refers to include representations, such as those found in the scientific literature analysed in this article. Such representations do not merely reflect reality, they enact it. It follows from this then, that, “If, performatively, representations do realities in practice, then those realities might have been done differently. We find ourselves in the realm of politics” (p. 161).

Law’s (2011) approach corresponds with the approach I take here. Rather than merely reflecting a pre-existing reality, the scientific discourse I examine ‘does’ realities, does ontological politics. It makes these realities, including, or partly through, collateral realities. Law spells out the three main attributes of this approach. First, it allows him to track very specifically the features of the enactments that occur in representations (the example he uses is that of a conference slide show). How, precisely, do they work? By, he says, selecting, juxtaposing, deleting and ranking elements. Second, these realities are not stable or consistent. Instead, different realities are enacted at different moments according to different needs. Third, he speculates that the multiplicity evident in the enacted realities he observes is a requirement of “institutional survival” (p.165).

Clarifying how this approach can be used across different empirical contexts, Law (2011) suggests attention be paid to a series of related issues: first, consider how relations are put together in particular order to “produce objects, subjects and appropriate locations” (p. 171), and second consider how these assemblages then become and remain stable. Third, identify the work being done “to wash away the practices and turn representations into windows on the world” (p. 171). How, in other words, do the

processes through which realities are made and kept stable become sufficiently obscured to allow those realities to appear independent, given in nature rather than produced in the social? Fourth, remember that whatever the empirical setting (he cites meeting halls, laboratories and surveys), there “is no escape from practices” (p. 171), all, in other words, is practice. No other, founding, reality lurks behind them. Last, attend to “gaps, aporias and tensions between the practices and their realities” (p. 171). This is where the stability of realities become vulnerable, and the possibility of change emerges.

There is much to take from this approach in analysing the scientific discourse that is the subject of this article. Increasingly conceived as the effect of a form of addiction – food addiction – obesity is linked in the scientific literature more and more directly with the dominant neuroscience account of addiction as brain disease, and individual conduct as the direct effect of brain chemistry. Particular collateral realities are enacted in these accounts – realities of addiction and drugs themselves, and many others. This analysis considers the relations at work to constitute particular realities of obesity, how the stability of these realities is achieved and maintained, and the processes or strategies by which this stabilising work is simultaneously obscured or “washed away” (Law, 2011, p. 171). As Law points out,

whatever is not contested and, more particularly, whatever lies *beyond the limits of contestability* is that which operates most powerfully to do the real. And it is this, to be sure, that is the technique that lies at the heart of common sense realism. It is the enactment of collateral realities that turns what is being done in practice into what necessarily *has* to be (emphasis in the original). (p.174)

In what follows I aim to bring back into the domain of contestability the collateral realities being made along the way as overeating and obesity come to be framed via the neuroscience of addiction.

## METHOD

The articles analysed in this chapter were collected in two main ways:

1. A systematic search was conducted across three journals: *Addiction*, *Obesity Reviews* and *International Journal of Obesity* (the latter two are both published by the International Association for the Study of Obesity). These journals were chosen as the key publications in their field (addiction and obesity respectively). The terms “addiction” and “obesity” were used together to search the journals’ electronic archives for material linking obesity and addiction. This search produced a total of 30 articles. The search provided some information on the distribution across time of debate about the relationship between obesity and addiction, although this was constrained by the limitations of the online archive of the *International Journal of Obesity* (established in 1976, its earliest online issues are from 1997) and the relative youth of both the obesity journals (*Obesity Reviews* was first published in 1999).
2. A general Google Scholar search was also conducted for articles linking obesity and addiction across all fields. This yielded a large body of publications, many of minimal or no direct relevance to questions about the relationship between obesity and addiction (for example, some simply included lists of disorders such as obesity and drug addiction). From this corpus, 10 key articles were selected which focused explicitly on the debate about overeating as addiction. These spanned a range of disciplines, allowing insight into the distribution of debate across medical, health and social science fields.

Together these searches produced a dataset (N=40) intended to cover both the depth and breadth of research on obesity as addiction. Bearing in mind the constraints on some of the data collection, the pattern of publication evident in the dataset reflected the broader history of the rise of the neuroscience of addiction in that most substantial coverage appears after 2000. Once collected and sorted, this corpus of literature was then examined in light of Law's notion of collateral realities.

### **REPEATING ADDICTION?**

Following Law, we can say that wherever obesity is defined or produced, other, related or "collateral" realities are also produced. Probably the most significant reality enacted collaterally to the central phenomenon of obesity in the scientific literature collected here is that of "addiction" itself. Literature linking obesity with addiction began to emerge in the early 1980s and has grown unevenly over time, appearing in small clusters often with many years' gap in between. This temporal spread produces quite different accounts of obesity, and at the same time, draws on changing accounts of addiction itself. This is one of the challenges or opportunities of linking obesity and addiction – neither phenomenon enjoys conceptual stability. Just as obesity has been defined and measured differently across the last 30 years or so since it began emerging as a significant public health issue, so too has addiction itself. Key source of definitions of addiction, the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) has reviewed its criteria and terminology several times. Movements in mental health have influenced the emphasis definitions have taken, shifting between psychoanalytic notions to social psychological notions of trauma and social determinants, to, more recently, the neuroscientific accounts of the vulnerable

brain explored here. In this way, addiction has survived as a viable institutional object of psychiatry even as its boundaries and content fluctuate. Indeed, the etiology, attributes and implications of addiction have long been, and remain, heavily contested, and a range of different treatment modalities and responses (abstinence, harm reduction and so on), often accompanied by intense dispute, have developed. Yet this variation across time (along with persistent multiplicity at any given time) tends to be downplayed, at times “washed away”, in the scientific literature on obesity as addiction.

In some scientific articles – usually earlier ones – definitions of addiction are subjected to scrutiny, and arguments for expanding them to include eating are made. In such cases a commitment to achieving a single comprehensive definition is clear. In other cases, the stability and utility of existing definitions is taken for granted. Is obesity the effect of addiction? This commonly asked question acts to produce addiction as a single, stable and self-evident object whether or not the authors conclude in the affirmative or the negative. Marks (1990), for example, offers a very confident (in some respects narrow, in others extremely broad) definition of addiction in his formulation of the similarities between drug addiction and what he calls behavioural addictions such as “overeating (bulimia)”: “‘Addiction’ denotes repetitive routines that aim to obtain chemicals and, less often, routines without that aim. The latter are behavioural addictions” (p. 1389). Here addiction is defined narrowly in that it must entail repetition, but broadly, too, in that it embraces anything characterised by routine. As is suggested by the publication date (1990), this article does not draw in any detail on neuroscientific accounts of addiction. It does make reference to questions about the role of dopamine in the brain, but, it says, such questions offer scientists only “tantalising clues” at this stage

(p. 1392). Instead the article takes the World Health Organisation definition of “dependence syndrome” as its starting point to argue for a more global definition that embraces compulsive acts or thoughts beyond those directly related to drugs. Here we can see the beginnings of contemporary interest in linking addiction to food, and the use of a particular marker of addiction (repetition) to open the way for this linkage. Marks’ opening observation (which cites breathing, eating, drinking and other bodily functions) that “Life is a series of addictions and without them we die” (p. 1389), places repetition squarely at the centre of *both* addiction and healthy living. In the process, it enacts a collateral reality of drug addiction as repetitive drug consumption, and suggests that, debates about behaviour aside, a stable agreed-upon category of drug addiction exists.

At the same time that drug addiction is enacted as a single stable object here – as repetitive consumption of a drug – its meaning is also given a novel emphasis in that traditional ideas of repetitive consumption and dependence as purely aberrant are disrupted, framed instead as normal, indeed in many cases essential. Food is, of course, something we must all consume regularly and consistently. Repetition is the basis of life itself and as such we are all “dependent” – upon breathing, eating and so on. In this respect, Marks (1990) suggests that notions of food addiction cannot rely on repetitive consumption for diagnosis. Even repetitive consumption of “bad” (“highly palatable” junk) foods – discussed in the next section – cannot provide the basis for diagnosis in that body weight must exceed levels classified as healthy before concern about food intake is considered warranted. In other words, some people’s ability to eat chocolate and chips each day without exceeding weight injunctions rules out repetition or habit as in itself a



basis on which to define food addiction. Instead the notion of “bingeing” is, in Law’s terms, selected here for prominence: given emphasis (in Marks’ article, this is bulimia).

Writing approximately ten years after Marks, Orford (2001) also argues for a global definition of addiction, and for the inclusion of non-drug related phenomena (he cites gambling, eating and sex), again enacting a particular reality of addiction in the process. Citing a 17<sup>th</sup> century sermon, he argues that, despite many debates, a simple definition of addiction is possible and desirable, and it is one that serves a broader notion of “appetite” equally well. According to this sermon addiction can be identified where:

by long usage, an activity that was originally pleasurable has become a “necessity” [...] a strong craving is part of the experience; and [...] despite the many harms that it has brought, neither the exercise of reason nor encouragement from others have been sufficient to bring about control. (as cited in Orford, 2011, p. 16)

Here, as in Marks’ definition, repetition occupies an important place, leading to a shift from choice to necessity, and along with it an absence or loss of control. Craving, a concept familiar to diet and weight loss discourse, is also foregrounded here, as it is in much of this literature. In this way, longer standing enactments of addiction aimed at emblematic substances such as alcohol and heroin and emphasising the problem of repetition as daily use, are remade to rank more highly aspects of diagnosis more suited to the particular features of eating and overeating.

Other research, notably more recently published work, departs from the call to explicitly redefine addiction made in these articles. Instead, it treats definitions of addiction drawn from the drug field as self-evident, erasing (or “deleting”) instability and uncertainty as it does so. Davis (2009), for example, aims to identify psychological and biological risk factors for overeating, rehearsing the debate about the links between eating and addiction, and noting that overeating and “addiction disorders such as drug

abuse ... both activate the same reward systems” (p. S49). According to Davis, they have:

comparable clinical features, such as their escalating compulsion, the symptoms of tolerance and withdrawal, and the overwhelming cravings that contribute to repeated relapses after periods of restraint or abstinence. (p. S49)

Here the clinical features of drug addiction are treated as stable, self-evident and beyond controversy. As already suggested, assumptions of this kind do not have a strong basis, indeed, debate about the presence or otherwise of elements such as tolerance and withdrawal remains vigorous and in some important cases, such as that of methamphetamine, physical withdrawal is generally considered to be absent (Weaver, 2010).

In another article (Gearhardt, Grilo, DiLeone, Brownell & Potenza, 2011), the enactment of food addiction’s collateral reality – drug addiction – goes a step further. Discussing the addictiveness of food, the authors state that “Food shares multiple features with addictive drugs” (p. 1208) especially in their effect on neurocircuitry. The article goes on to propose that “Foods and abused drugs may induce similar sequelae, including craving, continued use despite negative consequences and diminished control over consumption” and suggests that given this, “lessons learned from drug addiction” (p. 1208) can be applied to obesity policy, prevention and treatment. Claiming that neuroscientific accounts of addiction have achieved progress beyond accounts that hold individual drug users responsible for their actions, the article invokes the common trope of the hijacked brain (Robinson & Berridge, 2003), asserting that this trope may also aid in understanding overweight and obesity. Here, as in Davis’s (2009) article, the nature of drug addiction (craving, continued use, diminished control) is taken for granted. Its features are then attributed to “food problems” and obesity with such a degree of

conviction that transfer of policy and practice from the drug field is advocated. While the article adopts a provisional tone at points (“Foods and abused drugs *may* induce similar sequelae” [my emphasis]), the overall aim of the article belies this caution. It proceeds as though drug addiction is well understood and its features agreed by consensus, and it stabilises drug policy, prevention and treatment as so successful as to warrant emulation.

Elsewhere similar assumptions about the utility of drug addiction responses prompt explicit calls for the classification of overeating and obesity as addiction disorders so that they too can then be treated using the principles and practices of conventional addiction treatment. Davis and Carter (2009), for example, argue that although abstinence-based treatments are not viable for eating disorders, and cognitive behavioural therapy is not effective for a substantial proportion of patients, the “implicit message” sent by a diagnosis of addiction – that affected individuals “may be fighting a strong neurobiological drive to overeat in an environment that exploits these urges” – could help foster a “therapeutic sense of self-empathy” and encourage participation in addiction treatment (p. 5). This portrayal of food addiction does not approximate the way drug addiction is generally understood as closely as might be expected from the article’s conviction that the two would usefully be classified together. While some responses to drug addiction do exhibit a degree of tolerance and sympathy for addicts, there is little or no evidence that individuals diagnosed with drug addiction emerge with an equally exculpatory view of themselves as “fighting a strong neurological urge” “exploited” by their “environment”.

Davis and Carter (2009) also promote treatment by arguing that: “There is also now a range of available medications for each of the major classes of drugs which, in

combination with psychotherapy or counselling, have been effective in reducing the likelihood of relapse” (p. 6). This remark is as unexpected as their previous statement, both because it is difficult, at least at this point in time, to imagine overeaters willingly being prescribed most of the actually rather limited range of relevant medications presumably included here (opioid replacement pharmacotherapies such as methadone or buprenorphine? naltrexone?) and also because the language tends to overstate the effectiveness and acceptability, even among existing target groups, of such medications. As do the comments made by Gearhardt et al. (2011), this turn to the benefits of drug addiction models for the sake of treatment enacts addiction treatments as broadly effective and successful. On the contrary, just as the attributes of addiction, and the criteria by which it can be meaningfully diagnosed, remain contested, so do assessments of the effectiveness of current treatments (Ritter & Lintzeris, 2004).

To sum up, discussions of the relationship between overeating and drug addiction remake addiction in particular ways, selecting relevant features – craving, bingeing – to make comparisons viable. Collateral to this remaking are at least two further (highly politically charged) realities: first is the enactment of drug addiction as the stable object of consensus, its attributes as beyond doubt. While the literature occasionally includes qualifying statements acknowledging the variability of addiction definitions, these are few and rarely if ever disrupt the larger logic that overeating and obesity can be fruitfully conceived and treated as addiction. The second reality constituted here is the notably optimistic view of drug addiction policy measures and treatment responses as uncontroversially successful and therefore meriting extension to food.

## **DOING “DRUGS”**

Just as the scientific literature tends to stabilise the concept of addiction, it also stabilises another key concept, that of “drugs”. While popular mobilisations of the idea of “drugs” tend at times to conflate all substances, treating it as what Derrida (1993) has described as a “buzzword” (p. 2), and this tendency can also be found at times in public health and treatment responses to drug use, different drugs, especially legal and illegal, are also carefully distinguished, and different effects on the mind and the body are ascribed to each. Within the neuroscientific account of drug addiction, which draws on the brain’s “reward system” to explain addiction, different drugs are also seen as having different effects. Some, such as cannabis or heroin, are said to directly mimic or replace endogenous chemicals (cannabinoids, opioids) while others, such as the hallucinogens, interfere with communication between parts of the brain, producing changes in perception and the attribution of meaning. These are very significant differences between drugs. Drugs are also understood to vary in other important ways, such as in the difference between opioids and amphetamine-type stimulants in producing physical dependence and a withdrawal syndrome. The literature analysed here is far less careful in recognising the variations between drugs. Indeed, its desire to compare and contrast overeating and obesity with “drug addiction” – to enact the two as one by ranking overeating as a subcategory of addiction – regularly produces generalising statements about drugs. For example, in making a case for the links between overeating and addiction, Pelchat (2009) observes that:

A study of neurochemistry of reward provides a great deal of evidence for similarity between food and drug cravings [...] Drug abuse is associated with decreased sensitivity of the dopamine-reward system. The same is true in obese individuals. (p. 621)

Similarly, Liu, von Denee, Kobiessy and Gold (2010) explain in the abstract to their article on the evidence for food addiction, “Good or great smelling, looking and tasting food has characteristics similar to that of drugs of abuse” (p. 133). The authors go on to posit sugar as an addictive substance, citing its capacity to cause the release of endogenous opioids and dopamine in the brain as the basis for its classification as addictive. This classification is backed up by the assertion that sugar consumption “follows the typical addiction pathway that consists of bingeing, withdrawal, craving, and cross-sensitisation” (p. 134).

Ifland et al. (2009) also frame foods as potential drugs in their own right, targeting “refined food” with high levels of salt, sugar, refined carbohydrates, fat and caffeine as potentially addictive. Overconsumption of drugs, they argue, follows: “the very same mechanisms – pleasure seeking followed by mindless behavioural reinforcement – that are operative in the loss of control over certain foods” (p. 519). As described in the previous section on addiction, comparative statements of this kind realise addiction as a set of fixed attributes, even where some, such as withdrawal, are not considered in the addiction field to apply consistently across drugs. Similarly, “drugs” operates as a useful comparator for “food”, coalescing as a unitary reality even as neuroscience seeks to distinguish the effects on brain chemistry of different drugs. Beyond the homogenisation of “drugs” here, the category is also subjected to expansion by proposals to include particular foods as drugs. The effects of sugar or “refined” food on brain chemistry are key to their reclassification, as are related putative effects such as bingeing and withdrawal. If sugar is to become a drug, what are drugs to become? The category of

drugs must surely break down or change where everyday substances such as sugar are introduced.

Of course, while I would not wish to draw a clear line between food and drugs given the latter is, as already noted, a purely political category, there are differences of some significance between the two categories as they are conventionally understood. The most obvious of these is that substances conventionally categorised as drugs – cocaine, heroin, alcohol, nicotine and so on – are not necessary for life. “Food”, as already noted, certainly is, and while it is possible to abstain from cocaine, heroin, and alcohol, it is not possible to abstain from “food”. This has implications for the way addiction is conceived. It allows room to move in the cramped conceptual territory on which the inconvenient dilemma, food is good/food is bad, is emerging in this field. Much discussion of obesity or “food addiction” addresses this dilemma by openly or implicitly juxtaposing need and want, drawing a distinction that is not necessary to notions of drug addiction in that the body has no physiological “need” for drugs, such that distinctions between healthy, essential levels of consumption, and unhealthy, excessive levels of consumption do not make sense.

The scientific literature varies in its response to this issue of need and want. Much of the research draws on a newly created category of food, mentioned above, sometimes termed “refined” or “highly palatable” food. These terms refer to foods high in sugar and/or fat and/or salt, and most often, again explicitly or by implication, cheap “junk” food. As we saw in the case of sugar, this focus works to produce some foods as drugs, juxtaposing them against healthy or natural foods, in that they are excessively dense in flavour and energy, and therefore like drugs in their chemistry, able to overstimulate the

brain. As with other drugs, this overstimulation creates a feedback loop of reward and withdrawal that produces, or in itself constitutes, an addictive state. Here, the problem of food as an intrinsically healthy, essential aspect of life is overcome by creating a limited category of non-essential drug-like foods. It is this group of foods that, for some (such as Volkow and Wise, 2005), should be consumed only at low levels, or, for others (such as Ifland et al., 2009), is so drug-like, so ready to alter brain chemistry and cause addiction, should be avoided altogether. A notable exception to this approach is that of Rogers and Smit (2000) who, relatively early in the rise of the neuroaddiction model of obesity, argue that any food can become addictive if it is administered according to the right patterns of constraint and bingeing. Addiction is, in this article, made more by denial than by excess.<sup>2</sup>

A second approach to the problem of food as drug is to locate the origins of addiction not primarily in the character of the particular food, but in the structure of the brain itself, and to distinguish between more susceptible brains and less susceptible brains. Susceptibility comes in more than one form however. As Davis et al. (2011) explain,

Low opioid signalling [in some brains] could foster overeating (and drug use) in some individuals as a form of “self-medication”, while in others, enhanced opioid signalling could promote greater intake of palatable food (and drug use) because of the heightened pleasure experienced from these substances. (p. 1352)

Both this approach and the approach that treats some foods as intrinsically addictive see brain function as a set of mechanisms able to produce addiction. The latter differs from the former, however, by placing the main emphasis on the brain’s built-in vulnerability to addiction, presenting food of any kind as potentially addictive where it is consumed under particular circumstances – that is, where it is associated with a reward.



These two approaches will not be new to scholars of addiction. Despite their grounding in the relatively novel field of addiction neuroscience, they reproduce a familiar debate about the origins of drug addiction: is addiction caused by characteristics of the drug, or is it the product of an internal flaw in the addicted individual? In responding to drug addiction, in attempting to reduce its incidence, should we focus on individuals and their vulnerabilities, or on drugs and their intrinsically toxic or corrupting properties? Should we seek to reduce supply of the corrupting drug, or demand from vulnerable individuals? Of course, Western liberal democracies have tended to do both, placing individuals into disease categories and identifying factors that lead to individual vulnerability to addiction, while also attempting to limit access to (at least some) drugs in the belief that such drugs have their own destiny, able to corrupt whomever they come into contact with. Vociferous debate accompanies the changes in emphasis that shift over time between these approaches, yet, again, this knowledge-making process of debate is washed away in this literature's enactments of drugs and addiction.

In this respect, as in many others, understandings of drugs tend to be much more varied and unstable than the neuroscientific literature on obesity suggests. If everyday foods are to be classified as drugs, a very broad definition of drugs must be established and maintained. Whether the inclusion of sugar, fat, or composite junk food staples (chips, doughnuts, chocolate and so on) works over time to extract some of the force from the term, inflecting it instead with the domesticating undertones of common expressions such as "comfort food" and "emotional eating" remains to be seen. At this juncture it is still difficult to imagine sugar and salt remade as life threatening substances

and consumption as shameful and stigmatising, but perhaps what has happened to tobacco seemed just as unlikely when campaigns against it began.

## **CONCLUSION**

This discussion of the scientific literature on obesity has analysed two key collateral realities – addiction and drugs – enacted in the process of remaking overeating and obesity as addiction. Wherever obesity and overeating have been framed as forms of addiction, they have come to be almost exclusively discussed in neuroscientific terms. Just as drug consumption now invites neuroaddiction accounts, so does obesity. In some respects this meaning-making process is circular. It is hardly surprising that, where drug addiction is understood as a malfunction of normal reward systems that govern, among other processes, eating, eating comes in turn to be open to addiction discourse. This circularity is one way of beginning to answer a question forcefully raised by these accounts: how and why have cultures that produced such profoundly meaningful stories of food and eating as the Last Supper of the Christian tradition, and such highly refined eating practices as molecular gastronomy and the death-row prisoner's last meal, also begun to produce such constrained understandings of the meaning and symbolism of food and eating? Part of the answer can be found, too, in the politics of food and the fat body identified in the literature described at the outset. But it is also important to consider the looping action of powerful notions of addiction, craving and consumption in contemporary culture.

The effects of this process of meaning making, reality enactment, are more than circular, however. Their patterns of authorisation refigure addiction as self-evident, and

drug treatment as unquestionably effective. As I have demonstrated, the scientific literature tends to create collateral realities that treat expertise on drug addiction as far more settled, consensual and effective than most of those working in that domain would consider accurate. If the obesity literature is to be believed, addiction is a thoroughly understood, well-integrated diagnosis for which there are a range of highly effective treatments. Drugs can be understood as a coherent category, and their effects generalised across individuals and social and cultural contexts. The bodies in which drugs work are predictable. The social world sometimes impacts on the problem of addiction, exacerbating it, but it is never seen as the source of the very norms and ideals from which anxieties about dependence emerge and gain meaning (Sedgwick, 1993). Uniform drugs cause clear cases of addiction. Made this way, the reality of food addiction offers itself to science for correction. Drugs can be identified and controlled. Addicts can be diagnosed and treated. Together, these collateral realities support and authorise each other. If obesity experts take up drug addiction models and measures, we are encouraged to think, the obesity epidemic will be at least partly solved. Familiar strategies of supply reduction (regulation of highly palatable foods) and demand reduction (pharmaceutical interventions in brain chemistry) will do this work.

As Courtwright (2010) has noted, neuroaddiction models have yet to demonstrate any real benefits for the problem of drug addiction, and it is likely any such benefits will be equally slow, or slower, in coming for food addiction and obesity. In the meantime, we must also consider to what extent public understandings of obesity and overeating are being shaped by emerging neuroscience accounts. These issues will be explored in detail in a forthcoming book (Fraser, Moore and Keane, forthcoming). What gaps if any exist

between scientific realities and lay realities, and will they close any time soon? I have hinted already at possible answers to this question in the acknowledgment I make above of the power and influence of science knowledges, their ability to marshal the epistemology and ontology of commonsense realism to support their own institutional survival – to “do” realities in particular ways and to wash away the messy processes by which this doing is done. It is possible that the language of neuroaddiction will move progressively into popular and lay discourse, even if the promises of the science remain unfulfilled. Yet this also depends upon practices of contestation. Whatever is not contested, whatever lies beyond the limits of contestability, Law says, works most powerfully to do the real. This article is one contribution to drawing back within the bounds of contestation two fundamentals of the new obesity and, in so doing, to contest the proliferating realities of neuroaddiction as well.

#### Declaration of Interest

The author reports no conflicts of interest.

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<sup>1</sup> This literature review and the section on fat and feminism that follows it are adapted from a more detailed discussion first published in (Fraser, Maher and Wright, 2010).

<sup>2</sup> It is difficult to ignore the reference to financial support from the enticingly named Biscuit, Cake, Chocolate and Confectionery Alliance, London, in the conflict of interest disclosure that concludes this article, but to make too much of this apparent conflict would be to treat other science as purer and more disinterested than a science studies approach such as mine would allow.