

Interpretive Phenomenological Analysis of the Spiritual Characteristics of Recovery Experiences in the Context of the Brain Disease Model of Addiction

Katie Givens Kime¹

Published online: 25 May 2018 © Springer Science+Business Media, LLC, part of Springer Nature 2018

Abstract Spirituality persists as a mechanism of behavior change for addiction recovery. The aim of this project was to carefully attend to how those in recovery construct meaning of their experience of addiction, regardless of the addiction treatment modality or ideological framework. Participant accounts reflected the increased public interest in and research funding based on the brain disease model of addiction (BDMA). The qualitative study used interpretive phenomenological analysis to investigate the experiences of six adults (age range from 24 to 72) with at least three years of sustained recovery from substance use disorders. In-depth key informant interviews tracked their construction of their experiences and their understanding of addiction. Participants who entered recovery after 2010 sought to integrate BDMA-related constructs into their understanding of addiction and recovery. Addiction recovery narratives featuring BDMA-related constructs integrated neuroscience-related ideas with spirituality-related constructs rather than completely replacing the latter. Notable innovations and paradoxical tensions were found within participant accounts. Such features echo the insights on secularity of Harvard philosopher Charles Taylor, particularly his notion of the "buffered self," which offers a theoretical framework for understanding these shifts in meaningmaking. For persons entering recovery in the twenty-first century, the brain disease model of addiction carries more explanatory authority than it does for previous generations, despite the lack of agreement across addiction-related neuroscientific findings. As a model, it engenders more mechanistic, agential, brain-centered ("buffered") senses of self, ostensibly making it less compatible with spiritual understandings of addiction than other medical models of addiction. However, this study's findings indicate that those in recovery are likely to devise complex narratives of the etiology of addiction that combine elements from various models.

Katie Givens Kime kgkime@gmail.com

¹ Universität Bern, Unitobler, Länggassstrasse 51, CH-3000 Bern 9, Switzerland

Keywords Spirituality · Addiction · Recovery · Neuroscience · Brain disease model of addiction · Substance use disorders · Religiosity

Given the worldwide burden of substance use disorders, it is significant that Alcoholics Anonymous (A.A.) programs and its 12-step derivations are "ubiquitous, effective, and free of charge" (Kelly 2017) and that they explicitly consider themselves to be "spiritual fellowships." Though not without controversy, several longitudinal measures indicate that 12-step programs produce outcomes comparable to or better than other interventions (Ashenberg Straussner and Byrne 2009; Humphreys et al. 2014; Kelly and Greene 2014). Several studies in the fields of medicine and the social sciences point to patterns of inverse relationship between spirituality and substance misuse (Dermatis and Galanter 2016; Geppert et al. 2007; Katsogianni and Kleftaras 2015). However, clinicians and professionals have expressed concerns regarding the amorphous definitions of "spirituality" (Cook 2004), and the biases, misunderstandings, and lack of education concerning 12-step programs' claim that spirituality is their central mechanism of behavior change (DeAngelis 2001; Johnson 2013; Pargament 2007).

Concurrently, the so-called brain disease model of addiction (BDMA) is the latest shift in addiction understandings,¹ and it has had an immense influence on popular and medical discourse and on research funding. The BDMA is best understood as an overarching paradigm rather than a singular set of findings or theories. Many have traced it back to 1997, when Science published a landmark study by Alan Leshner, who was at the time the director of the U.S. government's National Institute on Drug Abuse (NIDA). The Science article calls for a shift: "Addiction is a brain disease, and it matters," arguing that addictive drugs "hijack the reward centers of the brain" (Leshner 1997, p. 45). Within several months of the publication of Leshner's article, Bill Moyers used the phrase "hijacked the brain" in 1998 on a landmark PBS television series on addiction, citing Leshner (Lewis 2016, p. 17). Several historians and researchers of addiction have noted the way the word "hijack" stayed in the vocabulary of addiction for many years after that (Khantzian 2003). Addiction researcher Nancy D. Campbell (2007) notes that the "staying power" of the hijacking metaphor was a sign of "how neuroscience remade the social worlds of substance abuse research" by implying that "the elusive secrets of this 'disease of the will' would now yield to the powerful force of brain science" (p. 201). Indeed, if popular titles are any indicator, the BDMA holds great influence over public understandings of addiction (Earley 2017; Lewis 2016; O'Connor 2015; Spiegelman 2015; Szalavitz 2016a, b). Several researchers note that social scientists refer to the BDMA as the "NIDA paradigm" (Dunbar et al. 2010, p. 3), which is significant since NIDA funds 85% of the world's research on addiction (Vrecko 2010b, p. 55). Indeed, in 2014 NIDA devoted 41% of its funding to basic neuroscience and a further 17% to the development of novel pharmacotherapies based on this neuroscience, yet only 24% to epidemiology, health services, and prevention research (Field 2015).

Neuroscience-based approaches to addiction may be well funded, but despite the cultural perception to the contrary, addiction research is "a disunified science" (Campbell 2011, p. 195) with critical differences and approaches between teams, such as their understanding of which neuromechanisms are relevant for understanding addiction and even of how such mechanisms operate (cf. Kime 2015b; Koob and Moal 2005,

¹ In this article, *addiction* serves as an umbrella term for the full range of substance use disorders (Miller 2016, p. 92).

pp. 18–19). Regarding this discord, Campbell (2010) points out that "neuroscience is a high stakes interpretive game" (p. 90). In response, Lende (2012) calls for a neuroanthropological theory of addiction rather than a "brain-driven" theory:

The parts of the brain where addiction happens are not single, isolated circuits—rather, these areas handle emotions, memory, and choice, and are complexly interwoven to manage the inherent difficulty of being a social self in a dynamic world. (p. 342)

However, no investigations have explored the impact this "neuro" shift has had on spirituality as a mechanism of brain change in recovery. Such an oversight is a small example of the broad fragmentation and reduction of addiction research into isolated components that too often fail to attend to the lived experiences of people in recovery, despite calls from leading voices in addiction research for radical interdisciplinarity (Nadeau 2014) and holistic attention to subjective well-being (Miller and Miller 2009).

Scholars of religion and theology have been largely absent from meaningful involvement in the design or interpretation of the various social scientific and empirical studies of the spiritual or religious aspects of recovery programs, with some notable exceptions (e.g., the Higher Power Project at the University of Chester [United Kingdom]; see Dossett 2013). Very few such studies appear in the scholarly journals of theology and religion (Sørensen et al. 2015; Sremac and Ganzevoort 2013; Stewart 2004). Though not conducting empirical studies, some theologians have contributed insights about the spiritual and religious characteristics of recovery (Blevins 2009; Clinebell 1998; Cook 2006; Doehring 2006; Dunnington 2011; Kime 2015a; Lund 2016; McDonough 2012; Mercadante 1996, 1998, 2009, 2010; Nelson 2004; Rohr 2011). Nevertheless, the gap in the literature is significant.

With exceptions (e.g., Dossett 2013; Flaherty et al. 2014; Klingemann 2011; Sørensen et al. 2015), the vast majority of empirical research on the spiritual aspects of recovery from substance use disorders has used a quantitative methodological approach (Dermatis and Galanter 2016; Heinz et al. 2010; Katsogianni and Kleftaras 2015; Robinson et al. 2003; Tonigan et al. 2013), relying upon measurements featuring dichotomies (e.g., "spiritual" or "not spiritual"), closed questions, classification systems, standardized scales, and/or single continuous dimensions. Such methods are valuable, but it seems appropriate to also employ qualitative methods that allow participants to volunteer preferred language, symbols, metaphors, and narrative structures in interpreting their experience. Several scholars (Campbell 2007; Keane 2002; Vrecko 2010b) have noted the importance of attending to the nuanced constructions of meaning generated by people in recovery about their experience of addiction. Others have noted that "we live in a world of smart people" who are aware of the paradox and complexity of addiction (Klingemann 2011). An off-cited recent study of public neurocentric understandings of addiction (Meurk et al. 2014) discovered diffuse, complex, and varied perspectives when participants were prompted to phrase their own descriptions of addiction etiologies rather than completing a questionnaire or other instrument. The findings of Williamson and Hood Jr. (2016) are an exceptional example of a longitudinal qualitative study of the spiritual characteristics of recovery; it is focused particularly on strategies utilizing the exhilaration of conversions in Pentecostal traditions.

Anyone seeking to recover from addiction in the twenty-first century must make meaning of their experience amidst a cacophony of competing models. This project seeks to investigate the impact of BDMA-related understandings on the spiritual aspects of recovery from addiction.

Method

This qualitative study employed the guidelines and intentions of interpretive phenomenological analysis (IPA) and utilized key informant semi-structured interviews to investigate the spiritual/religious characteristics of recovery from addiction. IPA was first implemented in the field of health psychology by Jonathan A. Smith, who noted that "IPA studies usually deal with significant existential issues of considerable moment to the participants and the researchers" (2004, p. 49). The method features a phenomenological theoretical position, a generally inductive and highly idiographic approach, and an interrogatively intentioned stance towards existing literature and the relevant fields of research; all these components make IPA well suited to the goals and research questions of this study.

The research sample for this study consisted of six individuals, a sample size based upon the standard participation in phenomenological research of 1 to 10 persons (Starks and Trinidad 2007), guidance for appropriate sample sizes of IPA studies (Smith 2009, p. 51), and the time and resources available for the completion of this project. The study built upon the recent findings and study structure of Flaherty et al. (2014).

The limitations of this study precluded the ability to *represent* any particular racial or ethnic population, region of the United States, age group, gender, level of education, sexual orientation, class identity, or life phase. However, diversity was sought in the participant selection, as illustrated in Table 1.

Some homogeneity was assumed; this study was limited to North America and to those with strong facility with the English language and experience with 12-step recovery communities. All participants had sustained sobriety for at least three years. All identified alcohol as a substance of abuse, and some identified narcotics as well. Non-probabilistic sampling was most appropriate for this study since generalization, in a statistical sense, was *not* a goal. Instead, purposeful sampling (the most common form of non-probabilistic methods) best matched the aims and questions of this study, since it assumes a research goal of discovering, understanding, and gaining insight (Merriam 2009, p. 77). This study utilized a strategic combination of opportunistic and snowball approaches (Miles et al. 2014, p. 32) to recruit participants.

Pseudonym	Gen-der	Age	Ethnicity	Sobriety	Religious identity	Recovery programs
Ursula	F	24	White American	4 years	Spiritual/New Age, SBNR**	A.A.
Barry	М	38	Palestinian-Filipino American	4 years	Catholic	A.A., N.A.
Sean*	М	44	White American	5 years	Agnostic, SBNR	A.A. (some), Rational Recovery, Right Turn
Navarro	М	52	Mexican	5.5 years	Former Catholic, SBNR	A.A.
Karl	М	58	African American	27 years	Christian	N.A., A.A.
Connie	F	72	White American	37 years	Protestant	A.A.

Table 1 Participant Characteristics and Demographics

*Given the public disclosure of his addiction narrative in *The White Chip* (Kime 2017), Sean declined to have his identity masked by a pseudonym or otherwise anonymized

**"Spiritual but not religious"

The study was reviewed and approved by the Emory University Institutional Review Board. After the principal investigator was certified via the Collaborative Institutional Training Initiative, and following submission of the full study design, including protocols, methods, risk and benefit analysis, and plans for data analysis, expedited approval was awarded.

Key informant semi-structured in-depth interviews comprised the instrumentation of this study, building on the method of a recent Australian study (Meurk et al. 2014) whose authors found it valuable to depart "from previous literature in employing an iterative, inductive approach to derive categorisation based on terms identified within the respondents' discourse." Participants were sent the interview questions 24 h in advance to allow time for consideration. Adapted closely from a study designed by Flaherty et al. (2014, p. 340), the questions were broadly worded prompts regarding the participants' narratives of addiction and recovery. In no instance did interview conversations follow the questions; rather, participants were encouraged to simply tell their story. Notably, no interview questions included any suggestion of neuroscience- or "brain"- related language. Following the interview, each participant was permitted to see a transcript of it for approval. Per the guidance of IPA, the interview process was iterative, allowing the researcher to shift the interview template based on insights gained from a previous interview.

Each interview was recorded and fully transcribed. Audio recordings were used to ensure accuracy; participants were fully informed of and consented to this protocol. The goal of the phenomenologically oriented method of this research project was to discover and understand the lived experiences of participants; therefore, an iterative and deductive cycle rather than preestablished coding was used to select segments of data for organization into common themes. Although this study was grounded in the broader themes and findings of the recent literature and the common premises and subjects that might lend themselves to a priori coding, the intent was to refrain from preconceived expectations, allowing the data to reveal commonalities and patterns.

Results

In the analysis of the data, the commonalities and patterns that emerged shared many similarities to those found by Flaherty et al. (2014), such as progressive stages of recovery. However, the flexibility of the IPA analysis stage allowed an unanticipated theme to emerge: the intertwining of "brain" metaphors and language alongside (or within) descriptions of the spiritual and religious aspects of recovery. Thus, the potentially fruitful finding of this project was that the four participants who had entered recovery after 2010 (Sean, Ursula, Barry, and Navarro) sought to integrate BDMA-related frameworks alongside more traditional spiritual, moral, and medical "disease" models. The two participants (Karl and Connie) who had entered recovery considerably earlier than 2010 had few or zero instances of volunteering any BDMA-related framework in their descriptions of their experiences of addiction and recovery. The paradoxical tensions and innovations that emerged in the participant constructions of their experiences of recovery from addiction. Sean, Ursula, Barry, and Navarro each integrated the "brain" alongside or within spiritual characteristics of recovery.

Sean's construction of a "higher power" is notable, particularly given his identification as an atheist, which he sourced in his negative childhood and adolescent experiences in the Church of Latter Day Saints. More than his experiences in A.A., Sean experienced a barely veiled Christian agenda behind all his encounters within recovery services:

Even all through rehab, I couldn't get it. I just couldn't . . . because rehab is actually more religious than just your standard A.A. meeting. It's really people believing in the power of God. . . . It's like almost everybody I encountered who works in recovery services is very Christian and very conservative. Almost all Republicans. So that, for me, was also the tricky part of it, like, "We don't agree on anything. Our belief systems are so different." [But] even when I was like, "I don't know if I believe any of that," they were like, "Well, this is a faith-based program. This is what we're here for." I got in all these fights with my counselor [Britt] just because I felt like what they were saying was, "You don't have to believe in Jesus. You can pick anything." But everybody, eventually, believes in Jesus. So I felt like they were just stalling us up until this moment when you'd eventually come around.

Unlike the other study participants, Sean found the "doorknob" concept of A.A. to be disingenuous and, more importantly, unworkable. A close confidant of Sean's suggested a "workaround" Higher Power concept that functioned for him:

I have a great friend [in rehab] who I was talking to during it, and he said . . . he picked "the ocean" as his thing, because the ocean is bigger and more powerful than him. But I just felt like I didn't know. I'm giving up my power to the ocean? I just couldn't wrap my head around any of it.

Sean relates much of these struggles through the frame of his relationship with his counselor and sponsor, "a real tough recovering cocaine addict former Air Force officer turned Preacher and Addiction Specialist, named Britt" (Daniels 2016, p. 80) who states that if Sean wants any chance at sobriety, or even at continuing to live, he must find and surrender to a Higher Power. In his play and in his interview as a participant in this study, Sean was very clear that he agreed with Britt that his life was at stake. He had entered rehabilitation after losing his spouse and his job and then coming frighteningly close to attempting suicide. Sean describes his desperation one day near the end of rehab:

I decide to, ugh, pray. I'm not a pray-er, but I was told, when this happens, you have to pray. So, I do. Old school. On my knees. First time since I was 15? 16? I pray the prayer I was taught—and the whole time I'm having a Meta snob moment—who are you praying to Sean? You don't actually believe in anything. But I pray. I pray, then I eat, then I shower, then I pray, and I eat again . . . and then I stop sweating. Suddenly I realize I haven't thought about a drink in a few minutes. Then I realize 10 minutes have passed. And then I am fine. I am proud, and worried about when the voices in my head will return. (Daniels 2016, p. 85)

After years of failed recovery attempts, Sean described his desperation in his final days of rehab, feeling sure he "would die" because he was "not any different... I've detoxed properly, but I haven't done anything else." At the suggestion of his rehab counselor, Sean then visited a local meeting of a particular A.A. group of predominantly Jewish men who were "veterans" of A.A. Sean described the striking difference he experienced between the medical model counseling he had received earlier in the hospital warning him of physiological and neurological damage and the explanation of neurological mechanisms that he received from the men's group.

But it wasn't framed [that way] until I met the Jewish guys, "Here's how your brain is operating. Here are the things that are out of your control." So for me, that was the key in terms of finding science. . . . No one ever explained, "It's not in your control. This is the way that your brain is set up." . . . I had been to detox. I had been to countless meetings. I had taken alcohol training courses as required when you get an aggravated DUI in Kentucky. None of this had come up. It had always been religion. It had always been like if you had believed in God hard enough, you could do it.

For Sean, a neuroscientific account provided release from his sense of failure, whereas other medical model accounts (which warned him of liver and brain damage without explaining the physiology associated with craving or impulse control) and certainly "religion" had failed to provide him such tools or opportunities. Furthermore, the cognitive mechanism (or "chemistry" as Sean often referred to it) was separate from his "will power" and his personhood: "I have to realize, 'Oh, that's just chemistry. That's not like my self-will failing me." Like most persons experiencing severe addiction of any kind, Sean reported feeling bewildered and disturbed by the "not-me" aspect of his behavior while in the throes of alcoholism. In seeking to make sense of how he discovered himself en route to the liquor store after putting himself to bed for the evening, cognitive scientific narratives helped Sean make meaning.

So you've rewired your brain to know we have to have enough alcohol in the house before 2:00 in the morning, because 2:00 to 10:00 is the one time in the day that we can't get it. I think like that made me feel so much better, just that I wasn't out of control and watching myself from afar.

Noteworthy here is Sean's mixed use of pronouns. Many of Sean's accounts revealed a dualistic construction of his self-agency in opposition to his "brain," an external yet internal, even alien, entity with agency, intention, goals, and beliefs all "its" own.

[Learning] about neuropathways.... Your brain wants the dopamine all the time. So the brain can actually rewire itself to make you do things that will eventually get it dopamine.

In addition to what "your brain wants," Sean offered many descriptions of the sorts of inner dialogue he experiences as himself in conflict with his "brain." In describing how confounded he had previously felt by behavior and thinking that it "didn't make any sense," Sean described how learning the way in which his "brain equalizes dopamine experiences" continued to offer him clarity as he lived his life in recovery:

Even now, I'll get in a big fight with my wife, and I'll think, "I just want to drink to burn it all down." Then it's just like, "No, I'm just being self-destructive. I'm just thinking of the most self-destructive thing I can do," which isn't really . . . I'm not really close to drinking. My brain still flashes that in my mind as a thing that could work, but I kind of trained myself to have Pavlovian responses, so it's like I know that, then I'm like, "Nope. I don't. That's just my brain putting that there. I don't really have to do that."

Sean described several times his profound transformation upon learning a BDMA-related account of addiction, both in his play (Daniels 2016) (35) as well as his account for this study:

SEAN: People ask me, why did it stick that time? It was the first time it was chemistry and science and not shame and weakness. I believed in something larger than myself. My higher power is: science. It's my faith in science that keeps me sober. Though it seems to work for the vast majority, and I never try to talk anybody out of it—ever ever ever—it does make you think, how many people are like me, and then don't make it because we lead with God and not with science? Does belief in one exclude the other? (Daniels 2016, pp. 97–98)

For Sean, "science" is sufficiently powerful, explanatory, and trustworthy. Notable also is Sean's suggestion that his construction of science as a Higher Power and more traditionally theological constructions of a Higher Power may not be mutually exclusive. Thus, even for Sean, who was the study participant most averse to any spiritual or religious language or framework, words like "belief" and "higher power" emerged as important terms.

Perhaps most notable in Sean's story of surrender is that he did not see his inability to assent to any sense of a Higher Power as a mere philosophical or theological discrepancy but rather as a matter of life or death. Once he had access to an "alternative" Higher Power, Sean felt freed from his negative experiences of organized religion as well as the moral model of addiction in which he felt entirely to blame. It seems "science as my Higher Power" freed Sean in two ways: via his "brain" (or "brain chemistry") as the partially culpable me-but-not-me agentic force within him and via "science" as an external force (and/or set of knowledge) more powerful than him. Sean's terms and concepts for his sense of self and his sense of a Higher Power are complex, slippery, and overlapping—yet seemingly life-saving.

In Navarro's narration of his recovery pathway, he described the dangerous habits of thought he experienced as part of his "factory settings." He described the importance of attending 12-step meetings and also his daily practice of morning prayer and meditation in managing self-destructive irrationality. Without this practice, Navarro said he observes the immediate return of unhelpful mental habits because of how "conditioned" his "brain" and his "behavior" seem:

If I get up, I jump in the shower, get dressed, and walk out of the house, then by 10, 11 o'clock in the morning, I just feel like I'm reactionary again, like my factory settings are taking over and it's like, "What the heck?" And I go, "Oh, shoot, I didn't do my prayer and meditation today. . . . I try to stay involved in the program as much as I can. It just keeps me in the mind. It keeps my factory settings away, which is the whole purpose of doing this, because when I allow the factory—I mean, they immediately go back. I mean, it's unbelievable how conditioned your behavior, your brain is, to think that way.

Clearly, terms like "brain" are important for Navarro's self-understanding, though overall, his understanding of addiction and recovery is based on a traditional mix of the disease concept of alcoholism and the spiritual approaches typical of 12-step programs.

For Ursula, medical-model and neuroscientific accounts of addiction did not emerge in our interview until she turned our conversation to her observations as an addiction counselor. Up until that point, her description of her addiction and recovery was phrased entirely in spiritual terms.

Though Ursula's understanding of both prayer and grace included multiple references to her "brain," her framing of the "how" and "why" of her addiction and recovery was almost entirely spiritual in terms of phrasing and epistemology. Ursula had found herself unable to stop drinking and was facing homelessness. Although her experience of "rockbottom" desperation, inner division, and firm atheistic beliefs are strikingly similar to Sean's experience, Ursula's framing of her prayer experience is markedly different from Sean's framing of his prayer experience. So this is where my spiritual experience really starts, is because I prayed for the first time. I don't know why I prayed in that moment. I was an atheist. I don't pray, but I was like, "Dear God, help me," you know? I guess because—when I read this in *The Big Book*, it's the only reason that ever made sense. It's like, deep down in every man, woman, and child is the fundamental idea of God, you know? As a—as atheist as I was, theoretically and in my brain—like intellectually, I was like, "I'm atheist. I will fight you to the death. I will argue about it." . . . And it wasn't some long, drawn-out, like the Lord's Prayer. It was just like, "I need f*cking help, God."

Following her account of her own story of recovery, Ursula first raised the issue of her sense of the distinction between "spiritual malady" and "brain disease of your neural pathways" when I asked her about her personal view of the nature of addiction:

Spiritual malady, I think, is really the innate thing that we all have in common. You know, working in the field, there's a lot of—I kind of have to separate my opinions out of what best practice and what science says is addiction, where it's like, "Okay, it's a brain disease of your neural pathways have developed in this certain way for your reward system to work," and I think of it more of a spiritual thing. I wouldn't say that to a client. I might—well, I might, depending on the situation. But I really think that's what it is, it's a—I feel like I was born into this world broken-hearted.

From this point, Ursula described the "hand model" she often used with clients, pointing to parts of her fist to describe the prefrontal cortex, the frontal cortex, cortex, midbrain (which decides "this is good, this is bad"), and brainstem ("survival stuff" and "reptilian brain"). She briefly described substance misuse as damaging the prefrontal cortex "that's in charge of all rational thought. .. being an adult, really, lies here." Thus, the prefrontal cortex is damaged and "you really live in this good and bad area, the midbrain, that's a very—kind of like a dog, you know?"

[Substance misuse] releases the dopamine in your reward pathway that would be normally released for things like food, water, shelter, sex. All of that gets—I mean, you release so much dopamine from using that it's not even comparable to having a nice meal. It's not in the same ballpark. So it becomes the ultimate survival thing, where that reward pathway was developed for us to survive, you know? And we've hijacked it.

In terms of models of selfhood, Ursula's neuroscientific account suggests that the damage effected by addiction diminishes one's humanness (in which rationality is prized), as well as echoing much of the narrative of dopamine and reward pathways to which Sean was attracted.

Ursula strictly separated the models she presented as an addiction counselor as opposed to serving as an A.A. sponsor. Despite her professional delineation between the models, Ursula saw the BDMA and the spiritual aspects of recovery as mutually reinforcing and harmonious rather than discordant.

They don't really clash because you find that all of the things that we've found with neuroscience of addiction and then the solutions to that, the behavioral solutions to that, are very in line with what we already intuitively do in A.A. But I think the God piece is missing, you know? That's what's missing within a very scientific approach to addiction, is that, for me, I needed that God piece. I still do to this day.

Like Ursula, Barry sought to hold together understandings of addiction that were "scientific" versus "12-step oriented." After several attempts to maintain sobriety, Barry found success after a near-death vehicular collision and his subsequent brief imprisonment and lengthy (498 h) court-ordered outpatient treatment. Barry's understanding of addiction (like Ursula's) is an integration of spirituality- and BDMA-related frameworks:

But the coin didn't really flip until my brain also healed. You might have heard that how the prefrontal cortex gets all messed up from long-term alcohol use. It doesn't really actually begin to heal, my understanding is, until six months after the last drink. And funny enough, that part is responsible for our sense of consequences and actions and all that.

Like Ursula, Barry saw the BDMA and spiritually related aspects as distinct from one another but not conflicting. Although Barry reported feeling deeply appreciative of his exposure to what he called "the best of both worlds" from his two types of "teachers"—a 12-step approach and an addiction science approach—he made a point of noting that he thinks too much "science" is not helpful for a "newcomer" in the first stages of recovery:

Now I love getting into the other stuff... that gets into more of a chemistry lesson with how alcohol interacts with my liver and all that. But when you're talking to a newcomer, all that stuff that's going to turn into clouds.... You have to reach down at a gutwrenching level, something that will get their attention because everything else is just knowledge that can't really be used at that time.

Barry's perspective and experience contrast with those of Sean, who reported that information about neurological mechanism and the dynamics of dopamine as it relates to alcoholism was far more important for his recovery.

In the recovery accounts of the two participants (Connie and Karl) who entered recovery before 1990, the traditional disease concept of alcoholism and addiction featured more prominently than any references to neuroscientific theories. Both participants explicitly volunteered the value of relinquishing what they viewed as the impossible project of resolving paradoxes of addiction and recovery such as "spirituality and science."

Karl clearly described his experience of the physiological aspects of addiction but also stated that his "emotional state of mind" and "spiritual state of mind" were distinct from the "physical," which is like an "allergy." At one point, Karl described the inner struggle with addiction as a pull between self, God, and the "demons" of addiction, all subjects with agency and power as opposed to the substances themselves, which are mere objects.

You know they say that we only use ten percent of our brain. There's a whole 'nother 90 percent that we don't use. To me, that's that God part to me.

Other than this comment (a popular misconception), the experiences and perspectives Karl shared were completely devoid of terms such as "brain" or references to neurological mechanisms of any kind. In telling her own story of recovery and her understanding of addiction, Connie's testimony was similarly devoid of BDMA-related terms, tending towards conventional 12-step spirituality concepts. Connie was the only participant in this study who did not use any concepts related to neuroscientific theories of addiction nor any neurological terms in describing her experience of herself, not even the word "brain." At the conclusion of our conversation, I introduced the topic by beginning to describe a popular newspaper article, to which Connie quickly responded:

Interviewer: In *The New York Times*, last summer, there was an article—it was in, like, the top ten most clicked-on articles in *The New York Times* online . . . it basically said that, you know, all this stuff, everything we know about alcoholism and addiction, it can now be explained neuroscientifically. And I'm wondering what—

Connie: First thing I'd say is, "Bullshit." *[Laughs]* No, I mean, really, I just, I think that there is something in me that is genetic, some predisposition, right? But again, how are you going to define alcoholism?

Connie went on to describe examples of utterly illogical and self-destructive behavior, noting how "unexplainable" it was. This was a pragmatic point on which Karl, Connie, and Navarro were in clear agreement, both in terms of pursuing the "how" and "why" of addiction and in terms of completely "getting" the "God stuff." Connie shared how she typically responds to newcomers struggling with the concept of a Higher Power:

I tell people all the time, "Don't get too burnt out about this God stuff, at first, because it'll just drive you crazy that you're not good enough, right? Don't get all whooped up about that. Don't take all that stuff so seriously." To me, the point is, "I can't do this by myself; I am not that powerful."

From Ursula's "hand model" of the neurological aspects of addiction, to Sean's reports of inner multiplicity understood through a framing of his "brain" as a "not-me" aspect of himself, to Barry's integrating of his "two kinds of teachers" of 12-step and addiction science, to Navarro's "factory settings," the participants in this study who had entered recovery relatively recently volunteered far more BDMA-related constructs of addiction and recovery than those participants who had entered recovery several decades earlier.

Discussion

Developing innovative ideological frameworks in order to make meaning of the baffling experience of addiction is, in itself, nothing new. Indeed, it is "utterly bewildering" (Flanagan 2011) to be self-destructive, seemingly incapable of stopping oneself from ruining one's own life and everything one holds dear. Distorted thinking, which can be a kind of innovative meaning-making, is a long-recognized attribute of addiction. Similarly, the apparent paradox of expressing surrender to a Higher Power as an empowering (rather than disempowering) act is not new, though critiques of the 12-step model are arguably louder than ever in the "neuro-turn" (Dodes and Dodes 2014; Glaser 2015; Lewis 2016; Szalavitz 2016a, b). Furthermore, as noted above, "a self-constructed self-defined spirituality that is all-inclusive" (Kelly 2017) has always been lauded (or critiqued) as a defining feature of 12-step programs. What distinguishes the innovative constructions of this study's participants is their integration of neurocentric self-concepts with their spirituality/religiosity.

Many excellent analyses have emerged probing the changes in Western subjectivity (along with other cultural components, such as governance, law, commerce, and education) that seem to accompany the neuro-turn, and they employ terms such as "brainhood" (Vidal 2009), "neurochemical selves" (Rose and Abi-Rached 2013) and "cerebral subject" (Ortega 2009). Few, if any, have explored the impact of the neuro-turn on spirituality and religiosity.

The complex emergence of BDMA-related constructs within and alongside the transcendent, transpersonal functions of the recovery accounts of this study seem largely reflective of the recent theoretical proposals about secularity by Harvard philosopher Charles Taylor, particularly the concept of the "buffered self" (2007). Several researchers have capably noted the transcendent, transpersonal functions of recovery (Kurtz and White 2015), but the Taylorian framework adds a historicized account of the current undergirding of the Western sensibility, regardless of an individual's professed religious or spiritual beliefs or unbeliefs.

Taylor's significant contribution is the distinction he makes between his "sense" of secularity and previously identified theories of secularity, which he groups into two sorts of "senses." The first sense (S1) of secularity involves the departure of religion from public spaces (politics, the marketplace, science, the arts). The second sense (S2) of secularity is more personal, involving the inevitable waning of religious belief and practice as a consequence of modernity. Taylor notes that S1 and S2 produce insufficient "subtraction stories" that fail to account for how secularity is produced, not simply distilled. Taylor's "background" sense of the secular (S3) accounts for the creation of particular *conditions of belief* and shared contexts of understanding that also shape both belief and "unbelief." For Taylor, the primary features of S3 are the awareness that any belief is always one option among many and that exclusive humanism has become an option. Thus, regardless of how one would respond to a Pew Research Center survey ("Are you religious?"), S3 illustrates that is impossible to lack awareness that there are multiple options regarding belief. Taylor notes that we have shifted (permanently) from a context in which God is unchallenged and unproblematic to a context in which such belief is understood as one of many options. This is a "feel" of the world we all share, regardless of our professed beliefs. However, to conclude that we are moving toward a post-religious, post-spiritual future (or even that secularity is humanity minus religion) is to miss entirely the gifts of Taylor's insights and of the complex accounts of the experience of addiction from those in recovery.

In disrupting our assumption that our inner life "feels" like the inner life of people in other eras, Taylor calls attention to the historicized nature of our innermost senses of self. Disrupting such assumptions is critically important for the study of addiction, as Cook (2010) notes: "While each of us might like to imagine that our own view is the most logical, objective and impartial, that imagination is in itself the root of the problem" (p. 760). Taylor masterfully outlines the historical forces that have produced an age that is distinctive for its prizing of selfgovernance as a high and treasured good. From this vantage point, the pre-reflective context of anyone living in Western modernity, regardless of beliefs or principles, includes the expectation that one may master one's inner experience, including one's desires. No longer vulnerable (porous) to the demonic or the transcendent, the buffered self (subject) expects to master its own desires (objects). It follows that one should be able to govern and manage one's sensations, feelings, and emotional states with any available tools and strategies, including substances. Within this frame, addiction may only be comprehended in two ways: (1) as (moral) failure, on the part of the buffered self, to adequately control one's desires; and/or (2) as disease, which, although (like desire) a force internal but not identical to the self, is an organic "chemical" problem over which the addict is understandably powerless and for which the addict is not (or is less) responsible.

Indeed, the tired bifurcation between "moral failure" and "disease" is further exacerbated, rather than abated, via popular media engagement of the BDMA as an answer to "why can't they just stop?" (Bogren 2017; Campbell 2013; Racine et al. 2010; Robillard and Illes 2012). As Campbell (2011) notes, "The addicted brain becomes the prime example of the brain-based

self" (p. 213). Sally L. Satel and Scott O. Lilienfeld (2013, p. 3) note that the familiar 1987 "this is your brain on drugs" image of an egg (the brain) sizzling in a frying pan (the drugs) persists—only now, the frying egg is replaced with colorful brain images. However, for Sean, the sizzling egg image was an inadequate explanation of his failure to master his desires, whereas explanations of neural pathways worked. Sean's brain was an internal agential force with which he had dialogue, a "me-but-not-me" part of him with desires and powers that he needed to manage. Thus, perhaps part of the power of the BDMA model is the way in which a sense of agency is paradoxically retained. Colorful brain images, now "literally refashioned as tools of subjectivity" (Campbell 2013 p. 257), fortify a more complex and self-like model of brain mechanisms, whereas a raw egg lacks such capacities. Campbell (2013) describes a similar phenomenon amongst researchers using neuroimaging technologies as ways to "get inside" their patients' heads (p. 244), locating aspects of personhood in particular neuroregions (Campbell 2010, p. 99) and perpetuating a Cartesian dualism in which the brain itself has desires and wills. What Fernando Vidal (2009) calls "the belief in brain-self consubstantiality" and the "reducibility of self to an organ of the body" are thus writ large. As Nikolas Rose (2007) puts it, "Mind is simply what the brain does" (p. 192).

The rising prominence of neurocentric understandings of addiction matters for those in recovery, not only because it further medicalizes the experience of addiction (without sufficient scientific consensus or evidence) but also because it even more firmly engenders a sense of the buffered self, a model of a more mechanistic, agential anthropology in which the self is insulated from the transcendent and demonic and also from the self's own desires. When addiction is understood to be sourced in one's brain, along with any affective (or even spiritual) experiences, the self is even further reduced to little more than a rational manager.

Navarro's "my factory settings," Sean's "science is my higher power," Ursula's "God-piece" reinforcing the neuromechanics she explained via her fist model—such frameworks of meaning are more than psycho-social-theological curiosities or interesting philosophical constructions. In the case of recovery from addiction, they are life-saving conceptual frameworks.

As noted above, I concur with Meurk et al. (2014, 2016) and others (Bröer and Heerings 2013; Buchman et al. 2013; O'Connor and Joffe 2013) who suggest that neurobiological understandings of addiction are not about to utterly surpass and extinguish other modes of understanding, as is sometimes predicted. And, certainly, the role of spiritual/religious characteristics in recovery seems to persist. The implications for caregivers, researchers, clinicians, faith leaders, and policy makers seem to be (1) the need to prioritize multidisciplinary research on the spiritual/religious characteristics of recovery, though such efforts are always fraught; and (2) the knowledge that unorthodox meaning-making happens and that it can be life-saving.

Compliance with ethical standards

Competing interests None.

References

Ashenberg Straussner, S. L., & Byrne, H. (2009). Alcoholics anonymous: Key research findings from 2002– 2007. Alcoholism Treatment Quarterly, 27(4), 349–367. https://doi.org/10.1080/07347320903209665.

Blevins, J. (2009). We were powerless: Addiction, the will, and the Evangelical roots of the Twelve Steps. http://religiondispatches.org/we-were-powerless-addiction-the-will-and-the-evangelical-roots-of-the-twelvesteps/. Accessed 26 May 2015.

- Bogren, A. (2017). "Alcohol short-circuits important part of the brain": Swedish newspaper representations of biomedical alcohol research. Addiction Research and Theory, 25(3), 177–187. https://doi.org/10.1080 /16066359.2016.1239720.
- Bröer, C., & Heerings, M. (2013). Neurobiology in public and private discourse: The case of adults with ADHD. Sociology of Health and Illness, 35(1), 49–65. https://doi.org/10.1111/j.1467-9566.2012.01477.x.
- Buchman, D. Z., Borgelt, E. L., Whiteley, L., & Illes, J. (2013). Neurobiological narratives: Experiences of mood disorder through the lens of neuroimaging. *Sociology of Health and Illness*, 35(1), 66–81. https://doi. org/10.1111/j.1467-9566.2012.01478.x.
- Campbell, N. D. (2007). Discovering addiction: The science and politics of substance abuse research. Ann Arbor: University of Michigan Press.
- Campbell, N. D. (2010). Toward a critical neuroscience of "addiction". *BioSocieties*, 5(1), 89–104. https://doi.org/10.1057/biosoc.2009.2.
- Campbell, N. D. (2011). The metapharmacology of the "addicted brain". History of the Present, 1(2), 194-218.
- Campbell, N. D. (2013). "Why can't they stop?" a highly public misunderstanding of science. In E. A. Raikhel & W. C. Garriott (Eds.), Addiction trajectories (pp. 238–263). Durham: Duke University Press.
- Clinebell, H. J. (1998). Understanding and counseling persons with alcohol, drug, and behavioral addictions: Counseling for recovery and prevention using psychology and religion (rev. and enlarged ed.). Nashville: Abingdon Press.
- Cook, C. C. H. (2004). Addiction and spirituality. Addiction, 99(5), 539–551. https://doi.org/10.1111/j.1360-0443.2004.00715.x.
- Cook, C. C. H. (2006). Alcohol, addiction and Christian ethics. Cambridge: Cambridge University Press.
- Cook, C. C. H. (2010). Perspectives of beliefs and values are not conflicts of interest. Addiction, 105(4), 760– 761. https://doi.org/10.1111/j.1360-0443.2010.02921.x.
- Daniels, S. (2016). The white chip [live theatre performance]. Lowell: Merrimac Repertory Theatre.
- DeAngelis, T. (2001). Substance abuse treatment: An untapped opportunity for practitioners. *Monitor on Psychology*, 32.
- Dermatis, H., & Galanter, M. (2016). The role of twelve-step-related spirituality in addiction recovery. *Journal of Religion and Health*, 55(2), 510–521. https://doi.org/10.1007/s10943-015-0019-4.
- Dodes, L. M., & Dodes, Z. (2014). The sober truth: Debunking the bad science behind 12-step programs and the rehab industry. Boston: Beacon Press.
- Doehring, C. (2006). The practice of pastoral care: A postmodern approach. Louisville: Westminster John Knox Press.
- Dossett, W. (2013). Addiction, spirituality and 12-step programmes. *International Social Work*, 56(3), 369–383. https://doi.org/10.1177/0020872813475689.
- Dunbar, D., Kushner, H. I., & Vrecko, S. (2010). Drugs, addiction and society. *BioSocieties*, 5(1), 2–7. https://doi. org/10.1057/biosoc.2009.10.
- Dunnington, K. (2011). Addiction and virtue: Beyond the models of disease and choice. Downers Grove: IVP Academic.
- Earley, P. H. (2017). *RecoveryMind training: A neuroscientific approach to treating addiction*. Las Vegas: Central Recovery Press.
- Field, M. (2015). Addiction is a brain disease. .. but does it matter? https://www.nationalelfservice.net/mentalhealth/substance-misuse/addiction-is-a-brain-diseasebut-does-it-matter/. Accessed 16 February 2017.
- Flaherty, M. T., Kurtz, E., White, W. L., & Larson, A. (2014). An interpretive phenomenological analysis of secular, spiritual, and religious pathways of long-term addiction recovery. *Alcoholism Treatment Quarterly*, 32(4), 337–356. https://doi.org/10.1080/07347324.2014.949098.
- Flanagan, O. (2011). What is it like to be an addict? In J. S. Poland & G. Graham (Eds.), Addiction and responsibility (pp. 269–272). Cambridge: MIT Press.
- Geppert, C., Bogenschutz, M. P., & Miller, W. R. (2007). Development of a bibliography on religion, spirituality and addictions. *Drug and Alcohol Review*, 26(4), 389–395. https://doi.org/10.1080/09595230701373826.
- Glaser, G. (2015). The false gospel of alcoholics anonymous. Atlantica, 315(3), 50-60.
- Heinz, A. J., Disney, E. R., Epstein, D. H., Glezen, L. A., Clark, P. I., & Preston, K. L. (2010). A focus-group study on spirituality and substance-abuse treatment. *Substance Use and Misuse*, 45(1–2), 134–153. https://doi.org/10.3109/10826080903035130.
- Humphreys, K., Blodgett, J. C., & Wagner, T. H. (2014). Estimating the efficacy of alcoholics anonymous without self-selection bias: An instrumental variables re-analysis of randomized clinical trials. *Alcoholism: Clinical and Experimental Research*, 38(11), 2688–2694. https://doi.org/10.1111/acer.12557.
- Johnson, T. J. (2013). Addiction and the search for the sacred: Religion, spirituality, and the origins and treatment of substance use disorders. In K. I. Pargament, E. P. Shafranske, & A. Mahoney (Eds.), APA handbook of psychology, religion, and spirituality (Vol. 2). Washington, DC: American Psychological Association.
- Katsogianni, I. V., & Kleftaras, G. (2015). Spirituality, meaning in life, and depressive symptomatology in drug addiction. *International Journal of Religion and Spirituality in Society*, 5(2), 11–24.

Keane, H. (2002). What's wrong with addiction? New York: NYU Press.

- Kelly, J. F. (2017). Is alcoholics anonymous religious, spiritual, neither? Findings from 25 years of mechanisms of behavior change research. Addiction, 112(6), 929–936. https://doi.org/10.1111/add.13590.
- Kelly, J. F., & Greene, M. C. (2014). Toward an enhanced understanding of the psychological mechanisms by which spirituality aids recovery in alcoholics anonymous. *Alcoholism Treatment Quarterly*, 32(2/3), 299– 318. https://doi.org/10.1080/07347324.2014.907015.
- Khantzian, E. J. (2003). Understanding addictive vulnerability: An evolving psychodynamic perspective. *Neuropsychoanalysis*, 5, 5–21.
- Kime, K. G. (2015a). A higher power: Thinking theologically about addiction, recovery and being not-God. Church Health Reader, (2015), 28–31.
- Kime, K. G. (2015b). New neuro models for the interdisciplinary pursuit of understanding addiction. American Journal for Bioethics: The Neuroethics Blog http://www.theneuroethicsblog.com/2015/06/new-neuromodels-for-interdisciplinary.html.
- Kime, K. G. (2017). Why addiction narratives matter. American Journal for Bioethics: The Neuroethics Blog http://www.theneuroethicsblog.com/2017/03/why-addiction-narratives-matter.html.
- Klingemann, J. I. (2011). Lay and professional concepts of alcohol dependence in the process of recovery from addiction among treated and non-treated individuals in Poland: A qualitative study. Addiction Research and Theory, 19(3), 266–275. https://doi.org/10.3109/16066359.2010.520771.

Koob, G. F., & Moal, M. L. (2005). Neurobiology of addiction (1st ed.). San Diego: Academic Press.

- Kurtz, E., & White, W. L. (2015). Recovery spirituality. *Religions*, 6(1), 58-81. https://doi.org/10.3390 /rel6010058.
- Lende, D. H. (2012). Addiction and neuroanthropology. In D. H. Lende & G. Downey (Eds.), *The encultured brain: An introduction to neuroanthropology* (pp. 339–362). Cambridge: MIT Press.
- Leshner, A. I. (1997). Addiction is a brain disease, and it matters. Science, 278(5335), 45-47.

Lewis, M. (2016). The biology of desire: Why addiction is not a disease (Reprint ed.). New York: PublicAffairs.

- Lund, P. (2016). Christianity in narratives of recovery from substance abuse. Pastoral Psychology, 65(3), 351– 368. https://doi.org/10.1007/s11089-016-0687-3.
- McDonough, W. C. (2012). Sin and addiction: Alcoholics anonymous and the soul of Christian sin-talk. Journal of the Society of Christian Ethics, 32(1), 39–55.
- Mercadante, L. A. (1996). Victims and sinners: Spiritual roots of addiction and recovery. Louisville: Westminster John Knox Press.
- Mercadante, L. A. (1998). Addiction and recovery. Christian Century, 115(9), 302-303.
- Mercadante, L. A. (2009). Religious and theological roots of alcoholics anonymous. In A. Browne-Miller (Ed.), *The Praeger international collection on addictions: Volume 1, faces of addiction, then and now* (pp. 95– 105). Westport: Praeger.
- Mercadante, L. A. (2010). Helping addicts move beyond the spiritual wading pool: A new approach to religion and spirituality in the healing of addictions. *International Journal of Existential Psychology and Psychotherapy*, 3(1), 1708–1696.
- Merriam, S. B. (2009). Qualitative research: A guide to design and implementation. San Francisco: Jossey-Bass.
- Meurk, C., Carter, A., Hall, W., & Lucke, J. (2014). Public understandings of addiction: Where do neurobiological explanations fit? *Neuroethics*, 7(1), 51–62. https://doi.org/10.1007/s12152-013-9180-1.
- Meurk, C., Morphett, K., Carter, A., & Weier, M. (2016). Scepticism and hope in a complex predicament: People with addictions deliberate about neuroscience. *The International Journal on Drug Policy*, 32, 34–43.
- Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Thousand Oaks: SAGE.
- Miller, W. R. (2016). Sacred cows and greener pastures: Reflections from 40 years in addiction research. Alcoholism Treatment Quarterly, 34(1), 92–115. https://doi.org/10.1080/07347324.2015.1077637.
- Miller, P. G., & Miller, W. R. (2009). What should we be aiming for in the treatment of addiction? Addiction, 104(5), 685–686. https://doi.org/10.1111/j.1360-0443.2008.02514.x.
- Nadeau, L. (2014). All for one, one for all: Interdisciplinary collaboration in the treatment of addictions. *Canadian Journal of Addiction Medicine*, 5(3), 23–27.
- Nelson, J. B. (2004). THIRST: God and the alcoholic experience (1st ed.). Louisville: Westminster John Knox Press.
- O'Connor, R. (2015). Rewire: Change your brain to break bad habits, overcome addictions, conquer selfdestructive behavior (Reprint ed.). New York: Plume.
- O'Connor, C., & Joffe, H. (2013). How has neuroscience affected lay understandings of personhood? A review of the evidence. *Public Understanding of Science*, 22(3), 254–268.
- Ortega, F. (2009). The cerebral subject and the challenge of neurodiversity. BioSocieties, 4(4), 425-445.
- Pargament, K. I. (2007). Spiritually integrated psychotherapy: Understanding and addressing the sacred. New York: Guilford Press.

- Racine, E., Waldman, S., Rosenberg, J., & Illes, J. (2010). Contemporary neuroscience in the media. Social Science and Medicine, 71(4), 725–733. https://doi.org/10.1016/j.socscimed.2010.05.017.
- Robillard, J. M., & Illes, J. (2012). The diction of addiction at the intersection of law and neuroscience. In A. Carter, W. Hall, & J. Illes (Eds.), Addiction neuroethics: The ethics of addiction neuroscience research and treatment (pp. 215–230). London: Academic Press.
- Robinson, E. A. R., Brower, K. J., & Kurtz, E. (2003). Life-changing experiences, spirituality and religiousness of persons entering treatment for alcohol problems. *Alcoholism Treatment Quarterly*, 21(4), 3–16.
- Rohr, R. (2011). Breathing under water: Spirituality and the twelve steps. Cincinnati: St. Anthony Messenger Press.
- Rose, N. (2007). The politics of life itself: Biomedicine, power, and subjectivity in the twenty-first century. Princeton: Princeton University Press.
- Rose, N. S., & Abi-Rached, J. M. (2013). Neuro: The new brain sciences and the management of the mind. Princeton: Princeton University Press.
- Satel, S. L., & Lilienfeld, S. O. (2013). Brainwashed: The seductive appeal of mindless neuroscience. New York: Basic Books http://proxy.library.emory.edu/login?url=http://www.emory.eblib.com/EBLWeb/patron/?target= patron&extendedid=P 1113965 0.
- Smith, J. A. (2009). Interpretative phenomenological analysis: Theory, method and research. Los Angeles: SAGE.
- Sørensen, T., Lien, L., Landheim, A., & Danbolt, L. J. (2015). Meaning-making, religiousness and spirituality in religiously founded substance misuse services—A qualitative study of staff and patients' experiences. *Religions*, 6(1), 92–106. https://doi.org/10.3390/rel6010092.
- Spiegelman, E. (2015). Rewired: A bold new approach to addiction and recovery. Hobart: Hatherleigh Press.
- Sremac, S., & Ganzevoort, R. R. (2013). Addiction and spiritual transformation. An empirical study on narratives of recovering addicts' conversion testimonies in Dutch and Serbian contexts. Archive for the Psychology of Religion, 35(3), 399–435. https://doi.org/10.1163/15736121-12341267.
- Starks, H., & Trinidad, S. B. (2007). Choose your method: A comparison of phenomenology, discourse analysis, and grounded theory. *Qualitative Health Research*, 17(10), 1372–1380.
- Stewart, C. (2004). An empirical exploration of spirituality and religiousness in addiction treatment. American Journal of Pastoral Counseling, 7(4), 71–83. https://doi.org/10.1300/J062v7n04_05.
- Szalavitz, M. (2016a). Unbroken brain: A revolutionary new way of understanding addiction. New York: St. Martin's Press.
- Szalavitz, M. (2016b). Can you get over an addiction? *The New York Times*. http://www.nytimes.com/2016/06/26 /opinion/sunday/can-you-get-over-an-addiction.html
- Taylor, C. (2007). A secular age. Cambridge: Belknap Press of Harvard University Press.
- Tonigan, J. S., Rynes, K. N., & McCrady, B. S. (2013). Spirituality as a change mechanism in 12-step programs: A replication, extension, and refinement. *Substance Use and Misuse*, 48(12), 1161–1173. https://doi. org/10.3109/10826084.2013.808540.
- Vidal, F. (2009). Brainhood, anthropological figure of modernity. *History of the Human Sciences*, 22(1), 5–36. https://doi.org/10.1177/0952695108099133.
- Vrecko, S. (2010). Birth of a brain disease: Science, the state and addiction neuropolitics. *History of the Human Sciences*, 23(4), 52–67.
- Williamson, W. P., & Hood Jr., R. W. (2016). Psychology and spiritual transformation in a substance abuse program: The Lazarus project. Lanham: Lexington Books.