**Manuscript ID:** EJP-23-140.R1 **Author/Contact/Affiliation:**Arthur Krieger
arthur.krieger@temple.edu

Temple University,
Department of Philosophy
728 Mazur Hall
1114 Polett Walk
Philadelphia, PA 19122 USA

**Torturous Withdrawal: Emotional Compulsion in Addiction**

**Abstract:** Withdrawal involves emotional pain that motivates much addictive behavior. In this paper I argue that the emotional pain of withdrawal *compels* much addictive behavior. Researchers have noticed this possibility but it is widely underappreciated. Among philosophers only Hanna Pickard has discussed emotional compulsion in addiction, and the emotional aspect of withdrawal has been almost completely neglected. Accounts of emotional compulsion in the philosophical literature (from Tappolet, Elster and Furrow) probably do not capture how the distress of withdrawal compels, so I propose a more suitable account of “pathodoxastic” compulsion in addiction. On this account, the emotional pain of withdrawal compels when it undermines the ability to believe that one can continue to endure it, and therefore the ability to intend abstinence.

The pain of withdrawal is a widely cited reason for thinking of addiction as a compulsion (Heather 2017). Nomy Arpaly asserts that “[f]or the heavy user, heroin withdrawal amounts to torture” (Arpaly 2006: 20), and it is natural to think that such “torture” can compel addictive behavior. Opponents of this view observe that only a few drugs have medically dangerous withdrawals (alcohol, benzodiazepines, barbiturates), and that other withdrawals are more comparable to mild or moderate illness (Foddy and Savulescu 2010: 11; Pickard 2015: 143; cf. Husak 2000: 71-3). Heroin withdrawal is sometimes compared to the flu with regards to symptom type and severity (Pickard 2015: 143-4). Some claim that cocaine has a relatively mild withdrawal because the physical symptoms are mild, and that the apparent compulsivity of cocaine addiction means that addiction per se cannot be compulsive in virtue of withdrawal (Foddy and Savulescu 2010: 11).

But the compulsivity of addiction need not come down to a single factor. Heroin addiction might be compulsive because its withdrawal is excruciating while cocaine addiction compels via irresistible cravings. Several theorists believe addiction generally works through *both* the pleasure of use (positive reinforcement) and the pain of withdrawal (negative reinforcement) (Baker et al. 2004; Johnston, Linden & van den Bree 2016; Heather 2017: 19). Then again, addiction comes in many forms. Drugs differ in neurobiological action (Grisel 2019) and the symptoms that typify addiction manifest differentially (Rhemtulla et al. 2016). Different drugs seem to affect agency in different ways and there may even be variation at the level of the individual user (Redish, Jensen & Johnson 2008). Indeed, addiction may not even constitute a natural kind (Pober 2013; cf. Flanagan 2017; Clarke-Doane & Tabb 2022). So, it can be difficult to generalize about addiction, including how it might compel. The point that not all addictions appear to compel in virtue of their withdrawal is not a point against the possibility of compulsion by withdrawal in some kinds or cases—or even against the possibility that withdrawal is *generally* a source of addictive compulsion.

Setting that objection aside, those inclined to view withdrawal as (sometimes) compelling will be unimpressed by the claim that it is rarely very severe. Especially for drugs like heroin and alcohol, it is beyond doubt that withdrawal can be extremely painful. “You can list the symptoms of junk sickness,”— those of a flu—"but the feel of it is like no other feeling and you cannot put it into words,” explains William S. Burroughs’ protagonist in *Junky* (Burroughs 2003[1953]: 115). How are we to square the independently plausible ideas that most withdrawals do not have serious physical symptoms, and that withdrawal is often extremely unpleasant? In addition to having painful physical symptoms, withdrawal is often if not always an *emotionally* painful experience. To go through withdrawal is to become increasingly anxious, upset, or distressed; one feels that a deep need is going unmet. The health sciences tend to see withdrawal as physiological, but a growing scientific literature confirms that withdrawal is also an emotional phenomenon. It is not just “physically addictive” drugs that can result in withdrawal, but merely “psychologically addictive” drugs too, like cannabis and MDMA (cf. Newlin 2008). Even behavioral addictions can result in emotional withdrawal symptoms (Blaszczynski et al. 2008; Fernandez, Kuss & Griffiths 2020).

The upshot here is that withdrawal can be intensely emotionally painful when physical symptoms are mild or absent. This raises another version of the question of compulsion by withdrawal: Can the *emotional* pain of withdrawal become so intense as to compel addictive behavior? Intense emotions are widely thought to compel outside of addiction, including by lay people, the common law tradition (Roth & Blayden 2012; Sorial 2019) and philosophers (Furrow 1998; Elster 1999; Tappolet 2009). Assuming the emotional pain of withdrawal can become extremely intense, we have reason to think withdrawal can emotionally compel. The role of emotional withdrawal symptoms in motivating or even compelling addictive behavior is widely underrecognized by addiction theorists in neuroscience, philosophy, psychology, and psychiatry. Indeed, philosophers who write about addiction are approaching consensus that it is not a compulsion, at least not in the traditional sense; but with the exception of Hanna Pickard, they do not acknowledge the possibility of emotional compulsion in addiction at all. Furthermore, these philosophers reason that addiction cannot be a compulsion because little if any addictive behavior is fully beyond agential control. But the thought that addiction is a compulsion in virtue of withdrawal does not assume that very much addictive behavior is compulsive. The thought, rather, is that while most addictive behavior is done freely, when withdrawal becomes excruciating, it can abort even the best efforts at abstinence. If emotional compulsion occurs only sometimes, after significant periods of abstinence and in particularly severe cases of addiction, we have good reason to reject the dominant reasoning about addiction among philosophers. Addiction may be properly classed as a compulsion after all.

My purpose in this paper is to show that emotionally compelling withdrawal is a familiar and relatively common experience in addiction. In §1, I review scientific literature pertaining to the role of negative affect and especially negative emotion in addiction. Of the neurobiological models of addiction, only one— Koob and Le Moal’s—centers the emotional pain of withdrawal, but there is ample evidence that withdrawal is emotionally painful, and that addictive behavior is often motivated by this pain. In §2, I turn to addiction and emotion as phenomena that are independently viewed as compelling, and rebut Hanna Pickard’s uniquely circumspect argument against emotional compulsion in withdrawal. In §3, I examine accounts of emotional compulsion from philosophers Christine Tappolet, Jon Elster and Dwight Furrow, and argue that they do not capture how the emotional pain of withdrawal seems to compel addictive behavior. I then develop a novel account of “pathodoxastic” compulsion that does better in that respect. To preview, extreme emotional pain can force one to form the belief that they are no longer capable of attempting to do what pains them. This belief makes it impossible for them to intend to continue abstaining, which in turn makes them psychologically incapable of it. In §4, I summarize my account and its upshots.

Astute readers will have noticed that I am classing intense negative emotions like anxiety and distress as kinds of pain. The reality of affective or “psychological” pain is taken for granted in large areas of psychological research. In suicidology for instance, “psychache,” or extreme emotional pain, is often posited as the primary explanation for suicidal behavior (Schneidman 1993). While affective pain is unproblematically classed as a variety of pain, I will go a step farther. On one account of sensory or “physical” pain, what it means for a sensation to be painful is, roughly, for it to cause negative affect in the right way. This is substantiated by the fact that certain traumatic brain injuries preserve sensation but prevent it from arousing the distress that would make some sensations painful (Aydede 2019: §4.3). For the purposes of this paper, I will assume that pain is essentially affective; that psychological or affective pain—and its subspecies, emotional pain—is negative affect alone, which in some cases has distinctive psychological precursors (e.g. negative thoughts); and that physical or sensory pain is the experience of a sensation as arousing negative affect. In this framework, withdrawal symptoms are physically painful when physiological symptoms arouse negative affect. The emotional distress of withdrawal is the negative emotion that constitutes withdrawal but that is not aroused directly by the sensations of withdrawal symptoms. Notably, since all pain is ultimately affective on this view, it is easy to see how physical and emotional pain can compound, including in withdrawal.

**§1. Addiction and affect**

I will argue that the emotional pain of withdrawal often compels addictive behavior. As a first step, I will now present the scientific evidence that withdrawal is a negative emotional reaction as well as a physiological one, and that this emotional reaction motivates addictive behavior. While to many this will be intuitively obvious—consider the stereotypical media portrayal of the desperate, strung-out addict—several influential theories of addiction pay little attention to the emotional pain of withdrawal, or more generally to the complex relationships between addiction on one hand, and negative affects (emotions, moods) on the other.

 Let me start by noting that there is copious evidence that addiction and negative affects stand in complex bi-directional relationships (Morissette et al. 2007; Pani et al. 2009; Hogarth 2020). Negative emotional states and negative moods are triggers for drug use and other habit-forming behaviors, and conversely, addiction causes negative emotions and negative moods, even to the point of causing substance induced mood disorders (Schuckit et al. 1997; Brook et al. 2002; Gilder et al. 2004; Conner et al. 2005; Quirk 2001: 96-7, 100; Pani et al. 2009: 190-1; cf. Martin 1972; Carnes 1991; Martinotti et al. 2008). Here I will focus on the evidence that withdrawal is itself an emotionally distressing phenomenon that motivates addictive behavior as such.

 Extant studies indicate that at least some kinds of addiction characteristically involve negative emotions or the potential for them, particularly in withdrawal. Withdrawal from nicotine, alcohol, opioids, benzodiazepines, cocaine and other stimulants has been observed to involve irritability, anxiety, restlessness, fear, affective tension, depression and di/stress (Myrsten, Elgerot & Edgren 1977; Wikler 1984; Hughes 1992; Avery, Clauss & Blackford 2016; McLaughlin, Dani & De Biasi 2017; Bavley & Rajadhyaksha 2019; cf. Breslau & Klein 1999). Neurobiological explanations for the negative emotional aspect of withdrawal have been proposed. There is significant overlap in the brain regions and circuits involved in addiction and affect, and alterations in shared elements explain core symptoms of addiction (Pani et al. 2009: 190). Withdrawal from alcohol, opioids, cannabinoids and nicotine has been associated with the production and release of corticotropin-releasing factor (CRF), which in turn is associated with stress and related responses, and there is evidence of a role for CRF-like peptides in protracted drug withdrawal symptoms and relapse to drug-taking (Zhou et al. 1996; Frederick et al. 1998; Koob 1999, 2003; Weiss et al. 2001). The neuroendocrine stress system is strongly implicated in anxiety and mood disorders (Nemeroff 1992; Stam et al. 2000) as well as addiction (Elman et al. 1999; Sarnyai et al. 2001; Weiss et al. 2001; Avery, Clauss & Blackford 2016).

There has long been doubt that the negative emotion involved in withdrawal is a primary motivator of addictive behavior (e.g. Wikler 1984), but some still believe it is. One recent study of negative affect in withdrawal goes so far as to say that “[a]bstinence from chronic use of addictive drugs triggers an aversive [i.e. negative emotional] withdrawal syndrome that compels relapse and deters abstinence” (McLaughlin, Dani & De Biasi 2017: 130). It is well known that in general, negative affect is a common trigger for addictive behavior (Greely, Swift & Heather 1992; Childress, Ehrman, McLellan, MacRae, Natale & O’Brien 1994; Hogarth 2020), including relapse (Marlatt & Gordon 1980; Annis & Davis 1988). This should include the negative emotion intrinsic to withdrawal as well as external causes of negative affect, but it is worth noting that addiction can also cause “hyperkatifeia,” or hypersensitivity to negative emotion from external sources (Koob et al. 2020). Whether extrinsic or intrinsic, negative affect apparently undermines the ability to disrupt decision-making and behavioral processes related to addiction (Tiffany 1990; see also Selby, Anestis & Joiner 2008; Chester et al. 2016).

Most models of addiction do not give negative affect a central role. In his recent review, Nick Heather (2017) enumerated four leading neurobiological theories of addiction: Everitt and Robbins’ aberrant learning theory, Koob and Le Moal’s allostatic dysregulation theory, Robinson and Berridge’s incentive sensitization theory, and Goldstein and Volkow’s impaired response inhibition and salience (“iRISA”) model. Of these, only Koob and Le Moal’s explicitly centers on negative affect. Koob is a leading advocate of the view that the negative affect involved in withdrawal is an essential component in the addictive behavioral cycle, labelling this negative affect the “dark side” of addiction (Koob 2009, 2015; Koob & Volkow 2010; Zorrilla & Koob 2019). “An individual who struggles with addiction can be tempted to return to drug use to reduce misery that is caused by use of the drug itself,” Koob writes (Koob 2020: 1031). The allostatic dysregulation theory may or may not prevail, but its attention to negative affect is a strength, and there is pressure on other theories to account for the findings implicating it in addiction—or at least to be more explicit about the connection. Stuart Quirk (2001) argues that most psychological and neuroscientific theories of addiction tacitly encode the role of positive or negative affect but that the connection should be more explicit, and calls for the elaboration of an “emotion-based model of addiction.” In a similar vein but from the side of psychiatric nosology, Pani and colleagues (2009, 2020) start on a “unitary” conception of the psychopathology of addiction on which psychological and especially negative affect symptoms should be seen as more than accidental, independent comorbidities in addiction diagnosis and treatment. In addition to that of Koob and colleagues, more emotion-centric theories of addiction are beginning to emerge (Johnston, Linden & van der Bree 2016; Hogarth 2020). We will not fully understand addiction and related phenomena (e.g. dependence, withdrawal) until we understand their connections both to negative affect that is independent from drug use, and to the negative affect that emerges as a result of frequent, chronic drug use.

**§2. Addiction and emotion as compelling**

 Both addiction and intense emotions are widely held to compel characteristic behaviors. On the widely held medical understanding, addiction is a condition of the brain or mind in which the faculties required for free choice are dysfunctional with regards to addictive behavior, rendering the addict incapable of willful abstinence (Pickard 2015, 2021; Heather 2017; NIDA 2020). Similarly, a traditional view in philosophy, common law and among laypeople is that the emotions compete with reason and occasionally usurp it, driving the fearful mother or jealous lover to action, precluding omission, and reducing responsibility (Elster 1999; Tappolet 2009; Roth & Blayden 2012; Sorial 2019).

 There is a great deal of doubt that addiction is compulsive among philosophers and psychologists. There are basically two reasons for this: (1) addicts often abstain when they have the right kinds of reason (Levy 2006a, 2006b; Herdova 2015; Pickard 2015, 2021; Holton & Berridge 2017; Sripada 2018, 2022; Burdman 2022; cf. Feinberg 1970; Watson 2004; Noggle 2016); and (2) addictive behavior usually seems to result from cognitive decision-making processes that are responsible for free, intentional action (Bigelow & Liebson 1972; Stitzer, Iguchi & Felch 1992; Elster 1999; Foddy & Savulescu 2010; Higgins et al. 2012; Ainslie 2013; Pickard 2015, 2021; Henden 2017; Lee & Sher 2018). However, in attending to the cognitive and conative aspects of addiction, philosophers and psychologists ignore the possibility that the emotional pain of withdrawal sometimes compels addictive behavior.

 While to my knowledge no philosopher has addressed this possibility, one, Hanna Pickard, has addressed the more general question of whether addiction involves *some* variety of emotional compulsion. Pickard tells us that addicted persons may be especially susceptible to certain conditions like fear, rage and stress, which alter “the neurobiological and physical bases that realize the capacity for executive function and behavioural control” (Pickard 2015: 154). She connects this susceptibility to the function of addictive behaviors as coping mechanisms and explains that abstinence can compound the emotional distress already present, which can result in frenzied, out of control behavior (155). Crucially, in Pickard’s view such emotionally compulsive behavior is neither distinctively addictive, nor very common in addiction. As she puts it, “the explanation of this powerlessness is not the irresistibility of [an addicted person’s] addictive desires per se, but rather, their emotional or physical state, which temporarily removes executive function and with it, behavioural control. It is also the case that such frenzied, out of control behavior is by no means typical of the behavioural patterns constituting addictive consumption” (Ibid.)

Pickard is probably right that frenzied behavior is neither distinctly addictive nor common in addiction. But it does not follow from the fact that addictive behavior is not typically frenzied that addiction does not typically involve intense emotions that compromise behavioral control. Indeed, we should not assume that intense emotions are extrinsic to addiction; and frenzy is just one of several expressions of the behavioral dysregulation caused by intense emotions.

**§3. Emotional compulsion in addiction**

I will now argue that in addition to what Pickard acknowledges, there is another variety of emotional compulsion that occurs in addiction—one that is more distinctive of addiction and more common in it. Philosophers have described several varieties of emotional compulsion, but it seems to me that the variety that occurs in withdrawal calls for a novel account. Christine Tappolet (2009) describes how intense emotions can cause involuntary, automatic behavior, while Jon Elster (1999) describes how they can make all but one course of action conceivable. And Dwight Furrow (1998) argues that occurrence of deeply rooted emotions at one time can preclude the formation of incompatible intentions at later times. But if emotional compulsion in withdrawal is like other emotionally motivated addictive behavior, then *occurrent* (i.e. present) intense emotion compels *intentional* addictive action, in the face of recognized alternatives. If the accounts from Tappolet, Elster and Furrow fail to capture what happens when withdrawal seems to compel, a novel account is required to characterize an unfamiliar phenomenon. I will propose such an account. If, however, one or more of these accounts does capture a way in which withdrawal compels, so much the better for the view that addiction is a compulsion in virtue of withdrawal—for then, it appears withdrawal can involve multiple kinds of emotional compulsion. I will proceed by summarizing Tappolet’s, Elster’s and Furrow’s accounts of emotional compulsion, to illustrate how philosophers have theorized it previously and why I believe a novel account is needed (§§3.1-3.3). Then I will argue that severe withdrawal often involves what I call “pathodoxastic compulsion,” in which intense distress forces the addict to believe they can no longer even attempt abstinence (§3.4).

**§3.1. Motivational modularity**

 According to Christine Tappolet (2009), many philosophers and psychologists endorse some version of the thesis of motivational modularity. On this view, certain perceptual cues trigger emotional responses that automatically and involuntarily manifest in a narrow range of behaviors; the stimulus-emotion-expression sequence is completed in a way that preempts and thoroughly precludes deliberation, conscious choice, or trying to do otherwise (Tappolet 2009: 330-1). Tappolet’s label for the thesis is a nod to Jerry Fodor’s (1983) notion of modular information processing. A stock example is the prey animal who spots a predator and automatically fights or flees. Proponents generally hold emotionally modular behavior to occur in humans as well as nonhuman animals (Tappolet 2009: 330-1).

Addiction is widely held to involve some involuntary, automatic behavior (Tiffany 1990; Everitt & Robbins 2005; Goldstein & Volkow 2011). The first thing to notice is that much quotidian behavior is partly or wholly automated but not compulsive in the sense of being unpreventable (Bargh & Chartrand 1999; Heather 2017: 17-8). For instance, one might automatically start to flip the lights off but stop when they realize there is still someone in the room. The second and more important point is that the relationships between automatic addictive behavior and the sense-stimulus trigger (Tiffany 1990: 154) does not seem to be mediated by intense emotion. Consider the following anecdote about automatic addictive behavior from journalist and addiction memoirist David Carr. While on Christmas break from inpatient rehab, Carr went to his ex-wife’s house to pick up his daughters. In the house he glimpsed a makeshift crackpipe and lighter.

I made no conscious decision; I put the lighter to the can in a kind of see-and-smoke reflex baked in over the years. There was nothing there, not even a remnant, and I put down the can and went back to the business at hand. It was a moment of temporary possession, and it passed. (Carr 2008: 197)

It is just one anecdote, but Carr’s example comports with both the ordinary experience and the science of habit-automated behavior; there is no intense emotional reaction. It is easy to imagine another version of the story in which the sight of the crackpipe caused extreme emotional arousal and therefore an automatic reaction, as with emotionally modular behavior. But it simply does not seem necessary to refer to emotional modularity to explain the automaticity typical of addiction. Evidence or argumentation suggesting that some automatic addictive behavior is emotionally modular would be a valuable contribution to addiction science.

**§3.2. Action without choice**

 Jon Elster (1999) argues that two kinds of compulsive behavior can occur in intense emotional states. The first is emotionally modular behavior, which is compulsive qua automatic and involuntary (Elster 1999: 154-5). The second he calls “action without choice.” According to Elster, intense emotions sometimes cause us to perform intentional actions which, despite being intentional, we cannot help but perform—that is, which we would perform regardless of any reason not to. “A person running away from an approaching lion,” he tells us, “may be so consumed with fear that he does not notice or call to mind that he is heading toward a cliff, which represents an even greater certainty of death” (Elster 1999: 155). The ability to respond to reasons to do otherwise—which Elster takes to be tantamount to the ability to do otherwise itself—requires the ability to conceive of alternatives and their consequences. That is, it requires the ability to become *aware* of reasons to do otherwise, and to see them as reasons. In addition to fear (Elster 1999: 155-6), emotions like anger (156), sexual arousal (Ibid.) and shame (164) may block this ability, resulting in action without choice, or in other words, action that neither results from a decision-making process nor for which such a process could have occurred. Elster agrees with Niko Frijda (1985) that aversive emotions like fear are particularly compelling, at one point quoting Frijda’s claim that when an emotion directs action not towards a goal but away from something, it “blocks freedom of action” (Elster 1999: 155). This appears to be because when we are set on avoiding something we are less attentive to the means of achieving our goal, and less aware of reasons for and against those means. When one’s sole concern is avoiding the charging lion, they may not be able to evaluate and compare the various escape routes.

On Elster’s account of action without choice, intense emotions can compel by driving a particular action while blocking practical deliberation, making it impossible for the agent to even consider doing otherwise. As with emotionally modular behavior, it is possible to imagine an addict so beside themself in withdrawal that they can only conceive of a single course of action and feel driven to embark on it. But this is not really how we imagine the emotional distress of withdrawal to compel. (Elster himself holds such a “narrowing of cognitive horizons” only occurs in addiction within episodes of cocaine use; Elster 1999: 167-8.) It is not so much that addicts in emotionally distressing withdrawal cannot even imagine alternatives to addictive behavior, but rather that they cannot see the alternatives as viable for them. The question is whether the emotional distress of withdrawal can affect the addict’s ability to intend or resolve to alternatives, and if so, how.

**§3.3. Deliberative practical necessity**

Some philosophers argue that practical deliberation can lead us to conclude that we must do something—that we are literally incapable of doing anything else. In his essay “Practical Necessity” (1981), Bernard Williams argues that personal character circumscribes practical deliberation. It is not always the case that when one determines what to do, they have simply determined what they have the most reason to do (Williams 1981: 125-6). Nor is it always the case that “the set of objectives or constraints which determines the outcome… [is merely] accepted or taken for granted by the agent as something which, so far as this deliberation is concerned, he does not intend to change” (126). That is, there are cases in which the agent really cannot change the objectives or constraints that determine the outcome of practical deliberation, and therefore in which there is genuine practical necessity.

 What Williams does not do is give an argument that practical necessity actually occurs, and if so, by what psychological mechanisms. Dwight Furrow (1998) addresses both the existential and explanatory questions. Furrow argues that Oskar Schindler’s heroic but out-of-character protection of Jewish employees during the Holocaust is a real-world example of emotional compulsion. Furrow’s target concept is moral necessity, which he also calls “moral compulsion,” and he uses Schindler’s case to argue that moral emotions can partially circumvent the autonomous will to compel intentional action (Furrow 1998: 211-4). But Furrow’s account can be used to argue that any deeply engrained and change-resistant emotional dispositions can compel. On Furrow’s account, emotions contain intentions (217). Intentions are governed by consistency constraints, in the sense that one cannot form an intention that conflicts with a prior intention without dissolving the prior intention (215-6). And the intentions that partially constitute emotions are more durable than those formed in practical reasoning, blocking the formation of contrary intentions for as long as the emotion endures. This results in incapacity to engage in certain kinds of action. To use an example from Furrow, “[a]nger at a friend’s betrayal precludes a relaxed and amicable conversation over dinner, as long as the anger has not subsided” (217). While emotional responses and the intentions they contain are already particularly durable, moral emotions tend to be more durable yet, because they are grounded in deeply held values that strongly resist direct alteration. “The persistence of our emotional lives,” Furrow tells us, “can therefore be explained by the persistence of what we value” (218). A fleeting emotion may temporarily make it impossible for us to form certain intentions and therefore to engage in certain intentional actions, but when emotional dispositions are rooted in deep sources of value that cannot be directly or intentionally altered, long-term psychological incapacities can result. In Schindler’s case, the threat to his own self-respect that would result in collaborating in mass murder resulted in “more pervasive feelings that accompany meaninglessness, impotence and helplessness. A tacit presentiment of the self’s vulnerability gives rise to self-respect as the dominant, regulative emotion” (Furrow 1998: 222). The emotions associated with Schindler’s sense of self-worth therefore made him enduringly and unwaveringly incapable of Nazi cooperation or even passive acquiescence, his two practical alternatives to resistance (214). In short then, Schindler continually resisted the Nazi regime’s genocidal policies, come what may, because he was continually emotionally incapable of the alternatives. According to Furrow, this is one way emotionally informed deliberation can practically necessitate a complex and protracted course of action.

For Furrow, moral values involve change-resistant emotional dispositions that can enduringly preclude the formation of certain intentions, thereby compelling a particular course of action. The main point in favor of applying Furrow’s account to addiction is that like moral values, addiction can apparently involve highly change-resistant emotional dispositions, like the disposition to anxiety and other negative emotions in withdrawal. Indeed, addiction may even change one’s deeply held values, if not one’s morals (Foddy & Savulescu 2010: 14-5; cf. Knobe & Preston-Roedder 2009). So, if Furrow is right that moral emotions can compel via practical deliberation, it would not be surprising if addiction could too.

One problem with Furrow’s account is that it holds emotions to block the formation of certain intentions in virtue of containing incompatible intentions. The view that emotions contain intentions is dubious. It is probably better to say that emotions are or involve behavioral dispositions that can give rise to intentions, rather than containing intentions themselves. For example, when an athlete yells at the referee out of anger, it is not that their anger contains an intention to yell—it might just as well be expressed in another way—but rather that the anger disposes the athlete to a range of characteristically angry behaviors, giving rise to some intention or other. The intention is not constitutive of the emotion but a consequence of it. That said, it seems likely that behavioral dispositions can themselves block the formation of incompatible intentions. An extremely strong disposition to aggression might make it impossible to intend to gently pet the neighborhood cat, and an extremely strong disposition to affection might make it impossible to intend to kick it. So this problem with Furrow’s account can be overcome.

The main problem is not with the viability of Furrow’s account per se, but with squaring it with the appearance of emotionally-motived addictive behavior. In the other two varieties of emotional compulsion, compulsive behavior is caused by an intense emotion that occurs during or immediately prior to the behavior. We might therefore say that they are “synchronic” forms of emotional compulsion. And the emotional distress of withdrawal seems to motivate synchronically; the addict in withdrawal is driven to addictive behavior by the present occurrence of distress. Furrow’s deliberative practical necessity, however, is not a synchronic form of emotional compulsion. On Furrow’s account, emotions determine the outcome of a deliberative process that can occur much earlier than the compulsive action itself. In the analysis of Oskar Schindler, most putatively compulsive action was not driven synchronously by occurrent emotions. What Furrow describes, then, is importantly different from what we are trying to capture about addiction. We might say he is describing “diachronic” emotional compulsion.

**§3.4. Theorizing emotional compulsion in addiction**

Emotionally compulsive addictive behavior should mostly resemble more familiar varieties of emotionally motivated addictive behavior. For one, it should be intentional action. Emotional distress does not appear to compel in virtue of preempting intentionality or agency (cf. Tappolet 2009), but by determining the outcome of practical deliberation. Since the emotional distress of withdrawal overcomes an intentional effort at abstinence, it seems not to prevent the agent from imagining or otherwise recognizing the relevant practical alternative (cf. Elster 1999). Rather, it seems to prevent the addict from conceiving this alternative as available to them in that instance. Since it is not the recognition of alternatives that gives rise to intense negative emotion, if the negative emotion were to go away, the agent could then abstain; emotional compulsion in addiction would be of the synchronic variety (cf. Furrow 1998).

 It may turn out that, contrary to the intuitive picture about how distress manifests in withdrawal, previously described varieties of emotional compulsion do occur at significant rates in addiction. But since this seems unlikely, doubts about emotional compulsion in addiction are understandable. I will now argue that, previous accounts of emotional compulsion notwithstanding, we have good reason to think that the emotional distress of withdrawal compels. In short, addicts often *experience* withdrawal as unbearable, and the belief that an occurrent pain is literally unbearable makes it impossible to intend to continue bearing it. By undermining the ability to intend abstinence, the extreme distress of withdrawal makes addicts psychologically incapable of intentionally abstaining. To coin a term, I will argue that withdrawal sometimes involves “pathodoxastic” (“patho-”, emotion; “doxastic”, belief) compulsion.

**§3.4.1. Pathodoxastic compulsion in addiction**

 Withdrawal is often so painful that addicts plainly and earnestly characterize it as unbearable, intolerable, or something they “cannot stand.” This kind of claim is most readily found in narratives of heroin addiction. William S. Burroughs says that “[n]o one will stand still for junk sickness unless he is in jail or otherwise cut off from junk. The reason it is practically impossible to stop using and cure yourself is that the sickness lasts five to eight days. Twelve hours of it would be easy, twenty-four possible, but five to eight days is too long” (Burroughs 2003[1953]: 93). According to Burroughs, heroin withdrawal becomes less and less bearable with time, and can reach a point at which it is fully unbearable; it is like a weighty object that one can carry for a while but not indefinitely. Another former heroin addict explains that heroin withdrawal is “a point of total, extreme pain—not only physically but mentally also. And this pain is unbearable... And then there’s the total obsession. All you can think about is getting those drugs” (Omand 2016). For this person, physical and psychological pain leads to a complete obsession with heroin seeking and use.

It is not just heroin or opioid withdrawal that addicts claim can be unbearable. Sirota and colleagues open their study on measuring nicotine withdrawal tolerance by noting that “some patients report that they ‘can’t stand’ the feelings,” including both physical and emotional symptoms (Sirota et al. 2010: 686). And a study of abrupt cessation of antidepressants and benzodiazepines during pregnancy found that almost one-third of patients reported “unbearable withdrawal symptoms” that produced suicidal ideation (Einarson, Selby & Koren 2001: 46). While this kind of testimonial evidence can be hard to find for certain varieties of addiction, other drugs have withdrawals that are at least as painful as those of nicotine, benzodiazepines or opioids, including alcohol and xylazine (Pétursson 1994; Whelan 2022; Gupta, Gokarakonda & Attia 2023).

 When an addict says that withdrawal is unbearable, what exactly do they mean? As the testimony above shows, they often mean that it quite literally cannot be endured. Put otherwise, this testimony reports a belief that, in the relevant cases, the subject was literally incapable of enduring the withdrawal they were experiencing. But even this is not adequately clear. The belief that one’s pain is unbearable is not a belief that one will not *have* to bear that pain any longer. It is not a prediction that something will end the pain immanently or eventually, be it intentional addictive behavior or something else. Nor does the belief that a pain is unbearable entail or imply such a prediction; it is possible to experience a pain as unbearable and to have no idea how it might ever end. Indeed, if means to relief are believed to be absent, then such a prediction may be impossible. What I propose, then, is that to believe one’s pain unbearable is to believe that one cannot *intentionally* endure it any longer. It is, in other words, the belief that one cannot do anything that entails or involves intentionally enduring the pain, as opposed to relieving it. The addict who begins seeking drugs because their withdrawal is unbearably painful intentionally does something—drug seeking—that involves further suffering. But intentional drug seeking is not intentionally bearing the pain of withdrawal, as intentional abstinence is; the addict who intentionally seeks drugs in withdrawal bears the pain of withdrawal only accidentally, despite a concerted effort to eliminate it, and on the way to achieving that goal. The addict experiencing unbearable withdrawal may not have a belief about when they will be relieved of their pain, but what they do believe is that they cannot intend to suffer any longer, as an implication of intentional abstinence, or for any other reason.

 An addict’s belief that they cannot intentionally endure the distress of withdrawal dramatically narrows the range of practical possibilities that they are capable of pursuing. Indeed, in most cases, it makes any alternatives to addictive behavior impossible to intentionally perform, qua forms of abstinence. In these cases, the addict *must* intend to engage in addictive behavior, behavior which I am referring to as pathodoxastically compulsive. My argument for this claim rests chiefly on two psychological principles. The first is that one must believe that one can attempt to φ, if one can intend to φ. The second is that one must be able to intend to φ, if one can φ intentionally.

 The premise that [(A can intend to φ) → (A believes A can attempt to φ)] is a version of the claim that to really be able to intend something, one must believe they can do it. If you believe you simply cannot φ, then, while surely you can intend to imitate or simulate φ-ing, it is not obvious that you can earnestly intend to φ. That said, you probably can. Before I had practiced very much on my skateboard as a kid, I was quite sure that I could not “ollie” (the basic skateboard trick—jumping with the board). I nevertheless earnestly intended to ollie, tried hundreds of times, and eventually succeeded. While I did not believe that I could ollie until I got quite close, I always believed that I could *attempt* to ollie. And because I believed I could attempt to ollie, I could intend to. On the other hand, if for whatever silly reason I had believed that I could not even *attempt* to ollie, I could not have really intended to do it. My ability to intend to φ required that I believe I could attempt to φ.

There is a natural objection to this premise. Imagine that Pat believes (quite wrongly and irrationally) that they cannot attempt to finish their sundae. Is Pat really incapable of intending to finish their sundae? After all, Pat might see the light and come to believe that they can attempt to finish the sundae; indeed, they might revise their belief within a few moments. Perhaps, then, all that is required for the ability to intend to φ, is *the ability* to believe they can attempt to φ (rather than having the belief already). In other words, maybe Pat can intend to finish their sundae because they are able to *come to believe* that they can attempt it—even if they do not already have this belief. What we should notice about Pat’s story is that for Pat to actually form the intention to finish the sundae, their belief that they cannot attempt to, must first change. That is, Pat must come to believe that they can attempt to finish the sundae, before they can intend to. What Pat’s case shows us is that sometimes, an incapacitating belief is subject to enabling change of belief. In pathodoxastic compulsion, the presence of extreme distress sustains the incapacitating belief, despite the prior resolution to abstain and any reasons for this resolution.

 The other premise here is that [(A can φ intentionally) → (A can intend to φ)]. This is a version of the familiar action-theoretic claim that, roughly put, to φ intentionally is to φ because one intends to φ (Bratman 1987; Velleman 1992). Now, the familiar claim that intentional φ-ing requires intending to φ, entails the premise I am presently asserting; if intentional φ-ing requires intending to φ, then intentional φ-ing must entail the *ability* to intend to φ. But my premise is weaker, and I hope less controversial, than the more familiar claim (though I do not mean to deny that claim, any more than I mean to affirm it). To many, it seems unclear how someone could do something intentionally without intending to do it. But it is that much less clear how someone could do something intentionally if they are not even *able* to intend to do it.

 My argumentative strategy should now be evident. When an addict’s withdrawal is so distressing that they come to believe they cannot attempt to bear it, they cannot intend to bear it, and therefore cannot bear it intentionally. Now I have to get us from the inability to intentionally bear pain, to the necessity of addictive behavior. Take the case of an addict who is suffering unbearably distressing withdrawal and therefore cannot intentionally endure the pain any longer. Why should we think this person is compelled to engage in addictive behavior like drug seeking? Aren’t there other courses of action they can intend to pursue that do not involve intentionally enduring the pain of withdrawal? For instance, the addict might take some deep breaths to relax, or massage their muscles to relieve soreness. Or, to cite a dramatic but genuinely pertinent alternative, they might try to end their life to escape the pain of withdrawal, as addicts sometimes do (Burroughs 2003[1953]: xxiv; Miller, Mahler & Gold 1991; Lange & Bozza 2008: 157). How, then, can addictive behavior be the only course of action that the addict can intentionally pursue?

 While suicide can be a means of emotional and physical pain relief—and often is (Schneidman 1993; Avci 2022)—I need to handle it differently from other means here. An addict experiencing unbearable withdrawal believes, quite correctly, that deep breaths and self-massage are simply not means to relieving distress of the kinds and severity they are suffering. As such, intending to do these things as alternatives to addictive behavior would entail intending to bear further pain. This is something they cannot do. The option of suicide, on the other hand, presents a unique problem. Most addicts will recognize suicide as one means to complete pain relief. As such, a belief that suicide is not a means of adequate pain relief should not be given as an explanation for why addicts cannot intend to attempt suicide. But it seems to me that, in the absence of an extremely weighty reason to do so, people are, *in general,* psychologically incapable of intending suicide. Addicts do sometimes attempt suicide when they are in withdrawal and believe they cannot access addictive behavior. But when they do believe addictive behavior is available to them, they probably *cannot* intend to attempt suicide, since they recognize an alternative form of pain relief and therefore have no reason to do so.

**§3.4.2. Clarifications on the unbearable, modality and scope**

 I have just argued that the emotional pain of withdrawal often causes addicts to believe that they cannot attempt any form of abstinence—except suicide—and that this makes it impossible for them to intend any form of abstinence. They are left believing that addictive behavior is the only thing they can attempt that does not entail intentionally bearing further suffering, and this means that addictive behavior is literally the only course of action they can intend. Now that I have laid out the main argument, a few clarifications are in order.

 First of all, I need to say a bit more about how the incapacitating belief is formed. It is easy to imagine cases in which a person believes that they cannot even attempt to do something but are mistaken. An addict might believe she cannot attempt abstinence because she has received certain cultural messaging; a would-be dieter might systematically underrate his ability to exert effort, making it impossible for him to adhere to a diet. At first glance, these cases appear to ground an objection to my account, insofar as they involve people who can have the correct belief, and do not. But it is vital to my account that in pathodoxastic compulsion, not only does the agent believe that they cannot attempt to φ, but that the presence of intense emotional distress makes them incapable of believing that they *can* attempt to φ. This is what I mean when I say that the pain “forces” or “causes” the incapacitating belief. I would like to be able to say more about this process than I currently can (especially the kinds of nonrationality and irrationality it exhibits, and their relations to behavior control). But the basic thought is that pain becomes unbearable precisely when the negative affect fully determines the beliefs that circumscribe practical reasoning. In pathodoxastic compulsion, the belief that one cannot attempt to φ is not formed on the basis of evidence or epistemic reasons; it does not reflect one’s reasoning or mental agency. It simply emerges, and is held in place as it were, by the presence of the extreme distress. The point at which the incapacitating belief emerges constitutes the boundary of one’s ability to tolerate distress.

It will also be helpful to clarify how I am deploying the modal notions so central to my argument: ‘compulsion,’ ‘necessity,’ ‘unable’ and the like. I do not mean to claim that pathodoxastic compulsion involves metaphysical, conceptual, or physical necessity. There are no “deep” connections between the negative affects of withdrawal, the beliefs they give rise to in humans, and the way these beliefs affect our behavior. The necessities and inabilities I invoke are precisely those in question when we otherwise inquire about behavioral control in addiction and intense emotional agitation. Let’s return for a moment to my claim that the ability to intend to φ requires the belief that one can attempt to φ. This principle is not metaphysically, conceptually or physically necessary. It is easy to imagine a case in which a person believes they cannot earnestly attempt to jump ten feet in the air and nevertheless intends to jump ten feet. But this person is not just being irrational (which they are). They seem to exhibit a profound mental disorder which, to my knowledge, does not actually occur in humans. To intend to φ while believing one cannot attempt to φ is *psychologically* impossible, for most or all people, in the same way as it is psychologically impossible to intend to φ and to ~φ at the same time. The most important thing to note here is that psychological principles of this kind—and particularly those invoked in my argument—are not things we are at liberty to alter. In most if not all humans, and certainly in all healthy and all rational ones, these principles are not the outcome of practical reasoning, but undergird and structure it. They are themselves contingent features of the human psyche, but just the same, they condition or circumscribe important varieties of human freedom.

Another way to describe the sort of modality I am invoking is to tie in one of the main inspirations for this paper. In his paper on moral incapacity, Bernard Williams (1993) classes his target concept as a species of inability to φ “knowingly,” or more precisely, under the relevant description. A person who can eat rat meat which they believe to be chicken, might nevertheless be incapable of eating chicken they believe to be rat meat. As is the case for Williams, the phenomenon central to my account reflects how beliefs about a course of action can make us literally incapable of it. (Strangely, Williams reserves the label ‘psychological incapacity’ for inabilities like the inability to do complex mental math, and leaves inabilities to φ knowingly without a distinctive label [Williams 1993: 62]. I think the label suits inabilities to do things knowingly much better.) A person who believes that they cannot attempt to φ cannot intentionally φ; they are psychologically incapable of intentional φ-ing. That is because the belief that one cannot attempt to φ psychologically precludes intending to φ. In addiction, if the distress of withdrawal makes a person believe that they cannot even attempt to abstain anymore, then they become psychologically incapable of intending to abstain, and must therefore come to intend to engage in addictive behavior.

It is sometimes argued that “inner agentive compulsion” is conceptually incoherent (Pickard 2015, 2021). On this line of thought, one of the things that distinguishes intentional action from mere behavior is that actions are chosen from among multiple practical possibilities. Since choice is held to be the antithesis of compulsion, compulsion and intentional action are thought conceptually incompatible; a behavior that is an action, qua chosen, cannot be practically necessary. The problem with this line of argument is that a person might choose to do something but be incapable of choosing to do otherwise. As Walter Sinnott-Armstrong explains, “conscious choice does not prove control… compulsive hand washers choose to wash their hands, even after their hands become raw and bleeding [sic] from too much washing. Their washings are not like seizures. They know what they are doing, intend to do it for a reason (to relieve tension or anxiety), and control how they do it within limits. Nonetheless, they do not control whether they wash their hands too often” (Sinnott-Armstrong 2013: 132). Choice is a kind of mental process that can produce behavior or action; it is not equivalent to freedom. Not all choice is *free* choice. On my account above, pathodoxastic compulsion is one way that properly intentional action might be compelled via necessity in the direction of the decision-making or choice process. If an agent’s beliefs prevent them from intending abstinence, they are “internally forced” to intend addictive behavior. This behavior is properly understood as compulsive, since it reflects principles that govern practical deliberation and make the alternatives psychologically impossible.

Finally, it is important to be clear here that I am not claiming pathodoxastic compulsion occurs whenever withdrawal is experienced as distressing, or even extremely distressing. There are many cases in which the distress of withdrawal leads to action by other routes, without the agent ever coming to believe that they are incapable of bearing the pain any longer. In some cases, addicts rationally determine that the good of pain relief outweighs the good of sobriety, and freely choose to mitigate their symptoms by addictive behavior. But the fact that this sometimes occurs does not count against the possibility that in many other cases addicts experience withdrawal as unbearably distressing, making it impossible for them to continue attempting abstinence. As addicts frequently attest, some drug withdrawals are *typically* so severe that they are often experienced as compellingly painful. There are many factors that affect whether withdrawal becomes unbearable in a given case. Again, some addictions simply are not characterized by extremely intense withdrawals. Even within the category of properly severe addictions, some cases are more severe than others. People naturally vary in “pain tolerance” (Sato et al. 2013); this probably plays a role. And the belief that addictive behavior is unavailable tends to lessen the intensity of withdrawal symptoms (Peele & Brodsky 1976).

**§3.4.3. Further support for pathodoxastic compulsion in addiction**

 A happy accident of understanding addictive emotional compulsion in terms of belief is that there is already scientific literature that bears on the topic. Extensive research suggests that a high degree of confidence in one’s ability to abstain (“self-efficacy”) is necessary though not sufficient for successfully overcoming addiction (Hyde et al. 2008: 613). Furthermore, negative affect appears to lower this confidence and therefore success (Gwaltney et al 2002). Given the evidence that addiction often causes or constitutively involves negative affect, extant science supports the thought that the negative emotion of addiction lowers confidence in one’s ability to abstain, and therefore affects one’s likelihood of success. This does not mean that the negative emotion of addiction *compels* by making one believe they are *entirely incapable* of abstinence. But it does suggest that the relationship between self-control in addiction and negative affect is mediated by self-efficacy belief. This validates the method of analysis of addictive emotional compulsion that I have proposed, not the positive assertion that addiction really is emotionally compulsive in the described sense.

 It is also worth noting that the variety of emotional compulsion I have described finds support in the work of Lennart Nordenfelt, an important philosopher of medicine. In his book *Rationality and Compulsion: Applying Action Theory to Psychiatry* (2007), Nordenfelt argues that the inability to do otherwise found in compulsion is due to the “fixation” of propositional attitudes that figure in practical deliberation (Nordenfelt 2007: 144-8). When an agent cannot modify a desire or intention, nor their beliefs about how to fulfill that desire or intention given the circumstances, then the agent is compelled to do what they believe they must to achieve their fixed aim. In analyzing compulsion in kleptomania, pyromania and drug addiction Nordenfelt says the following:

Two phenomena exist that have a central position with regard to the determination of acts by drives. *In the first place, every unsatisfied drive is a cause of discomfort, often in the form of a tension*… *Feelings like thirst and hunger… can become intolerable to the subject.* He or she wants in the first place to get rid of them. However, a more basic intention, namely the one to survive, may also come into play. In both cases, the intentions are preformed, and the subject is not prepared to negotiate them (Nordenfelt 2007: 174-5; emphases added)

Though Nordenfelt does not squarely focus on the variety of emotional compulsion I have described, this passage suggests both (a) an awareness of the phenomenon and (b) a similar way of modeling it. For Nordenfelt, unsatisfied drives can cause “intolerable tension,” fixating the intention to satisfy them and leading to compulsive action. Now, withdrawal is not itself an “unsatisfied drive,” but what Nordenfelt is describing here *is* the negative enforcement normally identified, in addiction, with withdrawal. (Remember, Nordenfelt is trying to capture various compulsions in one brief description here.) On my proposal, the extremely intense emotional discomfort of withdrawal apparently causes the formation of a durable belief, namely, that one is no longer capable of attempting abstinence. The presence of emotional distress fixates this belief, during which time the agent is not capable of intending to attempt to abstain (since you must believe you *can* attempt to φ in order to intend to φ). The intention to engage in addictive behavior is therefore fixated as well, generally resulting in an addictive behavior attempt that the agent could not have prevented. I have several issues with Nordenfelt’s analysis of compulsion, not least of which is that he believes that agents can fixate their own attitudes, such that strictly speaking, they *are* able to do otherwise (Nordenfelt 2007: 153-4). This is reflected in the last line of the passage above, where he says the subject “is not prepared to negotiate” their intention to satisfy their drive. But to Nordenfelt’s credit, he says that compulsive psychopathologies typically involve the stronger form of fixation, which is not due to choice (Nordenfelt 2007: 154). In short then, we find in Nordenfelt an account of psychopathological compulsion quite resonant with my account of pathodoxastic compulsion in addiction.

**§4. Conclusion**

 In this paper I have argued that the emotional pain of withdrawal compels a significant proportion of addictive behavior, and proposed an account of how this happens. The emotional pain of withdrawal can become so intense that it forces the sufferer to believe they can no longer even attempt to bear it. This in turn makes it impossible to intend abstinence and forces the intention to engage in addictive behavior.

 Most addictive behavior is not performed in the throes of excruciating withdrawal. But withdrawal is often so painful that it is literally unbearable. For many addicts and theorists, this has been the criterion of compulsivity in addiction. Addiction is not compulsive because every addictive behavior is completely out of the addict’s control. To the contrary, most addictive behavior is highly controlled. But from practical, clinical and theoretical perspectives, the most important way addiction undermines behavioral control is apparent not when the addict is using, but rather, when they are trying to abstain. Philosophers have been understandably dubious about compulsion in addiction, and especially the compulsivity of withdrawal. Sometimes withdrawal is not severe, and only a small handful of drugs produce a withdrawal syndrome that can be medically dangerous. But when we recognize that many withdrawals involve intense and potentially compelling negative affect, compulsion starts to look more like a characteristic feature of addiction—especially if we think that this negative affect helps to explain the difficulty of abstinence that defines addiction. I have not argued that addiction is, in general, a compulsive condition; this is a line of potential further argument. But the pathodoxastic loss of control that does sometimes occur in withdrawal is a crucial data point in theorizing how agency in addiction is distinctive.

**Bibliography**

Ainslie, G. (2013), ‘Intertemporal Bargaining in Addiction’, Frontiers in Psychiatry*,* 4, 63.

Annis, H.M. & Davis, C.S. (1988), ‘Assessment of expectancies’, in D.M. Donovan & G.A. Marlatt (eds.) Assessment of addictive behaviors. New York: Guilford Press.

Arpaly, N. (2006), Merit, Meaning and Human Bondage: An Essay on Free Will. Princeton: Princeton University Press.

Avci, E. (2022), ‘The Goals of Medicine and Compassion in the Ethical Assessment of Euthanasia and Physician-Assisted Suicide: Relieving Pain and Suffering by Protecting, Promoting, and Maintaining the Person’s Well-Being’, Journal of Palliative Care, 37(3): 366-371.

Avery, S.N., Clauss, J.A. & Blackford, J.U. (2016), ‘The Human BNST: Functional Role in Anxiety and Addiction’, Neuropsychopharmacology,41(1): 126-41.

Aydede, M. (2019), ‘Pain’, in E.N. Zalta (ed.) The Stanford Encyclopedia of Philosophy (Spring 2019 edition). <https://plato.stanford.edu/archives/spr2019/entries/pain/>.

Baker, T. B., Piper, M. E., McCarthy, D. E., Majeskie, M. R., & Fiore, M. C. (2004), ‘Addiction motivation reformulated: An affective processing model of negative reinforcement’, Psychological Review, 111: 33–51.

Bargh, J.A. & Chartrand, T.L. (1999), ‘The Unbearable Automaticity of Being’, The American Psychologist, 54(7): 462-79.

Bavley, C.C. & Rajadhyaksha, A.M. (2019), ‘Anxiety, the chicken or the egg of addiction: Targeting G9a for the treatment of comorbid anxiety and cocaine addiction’, Neuropsychopharmacology, 44(8): 1345-6.

Bigelow, B. & Liebson, I. (1972), ‘Cost factors controlling alcoholic drinking’, Psychological Record, 22: 305-314.

Blaszczynski, A., Walker, M., Sharp, L. & Nower, L. (2008), ‘Withdrawal and Tolerance Phenomenon in Problem Gambling’, International Gambling Studies, 8(2): 179-92.

Bratman, M. (1987), Intention, Plans, and Practical Reason. Cambridge: Harvard University Press.

Breslau, N. & Klein, D.F. (1999), ‘Smoking and panic attacks: An epidemiologic investigation’, Archives of General Psychiatry, 56: 1141-47.

Brook, D.W., Brook, J.S., Zhang, C., et al. (2002), ‘Drug use and the risk of major depressive disorder, alcohol dependence, and substance use disorders’, Archives of General Psychiatry, 59: 1039-44.

Burdman, F. (2022), ‘A pluralistic account of degrees of control in addiction’, Philosophical Studies, 179(1): 197-221.

Burroughs, W.S. (2003[1953]), Junky: The Definitive Text of “Junk”. New York: Grove Press.

Carnes, P. (1991), Don’t Call It Love: Recovery from Sexual Addiction. New York: Bantam Books.

Carr, D. (2008), The Night of the Gun: A Reporter Investigates the Darkest Story of His Life – His Own.New York: Simon & Schuster.

Chester, D.S., Lynam, D.R., Milich, R., Powell, D.K., Andersen, A.H. & DeWall, C.N. (2016), ‘How do negative emotions impair self-control? A neural model of negative urgency’, NeuroImage, 132: 43-50.

Childress, A.R., Ehrman, R., McLellan, A.T., MacRae, J., Natale, M. & O˜Brien, C.P. (1994), ‘Can induced moods trigger drug-related responses in opiate abuse patients?’, Journal of Substance Abuse Treatment, 11: 17-23.

Clarke-Doane, J. & Tabb, K. (2022), ‘Addiction and Agency’, in M. King & J. May (eds.) Agency in Mental Disorder: Philosophical Dimensions. Oxford: Oxford University Press.

Conner, K.R., Sörensen, S. & Leonard, K.E. (2005), ‘Initial depression and subsequent drinking during alcoholism treatment’, Journal of Studies on Alcohol and Drugs, 66: 401-6.

Einarson, A., Selby, P. & Koren, G. (2001), ‘Abrupt discontinuation of psychotropic drugs during pregnancy: fear of teratogenic risk and impact for counseling’, Journal of Psychiatry & Neuroscience, 26(1): 44-48.

Elman, I., Breiter, H.C., Gollub, R.L., et al. (1999), ‘Depressive symptomatology and cocaine-induced pituitary–adrenal axis activation in individuals with cocaine dependence’, Drug and Alcohol Dependence, 56: 39-45.

Elster, J. (1999), Strong Feelings: Emotion, Addiction, and Human Behavior. Cambridge: The MIT Press.

Everitt, B.J & Robbins, T.W. (2005), ‘Neural systems of reinforcement for drug addiction: From actions to habits to compulsion’, Nature Neuroscience, 8: 1481-1489.

Feinberg, J. (1970), ‘What is so special about mental illness?’, in Doing and Deserving: Essays in the Theory of Responsibility. Princeton: Princeton University Press.

Fernandez, D.P, Kuss, D.J. & Griffiths, M.D. (2020), ‘Short-term abstinence effects across behavioral addictions: A systematic review’, Clinical Psychology Review, 76, 101828.

Fischer, J.M & Ravizza, M. (1998), Responsibility and Control: A Theory of Moral Responsibility. New York: Cambridge University Press.

Flanagan, O. (2017), ‘Addiction Doesn’t Exist, But it is Bad for You’, Neuroethics, 10(1): 91-8.

Foddy, B. & Savulescu, J. (2010), ‘A Liberal Account of Addiction’, Philosophy, Psychiatry and Psychology, 17(1): 1-22.

Fodor, J. (1983), The Modularity of Mind. Cambridge: The MIT Press.

Frederick, S.L., Reus, V.I., Ginsberg, D., et al. (1998), ‘Cortisol and response to dexamethasone as predictors of withdrawal distress and abstinence success in smokers’, Biological Psychiatry, 43: 525-530.

Furrow, D. (1998), ‘Schindler’s Compulsion: An Essay on Practical Necessity’, American Philosophical Quarterly, 35(3): 209-29.

Gilder, D.A., Wall, T.L. & Ehlers, C.L. (2004), ‘Comorbidity of select anxiety and affective disorders with alcohol dependence in Southwest California Indians’, Alcohol: Clinical and Experimental Research, 28: 1805-13.

Goldstein, R. Z., & Volkow, N. D. (2011), ‘Dysfunction of the prefrontal cortex in addiction: Findings and clinical implications’, Nature Reviews Neuroscience, 12: 652–669.

Greeley J., Swift, W. & Heather, N. (1992), ‘Depressed affect as a predictor of increased desire for alcohol in current drinkers of alcohol’, British Journal of Addiction, 87: 1005-12.

Grisel, J. (2019), Never Enough: The Neuroscience and Experience of Addiction. New York: Doubleday.

Gupta, M., Gokarakonda, S.B. & Attia, F.N. (2023), Withdrawal Syndromes. Treasure Island: StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK459239/.>

Gwaltney, C.J., Shiffman, S., Paty, J. A., Liu, K. S., Kassel, J. D., Gnys, M., & Hickcox, M. (2002), ‘Using self-efficacy judgments to predict characteristics of lapses to smoking’, Journal of Consulting and Clinical Psychology, 70: 1140–1149.

Heather, N. (2017), ‘Is the concept of compulsion useful in the explanation or description of addictive behaviour and experience?’, Addictive Behaviors Reports, 6: 15-38.

Henden, E. (2017), ‘Addiction, compulsion, and weakness of the will: A dual-process perspective’, in N. Heather & G. Segal (eds.) Addiction & Choice: Rethinking the relationship. New York: Oxford University Press.

Higgins, S.T., Washio, Y., Heil, S.H., Solomon, L.J., Gaalema, D.E., Higgins, T.M. & Bernstein, I.M. (2012), ‘Financial incentives for smoking cessation among pregnant and newly postpartum women’, Preventative Medicine, 55(Supplement): S33-S40.

Hogarth, L. (2020), ‘Addiction is driven by excessive goal-directed drug choice under negative affect: translational critique of habit and compulsion theory’, Neuropsychopharmacology, 45(5): 720-35.

Holton, R. & Berridge, K. (2017), ‘Compulsion and Choice in Addiction’, in N. Heather & G. Segal (eds.) Addiction & Choice: Rethinking the relationship. New York: Oxford University Press.

Hughes, J. R. (1992), ‘Tobacco withdrawal in self-quitters’, Journal of Consulting and Clinical Psychology, 60: 689–697.

Husak, D.N. (2000), ‘Liberal neutrality, autonomy, and drug prohibitions’, Philosophy and Public Affairs, 29(1): 43-80.

Hyde, J., Hankins, M., Deale, A. & Marteau, T.M. (2008), ‘Interventions to Increase Self-Efficacy in the Context of Addictive Behaviors: A Systematic Literature Review’, Journal of Health Psychology, 13(5): 607-623.

Johnston, J.H., Linden, D. & van den Bree, M.B.M. (2016), ‘Combining Stress and Dopamine Based Models of Addiction: Towards a Psycho-Neuro-Endocrinological Theory of Addiction’, Current Drug Abuse Reviews, 9(1): 61-74.

Knobe, J. & Preston-Roedder, E. (2009), ‘The Ordinary Concept of Valuing’, Philosophical Issues, 19 (Metaethics): 131-47.

Koob, G.F. (1999), ‘Stress, corticotropin-releasing factor, and drug addiction’, Annals of the New York Academy of Sciences, 897: 27-45.

--. (2009), ‘Neurobiological substrates for the dark side of compulsivity in addiction’, Neuropharmacology, 56: 18-31.

--. (2015), ‘The dark side of emotion: The addiction perspective’, European Journal of Pharmacology, 753: 73-87.

Koob, G.F., Powell, P. & White, A. (2020), ‘Addiction as a Coping Response: Hyperkatifeia, Deaths of Despair, and COVID-19’, American Journal of Psychiatry, 177(11): 1031-7.

Koob, G.F. & Volkow, N. (2010), ‘Neurocircuitry of Addiction’, Neuropsychopharmacology, 35: 217-38.

Lange, A. & Bozza, A. (2008), Too Fat to Fish*.* New York: Spiegel & Grau.

Lee, M.R. & Sher, K.J. (2018), ‘‘Maturing Out’ of binge and problem drinking’, Alcohol Research, 39(1): 31-42.

Levy, N. (2006a), ‘Addiction, Autonomy, and Ego-Depletion: A Response to Bennett Foddy and Julian Savulescu’, Bioethics, 20(1): 16-20.

--. (2006b), ‘Autonomy and Addiction’, Canadian Journal of Philosophy, 36(3): 427-48.

Marlatt, G.A. & Gordon, J.R. (1980), ‘Determinants of relapse: implications for the maintenance of behavior change’, in P.O. Davidson & S.M. Davidson (eds.) Behavioral medicine: changing health lifestyles. New York: Brunner/Mazel.

Martin, W.R. (1972), ‘Pathophysiology of narcotic addiction: possible role of protracted abstinence in relapse’, in C.J.D. Zarafonetis (ed.) Drug Abuse. Philadelphia: Lea and Febiger.

Martinotti, G., Nicola, M.D., Reina, D., et al. (2008), ‘Alcohol protracted withdrawal syndrome: the role of anhedonia’, Substance Use and Misuse, 43: 271–284.

McLaughlin, I., Dani, J.A. & De Biasi, M. (2017), ‘The medial habenula and interpeduncular nucleus circuitry is critical in addiction, anxiety, and mood regulation’, Journal of Neurochemistry,142(2): 130-43.

Miller, N.S., Mahler, J.C. & Gold, M.S. (1991), ‘Suicide Risk Associated with Drug and Alcohol Dependence’, Journal of Addictive Diseases, 10(3): 49-61.

Morissette, S.B., Tull, M.T., Gulliver, S.B., Kamholz, B.W. & Zimering, R.T. (2007), ‘Anxiety, Anxiety Disorders, Tobacco Use, and Nicotine: A Critical Review of Interrelationships’, Psychological Bulletin, 133(2): c245-72.

Myrsten, A., Elgerot, A. & Edgren, B. (1977), ‘Effects of abstinence from tobacco smoking on physiological and psychological arousal levels in habitual smokers’, Psychosomatic Medicine, 39: 25-38.

Nemeroff, C.B. (1992), ‘New vistas in neuropeptide research in neuropsychiatry: focus on corticotropin-releasing factor’, Neuropsychopharmacology, 6: 69-75.

Newlin, D.B. (2008), ‘Are “Physiological” and “Psychological” Addiction Really Different? Well, No! … um, er, Yes?’, Substance Use and Misuse, 43(7): 967-71.

Noggle, R. (2016), ‘Addiction, Compulsion, and Persistent Temptation’, Neuroethics, 9: 213-223.

Omand, G. (2016), ‘Users strive to avoid withdrawal; Former addict recounts recovery as ‘unbearable’’, *Chronicle-Herald,* A8.

Pani, P.P., Maremmani, I., Trogu, E., Gessa, G.L., Ruiz, P. & Akiskal, H.S. (2009), ‘Delineating the psychic structure of substance abuse and addictions: Should anxiety, mood and impulse-control dysregulation be included?’, Journal of Affective Disorders, 122(3): 185-97.

Pani, P.P., Maremmani, A.G.I., Pacini, M., Trogu, E., Gessa, G.L., Ruiz, P. & Maremmani, I. (2020), ‘Delineating the Psychic Structure of Substance Use and Addictions, from Neurobiology to Clinical Implications: Ten Years Later’, Journal of Clinical Medicine, 9(6): 1913.

Peele, S. & Brodsky, A. (1976), ‘Addiction as a social disease’, Addictions, Winter: 2-21.

Pétursson, H. (1994), ‘The benzodiazepine withdrawal syndrome’, Addiction, 89(11): 1455-59. doi: 10.1111/j.1360-0443.1994.tb03743.x.

Pickard, H. (2015), ‘Psychopathology and the Ability to Do Otherwise’, Philosophy and Phenomenological Research, 90(1): 135-63.

--. (2021), ‘Addiction and the self’, *Noûs*, 55(4): 737-761.

Pober, J.M. (2014), ‘Addiction is not a natural kind’, *Frontiers in Psychiatry*, 4: 123.

Quirk, S.W. (2001), ‘Emotion concepts in models of substance abuse’, Drug and Alcohol Review, 20(1): 95-104.

Redish, D.A., Jensen, S.& Johnson, A. (2008), ‘A unified framework for addiction: Vulnerabilities in the decision-process’, The Behavioral and Brain Sciences, 31(4): 415-37.

Rhemtulla, M., Fried, E.I., Aggen, S.H., Tuerlinckx, F., Kendler, K.S. & Borsboom, D. (2016), ‘Network analysis of substance abuse and dependence symptoms’, Drug and Alcohol Dependence, 161: 230-7.

Roth, L. & Blayden, L. (2012), ‘Provocation and self-defence in intimate partner and sexual advance homicides’, Briefing Paper No 5/2012*.* NSW Parliamentary Research Service.

Sarnyai, Z., Shaham, Y. & Heinrichs, S.C. (2001), ‘The role of corticotropin releasing factor in drug addiction’, Pharmacological Reviews, 53: 209-43.

Sato, H., Droney, J., Ross, J., Olesen, A.E., Staahl, C., Andresen, T., Branford, R., Riley, J., Arendt-Nielsen, L. & Drewes, A.M. (2013), ‘Gender, Variation in Opioid Receptor Genes and Sensitivity to Experiential Pain’, Molecular Pain, 9(1). https://doi.org/10.1186/1744-8069-9-20.

Schneidman, E.S. (1993), ‘Suicide as Psychache’, The Journal of Nervous and Mental Disease, 181(3): 145-7.

Schuckit, M.A., Tipp, J.E., Bucholz, K.K., et al. (1997), ‘The life-time rates of three major mood disorders and four major anxiety disorders in alcoholics and controls’, Addiction*,* 92: 1289-1304.

Selby, E.A., Anestis, M.D. & Joiner, T.E. (2008), ‘Understanding the relationship between emotional and behavioral dysregulation: Emotional cascades’, Behaviour research and therapy, 46(5): 593-611.

Shao-Cheng, W., Yuan-Chuan, C., Shaw-Ji, C., Chun-Hung, Lee & Ching-Ming, C. (2020), ‘Alcohol Addiction, Gut Microbiota, and Alcoholism Treatment: A Review’, International Journal of Molecular Sciences*,* 21, 6413. doi:10.3390/ijms21176413.

Sinnott-Armstrong, W. (2013), ‘Are Addicts Responsible?’, in N. Levy (ed.) Addiction and Self-Control: Perspectives From Philosophy, Psychology, and Neuroscience. New York: Oxford University Press.

Sirota, A.D., Rohsenow, D.J., MacKinnon, S.V., Martin, R.A., Eaton, C.A., Kaplan, G.B., Monti, P.M., Tidey, J.W. & Swift, R.M. (2010), ‘Intolerance for Smoking Abstinence Questionnaire: Psychometric Properties and Relationship to Tobacco Dependence and Abstinence’, Addictive Behaviors, 35(7): 686-693.

Sorial, S. (2019), ‘Anger, Provocation and Loss of Self-Control: What Does ‘Losing It’ Really Mean?’, Criminal Law and Philosophy, 13: 247-69.

Sripada, C. (2018), ‘Addiction and Fallibility’, The Journal of Philosophy, 115(11): 569-87.

--. (2022), ‘Impaired control in addiction involves cognitive distortions and unreliable self-control, not compulsive desires and overwhelmed self-control’, Behavioural Brain Research, 418, 113639.

Stam, R., Bruijnzeel, A.W. & Wiegant, V.M. (2000), ‘Long-lasting stress sensitisation’, European Journal of Pharmacology, 405: 217-224.

Stitzer, M. L., Iguchi, M. Y., & Felch, L. J. (1992), ‘Contingent take-home incentive: Effects on drug use of methadone maintenance patients’, Journal of Consulting and Clinical Psychology, 60(6): 927–934. https://doi.org/10.1037/0022-006X.60.6.927

Tappolet, C. (2009), ‘Emotion, Motivation, and Action: The Case of Fear’, in P. Goldie (ed.) The Oxford Handbook of Philosophy of Emotion. Oxford: Oxford University Press.

Tiffany, S.T. (1990), ‘A cognitive model of drug urges and drug-use behavior: role of automatic and nonautomatic processes’,Psychological Review, 97: 147-68.

Velleman, D. (1992), ‘What Happens when Someone Acts’, Mind, 101(403): 461–481.

Watson, G. (2004[1999]), ‘Disordered Appetites: Addiction, Compulsion, and Dependence’, in *Agency & Answerability: Selected Essays*. New York: Oxford University Press.

Weiss, F., Ciccocioppo, R., Parsons, L.H., et al. (2001), ‘Compulsive drug-seeking behavior and relapse. Neuroadaptation, stress, and conditioning factors’, Annals of the New York Academy of Sciences, 937: 1-26.

Whelan, A. (2022), ‘A powerful sedative in Philly’s drug supply is causing severe wounds and agonizing withdrawals. It’s quickly becoming unavoidable’, The Philadelphia Inquirer (April 10, 2022). <https://www.inquirer.com/health/opioid-addiction/xylazine-tranq-withdrawal-philadelphia-fentanyl-addiction-detox-20220410.html>

Wikler, A. (1984[1965]), ‘Conditioning factors in opiate addiction and relapse’, Journal of Substance Abuse Treatment, 1: 279-85.

Williams, B. (1981), ‘Practical Necessity’, in Moral Luck. Cambridge: Cambridge University Press.

--. (1993), ‘Moral Incapacity’, Proceedings of the Aristotelian Society, 93: 59-70.

Zaragoza, K. (2006), ‘What Happens When Someone Acts Compulsively?’, Philosophical Studies, 131(2): 251-68.

Zhou, Y., Spangler, R., LaForge, K.S., et al. (1996), ‘Corticotropin-releasing factor and CRF-R1 mRNAs in rat brain and pituitary during ‘binge’ pattern cocaine administration and chronic withdrawal’, Journal of Pharmacology and Experimental Therapeutics, 279: 351-9.

Zorrilla, E.P. & Koob, G.F. (2019), ‘Impulsivity Derived From the Dark Side: Neurocircuits That Contribute to Negative Urgency’, Frontiers in Behavioral Neuroscience*,* 13. DOI:10.3389/fnbeh.2019.00136.