Towards a Dispositionalist (and Unifying) Account of Addiction

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Abstract: Addiction theorists have often utilized the metaphor of the blind men and the elephant to illustrate the complex nature of addiction and the varied methodological approaches to studying it. A common purported upshot is skeptical in nature: due to these complexities, it is not possible to offer a unifying account of addiction. I think that this is a mistake. The elephant is real – there is a *there* there. Here, I defend a dispositionalist account of addiction as *the systematic disposition to fail to control one's desires to engage in certain types of behaviors*. I explain this position, defend the inclusion of desires and impaired control, and flesh out the notion of *systematicity* central to my account. I then try to show how my dispositionalist framework can unify the disparate, seemingly incompatible accounts of addiction (and their respective methodological approaches). I close with a brief plan to extend and implement my account.

Keywords: addiction, control, disease, dispositions, unification

1. Introduction

The extant literature on addiction is beset with conceptual confusions, stalled debates, hasty inferences, and a lack of successful interdisciplinary dialogue. I am not alone in pointing out such difficulties [1-7]. Worse still, a likely cause of these issues is that addiction researchers often seem to lack clear, explicit definitions of the terms describing the very phenomenon they are addressing. Nick Heather nicely captures this fact about the state of the literature:

> When reading literature on addiction, both in the popular media and in scientific publications, it is surprising how seldom authors actually tell us what they mean by the term, whether by a formal definition, a rough characterization of how they see addiction, or what they consider to be the "hallmark" (Skog 1999, p. 173) of addictive behavior and experience. It is as though authors simply assume that, when speaking of addiction, everybody will know what they mean… [and] that the term needs no clarification. [3, p. 3]

As a result, many addiction researchers liken the state of the literature to the story of the blind men and the elephant [8-13]. Everyone appears to be siloed into their own disciplinary perspectives, feeling their way around with only their own idiosyncratic terminology and assumptions to guide them. As a result, some draw skeptical conclusions from the metaphor [14-15]. It is thought that the complex nature of addiction and the various methodological and disciplinary perspectives from which it is studied together undermine any chance of there being a unifying theory that ties these different perspectives together. Robert West and colleagues put it this way:

> While there is a need for greater clarity of constructs in the study of addiction, no investigator or organisation has the authority, or expertise, to propose a single unifying conceptual framework. [7, p. 163]

This is a mistake. I make no claims to being the authority on addiction, though I disagree that some special authority or expertise is needed to offer a unifying conceptual framework. In this paper, I aim to advance the discussion surrounding addiction towards remedying this problem of unifying the literature.

To that end, the paper is structured as follows. In section two, I start by distinguishing two senses of unification to clarify what I mean in saying that my account will move towards unifying the literature. In section three, I explain and defend my dispositionalist account of addiction. In section four, I defend my claim that the dispositionalist account on offer can indeed bring substantive unification (defined in section two) to the disparate accounts in the literature. In section five, I close with a brief plan to extend and implement my account.

2. Two Senses of 'Unification': Methodological and Substantive

The addiction literature currently lacks unification. It will be useful, though, to distinguish two senses of 'unification'.

First, *methodological unification* corresponds to the extent to which researchers in a domain (i) are capable of avoiding mere verbal disputes, and (ii) can and do effectively work together. Methodological unification is achieved to the extent that researchers have adopted both a shared understanding of key terms used to make claims about the target phenomenon, as well as a shared approach to achieving that understanding. Achieving it allows different accounts about some portion of reality to effectively interact *independently of the content* of the respective views. The use of ontologies – roughly, controlled vocabularies with logically well-formed definitions [16] – is one way to achieve this sort of unification [17-22]. In fact, West and colleagues argue for the implementation of ontology for just this reason in their chapter, and they are not alone in doing so [7, 10, 23-30]. I fully agree with these authors. Ontology is the right method for achieving this sort of unification. However, given that it is *methodological* in nature, ontology cannot provide the second type of unification that will be my focus here.

Substantive unification is the second type of unification, and it is about bringing the *content* of different, often competing views together under a single, unified framework. This might be by unifying many theories of *X*. For instance, "*X* is *p*," "*X* is *q*," and "*X* is *r*" might be unified by a theory holding that *p*, *q*, and *r* are all *s* or parts of *s*. Alternatively, it might be by unifying theories about seemingly disparate phenomena surrounding or related to *X*. For instance, theories holding that "*X* involves *p*," "*X* involves *q*," and "*X* involves *r*" might add that *p*, *q*, and *r* require different perspectives or approaches which do not allow for a single theory of *X*. Yet these factors might be unified by a theory holding that *s* can account for *p*, *q*, and *r* despite the fact that different perspectives and approaches are

appropriate – perhaps *s* is accessible from each perspective or approach, for instance. Hence, in both cases we could say that "*X* is *s*, and *s* captures *p*-*r*."[1]

Hence, a set of views is *methodologically* unified just in case, roughly, they have the appropriate means to successfully interact with and understand each other – a shared vocabulary, principles for controlling it, and so forth. A set of views is *substantively* unified just in case there is some account the contents of which can be said to capture the others. In line with West and colleagues, I think ontology can facilitate methodological unification in the addiction literature. *Pace* West and colleagues, I argue here that substantive unification can also be achieved through my dispositionalist account.

3. Addiction as the Systematic Loss of Control

In this section I do three things. First, since addiction is a disposition on my view, I elucidate my understanding of dispositions. Second, I argue for the inclusion of desires and impaired control in my account. Third, I flesh out the notion of *systematicity* regarding control that is central to my account. Accomplishing these tasks will together provide the general picture of my dispositionalist account.

3.1 The Basics of Being Disposed

Dispositions are modal properties of entities [34]. That is, a disposition is *a way an entity is that explains what that entity can or must do in certain circumstances*. Familiar examples include *fragility*, *solubility*, *elasticity*, *skills* such as being a competent guitar player or golfer, and *personality traits* such as being an honest or brave person. Providing a fully detailed foray into the world of dispositions is beyond the scope of this paper. Instead, I will identify what I take to be the key features of dispositions.[2]

1. *Dispositions are realizable entities that inhere in (are borne by) some entity that is their bearer*. A fragile vase is the bearer of the disposition *fragility*. Inherence is a relation of specific dependence, so the vase's fragility only exists in virtue of the vase existing.
2. *Dispositions are internally grounded in their bearers (changes in the disposition entail changes in the physical makeup of the bearer)*. The physical makeup and features of the vase, such as its molecular structure,

[1] Examples of substantive unification in the history of science include Newton's "first great unification" with his theory of gravity and Maxwell's "second great unification" with his theory of electromagnetism [31-32]. An example in the philosophical literature is Michael Bishop's attempt to unify theories of well-being with his "network theory of well-being" [33].

[2] I follow Barry Smith [16] and Neil Williams [34] in my general understanding of dispositions. There are some divergences in the details of their views, but these will not matter to the arguments here. Moreover, while I favor the neo-Aristotelian *powers theorist* interpretation of the nature of dispositions defended by Williams, this detail can also be set aside for our purposes.

are the *material base* of its fragility. In other words, it is fragile in virtue of its physical makeup. Gaining, losing, or modifying a disposition entails physical changes to the bearer.

3. *Dispositions are realized in certain processes (their realizations), which reveal the disposition for what it is*. The vase's fragility is realized in the process of the vase breaking. Dispositions are always *for* (in a non-teleological sense) some process(es) of a certain type. This is captured when we describe the vase as being disposed *towards* breaking.
4. *The processes and states of affairs that the disposition can produce, including its realization, are manifestations of that disposition*. The vase's fragility is manifested in the vase's breaking, but another manifestation of the vase's fragility is the broken vase on the floor. Manifestations can be more and less direct, where this roughly tracks the causal chain between the disposition being triggered and the purported manifestation.
5. *Dispositions have certain triggering conditions, which are those states of affairs in which a disposition can be realized or manifested*. The triggering conditions for the vase's fragility can be roughly characterized as *being suitably struck*. When the vase is in such circumstances, such as being dropped on cement or hit hard with a bat, its fragility *can* be realized in a breaking process.
6. *Dispositions explain (or make true) what their bearers can do in certain circumstances*. We can truly say of the vase, "If you drop that vase, it is almost sure to break." What makes this true is that the vase bears the disposition *fragility*.
7. *Dispositions have varying degrees of reliability*.
    a. *Strength* is the reliability with which a disposition is realized when triggered. Vases can be more or less fragile, breaking with varying likelihood when suitably struck. Breaking deterministically when suitably struck would make the vase's fragility *maximally strong*. Not all dispositions are maximally strong. Hence, it is possible that the vase is fragile, is suitably struck, and does not break.
    b. *Opportunity* is the reliability with which a disposition can be expected to be triggered. This refers to how likely the vase is to be suitably struck. We could also widen the scope of the question and ask how likely it is for vases in general to be suitably struck.
    c. *Systematicity* pertains to dispositions that are sufficiently strong in sufficiently many triggering conditions which members of the bearer's reference class have a sufficiently high probability of being in, given the laws of nature and history of the world.

In sum, dispositions tell us at least two things. First, they tell us about the present. They tell us that, right now, an entity is some way. Second, they tell us about some possible future. They tell us that, were certain conditions to be met, then a particular type of process or state of affairs (involving the disposition and its bearer) could unfold or obtain [34, pp. 46-47]. 'Functions', 'capabilities', 'abilities', 'capacities', 'powers', 'predispositions', 'potentials', 'tendencies', 'proclivities', 'predilections', and the like are all synonyms for or alternative ways of describing dispositions – or at least types of dispositions.

How addiction is a disposition with the features outlined above will emerge as I flesh out the account in the sections below, in particular the notion of *systematicity*. First, I turn to motivating the inclusion of desires and impaired control in my account of addiction.

3.2 Addiction Involves Desires and Impaired Control

Let us start with desires. First, I am aware of no author that studies or writes about addiction, but that denies a role for desires. Whether it is thought that desires compel addicts [35-36], are non-compelling but disordered [37-39], are non-disordered but abnormally difficult to resist [40-41], are not different in kind from those occurring in cases of weakness of will [42-43], or are completely ordinary and resistible, making addiction condemnable [12, 44], everyone agrees that desires have a role to play. Consider further the widely acknowledged role of the desire- and motivation-producing mesolimbic dopamine system in addiction [35-36, 40, 45-46]. To be sure, this does not at all imply that everyone agrees on what role desires actually have, nor on what desires themselves are. Nonetheless, this is quite telling, and in my view serves as a solid foundation for the claim that addiction involves, at least in part, desires.

Desires influence our actions, feelings, and thoughts. If we know that Andrew desires to go on a run every morning at 5 am, then we would be unsurprised to find him out running at 5:05 am tomorrow. We should also be unsurprised to hear him tell us that he felt disappointed to have missed his run yesterday. The same is true of desires for chocolates, for peace and quiet, for finishing your paper, for seeing the Grand Canyon before you die, for doing the right thing, and for any other desire. This is just part of what desires do. They are part of what dispose someone like Andrew to act, feel, and think in certain ways in response to representing the world to be some way (or to have been some way, or to likely be some way soon). Ultimately, my goal is to construct a framework for thinking about addiction that can accommodate different theories about the nature of (at least some of) the various components of addiction, such as desires and control.[3]

Desires fit into the dispositionalist account in various ways. First, they partially constitute the addiction disposition. The main idea is that addiction is a complex disposition which will always rest on some type of arrangement of other dispositions (just as many skills or abilities do), and desires will always be a part of that arrangement. Second, desires will also be involved in important processes related to addiction, including its initial

[3] That said, I favor the reward theory of desire defended by Nomy Arpaly and Timothy Schroeder [47-48]. Their co-authorerd work provides fuller explanations of the many complexities involved in reward learning and desiring [47, Ch. 6]. Additionally, Schroeder's work provides more detailed, and predominately neuroscientific, explanations of and arguments for the reward theory of learning and the reward theory of desire that rests on it [48].

development, its strengthening or weakening, and its realization. Moreover, our desires drive our felt urges or "cravings" for one option or another experienced in the midst of decision-making (or even in less reflective moments of simple want-based actions) [47, Chs. 5-6].

These are some of the roles that desires play in addiction. Desires partially constitute the addiction and take part in the realization and reinforcing of an addiction. The latter point, having to do with realizations of addiction, brings us to impaired control.

Despite the appearances of the disease vs. choice debate, impaired control is still a unifying feature of most accounts.[4] The question is just how much. Hence, requiring some degree of impaired control as an essential component of addiction is consistent with any mainstream view in the literature and avoids a commitment to one side or the other in the disease vs. choice debate. Still, let us consider some further evidence for including impaired control.

First, ordinary observation supports this condition. Most people have seen or heard of addicts struggling in many ways related to controlling their choices and behaviors (maintaining health, jobs, homes, families, and so on), even if they *sometimes* can. Indeed, about half of Americans (46%) report having a family member or close friend with an addiction [50]. A simple explanation is that, at least partly due to their addiction, their control has been impaired.

Second, there is a wealth of empirical evidence that addicts suffer impaired control as compared to non-addicts. For instance, addicts consistently show impairments to areas in the prefrontal cortex associated with self-control [35, 51-52]. Relatedly, addicts also exhibit an impaired ability (relative to non-addict controls) to inhibit impulsive behavior [53]. It is also well-known that addicts exhibit exaggerated delay discounting [8, 37, 53-54]. Combined with the previous evidence, this suggests that addicts are more now-oriented (even at the cost of losing out on rewards they themselves judge to be more valuable) due to an impaired ability to exhibit more reflective control over their impulses.

Third, arguments proposed against disease models (including those from both choice and moral models) appeal to evidence that remains consistent with impaired control, such as addicts "maturing out" of addiction without treatment or being responsive to incentives and features of their environment [38, 55]. However, these arguments would at best show that addicts do not *fully* lack control or that control is not impaired at *every* moment. I argue for neither of these claims, nor does defending impaired control in addiction require me to do so.

Having laid the foundation for including some degree of impaired control in addiction, let us turn to the explanation of this component as the *systematic* loss of control.

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[4] But compare the so-called 'moral model' [12, 44, 49]. Still, the moral model is very much an outlier view.

3.3 Systematicity and Control in Addiction

The third sense of a disposition's reliability is what I called 'systematicity' above.[5] This pertains to both a disposition's strength as well as something analogous to, but distinct from, the opportunity sense of reliability. I will now flesh out this notion and then explain how it relates to addiction being realized in failures to control one's desires.

As we saw above, strength alone is distinct from systematicity. Still, strength does matter to systematicity since it is only when a disposition is sufficiently strong – it has a sufficiently high probability of being realized when triggered – that it can be said to be systematic. Systematicity also pertains to something *like* the opportunity sense of reliability. It is not about how common the disposition's triggering conditions actually are. Instead, it pertains to picking out which triggering conditions count when trying to determine whether a disposition that is sufficiently strong is also systematic.

For instance, consider that bowling balls are very strongly disposed to break when dropped from tall buildings; this is a disposition they have. But this would not make it true that a bowling ball's disposition to break when dropped is systematic. That is, this would not make bowling balls fragile (even if they have a disposition, which is not fragility, to break when dropped from tall buildings). Despite the available opportunities to drop bowling balls from tall buildings, this is simply not a common circumstance for a bowling ball to be in. As such, these do not seem like relevant conditions for testing whether a bowling ball is fragile. It is not because *these triggering conditions for fragility are rare*, but it is instead because *these are not appropriate triggering conditions for fragility*.

The upshot here is that systematicity pertains to delineating which triggering conditions count. As in the bowling ball example, this is about appealing to some reference class (e.g., all bowling balls or all everyday objects) and asking what the likelihood is for members of that reference class to be in those conditions. If it is sufficiently high, then those conditions count, and can therefore be used in testing whether the disposition is systematic. Expanding this further, the idea is that, for any conditions that can trigger the disposition and that members of the relevant reference class have a sufficient probability of being in, given the laws of nature and history of the world, a disposition is systematic when it is strongly realizable in sufficiently many of those conditions.

[5] I borrow the term from David Limbaugh. He introduces this notion in the context of dysfunctions and disorders, where he argues that his "harm in the damage sense" helps Wakefield's *harmful dysfunction account* of medical disorder avoid a series of objections [56].

Now, control comes in degrees, and many non-addicts often fail to control their desires some of the time. So, a natural question is: In what sense must control over one's desires be impaired to count as an *addiction*? My answer appeals to the notion of *systematicity* just explained.

We have various mental and behavioral capabilities that are involved in motivation, deliberation, decision-making, self-reflection, modification of our desires and dispositions, and so forth. Desires influence our felt urges and motivations, and so one way to control our desires is to utilize these resources in trying to resist those urges or motivations when they arise. Unfortunately, not wanting to do *p* (and so having some desire to *not-p*) is insufficient for lacking desires to *p* – we are often torn about what we want to do [47, Ch. 2]. Hence, one way to fail to control our desires is to fail to resist a felt urge or motivation due to a failure to implement (or successfully implement) some such capacity. Another way to control our desires is more indirect. Instead of waiting for a desire to become active in the moment – for instance, by producing a felt urge when triggered – we might take antecedent steps to modify our desires, ranging from eliminating (some of) them entirely to reducing their influence. Hence, controlling our desires is not simply about attempting to resist a presently felt urge that our desires give rise to. It will often be about this, to be sure. But it will sometimes be about making more indirect efforts, such as taking steps to eliminate or mitigate them, to enhance others, to build up our cognitive resources, and so forth.

Of course, one failure to control our desires is insufficient for addiction. Addiction, in other words, is distinct from one-off cases of *akrasia*.[6] Notwithstanding the purported similarities, addicts succumb to their desires with much higher regularity. On my account, this is best understood as a difference in capacity, and it is captured by my notion of systematicity. Addicts *systematically* fail to control their desires (and urges), and this explains (or perhaps *is*) the difference in regularity between an addict and an "ordinary" weak-willed non-addict.

The disposition to fail to control one's desires needs to be sufficiently strong. The data above on impaired control capacities in addiction suggest that there *is* a difference in strength. Still, it is not enough for the disposition to be sufficiently strong. We need to contextualize that strength to certain types of triggering conditions. Systematicity is largely about restricting the circumstances to those types that are relevant – this is what systematicity is doing. So, which are the right types of circumstance to test for an addiction?

[6] But compare [42-43, 57-59]. While these authors claim that there is no difference in kind between *akrasia* and addiction, there is nonetheless room for impaired control. Moreover, they identify differences in terms of frequency, strength, stability, or some other such thing, suggesting that the difference comes to something akin to being disposed in a certain kind of way. This idea is what I try to capture with systematicity.

The general answer will be the same as above: those for which members of the addict's reference class have a sufficiently high probability of being in, given the laws of nature and history of the world. Following Limbaugh's discussion of systematicity in the context of delineating dysfunction and disorder, I call these circumstances 'societally relevant' [56, p. 12]. Just as fragility is (mostly) restricted to certain types of strikings, we can (mostly) restrict the addiction-relevant circumstances to what I call 'choice situations'. Thus, societally relevant circumstances need to involve the individual being presented with an opportunity to make an addiction-relevant choice. This need not be the choice to use or otherwise engage in the addicted behavior. It might simply be the choice to put oneself in a position to make that choice, or whether to sign up for the local AA meetings, or to call and make an appointment with a therapist, and many other types of circumstance that are connected to an eventual choice to engage in the addicted behavior.[7]

These circumstances and many others like them are societally relevant. The questions, then, are (i) whether an individual is disposed to fail to control their desires to engage in certain types of behavior, and (ii) whether this disposition is sufficiently strong in sufficiently many of these types of circumstance. If they are, then, this disposition is an addiction. If they are not, it is not. We can think of the addiction test as one of considering someone with this disposition being "plopped" into each possible societally relevant choice situation. The test is meant to determine whether the disposition is systematic. Suppose Al would fail to control his desires 85% of the time in 85% of these possible scenarios. This would mean that, were Al to try to control his desires to, say, drink alcohol, he would almost always fail to do so in almost all of the relevant situations. This would be true *even if he never tries to control them* (perhaps he is a willing alcoholic). If Al were to lose his addiction, it would follow necessarily that this would change these odds.

That is how systematicity is applied to addiction. It is the same basic framework we saw above with fragility. The realizations and triggering conditions changed. Fragility is about breaking when suitably struck. Addiction is about failing to control one's desires when presented with the opportunity to indulge them or to control them. More specifically, it is about being *strongly disposed* to fail to control one's desires to engage in certain types of behaviors in *sufficiently many* choice situations that are *societally relevant*. Addicts have this disposition, with this sort of nature, while non-addicts do not.

[7] Note that, while I invoke the term 'addiction' to explain societally relevant circumstance, this is only for ease of explanation and does not make the analysis circular. We can substitute 'addiction-relevant choices' for 'choices relevant to alcohol consumption', 'choices relevant to heroin consumption', 'choices relevant to gambling', and the like.

4. A Unifying Account

In this section I explain how my dispositionalist account can unify most other extant accounts of addiction. First, many accounts seem to be implicitly describing addiction as a disposition, and so my account captures these. Second, my account can accommodate any plausible view in the literature into the dispositionalist framework. Third, my account can expose where disagreements between accounts are merely verbal.

4.1 A Disposition by Any Other Name

It is worth pointing out that addiction researchers will often describe addiction or its various features in ways that suggest they have a dispositionalist account in mind. For instance, consider Hanna Pickard and Walter Sinnott-Armstrong's definition of 'addiction' as "a strong and habitual want that significantly reduces control and leads to significant harm" [41, 861]. Their discussion of this strong and habitual want seems to reveal that it is a disposition they have in mind. This is also seen in their want-based account of control, which is analyzed conditionally: if someone wants overall (not) to perform a type of action, then usually they (do not) do it [41, p. 856]. Such conditional analyses of control and talk of habitual wants is indicative of a dispositionalist account without the label.

Even those who are skeptical that there is any difference in kind between addiction and *akrasia* (except perhaps frequency and strength of desires) describe addiction as a disposition, such as Bennett Foddy and Julian Savulescu. However, it is somewhat indirect. They define 'addiction' as "a strong appetite," and then go on to define 'appetite' as:

> …a disposition that generates desires that are urgent, oriented toward some rewarding behavior, periodically recurring, often in predictable circumstances, sated temporarily by their fulfillment, and generally provide pleasure [42, p. 35].

Of course, there are differences between our views. Still, we can see that they understand addiction – which, on their view, is an amplified form of an ordinary appetite – as a disposition at its core.

As a final example, consider also how Nora Volkow, director of the National Institute on Drug Abuse and the *de facto* face of the brain disease model of addiction, describes addiction. She calls it a "a conditioned response [following exposure] to the drug and/or drug-related stimuli" [35, p. 323] that involves a pathology in "how the brain regulates (chooses) behavioral output in response to those stimuli" [52, p. 1410]. She also emphasizes the fact that "the enduring vulnerability to relapse is a primary feature of the addiction disorder" [52, p. 1403]. These statements are compatible with – even suggestive of – a dispositionalist account. To be sure, Volkow focuses on dispositions of *the brain* to respond to environmental stimuli and then produce behavioral outputs of the agent, whereas I take addiction to be a

disposition of the agent themselves. Still, we both have dispositions in mind. What's more, my account can accommodate hers, whereas her brain-based view cannot accommodate mine; this asymmetry is also made true by that fact that my view, but not Volkow's, is neutral with respect to pathology.

As we can see, accounts from across the board – brain disease model, choice model, "no difference" model – all speak about addiction in terms of a disposition, whether implicitly or explicitly. Many such examples exist in the literature. We should find this unsurprising since, in my view, the dispositionalist account is an entirely natural and intuitive way to think about common features of addiction: the *sensitivity* to triggers/cues, the *vulnerability* to relapse when recovering, the *susceptibility* to use when cued/triggered, the *risk* of harmful consequences, the *probabilistic* nature (i.e., *degrees*) of control loss, which leads to the *potential* for controlled choice, and so on.

4.2 An Accommodating Framework

Besides capturing the fact that many accounts (often inadvertently) speak in dispositionalist terms, my account is also unifying in its ability to *substantively unify* most accounts into the dispositionalist framework. Recall that, on my view, an addiction disposition is a way some organism is, and being this way makes it true that the organism will behave in certain ways under certain conditions. Moreover, an addiction might not be realized even when appropriately triggered (since it is plausibly a non-deterministic disposition). The physical makeup of the addict (a certain type of arrangement of the parts and qualities of the organism) will serve as the material basis grounding the addiction. There will also be paradigmatic realizations and manifestations of addiction that are triggered by being in certain types of circumstances. Additionally, as with many other dispositions like familiar skills or character traits, addiction's development and maintenance are influenced by one's genes, upbringing, environment, exposure, pre-existing tendencies, and so forth.

As the blind men do with the elephant, researchers tend to focus on one aspect of the whole phenomenon of addiction – development, influences, manifestations, triggers, material basis, etc. – and call *that* the addiction. For instance, George Ainslie and those following his research concentrate on behavioral and choice patterns in addiction, focusing on whether they are irrational or sub-optimal [8, 37-38, 54, 60]. On my account, they would be referring to some of the realizations and manifestations of the addiction disposition, and some of the typical effects of addiction when discussing suboptimal (that is, harmful) consequences.

The brain disease proponents like Volkow, on the other hand, focus on structural and functional changes to the brains of addicts. The same is true of non-disease or disease-neutral neurobiological models [61]. On my view, such accounts refer to (part of) the material basis for the addiction disposition.

Accounts like those from Hanna Pickard, Bruce Alexander, and others that focus on features such as social pressure, poverty, opportunity, knowledge, denial, identity, and the like, are concerned with what my account would identify as causal influences or triggers of the addiction disposition [41, 55, 62]. The same is true for so-called 'biopsychosocial models' of addiction, which argue that we must account for biological, psychological, and environmental features (usually influences) of addiction and addicted behavior [63-64]. Of course we should, but this does not mean these are all what addiction is – indeed, how could they be?

Consider also what might be called 'lifeworld' understandings of addiction that focus on the embodiment and ritualizations of an addiction, which is seen in an early development of this view by [65].[8] This approach shares similarities with those just discussed (i.e., Pickard, Alexander, the biopsychosocial models), but the latter more strongly emphasize the role of environmental and sociocultural factors as *developmental influences* and/or *causal triggers* generating or acting on an addiction. However, lifeworld theories emphasize the importance of understanding an addiction as *embodied in* some setting (or "framework") of *ritualizations* – often associated with some degree of communal acceptance – in order to fully appreciate whether and to what extent the individual is appropriately classified as an uncontrolled addict rather than a (mere) controlled user.

For instance, a simplified example might involve someone that has successfully resolved to use drugs only on weekends or at social events, as compared to someone else that ends up using whenever they have any urge to do so. Both might qualify as ritualized behaviors in their respective settings, but it is, in Zinberg's words, the *quality* of the ritualized use behaviors – when, where, how, in what mindset, and with whom they occur – rather than the *quantity* that matters most to determinations of controlled vs. uncontrolled use. Thus, the social user could end up using drugs in higher quantities (whether frequency, dose, or both) than the impulsive user if, for instance, there are fewer urges for the latter than there are weekends and social events for the former. Still, the social user is likely to suffer fewer harmful consequences, experience less disorganization in their life, and so forth, given the quality and communal endorsement of their ritualization as compared to the impulsive user. Focusing on the quality of one's ritualizations

[8] Thanks to an anonymous referee for pushing me on the need to include this kind of theory as distinct from the environment-based and biopsychosocial models of Pickard, Alexander, Buckner, and so on. Hartogsohn also provides a review of the history and evolution of this sort of theory of addiction [66].

and their embodiment in a particular setting, then, is meant to help identify differences in control – i.e., one's ability to *regulate* those behaviors.

I agree. Still, in my view it is the *similarities* between the lifeworld view and those of Pickard, Alexander, and the biopsychosocial models that are most instructive here rather than their *differences*, interesting and instructive as those differences may be in their own way.[9] In other words, as in context-based and biopsychosocial accounts of addiction, the important factors being emphasized (whether socioeconomic status, comorbid mental disorders, or ritualizations and their communal endorsement) should still be understood as potential *influences* on the addiction disposition. They may just be *masking* the disposition, as when a person with allergies moves to a low-allergen area; they may be creating a "bowling ball from a tall building effect," wherein focusing on specific contexts can generate the *appearance* of some disposition; or they may actually be modifying the disposition directly, as when continual practice of a routine (or "ritual") makes it easier to regulate the behavior making up that routine. None of this implies that we must *identify* the addiction with any of these influences. One of the benefits of the dispositionalist account defended here is that it can both (a) accommodate the importance of a particular addict's context and lived experience, but (b) maintain the importance of a broader focus on the addict's general ability to control their desires in various types of societally relevant circumstances. The latter helps, for instance, to avoid including "one-off" (or "one-setting") failures to regulate one's behavior as genuine addictions.

Given the foregoing, my account can capture all of these causes, effects, and manifestations of addiction while avoiding the problems with *identifying* them with addiction. Addiction is a disposition of an agent. It is typically developed through various experiences and exposures that alter the physical makeup of the agent, such as undergoing characteristic changes to cognitive and motivational systems in the brain. This development can be influenced by pre-existing tendencies, such as genetic makeup or distinct mental or behavioral disorders. Once present, we typically see the disposition manifested in certain patterns of choice and behavior in certain triggering circumstances. Moreover, which types of circumstances can trigger the disposition, and to what degree, can vary widely, depending on the strength of the disposition, the arrangement of lower-level dispositions on which it rests, or the nature of the material basis that grounds it.

[9] As an anonymous reviewer pointed out, one of those interesting and instructive differences is the lifeworld account's ability to provide a better integration of third- and first-person perspectives than other accounts. This, in turn, can be extremely important for therapeutic purposes.

Before turning to some future directions, let us briefly look at an example of how my account exposes merely verbal disagreements between competing accounts. This feature of the account speaks in favor of its ability to unify competing accounts, namely, by showing that they are often not as at odds with one another as they may seem.

4.3 A Verbal Disagreement Exposed

Nora Volkow argues that addiction is a brain disease [35-36, 45-46, 52]. She appeals to numerous well-established neurobiological studies that have generated large sets of data about the functioning – or, for Volkow, dysfunctioning – of different mechanisms and processes in the brains of addicts. For Volkow, the neurobiological studies show that addicts' brains are functioning abnormally, and she ultimately concludes that the abnormalities are pathological. Hence, addiction is a brain disease.

The Harvard psychologist Gene Heyman argues that addiction is not a brain disease [37-38, 67]. He appeals to various well-established epidemiological and behavioral studies that have generated large sets of data about recovery rates and choice (and thus behavioral) patterns of addicts. For Heyman, the studies he appeals to show that addicts usually recover without treatment, for normal reasons, and that they often exercise what appears to be a capacity for voluntary, controlled choice. Moreover, he argues, the choice patterns we see in addiction can be normalized since they are predicted by ordinary economic choice models (such as matching law or melioration theory) that explain most of our ordinary, non-addicted behaviors. Hence, addiction is not a brain disease.

So, what is the problem here? Even setting aside the fact that it is unclear whether Volkow and Heyman are understanding disease in the same way, a glaring problem of talking past one another remains. The dispositionalist account brings out where Volkow and Heyman are talking past one another. When Volkow says 'addiction is a brain disease', this can be translated as 'the characteristic functional and structural changes in the brains of addicts constitute a disease'. When Heyman says 'addiction is not a brain disease', this can be translated as 'the characteristic behaviors and choices of addicts do not constitute a disease'. Volkow is referring to (part of) the material basis of the addiction disposition. Heyman is referring to the realizations or manifestations of the addiction disposition. Contrast this with Marc Lewis's response to Volkow and the brain disease model [40]. Lewis, a neuroscientist himself, first accepts all of the neurobiological data and yet still argues that addiction is not a brain disease. However, he does so by arguing that the functional and structural brain changes that are characteristic of addiction are not dysfunctional. Thus, he and Volkow are speaking about the same phenomenon (the material basis of the disposition on my view), and so have a genuine disagreement.

Heyman's focus on the behavioral manifestations of addiction is not irrelevant; these are important matters. The problem is that he and Volkow are simply not talking about the same phenomenon, and so their claims about addiction and disease end up sailing past one another like ships in the night.

The aim of section four has been to show how my account can unify some prominent views in the literature. Though I lack the space here for a fuller exploration, I believe such unification can be extended to include many more accounts. Although it is typically not explicit, many accounts already speak in dispositionalist terms What's more, where they do not, the core of the accounts can still be brought into the dispositionalist framework. This fact about the literature, coupled with the fact that dispositionalist language and disposition-friendly features are quite often implicit and unnoticed, makes the development of a dispositionalist framework all the more important. Accounts like those from Sinnott-Armstrong and Pickard and Foddy and Savulescu, which are much more explicitly dispositionalist, still fail to provide any worked-out account of the dispositionalist components of their views. This is the gap I am aiming to fill, and in doing so I show how such an account can provide substantive unification to most of the views on offer.

Let us turn to some concluding remarks.

5. Implications for Future Work

I want to close by offering a brief look into how my account can be implemented and extended. First, one intended implementation of my account is into the domain of ontology. As mentioned in section two, some addiction researchers have called for the need to use realist ontologies in the addiction literature. This has proven an effective way of providing methodological unification in other domains, such as biology and medicine [16-18, 20, 68-72]. I fully embrace this project. One of the most central and important uses of ontologies is in helping to manage very large and heterogeneous sets of data. Given the disunification prevalent among accounts in the literature, it is inevitable that the massive amounts of data we have on addiction – addicts' brains, behaviors, genes, environments, recovery and relapse rates, and on, and on – will share this disunification. Hence, as Robert West, Janna Hastings, and others have pointed out, we need an ontology of addiction. In future work, I hope to show that my account is consistent with the ontological approach, and moreover, is an improvement on extant representations of addiction in existing ontologies.

Second, one way in which I intend to extend my account is by using it to engage with the philosophy of medicine literature, and in particular with debates over whether addiction is a disease. I tried to illustrate how my account can help to avoid some merely verbal disputes on this front. More than this, though, it would be useful to see what the

combination of my dispositionalist framework with different accounts of disease would entail. For instance, if Wakefield's *harmful dysfunction account* of disease is correct, then this would entail that addiction is a disease only if the systematic disposition to fail to control one's desires is a dysfunction, and only if this dysfunction is harmful in the relevant sense [73-75]. Wakefield already speaks in dispositionalist terms, and the fact that he distinguishes between *addiction* and *addictive disorder* implies that he sees harm as a typical consequence of addiction rather than a necessary condition. This already suggests that our views are closely aligned.

Third, and finally, another important extension of my account pertains to questions of control, free will, and moral responsibility. As it stands, my dispositionalist framework is meant to be theory-neutral with respect to the nature of control. For instance, I take my account to be such that either a compatibilist or an incompatibilist could utilize it for understanding addiction, despite the fact that they would have competing accounts of control. Still, perhaps a particular view of control is more suitable to the dispositionalist account, such as Fischer's *reasons-responsiveness* account [76-77]; some addiction researchers have utilized Fischer's account of control in discussing addiction [41, 78-79]. Moreover, the dispositionalist nature of my account – namely, the *systematicity* component – helps to clarify the kinds of questions we should be asking about addicts' free will and moral responsibility. General questions like, "Do addicts have free will" do not make much sense on my view. The disposition is (i) systematic rather than deterministic, and (ii) is realized in certain types of behaviors. Hence, my view could help to focus these questions on the nature of particular actions in particular circumstances rather than questions of general capacity. The latter are misleading and facilitate the idea that addicts are either fully free or fully (and irresistibly) compelled; this dichotomous thinking has fueled the stalled debates between brain disease and choice model proponents.

In sum, I hope to have shown both how my dispositionalist framework can help bring substantive unification to the literature, as well as how it can be extended into more particular domains of interest. There is more to work out in the details of the framework. In addition, I have argued that my framework is unifying partly because most extant accounts are at bottom dispositionalist. Still, I know of no other account that has offered a dispositionalist framework so explicitly, nor that is as developed as mine. With any luck, my account will help reveal the elephant for what it is so that a more unified effort to explain and understand it can be undertaken.

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