

The missing self in scientific psychiatry

Şerife Tekin¹

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Abstract Various traditions in mental health care, such as phenomenological, and existential and cognitive-behavioral psychotherapy, implicitly or explicitly acknowledge that a disruption of the self, or the person, or the agent (often using these three concepts synonymously) is among the common denominators of different mental disorders. They often emphasize the importance of understanding patients as reason-responsive, in their full mental health relevant complexity, if their mental disorder is to be treated successfully. The centrality of the concept of the self is not mirrored in the mainstream scientific approaches in psychiatry however; the self has rarely been considered as the object of scientific research, the empirical investigation of which might yield successful explanations of and interventions in mental disorders. Thus, even though self-related phenomena are clinically relevant in so far as they give important information about a mental disorder to the clinician and help the development of effective interventions, they are not considered among the scientifically relevant properties of mental disorders. Leaving the self-related phenomena out of the scientific research on mental disorders can be attributed to the presupposition that the self is not empirically tractable and its use will hinder psychiatry's goal to be scientific. In this paper, taking issue with this, I argue the self is empirically tractable, and its use as a target of research will not hinder psychiatry's scientific commitments.

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✉ Şerife Tekin
stekin@daemen.edu

¹ Daemen College, Amherst, NY 14226, USA

1 Introduction

Most mental disorders are expressed in the form of anomalies in such self-related capacities and attitudes as self-control, self-conceptualization, self-respect, and self-esteem, and, as such, they cause an individual's relationship with herself and others to deteriorate. In this regard, most mental disorders directly affect the person, or the self, or the agent—especially the dynamic, complex, relational, multi-aspectual, and multitudinous configuration of capacities, processes, states, and traits that support her agency (Tekin 2014; Bechtel 2008; Jopling 2000; Neisser 1988).

Various traditions in mental health care, such as humanistic, psychoanalytic, phenomenological, existential and cognitive-behavioral psychotherapy, implicitly or explicitly acknowledge that a disruption of the self, or the person, or the agent (often using these three concepts synonymously) is among the common denominators of different mental disorders. They emphasize the importance of understanding patients as reasons-responsive, in their full mental health relevant complexity, if their mental disorder is to be treated successfully. Self-related phenomena, such as personal identity (e.g., age, gender, race, socio-economic status, employment status, interpersonal relationships), and self-regarding attitudes and capacities, such as self-conceptualization, self-esteem, self-respect and self-control, are important constituents of mental health. In these clinical traditions, the concept of self is used to do the explanatory work of mental disorders, e.g., when the clinician explains the condition to the patient and the family members, and it reappears in subsequently prescribed therapies. For instance, the betterment of the self, e.g., increasing self-esteem, improving self-concepts, enriching self-control capacities, and enhancing self-respect, is set as the goal of the therapeutic encounter and achieved by engaging with various properties of the self, such as reason-responsiveness, self-interpretation and self-assessment.

The centrality of the concept of the self is not mirrored in the mainstream scientific approaches in psychiatry however. In fact, the self has rarely been the *object* of scientific research, the empirical investigation of which might yield successful explanations of and interventions in mental disorders. Thus, even though self-related phenomena are clinically relevant insofar as they give important information about a mental disorder to the clinician and help the development of effective interventions, they are not considered among the scientifically relevant properties of mental disorders. For instance, the tradition of psychiatric research driven by the Diagnostic and Statistical Manual of Mental Disorders (DSM), a classification manual of mental disorders created by the American Psychiatric Association (APA) to guide research, clinical, and policy related inquiries, does not take the concept of the self as an explicit object of scientific inquiry (APA 1994, 2013). Rather, the DSM opts for a mental disorder construct, e.g., major depression, individuated through observable behaviors such as signs and symptoms, not the plethora of self-related phenomena that are compromised in the presence of a mental disorder. In other words, the properties of mental disorders targeted by clinicians and those targeted by researchers are misaligned. Among the former group, self-related phenomena are considered relevant properties of mental disorders, while among the latter, they are neglected.

The fact that self-related phenomena are missing from scientific research on mental disorders can arguably be attributed to the presupposition that the self is not empirically

tractable and its use will hinder psychiatry's goal to be scientific. Researchers might want to exclude the self from scientific psychiatry because, as a folk concept, it does not sit well with the kind of concepts studied in sciences with the promise of unpacking the etiology of mental disorders, such as neuroscience or genetics. In the near future, the concept of the self might be fractured into different components, some related to memory (auto-biographical memory), others to high-level action control, and so on.

In this paper, I take issue with these connected challenges. I argue the self is empirically tractable, and its use as a target of research will not hinder psychiatry's scientific commitments. The concept of the self offers rich scientific resources to investigate and intervene in mental disorders; available resources include not only neuroscientific and genetic research but also those areas of study considering the role of interpersonal relationships, environment, culture and epidemiological factors in the development of illness. I respond to two challenges inherent in the presupposition that the self is not empirically tractable and its use will hinder psychiatry's goal to be scientific. The first is the question of how psychiatry can meet its aspirations to be a scientific discipline. I respond by proposing that psychiatry, very much like other special sciences such as economics, or biology, should be considered a model-building science. Different objects of inquiry, including the self, the mental disorder construct, or the brain, can be represented and studied using scientific models, thus making complex real-world phenomena empirically tractable. These models can be used to accomplish scientific goals, such as explanations of and interventions in mental disorders. The second challenge is whether the self is fit for empirical investigation. In response, I offer an empirically tractable model of the self, i.e., the multitudinous self, and explain how it can provide insight into and contribute to our understanding of mental disorders. I hold that while a fractured engagement with different parts of the self, e.g., auto-biographical memory is resourceful, there is virtue in maintaining the self as research construct as a whole because what happens in one component affects the other component and the self-system as whole, and such integrated understanding of the different parts of the self is necessary to fathom the complexity of mental disorders. To illustrate this, I focus on addiction.

The paper proceeds as follows. In part 2, I note the neglect of self-related phenomena in research on mental disorders by considering the features of mental disorder constructs in the DSM. I argue the neglect is the outcome of the presupposition that the self is not empirically tractable and its use will hinder psychiatry's goal to be scientific. In part 3, I propose psychiatry should be considered a model-building science; by developing my model of the multitudinous self, I show that pessimism about studying the self in a scientific manner in the context of psychopathology is unjustified. In part 4, I illustrate how the multitudinous self can be instrumental in studying addiction. I must note that sidestepping the self as a target of scientific research is not unique to DSM-led research programs; multiple examples of research programs can be given where the target is the brain, or the genes, or the behavior, not the self in its full mental health relevant complexity. Given time and space limitations, I cannot explore these here. Nor is it my goal to attack research programs for not including the self as a scientific target; rather, I argue it is conceptually and empirically plausible for psychiatry to embrace pluralism and encourage the development of research programs wherein the object of inquiry is the self.

2 The self and mental disorder

Psychiatry, as a branch of medicine, aims to alleviate the burden of mental disorders on individuals so affected. Its scientific research agenda is guided by a straightforward medical maxim: inquiry in psychiatry seeks to explain what mental disorders are, track their etiology, predict their course, and develop effective interventions. In theory, psychiatry's clinical and scientific frameworks should seamlessly work together, with scientists identifying the properties of mental disorders, arriving at successful explanations and predictions, and developing effective intervention methods, and clinicians using these to treat mental disorders. In practice, however, there is a misalignment between the properties of mental disorders that clinicians want to understand and treat and those targeted by scientists. The frameworks of various clinical traditions, such as humanistic, psychoanalytic, existential, supportive, and cognitive behavioral psychotherapies, and those of DSM-led research programs exemplify this divide. In the former, self-related phenomena are central to explanations and treatment; in the latter, they are sidestepped.

In most clinical settings, the disruption of the self is taken to be a common denominator of different mental disorders. In many mental disorders, there are various but not mutually exclusive anomalies in such self-related capacities and attitudes as self-control, self-conceptualization, self-esteem, and self-respect. Because these are compromised, the individual's abilities to build or continue social relationships, to work, to take on the responsibilities of everyday life, etc. are severed. For this reason, clinicians try to understand patients as persons, in their full mental health relevant complexity. They are seen as having a particular personal identity comprised of features that characterize them, making them who they are, including their history, gender, race, developmental trajectory, social relationships, socio-economic and educational status, and habits of embodiment, such as diet, exercise, and sleep. After getting a sense of the patient as a more or less integrated agent of various capacities, situated in a particular socio-cultural-economic milieu, the clinician will turn to the specific features of her distress. At this second stage, the clinician engages with the various properties of the self, such as reasons-responsiveness and capacities for self-interpretation and self-assessment, to facilitate the development of an effective intervention. The betterment of the self, e.g., increasing self-esteem, improving self-concepts, enhancing self-control capacities, enhancing self-respect, strengthening interpersonal relationships of value, etc., are set as the goals of the intervention. For example, a social worker may identify that a patient suffering from depression has genuine self-esteem issues, blocking his efforts to find a better-paying job; this, in turn, exacerbates his depression. She may try to help him improve or regain his self-confidence. Or a psychologist may notice that the source of a teenager's eating disorder is her negative bodily self-concepts and may actively work on improving them.

Now, consider a clinical paradigm, supportive therapy, which incorporates many techniques from a wide variety of psychotherapy schools and, thus, is sometimes conceived as an overarching therapeutic "matrix in which more specific techniques of therapy can be embedded" (Novalis et al. 1993, p. 20). Supportive therapy is part of most training programs in mental health professions, e.g., psychiatric residency, social work programs, clinical psychology degrees, etc. Its strategies are based on

considering the patient not just a clinical subject with a cluster of symptoms and signs, but as a personal subject with a particular life history, located in a particular juncture in time and society, with a particular identity, character strengths and weaknesses. The goal of the therapist is to see a complex person situated in a broad matrix and, as such, to identify his psychological states and self-regarding capacities and attitudes. For instance, the therapist's first step is to "formulate the case", with an integrated understanding of the person in his full mental health relevant complexity. Symptoms and signs of mental disorder are only a part of that formulation, sharing the stage with the other features of the person that make him who he is: not just his weaknesses and limitations but also his strengths. This strategy helps the patient develop self-respect, as he must acknowledge his strengths along with his weaknesses. Let me illustrate how supportive therapy works with an example.

Suppose that Jane, 33 year-old geologist, a single mother of two and former alcoholic, has recently lost her job. She has started to experience high anxiety, low self-esteem, and is increasingly unable to focus on finding another job. To cope, she relapses and starts drinking again, after having successfully abstained for the last eight years following addiction treatment. With the support of her parents, she goes to counselling. Her counsellor uses supportive therapy to treat her. One possible strategy is to foster and protect a therapeutic alliance; for example, she may show that she respects Jane as a person and recognizes that she is struggling with the same life issues as everyone else, e.g., stress of unemployment, inability to cope with the challenges of life. Alternatively, the therapist may help Jane make causal connections between her mental health and the other variables in her life. Understanding the connections between thoughts and feelings or between behavior and emotional response is crucial to patients' ability to negotiate and function in the real world. Jane may realize that she does not feel the way she does only because of her mental disorder, i.e., addiction. Rather, her struggles are independent of her illness. This kind of self-reflection may boost her self-respect, and she may address her addiction problem more effectively with a newly developed positive self-esteem. A final strategy Jane's therapist may use is to help Jane "raise self-esteem", by fostering her competency in her real skills (Novalis et al. 1993). This involves probing her existing strengths and talents. One or all of these strategies may help Jane recognize that she has the psychological resources to cope with her problems. Supportive therapy is often used in conjunction with other forms of treatment, such as drug therapy etc.

Despite the centrality of self-related phenomena in clinical contexts, the self is rarely considered as the object of scientific research. Yet its empirical investigation could yield successful explanations of mental disorders. Consider, for example, DSM-led research. The purpose of the DSM is to formulate useful categories of mental disorders, such as depression or substance use disorder, to guide research, diagnosis, and clinical treatment, and to inform various policy related contexts (APA 1994, 2013). Each mental disorder category is individuated by a list of criteria identifying the symptoms (observed by the patient) and signs (observed by others) (APA 1994, 2013). The target of research is the mental disorder category, with its list of symptoms and signs. The self is not explicitly targeted. For instance, according to the criteria for depression in DSM-5, at least five symptoms/signs have to be present during a two-week period and must represent a change from the patient's previous functioning.

The symptoms and signs of “depressed mood” or “diminished interest in and pleasure from daily activities” must be among the five. The rest include: significant weight change; sleep problems; psychomotor agitation; fatigue or loss of energy; feelings of worthlessness or inappropriate guilt; and diminished ability to think or concentrate, indecisiveness, recurrent thoughts of death, and suicidal ideation (DSM-5 2013, p. 125). In short, depression is characterized as a cluster of symptoms and signs, with minimal reference to self-related phenomena, including the individual’s life narrative, e.g., history, developmental trajectory, socio-economic status, the existence of a major traumatic event, etc., and her self-related attitudes and capacities, e.g., self-control, self-respect, self-esteem, and self-conceptualization.¹

The self may not be considered a suitable target of scientific inquiry because of an unexamined assumption that it is not empirically tractable and its use in scientific research will hinder psychiatry’s scientific commitments. In contrast, defining mental disorder as a cluster of observable features, e.g., symptoms and signs, may enhance its appeal as a target of scientific research. The adoption of what is called the operational approach in DSM-III was the result of efforts to make psychiatry scientific by grounding mental disorder descriptions and research on the observable properties of phenomena (APA 1980). Operationalism was a popular method of scientific inquiry in physics at the time, highly respected by logical positivists, and psychiatry wanted to adopt its methodology. As the above definition of mental disorder suggests, operational definitions characterize an otherwise complex scientific phenomenon by defining its features in a way that easily lends itself to scientific measurement and analysis; in this case, the observable signs and symptoms become the defining features.

The origins of operationalism can be traced to Percy Williams Bridgman’s argument that scientific concepts in physics are often abstract and unclear and, hence, not easily accessible in scientific research. He attempted to redefine unobservable entities concretely, in terms of the physical and mental operations used to measure them (Bridgman 1938; Chang 2009). A classic example is from psychology. When psychologists want to study a psychological variable, such as anger, because they have no way of directly measuring it, they can use operationalism to calculate its purported behavioral or physiological symptoms, such as loudness of voice or blood pressure, as an indirect measure of anger. These indirect measures are the operational definitions of anger. For a definition to be operational, the procedures used to arrive at the definitions should be repeatable by anyone, or at least by the peers of the scientist. This ensures both the validity of the descriptions, in that they are responsive to the facts of the world, and the reliability of the measurement of the phenomenon under study across different contexts.

It is worth pointing out that debates in philosophy of science on what it means for a discipline to be scientific were also partially responsible for DSM-III’s adoption of operationalism. Carl Hempel, a leading logical positivist, was invited to give a lecture

¹ Tellingly, albeit after much contentious debate, DSM-5 removed the bereavement exclusion criterion from the depression description. This means if an individual displays the above-mentioned symptoms for a two-week period because she has lost a significant person in her life, she can still be diagnosed with depression (Wakefield 2015; Tekin 2015).

at the American Philosophical Association's meeting on scientific taxonomies.² In his discussion of what makes a discipline scientific, Hempel highlights the importance of using operationalism to increase the validity and reliability of scientific classifications, commenting:

An operational definition for a given term is conceived as providing objective criteria by means of which any scientific investigator can decide, for any particular case, whether the term does or does not apply...Most diagnostic procedures used in medicine are based on operational criteria of application for corresponding diagnostic categories. (Hempel 1994/1961, in Sadler et al., p. 319)

The idea of operation has to be taken in a very liberal sense in psychiatry; the "mere observation of an object...must be allowed to count as an operation, for the criteria of application for a term may well be specified by reference to certain characteristics which can be ascertained without any testing procedure more complicated than direct observation" (Hempel 1994/1961, in Sadler et al., p. 320).

In the psychiatric context, then, operational definitions are taken to depict those features of mental disorders that are directly observable by different observers, thereby warranting consistent intersubjective agreement on their descriptions. Operational descriptions serve two purposes in Hempel's image of science:

[T]he vocabulary of science has two basic functions: first, to permit an adequate *description* of the things and events that are the objects of scientific investigation; second, to permit the establishment of general laws or theories by means of which particular events may be *explained* and *predicted* and thus *scientifically understood*; for to understand a phenomenon scientifically is to show that it occurs in accordance with general laws or theoretical principles. (Hempel 1994/1961 in Sadler et al., p. 317; emphasis in original)

Thus, descriptions of mental disorders have to validate the mental disorder in question and provide the building blocks of scientific theories by helping establish general laws or theories.

For psychiatry to establish itself as a science, Hempel urges psychiatrists to use operational descriptions, as they lend themselves to the development of laws and theories. He criticizes the psychoanalytic framework used in DSM-I and DSM-II, taking issue with the lack of operational descriptions in the characterization of "conversion reaction" in DSM-I, whereby anxiety is "converted into functional symptoms in organs

² There is disagreement on whether and precisely how Hempel's work affected the DSM. DSM-III Task force chair Robert Spitzer denies such influence, whereas philosophers such as Joseph Parnas and Louis Sass emphasize it. In a review article, Kendler et al. discuss the influence of Hempel's operationalism on the development of Feighner criteria by psychiatrists at Washington University in St. Louis. Most recently, Parnas and Bovet trace the emergence of operationalism in psychiatry to Hempel. However, Schaffner and Tabb address the complexities of the causal relationship between Hempel and the DSM by pointing out the later work of Hempel moves away from logical positivism and is more sympathetic to a Kuhnian approach. I do not want to overstate Hempel's influence on the DSM, but insofar as his work represents the shared understanding of science at the time, it is important to engage with it to understand the underlying reasons for psychiatry's choice to ignore the self in scientific contexts (Parnas and Bovet 2014; Schaffner and Tabb 2014; Fulford and Sartorius 2009).

or parts of the body, usually those that are mainly under voluntary control” (APA 1952, pp. 32–33). Hempel notes:

Clearly, several of the terms used in this passage refer neither to directly observable phenomena, such as overt behavior, nor to responses that can be elicited by suitable stimuli but rather to theoretically assumed psychodynamic factors. Those terms have a distinct meaning and function only in the context of corresponding theory, just as terms *gravitational field*, *gravitational potential*, and so on have a definite meaning and function only in the context of a corresponding theory of gravitation. (Hempel 1994/1961 in Sadler et al., p. 318)

For Hempel, operationalism could increase the reliability of the mental disorder categories by allowing different clinicians to individuate the same phenomena for the same mental disorder, thus securing objectivity. Hempel says:

One of the main objections to various types of contemporary psychodynamic theories, for example, is that their central concepts lack clear and uniform criteria of application, and that, as a consequence, there are no definite and unequivocal ways of putting the theories to a test by applying them to concrete cases... For just this reason, the operational criteria of application for psychological terms are usually formulated by reference to publicly observable aspects of the behavior a subject shows in response to a specified publicly observable stimulus situation, and this does indeed seem to be the most satisfactory way of meeting the demands of scientific objectivity. (Hempel 1994/1961 in Sadler et al., pp. 318–321)

In Hempel’s view, then, for psychiatry to be scientific, it must start with operational descriptions validating the phenomenon under scrutiny.

Operationalism was adopted by the DSM-III creators with this goal in mind. Its creators pointed out that DSM-I and DSM-II are populated with metaphysical assumptions on how the mind works and how psychopathology develops, e.g., unresolved sexual tensions of childhood, and criticized such categories as lacking scientific validity and reliability. A scientifically valid category of mental disorder, they argued, requires external validators, such as symptoms, signs, and neurobiological markers, not simply theories (Robins and Guze 1970; First et al. 2004).

Because the diagnosis of mental disorder in DSM-I and DSM-II relied on psychoanalytic and theoretical presuppositions about the mind as opposed to observable and measurable evidence, it was difficult to validate diagnoses (Beck 1962; Schwartz and Wiggins 1987a, b; Tsou 2015; Sadler 2005). In addition, research showed that psychiatric diagnoses based on DSM-I and DSM-II differed markedly between Europe and the US; the same set of behaviors was not individuated as same mental disorder across settings, risking the reliability of categories (Cooper et al. 1969). Therefore, the later DSM creators wanted to develop reliable diagnostic categories able to pick out the same mental disorder across different settings and, thus, facilitate scientific research. Operational descriptions would make mental disorders intersubjectively certifiable, because they would specify observable behaviors. In this regard, operationalism was meant to improve the reliability of categories.

A plausible argument for leaving the self out of the scientific picture of mental disorders, especially one with a logical positivistic bent, is that it is abstract, not

empirically tractable, and not observable. One might perceive the self as the remnant of psychoanalysis and argue that targeting self-related phenomena in mental disorders could hinder psychiatry's scientific commitments. In what follows, I offer a two-part refutation of this argument. First, I explain what kind of science psychiatry would be if it made the self an explicit target of scientific inquiry. Second, I show the self can, in fact, be empirically tractable. I apply this framework to the scientific inquiry into addiction in Sect. 5.

3 Psychiatry as a model based science and the multitudinous self

What does it take for psychiatry to be a truly scientific discipline? The response to this question hinges on what we take science to be. When psychiatry shifted to operational criteria to define mental disorders and to study them scientifically, a logical positivistic view of science was popular, leading psychiatrists to believe they needed to pattern psychiatry after hard sciences such as physics. However, contemporary philosophers of science contemplate what science is by looking at the ways actual scientists practice science. For instance, more philosophers are working on sciences that inquire into empirical phenomena by using scientific models.

A scientific model is an interpretive description of empirical phenomena that facilitates access to those very phenomena. Models come in a variety of forms—that is, they employ different external representational tools. Models can be objects, such as a toy airplane, or theoretical entities, such as Bohr's model of the atom (Bailer-Jones 1999). A toy airplane informs us of the mechanisms responsible for an airplane's ability to stay in the air, and Bohr's model illustrates the configurations of electrons and the nucleus in an atom, along with the forces acting among them. Model building is considered a fundamental building block of scientific activity (Cartwright 1983; Hacking 1983). Models enable access to complex real world phenomena by bringing forward certain specific aspects to make them amenable to manipulation and deliberately disregarding others in a process called abstraction and idealization (Godfrey-Smith 2006, 2009). As a result, models tend to be partial descriptions or representations only. Model builders select and identify relevant aspects of the target phenomena and use different types of models for different aims; graphical models can visualize and mathematical models can quantify the subject. Consider the many different ways the brain—an extremely complex system—is modeled: each model targets different features of the brain to better understand its mechanisms.

In recent decades, there has been a huge push to understand the brain through computer modeling. Many scientists are developing models to advance our understanding of daily human experiences, ranging from memory to vision to decision-making. These models allow scientists to combine results from a variety of research areas to create a better picture of how the brain works or to reveal gaps in our understanding. We have several models to explain how information is stored in the form of memory at the cellular level and at the network level; each is used for different purposes, and the properties of the brain they highlight are different, even though they are all representations of the same complex phenomenon.

We have reasons to believe that psychiatry already operates as a model-building science because of the complexity of its target of inquiry, i.e., mental disorder, and the multiplexity of the goals of scientific inquiry, ranging from diagnosis to various forms of treatment, from medication therapy to cognitive-behavior therapy. Some models, such as those in the DSMs, are intended to promote research on mental disorders, such as depression, by individuating them as clusters of signs or symptoms. Other models study mental disorders differently and for different reasons: geneticists may create genetic maps of schizophrenia, neuroscientists may study neural networks, such as the mesolimbic system, suspected to underlie self-control mechanisms, and clinical psychologists may build a model to explain how cognition and behavior relate to each other. Yet another set of models may facilitate development of medications that target the area of the brain hypothesized to underlie mental disorder. Because of the complexity of the target of inquiry and the multiplexity of scientific goals, the existence of multiple models studying different dimensions of these disorders, using the perspectives and tools of different scientific disciplines, is justified. In short, psychiatry is a model-building science, representative of scientific inquiry, and can comfortably leave behind the logical positivistic view of science as its ultimate goal.

Let's take the argument a step further. I argue that psychiatry, because it is already operating as model-building science, can expand the research on mental disorders by making the self an explicit target of inquiry and describing mental disorders in relation to a model of the self. Psychiatry's goal of making the object of inquiry empirically tractable by adopting operationalism (in DSM-III and on) can be met by creating a model of the self and tracing it empirically.

It is important to situate psychiatry as a model-building science in the larger philosophy of science literature on models. Philosophers who acknowledge the importance models play in scientific practice are interested in a variety of philosophical questions that arise in connection with models. For instance, models raise questions in the following areas: semantics, i.e., about the representational function that models perform; ontology, i.e., what kind of things are models; epistemology, i.e., how we learn with models; and, in general, philosophy of science related questions, such as how models relate to theory or what the implications of a model based approach are to debates of scientific realism, reductionism, explanation and laws of nature (Hartmann and Frigg 2016). Philosophers of psychiatry can use these various perspectives to contemplate various topics in psychiatry, but I limit the present discussion to the fundamental epistemological problem in psychiatry, i.e., how a model of the self may help us learn more about mental disorders.

As we live in a post-operationalist era, i.e., model-building, some might wonder why we need to make the object of inquiry empirically tractable. The answer is that empirical tractability remains a key challenge of new models of scientific activity. The target of inquiry is complex: we want to acquire knowledge about it, and we create models to represent it.

The self, or the person, is a dynamic, complex, relational, and multi-aspectual configuration (Neisser 1988; Jopling 2000; Thagard 2014; Bechtel 2008; Tekin 2014,

2015).³ In Daniel Dennett's terms, the self is an intentional system that is reason-responsive, acting according to beliefs and desires (Dennett 1971), supporting a degree of agential capacity which makes possible the attribution of responsibility and the moral blameworthiness or praise of the individual. In fact, as discussed above, it is usually these features of the self that make it an attractive and useful concept in clinical contexts. This philosophically plausible conception of selfhood is responsive to the complexities of "real people", including those with psychopathologies (Wilkes 1988). As I show in what follows, this conception of the self is also empirically plausible. A model of the self I have previously called the multitudinous self is useful to track the self empirically, in a way that teaches us more about mental disorders (Tekin 2014).

The multitudinous self is based on Ulric Neisser's account of the self as a configuration specified by various kinds of information originating from the subject and her social and physical environment (Neisser 1988). Neisser argues the forms of information individuating the self are so different that it is plausible to suggest each one establishes a different "self". He tracks five distinguishable, if ultimately inseparable, selves: (i) the *ecological self*, or the embodied self in the physical world, which perceives, acts, and interacts with the physical environment; (ii) the *interpersonal self*, or the self embedded in the social world, which constitutes and is constituted by intersubjective relationships with others; (iii) the *temporally extended self*, or the self in time, which is grounded in memories of the past and anticipation of the future; (iv) the *private self* which is exposed to experiences available only to the first person and not to others; and (v) the *conceptual self*, which represents the self to that individual by drawing on the properties or characteristics of the person and the social and cultural context to which she belongs. Neisser's individual and collaborative work empirically tracks these five selves or aspects of multiplexity in cognitive sciences, including developmental psychology, social psychology, cognitive psychology, and neuroscience, making it a methodology I find useful for research on psychopathology.

The multitudinous self is a variation of the Neisserian self, in that it represents all five dimensions as features of a single person. These dimensions connect the subject to herself and to the physical, social, and cultural environment in which she is situated. Because these aspects are all more or less integrated and self-regulating and function as a locus of agency that remains more or less integrated through time, the multitudinous model of the self gives a partial but helpful representation of the self.

Let me make explicit the sense in which I think that the self is empirically tractable via scientific means, using the multitudinous self. Briefly stated, this is made possible by connecting the aspects of the self to other kinds of research in psychology, sociology, biology, etc. by using phenomenological, existential, cognitive, biological methods. Each aspect of the self in this model can be tracked by using first-person, second-person, and third-person perspectives. For instance, we can understand how mental disorder affects the various dimensions of the self by relying on first and second-person reports. An example would be interviewing the patient and those around her on how her anxiety leads to disturbances in the ecological dimension of the self, e.g., sleep dis-

³ I want to make it clear that I am not trying to develop an understanding of the metaphysics of the self, a debate in philosophy with a long and complex history. I do not commit myself to developing a philosophical account of the self; rather, I argue for its instrumental value in psychiatry.

turbances, or in the interpersonal dimension, e.g., challenges in relationships with her partner. Various sciences, such as cognitive psychology, social psychology, sociology, clinical psychiatry, etc., can be instrumental in making this possible, using various methods. The self can also be empirically tracked by using the third-person point of view through sciences such as genetics, neuroscience, biology, etc. This methodology is called the trilateral strategy; it promotes the examination of scientific and clinical work on mental disorders, as well as first-person reports (Tekin 2016). These epistemic sources shed light on effective interventions, as they disclose, respectively, what may be the underlying causes of mental disorders, how to effectively treat them, and what it may be like to live with that particular disorder. How this is made possible by the multitudinous model of the self becomes clear in the example below.⁴

4 Investigating addiction through the multitudinous self

In the preceding section, I argue psychiatry, as a model-based science, should target, among other things, the self; which meets the scientific goals of both the operationalist (as discussed in Sect. 2) and the post-operationalist model-building eras. In this section, I bolster this argument using one particular mental disorder, addiction, or substance use disorder. At this point, addiction is investigated primarily as a target construct individuated through the symptoms listed in the DSM, but it can also be scientifically examined by studying the self, or more specifically, the multitudinous self, through ecological, temporal, private, intersubjective, and temporal dimensions.

Addiction is “a chronic condition that involves a powerful and repeating motivation to engage in a rewarding behavior... despite the knowledge of its long-term consequences” (West and Brown 2013, p. 18). DSM 5 defines substance use disorder as a problematic pattern of using a substance that results in impairment in daily life or noticeable distress (APA 2013). For a person to be diagnosed with a disorder due to a substance, he must display two of 11 symptoms within the last 12 months: (1) consuming more substance than planned; (2) worrying about stopping or consistently failed efforts to control use; (3) spending a large amount of time using a substance or doing whatever is needed to obtain it; (4) failing to fulfill major obligations at home or work because of substance use; (5) “craving” the substance; (6) continuing the use of a substance despite health problems caused or worsened by it; (7) continuing the use of a substance despite its negative effects on relationships with others; (8) repeatedly using the substance in dangerous situations; (9) giving up or reducing activities because of substance use; (10) building up a tolerance to the substance; (11) experiencing withdrawal symptoms, such as anxiety, irritability, fatigue, nausea, vomiting, hand tremors or seizures, after stopping use. The substance use disorder construct in the DSM-5 is instrumental in diagnosing individuals with this condition through the 11 observable behavioral criteria. It is equally useful for picking research subjects for neuroscientific studies on the brain’s reward system so as to identify the problems associated with substance use disorders.

⁴ The desire to include the self as a scientific target in psychiatry embraces pluralism in psychiatric research and other models of the self may also be promising. I will not discuss those here.

I suggest addiction can also be studied by using the multitudinous self (i.e., ecological, intersubjective, temporally extended, private, and conceptual aspects, as defined above). The advantage of the model is its ability to bring into scientific investigation the self-related features of addiction that are instrumental in successfully treating the disorder. Using this model, we can at least partially explain and treat addiction and stimulate new and productive research. In what follows, I use available evidence about the self-related features of addiction; however, the model can be incrementally updated as new evidence emerges. Putting the self at the heart of addiction research means the model of addiction will grow with the model of the self.

The *ecological* dimension of the multitudinous self represents the individual's embodiment in the physical world, including her neurological features, genetic make-up, and the constraints of her body. She enters the physical world, participates in it, and manipulates it through the ecological dimension. In this sense, the ecological aspect of the self is specified by the body, the physical conditions of a particular environment, and the active perceptual exploration of and response to these conditions. It is present from birth and continues over time, across varying physical and social conditions (Jopling 2000).

The ecological aspect of the multitudinous self tracks addictive behavior in a number of ways. First, there is something going on in the body—in the central nervous system, brain cells, brain's reward system, hormones, genes, etc.—of an individual when she becomes addicted to a certain drug. Recent work on the brain's reward system (mesolimbic) indicate correlations between the addict's intense craving for her drug of choice (DoC) and her inability to exercise self-control over it (Nestler 2013). As neuroscientific tools advance, we may be able to explain the involvement of this mechanism better. Second, the ecological dimension of the self may explain why addiction takes repeated exposures to develop, but then remains roughly at the same level with further exposure to the drug of choice. It can take months or years from the initial sampling of an activity for addiction to develop (Fidler et al. 2006, p. 30). Then, over a period varying from a few months to several years, the severity of the dependence increases. All this time, the pleasure obtained from the drug never diminishes; this aspect of addiction is intimately tied to the body's ability to tolerate the substance. Third, intense cravings in the absence of a DoC can be traced through the ecological dimension. The addict's hands may shake. She may get anxious, restless, and irritable. She may experience sleep disturbances and anxiety, waking up in the middle of the night with nausea or with a desire to consume the DoC. During such times, she may even experience life-threatening symptoms such as delirium and hallucinations. This continues until she takes the DoC.

The manifestation of addiction in the ecological dimension of the self is not only accessible through a first-person perspective (the addict herself) but also through second-person (e.g., her loved ones) and third-person perspectives (e.g., the scientists who study her brain, hormones, genes, and the medical practitioners). The addict experiences the craving; her partner may observe her restlessness, anger and frustration in the absence of the DoC; her psychotherapist may notice she is more tense and quieter than usual; scientists may gather evidence about the level of the DoC in her blood.

Knowledge of the ecological aspect of the self can and does facilitate a number of effective (albeit limited) interventions. For instance, with heroin addiction, the supervised long-term substitution of methadone and buprenorphine can reduce or, in some cases, eliminate heroin addiction (West and Brown 2013, p. 32). From this perspective, the primary tasks of treatment are to (i) identify the specific needs the substance is being used to meet (e.g., to be able to fall asleep), (ii) develop skills that provide alternative ways of meeting those needs, and (iii) use these drugs to supplement the person's transition from heroin addiction to more resourceful ways of meeting her needs. For example, through cognitive behavior therapy, addicts can learn self-monitoring to recognize cravings early, identify situations that might put them at risk, develop strategies for coping with cravings—sometimes with the support of the above mentioned medications—and avoid high-risk situations (Carroll and Onken 2005).

The *intersubjective* aspect of the self is individuated by “species-specific signals of emotional rapport and communication” between the self and other people (Neisser 1988, p. 387). From earliest infancy, a person enters a social world through interaction with her caregivers (see also Trevarthen 1980; Bechtel 2008). Through her intersubjective dimension, she begins the interpersonal relationships of care and concern, through which her identity is formed, enriched, or impoverished, depending on the level and the kind of care she receives. The intersubjective dimension of the self also contributes to her ability to shape others' identity formation, enrichment, and impoverishment.

The intersubjective dimension of the self tracks addictive behavior patterns in multiple ways, again, through the first, second, and third-person perspectives. First, forms of addictive behavior in the consumption of the DoC progress in a particular kind of social environment. Consider a kind of lifestyle that Owen Flanagan calls “the male life of public and gregarious heavy drinking (Flanagan 2013b, 870). Flanagan writes:

Because social drinking, especially among males, is widely endorsed, involves a host of well-known social scripts, and because alcoholism takes time to develop, it is uncommon for there to be male alcoholic individuals who become addicted. (Flanagan 2013b, p. 871)

Here, the DoC use becomes the context through which individuals socialize in their professional lives. For example, they go for a drink after a business meeting. For an addict, over time, drinking becomes the sole reason to go, not to talk business.

Second, the kind and the quality of interpersonal relationships are major factors in the development of addictive behavior. Individuals with addiction often have a complex history of family relationships. Being subject to physical or sexual abuse as a child is strongly linked to development of addiction (e.g., Marcenko et al. 2000; Langeland et al. 2002). Sometimes individuals are in relationships they do not want to be in, and intoxication becomes an easy escape. It ultimately becomes a problem on its own, however, harming not only the self, the person, but others as well (Graham 2013). For instance, under the influence of the DoC, the addict may be violent towards her loved ones or give up important social, occupational, or recreational activities.

Tracking the intersubjective dimension of the self to investigate addiction may provide better explanations of why a person becomes and stay addicted. At the same time, it may facilitate the development of effective interventions. If a particular lifestyle

is enabling addiction, as in the “male life of public and gregarious heavy drinking”, interventions should include helping the person change her social environment. Other forms of interventions include helping an individual get rid of a relationship causing distress or helping her develop more effective coping strategies.

In addition, addiction can be tracked through a study of the *temporally extended* aspect of the self. This aspect of the self individuates the individual in time. A person’s experiences and memories of her past and her anticipation for the future shape who she is. The development of addiction over time may take many different trajectories, but there are some commonalities. An activity is sampled first, often with no intention of making it a regular activity. There is no fear of the harm that may ensue. The activity is found to be enjoyable, inviting further consumption. It becomes increasingly frequent, with the individual seeking out more activities, sometimes at the expense of more constructive activities. At some point, she may notice the behavior is harmful and realize that it contradicts with her vision for her future self. She may recognize the necessity of not using the DoC to realize her goals, and this may help her stop the addictive behavior.

Understanding the temporal dimension of the self may help explain how and why people get addicted and why they have difficulty keeping their promises to themselves and others, e.g., quitting after this last drink or being a more responsible father. The study of the temporally extended aspect of the self may illuminate why addicts have difficulty choosing the long-term reward of no longer being addicted over the short-term satisfaction that comes from using the DoC.

Like the other aspects of the multitudinous self, the temporally extended aspect can be studied through the first, second, and third-person perspectives and may facilitate the development of effective interventions. The ability to recognize temporal extendedness is already used as a resource in cognitive behavior therapy when patients are taught “stimulus control strategies”. In this type of therapy, patients learn to avoid situations associated with drug use and to spend more time in activities incompatible with drug use. They learn to practice “urge control” by recognizing and changing the thoughts, feelings, and plans that lead to drug use. Patients’ past attempts and failures are used as a benchmark to customize the therapy (Azrin et al. 1994a, b).

The *private* aspect of the multitudinous self traces the individual’s conscious awareness of felt experiences—what William James takes to be uniquely ours (James 1890). The private aspect not phenomenologically available to anyone else (such as feelings of pain or disappointment), but with the help of language, it can be communicated to others (Bechtel 2008, p. 260). This aspect of the self first developmentally appears when children notice some of their experiences are unique to them; it continuously develops as all dimensions of the self evolve and further enrich the private world of lived and felt experiences.

Addiction is tractable in the private aspect of the self; there is the felt experience of being addicted, along with cravings for the DoC, the distress of not using it when consumption is delayed, or the regret of consuming it despite various resolves not to. It is extremely difficult for others, e.g., caregivers, clinicians, etc., to understand and appreciate the complexity of the various phenomena experienced by the addict. However, linguistic representation of these experiences, say, when the person is describing to loved ones, clinicians, etc. what it is like either verbally or in writing, substantive

information is gathered, and these data can be used for explanations and interventions. Some say the memoirs of addiction are helpful, not only to the experts wanting to fathom addiction, but also to the addicts themselves (Flanagan 2013a, b). The private dimension of the self offers good resources to scientifically investigate addiction, and as we better understand this aspect of the self, we will better understand what addiction is and what successful interventions look like.

Last but not least, we have the *conceptual* aspect of the self. Self-concepts selectively represent the self to the self. They are the products of the dynamic interaction between the other four aspects of the self and the features of the social and cultural environment. Self-concepts include ideas about and evaluations of our physical bodies (ecological aspect), interpersonal experiences (intersubjective aspect), the kinds of things we have done in the past and are likely to do in the future (temporally extended aspect), and the quality and meaning of our thoughts and feelings (private aspect) (see Jopling 2000; Neisser 1988; Bechtel 2008). For instance, an individual's self-concept as a "compassionate person" is the product of the intersubjective aspect of her selfhood and of the norms of compassion in the culture of which she is a part. Self-regarding feelings and attitudes, such as self-confidence, security, self-esteem, self-respect, and social trust, emerge as we develop self-concepts and as the different dimensions of the self interact with the social and cultural world, through an exchange between the self and others. In turn, self-concepts inform and shape the aspects of the self, as well as some features of the social and cultural environment. They are, thus, informed by the above four aspects of the multitudinous self and by the individual's embodied experiences in the world, for example, illness (Neisser 1988; Bechtel 2008; Tekin 2011).

Self-concepts are also informed by pathologies to which the individual is subjected. As noted above, changes occur in the ecological, intersubjective, temporally extended and private aspects of the self because of pathology. Their influence is mediated by the scientifically based or folk-psychological knowledge available to the individual about her illness and by her own self-narratives to make sense of her condition (Tekin 2014, 2015). For example, addiction affects an individual's intersubjective and temporal dimensions by making it difficult for her to keep her promises, such as fulfilling work obligations, etc. Failing to follow through on promises and breaking the trust of others over time may alter her self-image as a reliable person. She may develop feelings of frustration or even hatred towards herself. She may decide to stop making promises or even taking on responsibilities that require keeping promises.

In addition, the addict may develop "self-regarding reactive attitudes of bewilderment, disappointment, and shame" about her addiction (Flanagan 2013a, p. 6). Consider relapse, for example. Addicts refrain from the addictive behavior during certain periods but may not achieve lasting success:

They "fall back" into the detrimental behavior after a period of temporary stoppage. After the relapse, the individual self-interprets himself as a failure, relapse becomes a source of shame, regret, self-blame, and embarrassment or as grounds for diminished self-confidence or self-esteem. (Graham 2013, p. 179)

These experiences influence the individual's self-concept: for example, he may think he lacks self-discipline.

Self-concepts are not only representations of the self to the self; they are also action-guiding (Tekin 2014, 2015). In other words, they are descriptive, and prescriptive; they inform how we behave and can motivate us to change. In the context of addiction, the self-concepts formed or altered in this vein influence future actions. Hopelessness in the face of repeated relapses and self-concepts such as being weak-willed may diminish an addict's ability to quit the addictive behavior. Alternatively, the individual may express conflict and heightened distress because of a strong resolution to quit drinking especially if she is unable to do so. From this conflict, she can redefine her self and her behavioral goals consistent with that self-concept. She has taken her first step towards a change, altering the self-concept and leading to stabilization of the new behavior pattern and its development into other areas. In addition, perceiving herself as someone who needs help, an addict may reach out to the communities of other individuals with addiction. The success of Alcoholics Anonymous programs partially owes to this.

Because of their plastic nature, self-concepts offer the best opportunities for successful clinical interventions. As discussed above in the description of supportive therapy, clinicians may work towards helping the person develop more positive and resourceful self-concepts, strengthening her self-esteem, as well as her self-control capacities, and help her flourish by stopping use of the DoC. Working with self-concepts, clinicians can motivate the individual to think, act, and behave in certain ways, expanding her possibilities for action (Tekin 2011, 2014, 2015). In short, targeting the conceptual aspect of the multitudinous self in scientific study contributes positively to explanations of and interventions in addiction.

5 Conclusion

In this paper, I argue that despite its acknowledged value in clinical contexts, the self has rarely been made the *object* of scientific research in psychiatry, due, in part, to the presupposition that the self is not observable/measurable and, thus, not amenable to scientific analysis. I argue this presupposition is false. In my view, the self can be empirically studied; moreover, psychiatry should consider itself a model-based science. More specifically, I propose that a model of the multitudinous self could fruitfully be applied to research on addiction. Such inquiry into the self can help psychiatry benefit from collaborative work in cognitive sciences, social sciences, and first-person accounts by those with mental disorders. The self is not an idle concept—scientifically or therapeutically.

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