An Enactive Approach to Psychiatry

Sanneke de Haan

Philosophy, Psychiatry, & Psychology, Volume 27, Number 1, March 2020, pp. 3-25 (Article)

Published by Johns Hopkins University Press

An Enactive Approach to Psychiatry

Sanneke de Haan

Abstract: This article addresses the integration problem in psychiatry: the explanatory problem of integrating such heterogeneous factors as cause or contribute to the problems at hand, ranging from traumatic experiences, dysfunctional neurotransmitters, existential worries, economic deprivation, social exclusion, and genetics. In practice, many mental health professionals work holistically in a pragmatic and eclectic way. Such pragmatic approaches often function well enough. Yet an overarching framework provides orientation, treatment rationale, a shared language for communication with all those involved, and the means to explain treatment decisions to health insurers and to society at large. It also helps to relate findings from different areas and types of research. In this article, I introduce an enactive framework that supports holistic psychiatric practice by offering an integrating account of how the diverse aspects of psychiatric disorders relate. The article starts with a short overview both of the four main dimensions of psychiatric disorders and of the currently available models. I then introduce enactivism and the enactive notion of sense-making. Subsequently, I discuss how this enactive outlook helps explicate the relation between the four dimensions and what that implies regarding the causality involved. The article concludes with an overview of treatment implications.

Keywords: philosophy of psychiatry; explanatory framework; embodied cognition; mind-body problem; causality; existential dimension

Introduction

Psychiatry is enormously complex. One of its main difficulties is how to connect the wide diversity of factors that may cause or contribute to the problems at hand, factors ranging from traumatic experiences, dysfunctional neurotransmitters, existential worries, economic deprivation, and social exclusion, to genetic bad luck. Interventions are also diverse, with options including chemical or electrical treatment, therapies aimed at behavior change and those promoting insight. Much is still unknown: what are the causal pathways, which interventions work best for which patients and why?

In practice, many mental health care professionals work holistically in a pragmatic and eclectic way. Without using any explicit, overarching theoretical framework they aim to consider all the factors which maintain their patients' problems. Such pragmatic approaches often function well enough. Yet an overarching framework can provide orientation, treatment rationale, a shared language for communication with all those involved, and the means to explain treatment decisions to health insurers and to society at large. It also helps to relate findings from different areas of research.

In this article, I introduce an enactive framework that supports a holistic psychiatric practice by offering an integrative account of how the diverse aspects of psychiatric disorders relate. In the first section, I give a short overview of the four main dimensions of psychiatric disorders that a model needs to take into account, and of the currently available models. In the following section, I introduce enactivism and the enactive notion of sense-making. Subsequently, I discuss how this enactive outlook can help explicate the relation between the four dimensions and what that implies regarding the causality involved. The article ends with a short overview of treatment implications.

Models in Psychiatry: What They Should Encompass and How Well They Do It

What should a model for psychiatry encompass? Which are the elements that we would like to see connected? I take it that the elements of the biopsychosocial model are generally accepted as relevant. This means that a model should at least relate patients' experiences with the relevant physiological processes (hormonal, neural, genetic), plus take into account the role of their (sociocultural) environment. There is one other aspect that I would like to add to this list: the existential dimension. By 'existential,' I refer to the reflexive stances we take on our experiences and situations—for example, the fear of having a panic attack in panic disorder, the fear of making a fool of oneself in social anxiety disorders, the guilt one may feel in depression—stances which inevitably feed back on the experiences and situations themselves (de Haan, 2017). A helpful model will 1) take into account these four dimensions and 2) show how they relate.

Now there are already many models of psychiatry available, so why would we need yet another one? In short: extant models fall short by referencing fewer than the four dimensions and/or by insufficiently integrating them.

We can roughly discern three main groups of models: one-sided, dualist, and integrative models. Many models are *one-sided*: they elucidate only one or two of the four dimensions: they focus on the phenomenology, *or* the social system, *or* the existential dimension, *or* the physiology of psychiatric disorders. Even though they can provide valuable insights, as a general model for psychiatric practice they fall short.

Reductionist models form a specific kind of one-sided models: they can encompass many different aspects, but in the end, all *relevant* influences are traced back to one dimension only. Currently, one of the most popular models for psychiatry is *neuro-reductionist*: psychiatric disorders are regarded as diseases of the brain, or 'disorders of brain circuits' (Insel et al., 2010; cf. Ross et al., 2015; Wittchen et al., 2011). That is, symptoms of psychiatric disorders are seen as the result or expression of disorders in the brain. The causally effective processes take place in the brain, and other factors—whether psychological, sociocultural, or existential—are only relevant to the extent they influence the brain. As a consequence, research is directed at finding the 'underlying neural mechanisms' of psychiatric disorders.

Like all reductionist models, the neuro-reductionist model too has the advantage of providing a coherent account of how the dimensions relate; namely that they can all be reduced to neurophysiology. And because the brain obviously is important for mental health, this view has some intuitive appeal as well. So far, however, the search for underlying neural mechanisms has been unsuccessful: no biomarkers have been found for any psychiatric disorder, and no new psychotropic drugs have been developed despite extensive funding for neurocognitive research. Such research, moreover, at best shows correlations between certain disorders and certain changes in the brain, but this does not yet tell us anything about the brain's presumed causal role. Finally, it was hoped that a view of psychiatric disorders as brain diseases would alleviate their stigma. Patients suffering from malfunctioning brains would be less likely to be blamed for their condition or deemed morally inferior. Unfortunately, the destigmatizing effects of neuro-reductionism turn out to be disappointing. In fact, it even appears to have the opposite effect of increasing the stigma of psychiatric patients as being dangerous (Corrigan & Watson, 2004; Pescosolido et al., 2010). In the

light of stigma studies, it makes more sense to fight stigma not by *estranging* people from psychiatric disorders (as mysterious brain disorders out of their control), but rather by *familiarizing* them with these disorders (as disorders that are quite common and could happen to anyone). Despite limited successes, many in the field keep faith in the neuro-reductionist view that psychiatric disorders are brain diseases; the brain being such a complex organ, perhaps we just need more research to unravel its mechanisms.

What is problematic about neuro-reductionism is not that it takes the role of the brain in psychiatric disorders seriously. It is problematic that it a priori *assumes* the brain's causal *primacy*. When it comes to complex processes, however, reductionist strategies are unlikely to be adequate. Reductionist strategies run the risk of oversimplification. And this oversimplification has practical consequences. For if all psychiatric problems are supposed to originate in the brain, it makes sense to concentrate research and treatment on the brain and to deprecate other routes to pathogenesis and change. There are also ethical risks: by labeling psychiatric disorders as brain diseases, neuro-reductionists risk shrinking the scope of patients' agency in dealing with their problems. If it is all just a matter of 'bad wiring luck' patients become the passive victims of their unfortunate brains. Besides, because patients cannot look into their own brains, the professionals' expertise on the patients' condition outweighs that of the patients themselves, impacting their relationship. Both for reasons of adequacy as well as for ethical reasons it is worthwhile aiming for a model that is integrative and coherent without being reductionist.

A second group of models are *dualist*. These models offer a two-sided psychiatry: on the one hand we have scientific facts and evidence-based medicine, on the other we have patients' life-worlds including their values and norms. Values-based psychiatry provides a recent example. It presents itself as complementary to evidence-based psychiatry (Fulford, 2008), and defines its domain on the basis of a fact-value distinction (Fulford, Broome, Stanghellini, & Thornton, 2005). Psychiatric *research* takes place under the auspices of strict science and covers the facts, while psychiatric *practice* takes place in the life-world and is guided by values. The advantage of this model lies in its recognition of the fundamental role of values in psychiatry, aiming for an and/and rather than an either/or approach. Compared with one-dimensional and reductionist models, dualist models thus provide a broader scope. The disadvantage is the lack of an account of how the two sides relate. Given their assumption of an opposition between description (fact) and the (subjective) evaluation of that description (value) the two can only be complemented, but they shall never meet. This mere juxtaposition, however, does not provide insight into *how* physiological facts and existential values come together in one person.

A third group forms the *integrative models*. Obviously, the call for a more encompassing, integrative approach to psychiatry is not new. In fact, the biopsychosocial (BPS) model was introduced to offer just that (Engel, 1977). Engel stressed the inherent complexity of psychiatric disorders in which all these three elements are at stake. Interestingly, he argued that psychiatry should not try to squeeze itself into a limited medical model, but should rather serve as an example to such other medical specialties that would also benefit from a more encompassing approach.

Although the BPS model provides an important step forward, there is still room for improvement in two respects. First, the BPS model does not explicitly acknowledge the existential dimension. Admittedly, the way in which patients relate to their disorder and their situation in general seems to be implicit in the psychological aspect: Engel (1980) for instance mentions the relevance of whether or not the patient has *accepted* the reality of his illness (p. 540). But by leaving the psychological aspect thus 'undifferentiated' (Verhagen, 2017), the BPS model runs the risk of not doing justice to patients' subjective experiences (Brendel, 2007; Verhagen, 2017). Given the special importance of the existential stance for understanding and treating psychiatric disorders, it is helpful to recognize it as a separate dimension (de Haan, 2017).

The second, more fundamental problem is that the BPS model provides no clear view on *how* the three aspects relate (Drayson, 2009; Ghaemi,

2009; Van Oudenhove & Cuypers, 2014). The BPS model relies on Von Bertalanffy's (1950) general systems theory to explain and model the relations between the three aspects, but remains vague when it comes to explicating their nature. Engel speaks of 'material and information flow' (p. 537) across the system's boundaries without further specifying how this works. In the meantime, the way we think of model systems has evolved considerably. In particular, complex systems theory, dynamic systems theory, and network theory have been further developed to model complex, interacting, and non-linear processes (Moreno, Ruiz-Mirazo, & Barandiaran, 2011)—the kind of processes that are most likely to be at stake in psychiatric disorders. So while the BPS model is the most encompassing model so far, it does not offer a properly integrative account.

Recently, a network model has been proposed as an organizing framework for the 'integration of different levels of explanation' in psychiatry (Borsboom, 2017, 11). The idea is that mental disorders have a network structure in which the components of the network (so-called 'nodes') correspond with psychiatric symptoms as listed in the *Diagnostic and Statistical Manual of Mental Disorders*. In this way network models allow for direct causal connections between symptoms, as well as for feedback loops. This may seem self-evident, but it stands in stark contrast to the commonly held 'latent-variable' models in which the disease is supposed to be the one cause of each of the separate symptoms.

The advantage of a network model is that it offers a way to model the complexity of psychiatric disorders. Assuming causality between symptoms makes sense too. Furthermore, network models are easy to individualize and to adopt in practice: different patients can have different symptoms with different strengths between the nodes.

Despite these advantages, network models do not offer the integrative account they promise. That is because they are mathematical tools, empty templates of nodes and connections, waiting for their users to fill them in. No model will tell you how to apply it: you need a theory for that. The lack of a theory leads to two major problems. First, the model cannot help to determine what to include in it because it has no account of what is and is not relevant. This is why Borsboom and colleagues rely completely on the lists of symptoms of the *Diagnostic and Statistical Manual of Mental Disorders* to determine the content of their networks—anything else are 'external factors.' But this is unsatisfactory: it leaves out potential causes that are not symptoms (like neural processes or unconscious emotions), and misses out on the opportunity to include positive, strengthening factors. Besides, by taking 'symptoms' as a given, the model also smuggles in a distinction between normal and abnormal that it cannot provide itself. The second problem is that the network model cannot tell us anything about the nature of the relations between the nodes. In particular, it cannot help distinguish between causal and constitutive, part-whole relations—which is unhelpful of a model that is supposed to be a tool for mapping causal trajectories. The use of a model requires an understanding of what it is that one is modeling, i.e. some sort of theory. The network model, however, *presupposes* rather than *provides* a theory of which factors are relevant and how they are related.

Summing up, currently available models leave out one or more dimensions and/or they do not sufficiently show how the dimensions relate. The network model is somewhat different in that it offers a helpful template, but it presupposes rather than provides an integrative theory. What we still lack is a framework that integrates all four dimensions in a non-reductionist manner. This is where enactivism comes in.

Enactivism

There are different forms and applications of enactivism (Di Paolo & Thompson, 2014; Stewart, Gapenne, & Di Paolo, 2010; Torrance, 2005), but what binds them together are certain core ideas on what cognition is and how it is best studied. The term 'enactivism' was coined by Varela, Thompson, and Rosch (1991) in their book *The Embodied Mind*. They were dissatisfied with the dominant cognitivist model of cognition and concerned about the widening gap between the cognitive sciences and our everyday experiences

and self-understanding. A standard cognitivist approach assumes that cognition is best understood as (passive) information processing done by the brain. Drawing on insights from various disciplines such as phenomenology, dynamic systems theory, and systems biology, Varela et al. (1991) proposed a view of cognition as an *embodied* and *embedded activity* of an organism in interaction with its environment. To properly understand cognition they contend that we should acknowledge that cognitive activities are done by bodily beings in specific environments and that both different bodies and different environments make for different experiences. They also propose that perception and action are inseparable and that perception is an activity rather than a matter of internally representing the outer world (see also Myin & Degenaar, 2014; Noë, 2004; O'Regan & Noë, 2001). It is a motivated, bodily activity of making sense of the environment by engaging with it.

In the following, I focus on two aspects of enactivism that are most relevant for psychiatry, namely the notion of sense-making and its implications for the relation between body, mind, and environment.

Characteristics of Sense-Making

Sense-making can be defined as an organism's evaluative interaction with its environment.[1] For enactivism, the central unit of analysis for understanding cognition is not an isolated individual agent, let alone its brain, but the *organism-environment-system*. Sense-making is an activity, a temporally extended process that cannot be understood in static terms. It is an environmentally and temporally situated process that is a) essential to life, b) implies values, and c) is affective. In addition to this, I propose that it is important to distinguish basic from existential sense-making.

Living Requires Sense-Making

Central to enactivism is the idea that living beings are self-organizing and thereby autonomous beings. In contrast to non-living matter, organisms maintain their own organization, their own being, and they do so by exchanging matter and energy with their environment. As Jonas (1966/2001) pointed out, living beings have metabolism, in contrast to non-living things. The autonomy of their self-organization at the same time implies a fundamental dependence on their environment. Organisms need to get nutrients in and dispose of waste substances. It is precisely through this constant exchange of matter that an organism can persist: it remains 'its same self, *by* not remaining the same matter' (Jonas, 1966/2001, 76). For living beings then, their very life depends on their interactions with their environment. Not only do they need to distinguish food from non-food, but also danger from safety. Living is never a given; it is rather a precarious process that requires organisms to make sense of their environments. That is the gist of the so-called life-mind continuity thesis (Di Paolo, 2009; Froese & Di Paolo, 2009; Thompson, 2007): living requires sense-making. Such sense-making can be very basic, yet it includes at least some form of distinguishing or perceiving what supports and what thwarts one's existence as well as some sense of the organism's own needs.

For our purpose of finding an integrative framework for psychiatric disorders, the relevance of the life-mind continuity thesis is that it offers a non-dualist perspective on the body-mind problem. The mind is not an 'extra' ingredient needed to fuel the mindless matter of bodies; the idea is rather that the processes that constitute living, physiological processes, are qualitatively different from mere physical processes from the very start. The matter of our flesh is not the same as that of a rock: not because some mysterious vital power has been added to it, but because its *organization* differs. The life-mind continuity thesis thus adopts emergence in that the properties of matter also depend on their organizational structure.[2] Once matter is organized in such a way as to be *living* matter, it will engage in sense-making. There is no need then to assume that matter and cognition refer to two wildly separate, incomprehensibly connected, realms: matter in specific (i.e. self-organizing) patterns *is* minded.

Sense-Making Entails (Metabolic) Values

The organism's environment is not a neutral place: depending on its body, abilities, and present needs, different parts of the environment show up as meaningful to the organism. In other words: the organism's dependency on its environment implies that different aspects have a certain *value* for the organism (Jonas, 1966/2001). I call these 'basic values' or 'valences,' to differentiate them from the existential values that I discuss elsewhere in this article.

It is important to point out that these valences or 'senses' are not bestowed upon things by the organism. The term 'sense-making' can be understood in a too active way, as if the meaning of things was generated by the organism. By stressing only the active rather than the receptive role of organisms, sense-making could be misunderstood as an idealist conception of meaning being 'projected' by the organism onto a neutral world—for instance when it is said that meaning or salience are 'constructed' (Colombetti, 2013, p. 1098; Thompson, 2007, p. 54), or that organisms 'fashion a world of meaning from within' (Weber & Varela, 2002, p. 115).[3] This would be an unfortunate misconception. Sense-making properly understood is neither passive information absorption nor active projection: it is a *relational* function. That is, an organism's sense-making depends both on what is given in the environment and on its own characteristics. Sugar is food to the bacterium thanks to the characteristics of sugar *and* the characteristics of the bacterium. The oak is wood to the forester, a place to dig a hole for the fox, and food for the bark beetle (cf. Von Uexküll, 1920). The value of the oak depends on the characteristics of each organism—but that does not make these values 'projections' of the organisms. The organisms do not make these senses up: they are grounded in the oak's objective existence and characteristics. The oak's bark has specific properties, but its bark being nutritious depends on there being an organism with a specific digestive system. The value or meaning of something (sugar, oak, tea mug) is not the result of an *act* on the part of the organism: the beetle is not conveying value to the oak: the value or meaning is rather the *effect*, the *corollary* of the coupling of the organism's specific biological makeup and the characteristics of its environment. The emerged meaning or value is a *relational fact*.

The value of an aspect of the environment not only depends on the structural influence of an organism's bodily makeup, but also varies according to the organism's current needs and concerns. For example, if an organism's specific bodily makeup implies that it will die above certain temperatures, avoiding these temperatures will be relevant at all times, whereas the relevance of food will depend on whether the organism is hungry or rather satisfied and instead seeks a place to safely rest and digest. To some extent then, values are dynamic.

Sense-Making Is Affective

Sense-making is not a cool, detached endeavor: the organism is *affected* by its environment. Because of our dependency on our environment, what we encounter matters to us, it means something to us, and we are affected by it accordingly. Directly related to the evaluative, value-sensitive character of sense-making is its *affective* character. Our affects are the counterparts of the value of what is encountered. To us, for instance, a poised rattlesnake is dangerous and thus frightening, a dark-pink raspberry is delicious and thus attractive, and a cool lake on a hot day is refreshing and thus pleasing. For an eagle, the rattlesnake may be food and thus appealing when she's hungry, whereas she might not even see the raspberries as they mean nothing to her. Affects thus refer to the experienced relevance of a situation. This experience of the affective 'allure' of a situation typically requires no conscious scrutinizing: sense-making is first and foremost a direct bodily-affective evaluation (Colombetti, 2007, 2010; Colombetti & Thompson, 2008).

Basic and Existential Sense-Making

A common critique of enactive theories is that they appear especially suited for explaining 'low level' types of cognition, or more or less 'intelligent behavior'—such as frogs catching flies and

possibly habitual human behavior—but fall short when it comes to explaining full-fledged human cognition such as imagining and reflecting. The idea is that there is a 'cognitive gap' (Hanne De Jaegher & Froese, 2009) between what insects do and human thinking. Various answers have been proposed (De Jaegher & Froese, 2009; Hutto & Myin, 2013, 2017), but I want to suggest a different position, namely that we should distinguish basic from reflexive or existential sense-making.

Apart from gradual differences in the complexity of sense-making of different organisms, we can distinguish a qualitative shift in the very nature of sense-making that comes from being able to reflexively relate to one's own experiences: what I call the existential stance. This capacity to take a stance (on oneself, one's experiences, one's environment) is not just a capacity added on top of basic sense-making: it rather changes the whole system to such an extent that it calls for distinguishing organism-environment from person-world interactions.[4] Basic sense-making involves discerning the relevant aspects of the present environment: recognizing food, mates, danger, etc. It is a submerged sense-making of the here and now. The meaningfulness of the environment is a reflection of its relevance for survival: what is valuable is a function of the organism's biological needs. But for organisms capable of taking a stance, things change drastically. With evaluative sense-making turned upon itself comes the desire not just for survival but for dignity, for living a *good* life. The meaningfulness of our worlds and the values that guide our actions surpass the functional, the life-maintaining. With stance-taking a different kind of values emerges, what we could call 'existential values,' like respect, honor, dignity, friendship, and love (de Haan, 2020).

The distinction between basic and existential sense-making leads to three different forms of sense-making: 1) basic sense-making; 2) existential sense-making as the explicit reflexive sense-making of oneself, one's situation, or others; and 3) 'existentialized' sense-making: the general sense-making of persons as transformed by the capacity for (2). Explicit existential sense-making (2) refers to instances of deliberate reflection, such as: How do you feel about your diagnosis? What does it mean to you to be taking psychotropic medication? But even if we do not explicitly reflect on something, our capacity to do so still transforms all our sense-making into existentialized sense-making (3). That is, once we have become reflexive beings or persons, we cannot go back to the basic sense-making of non-reflective beings (1) anymore: we cannot undo our self-awareness. Our basic biological needs unavoidably acquire an extra, existential meaning. For instance, food is never just food: what you eat says something about who you are, which cultural community you are part of, and we have all kinds of rituals surrounding how to eat, what to eat, when, and with whom. The same is true for other basic biological needs such as sex and clothing: they are meaningful in a way that surpasses the functional. Clothes keep us warm, but we cannot avoid also expressing something through what we wear—even if only that we do not care about clothes. We can even forego our biological needs in light of our existential values, like when we refrain from eating even though we are hungry, because of religious (e.g., fasting) or social reasons (e.g., the host should eat first) or because we want to lose weight to conform to the beauty standards of our sociocultural community. In the most extreme case, we can sacrifice our lives for what we value. Our sense-making is thus of a richly meaningful world. In the remainder of this article I will use 'sense-making' to refer to (3) and specify the basic sense-making of non-reflective organisms (1) and explicit existential sense-making (2) when needed.

Does this mean the critics are right and that there is indeed a cognitive gap? The assumption of critics seems to be that as soon as there is something of a 'gap' this would imply the limited use of enactive ideas: these would only hold for the simple cognitive activities while we need to use traditional cognitivist notions of the mind for the complex and most interesting side of the gap (Adams & Aizawa, 2008). I do not see any reason to assume this. For even though I maintain that there is a qualitative shift in sense-making capacities, this capacity for existential sense-making is still very much an embodied and embedded capacity. In fact, it is most likely that we develop this capacity in and through our interactions with others, in a sociocultural and linguistic community that fosters this practice (Fuchs, 2012;

Hobson, 2002; Reddy, 2008; Di Paolo, Cuffari, & De Jaegher, 2018; van den Herik, 2017). Like other skills, this capacity consists of a collection of skills, which all require practice (e.g., through peek-a-boo, hide-and-seek, and explicit teaching 'how would you feel if she did that to *your* toy?'). Even though from a structural point of view the existential stance presents a qualitative shift, from a developmental perspective we should not expect a clear-cut edge or full-fledged capacity to emerge from one day to the next.

So yes, sense-making such as human persons do is indeed special compared to basic sense-making. The capacity for taking a stance on things, for reflecting, gives rise to different kinds of behaviors, such as promising, giving reasons, and imagining. Indeed, a whole new structure of behavior (Merleau-Ponty, 1942/1963), or form of life (Wittgenstein, 1958) emerges. But there is still continuity too: for these novel capacities do not require anything to be *added*: no inner representations, or faculties, or models, or mechanisms. We do not need a different model of the mind to explain these capacities: they can be perfectly well explained as forms of enactive, embodied and embedded sense-making.

An Enactive Approach to Psychiatry

The relevance of enactivist theories for psychiatry and psychopathology has been recognized for some years now. Enactivist ideas have been called upon to better understand specific psychiatric disorders, such as autism (De Jaegher, 2013; Klin, Jones, Schultz, & Volkmar, 2003), depression (Maiese, 2018; Slaby, Paskaleva, & Stephan, 2013), schizophrenia (Kyselo, 2016), and trauma (Ataria, 2015). Ratcliffe's recent accounts of depression (2014) and schizophrenia (2017) also reveal a kindred spirit in his emphasis of their embodied and embedded nature. Enactive accounts of emotions (Colombetti, 2007, 2010, 2013; Colombetti & Thompson, 2008) are relevant for psychiatry too. Besides, more general outlines have been given of how embodied, embedded cognition and enactivism may relate to the field of psychiatry (Colombetti, 2013; Drayson, 2009; Fuchs, 2009; Fuchs & Schlimme, 2009; Maiese, 2015; McGann, De Jaegher, & Di Paolo, 2013; Myin, O'Regan, & Myin-Germeys, 2015; Varga, 2018).[5]

Still lacking, however, is a *general* enactive framework for psychiatry that provides an integrative perspective on the nature, causes, and treatment of psychiatric disorders. Such a framework also helps dissolve several long-standing conceptual debates such as whether psychiatric disorders are real or social constructs, or whether we should conceive of them as gradual or discrete phenomena (de Haan, 2020). Here I focus on how this enactive approach can solve one of psychiatry's main puzzles: how to integrate the diverse aspects of psychiatric disorders. In the remainder of the article, I introduce the idea of psychiatric disorders as disordered patterns of sense-making, show how psychiatry's different dimensions relate, and look in more detail into what this integrative perspective means for how we think about the relation between physiological and experiential processes, and how to understand different types of causality involved. I end with a short overview of some implications for treatment.

Psychiatric Disorders Are Structurally Disordered Patterns of Sense-Making

What does enactivism imply for the conception of psychiatric disorders? What happens in psychiatric disorders? Do depression, anxiety disorder, schizophrenia, obsessive-compulsive disorder, eating disorder, and other disorders have something in common? From an enactive perspective, psychiatric disorders can be seen as *disorders of sense-making*.[6] That is, in psychiatric disorders, the evaluative interactions of a person and her world go astray. These interactions may include the person's thoughts, feelings, and/or behavior—toward the world and/or to herself. On a very general level we can say that the way in which the person makes sense of her world is biased in a specific direction: the world appears overly threatening, or meaningless, or meaningful, or chaotic. This bias needs to be structural: a single instance of inadequate sense-making does not yet amount to a disorder. Psychiatric disorders refer to a more or less stable *pattern* in how someone's sense-making goes astray. 'Going astray' means

that the person's sense-making is not *appropriate* to, or insufficiently grounded in, her situation. She finds it difficult to flexibly *adjust* her sense-making to her situation. This difficulty in adjusting and attuning will often result in overly *rigid patterns of interactions*. For example: to grieve about losing someone you love is fitting and meaningful. By contrast, a depression is not a meaningful connection to the world, but rather *stands between* the person and her world, and makes it impossible for her to relate meaningfully to it. While grief is a way of relating to one's situation, a depression hinders one's relation to the world. In a depression patients' sense-making gets 'stuck,' it is no longer attuned to their present situation: even pleasurable situations have lost their attraction.

This does not mean that there is a 'wrong' or a 'right' sense-making, period. There is not just one way to make sense of something: there are often a range of viable possibilities. Moreover, the appropriateness of sense-making necessarily depends upon the context. And this context is itself not a static nor a neutral point of reference; our worlds are imbued with sociocultural meanings which differ depending on time and place. Norms shift and social practices are flexible too, altering the assessment of what is and is not appropriate. Irrespective of the specific context though, the 'how' of the relating is similar: in any community our ability to flexibly attune our sense-making to the world and the others around us is vital.

What does this imply with regard to the demarcation of psychiatric disorders: what makes them *psychiatric* disorders (as opposed to somatic disorders) and what makes them *disorders* (as opposed to normal functioning)? The distinction between normal and abnormal patterns of sense-making requires more elaboration than is possible in the space of this article, but it involves the appropriateness and flexibility of sense-making, and typically involves personal suffering as well (de Haan, forthcoming). Regarding the first demarcation: whereas in somatic disorders patients' sense-making can be secondarily affected, psychiatric disorders are *primarily* problems of sense-making. For instance, neurological disorders such as Parkinson's disease and Korsakoff's syndrome can have an effect on patients' sense-making and potentially even on their personality. But these are secondary effects of the disease. Similarly, a delirium following a physiological trigger (e.g., fever, anesthesia, or alcohol), madness following untreated syphilis, and disturbances of sense-making that are caused by a brain tumor should not be considered psychiatric disorders. In these cases, a person's way of interacting with their world can be disturbed, but not due to a difficulty in dealing with that world: if the somatic problem would be solved, the problems would in principle disappear too.

Another way to describe this difference is that in case of Parkinson's disease or brain tumors the sense-making problems have a (somatic) *cause*, whereas psychiatric disorders have a *reason*. There is motivation involved. Living beings' self-organization is precarious, and likewise being an existential self, being a person in the world, is precarious too. Often the self is, or was once, protected by certain ways of acting, feeling, or thinking—but this protection can come at a cost or can become detrimental over time or in a different environment. Psychiatric disorders are thus *enacted*: they dissolve if one succeeds in changing one's way of interacting with the world. Secondary effects of somatic disorders on sense-making in contrast do not disappear by interacting with the world in a different way.

As disorders of sense-making, psychiatric disorders are not of the brain, not even of the body, but of *persons*; that is, of bodily, social, and reflective beings. Persons, moreover, whom we cannot understand in isolation from their interactions with and embeddedness in their sociocultural worlds. From an enactive perspective then, if we want to understand psychiatric disorders, we should look at persons *in interaction with their specific worlds*. And second, as is already implied by the notion of interaction, we need to look at this complex person-world system as it has developed and is *developing over time* to understand its dynamics.

Four Dimensions, One Dynamical System

Where does this lead us with regard to the four—physiological, experiential, sociocultural, and existential—dimensions of psychiatric disorders? The appeal of an enactivist approach is that

the concept of sense-making already integrates them. That is, we can understand persons and their sense-making only if we take into account their bodily nature and their fundamental embeddedness in their social world. The four dimensions refer to different *excerpts* of this one complex person-world system, at different levels of zooming in. When it comes to sense-making, the person-in-interaction-with-her-world is the proper unit, the dynamic system of which all dimensions are part. Thus from an enactive perspective *none of the four dimensions can be understood in isolation from the other three*. Experiences require a bodily being in an environment, which is in our case a sociocultural world. We live in a sociocultural world rather than a merely biophysical environment due to our stance-taking capacities. But the development of these reflexive capacities itself depends on our being bodily, social agents who interact with others in a community that fosters this practice. Our sociocultural communities in turn both shape and are shaped by our experiences and reflexive stances.

But how about the physiological dimension? It is clear that experiences, existential stances, and sociocultural communities depend on there being bodily beings 'in the first place.' But how about the other way around? We may be inclined to think that first there is matter and that the other elements (experiences, existential stances, sociocultural processes) are somehow added on to this (dualism) or are somehow derivative of it (reductionism). The life-mind continuity thesis, however, points out that physiological processes could not exist if it were not for the constant interaction of the organism with its environment—an interaction that requires some form of sense-making. This means that the matter of living beings is already different from the matter of objects. Matter in the specific configuration of living beings is minded—and it is this configuration of an organism interacting with its environment that determines the properties of the physiological processes involved too. This ranges from very low level processes such as the binding of iron and oxygen that only happens in hemoglobin (Fuchs, 2018), to how the effects of the so-called cuddle hormone oxytocin depend on the mood one is in while taking them (Olff et al., 2013; Bartz et al., 2011) (as is the case for many drugs as well), and the effects of cultural gender norms on the density of our bones (Fausto-Sterling, 2005). The existence of 'placebo effects' of medication too testifies of how our physiological processes are intrinsically tied up with our current and previous experiences and social context. On an enactive view then, our physiological processes are not neutrally unwinding in a secluded domain; they are rather shaped by being part of a living being with its specific concerns and specific behaviors. This means that both our sense-making capacities and the properties of our physiological processes emerge from this person-world system.

The four dimensions are a means to make this complex person-world-system more tractable. It is, of course, a rough division: each of these can in turn be further specified. Moreover, the dimensions should not be understood as isolable, static 'parts' of the system, but rather as different aspects of or different foci on one and the same process. Being anxious is for instance an experience, a response to a certain situation, which includes all kinds of physiological processes. To elaborate this enactive, integrative view, I first turn to the relation between experiential and physiological processes, and subsequently relate these to the sociocultural and existential dimensions.

The Experiential and the Physiological Dimensions

Dualism has deep roots in Western medicine, including in psychiatry. The distinction between physiological and experiential (in the literature: psychological) processes is at stake throughout psychiatric practice. What is going on 'in' the patient can be divided in physiological (e.g., hormonal, or neuronal) and psychological (ruminations, obsessions) processes. The causes of patients' problems can likewise be divided into physiological (neurotransmitter imbalance, vitamin D insufficiency) and psychological (relational conflict, trauma) ones, as well as the forms of treatment available, with medication targeting physiological processes and psychotherapy targeting psychological processes. One can have the sense that a problem is either more 'psychological' or more 'physiological' (Dew, 2009) as if they present two ends of one continuum. Such a classification

will typically influence which treatment is favored: it makes sense to think that a neurotransmitter problem is best treated by medication and that relational conflicts are best treated by (couples) therapy.

This division thus matters. Whether an experience is regarded as primarily physiologically or psychologically caused, can bring along a whole change of perspective. Kramer (1997) provides a nice example of this in his book *Listening to Prozac*. He recounts meeting a patient whom he had prescribed antidepressants the week before. The patient tells Kramer that he is very anxious. At first, Kramer takes this to be a side effect of the medication, but then it turns out that the patient has actually not taken this medication and that his anxiety partly stems from fearing Kramer's reaction to his disobedience. Kramer writes:

> I was struck by the sudden change in my experience of his anxiety. One moment, the anxiety was a collection of meaningless physical symptoms, of interest only because they had to be suppressed, by other biological means, in order for the treatment to continue. At the next, the anxiety was rich in overtones. Hearing that the anxiety was not a medication side effect, I had an instantaneous sense of how I appeared to the student—demanding, judgmental, punitive, powerful in the face of his weakness—and how it must feel for him to go through life surrounded by similar figures. ... The two anxieties were utterly different: the one a simple outpouring of brain chemicals, calling for a scientific response, however diplomatically communicated; the other worthy of empathic exploration of the most delicate sort. (p. xii)

Kramer's change in reaction makes sense: there does seem to be a fundamental difference between anxiety as the result of chemical processes and anxiety as the result of tensions in an interpersonal relationship. Kramer speaks of 'meaningless physical symptoms' as opposed to the highly meaningful psychological processes, suggesting that it is equally inappropriate to ascribe meaning to the physiological (e.g., psychologizing the physiological), as to deny meaning to the psychological (e.g., physicalizing the psychological).

How then to think of the relation between physiological and experiential processes? On the one hand, we want to acknowledge the fundamental differences between them, but, on the other hand, we also want to account for the fact that they somehow influence each other: that drugs can change my mood, for instance, and that psychotherapy can change my brain. As we have seen, current models either reduce the experiential to the physiological (reductionist models), or assume some form of interaction between them but without specifying how this would work (dualist and biopsychosocial models). Could an enactive framework do justice to both the differences between the physiological and the experiential dimension and their mutual influences, without resorting to either dualism or reductionism?

Organizational Causality: Cakes Not Dominos

Following the life-mind continuity thesis, physiological and experiential processes should both be understood as being part of a larger person-world-system. We don't have two separate realms; rather we are looking at one and the same process, only focusing on different excerpts or aspects of it. Let's examine this with the aid of an example. Suppose I am reading a book which defends the idea that psychiatric disorders are brain diseases. I am annoyed by this: I disagree, I think that it does not do justice to the nature of psychiatric disorders, and that this view has potentially harmful consequences. Now suppose I was put in a scanner while in this state of annoyance and the scanner shows heightened activity in my amygdala. What is the relation between my feeling annoyed and the amygdala activity? Am I annoyed *because* my amygdala activity has increased? Or has my annoyance *caused* my amygdala activity to go up?

From an enactive perspective these are misconceived questions: both my annoyance and my amygdala activity are only understandable from the larger perspective of being a person in a world; having a certain history of reading and thinking about philosophy and psychiatry, and reasons to care about these matters. The amygdala activity is *part* of my being annoyed: it is what you get when you zoom in on what is happening in my brain while I (a person in her world) am in a state of annoyance. In other words: when I am annoyed,

this *includes* various neuronal and other physiological processes. Neuronal processes are part of and depend upon the person as a whole, in interaction with her environment. And the same goes for experiences: my experiences too depend upon my being a person, with a specific history, being engaged in a specific situation. In that sense, we can speak of a *mereological* (part-whole) relation: both experiences and (neuro)physiological processes are part of the complex system of a person coupled to her world. Because both are part of a larger whole, we cannot map physiological and experiential processes onto each other. That would be trying to align the wrong things, like putting incomparable magnitudes into one equation.[7] They would first have to be converted to their common magnitude: that of a person in her world. They cannot be opposed because they are not separate causal systems or tracks, they are rather partly overlapping excerpts of one and the same person-world system. There is an asymmetry between them in that experiential processes are more global: they necessarily include certain physiological processes, so that changes in experiential processes always include changes in at least some physiological processes—whereas physiological processes are more local and not all changes in physiological processes involve or 'add up' to changes in experiential processes.

This means that we cannot say that the amygdala activity is *causing* my being annoyed, nor the other way around, that my annoyance is *causing* my amygdala to be extra active—at least not if we mean by causation that there are two separate processes or systems, one physiological and one experiential, where one causes something in the other like one domino hitting the next. There is no such linear, sequential, causal relation between the physiological process and the experiential process because we are rather looking at one and the same process, but different excerpts of it, at different levels of zooming in, typically focusing on different time-scales too.

Even though it is one process, it will still differ depending on what set it in motion. That is, it still makes a difference whether an experience (anxiety, annoyance) is caused by an event in someone's life world (fear of the psychiatrist, an irritating book), or instead chemically or hormonally caused (as side effect of medication, or of having one's period). Should we not say then that a certain state can have a psychological (or life-world) cause or a physiological cause? Well, yes—as long as we do not see psychological and physiological as opposed processes and as long as we properly understand what we mean by 'cause' here.

The crux is again the mereological relation of physiological and experiential processes as both being part of the same system of a person in her world. This mereological structure does not preclude influences from one to the other. It just involves a *different* understanding of how physiological and experiential processes relate and how their influences work. The important, dualism-defeating move here is to resist thinking about causality in linear terms and instead regard both the physiological and the life-world causes as mereological or organizational forms of causality: the one local to global, the other global to local. The causality involved is rather of a mereological, organizational, or constitutional type.[8] That is: within a specific organizational structure the relation between its local and global processes is reciprocally influential, but without the one working on the other as if they were separate.

An analogy may help: the causal processes involved in making a cake are organizational. A cake is made from various ingredients that influence each other. The amount of sugar, for example, affects not only the overall sweetness of the cake, but also the gluten in the flour and thus the structure of the sponge. Adding an extra egg to the dough will affect the sponge—and thereby the cake as a whole. The added sugar or the added egg do not work 'on' the cake like one domino hitting another. Rather, by being part of the cake, a change in the amount of sugar or eggs *is* a change of the cake as a whole. We can understand the effect of changes in my amygdala on my mood in a similar way as changes in the amount of sugar affecting the taste of the cake. There are not two separate processes working on each other. Rather, by changing an element of a whole, the whole is at that very moment different. And not just in the self-evident, synchronous way, but over time too local changes can amount to more global differences.

There are thresholds: not all local changes lead to noticeable, global effects: adding one more grain of sugar will not make a noticeable difference on the cake as a whole, but adding an extra cup will. Similarly, not all changes in my amygdala will be noticeable on the personal, experiential level. The likelihood of local changes leading to global effects will (partly) depend on the interconnectedness of the process in question with other processes and the feedback loops involved. The effects of a local change thus depend on the larger context in which it takes place: as the effects of one ingredient will depend on the other ingredients, the effects of heightened amygdala activity similarly depend on many other simultaneous processes, such as hormonal processes for instance. Besides, in complex, dynamic systems gradual changes can sometimes lead to a qualitative turning point: tipping the system over from one stable state into another, to put it in dynamic system terms. Similarly I cannot keep adding eggs while preserving the general taste of the cake: at some point the cake will turn into something else, say, sweet scrambled eggs with jelly.

Physiological causes (e.g., anxiety as a side effect of medication) are local to global causes, like the amount of sugar changing the taste of the cake. Life-world causes (e.g., anxiety as a result of fear of rejection) on the other hand, are global to local causes, like the effect of the temperature of the oven on the overall state of the cake, including its ingredients.

It Takes More Than Two to Tango—Further Implications for Causality

Coming back to Kramer's example, we can see that they are indeed two different anxieties: that it does matter for understanding our present state to know how it started, and that we can indeed distinguish between meaningful persons-relating-to-their-worlds causes and just-so physiological causes. We are looking at *different causal trajectories*: a global to local and a local to global one respectively. So yes, there are differences, and yes they matter. But we can also see that these real differences need not trick us into succumbing to dualist tendencies. For the dualist presupposition of two separable processes is invalid from an enactive perspective. Physiological and experiential processes are both part of the larger person-world system. As a consequence the form of causality involved is organizational rather than linear. While such linear approaches to causality can give us synchronic explanations, the organizational causality at play in complex dynamic systems rather offers multifactor diachronic explanations—which seem much better suited to do justice to how psychiatric disorders develop, evolve, and persist over time. The enactive perspective is not reductionist either: as there can be no one-to-one mapping of experiential and physiological processes, they cannot be reduced to each other either. Besides, from this dynamic systems perspective any attempt to reduce this complexity to one part of the system that should be 'underlying' all the rest looks highly implausible.

Because both experiential and physiological processes can only be understood in the context of a person's ongoing interactions with her world, it is misleading to use 'physiological' and 'psychological' as our two main categories for understanding the causal influences and interventions in psychiatric disorders. Even in seemingly clear cases, matters are typically too complex to be easily dividable along the binary lines of psychological *or* physiological. Suppose we take an unresolved inner conflict (say between wanting to please a parent and wanting to assert oneself) as a psychological cause of a psychiatric disorder, then we are still dealing with an embodied, embedded person, with certain embodied dispositions and patterns of interaction with others. Or take anxiety induced by drug use as a physiological cause of sense-making problems. But here it will be relevant to know *why* the patient started using drugs. The cause is not the drug, but the drug-*taking*. A 'physiological cause' is seldom just that: usually it is tied to (motivated) behavior.

The only exceptions, when we can justly speak of physiological causes of sense-making problems, are cases like brain tumors or thyroid malfunctioning. In these cases the physiological cause is the only 'why' to someone's sense-making problems; there is no further reason. But as argued before, these are precisely not *psychiatric* disorders: the sense-making problems are secondary here. That

is, they are not due to a difficulty in relating with reality, and what thus needs to be addressed is not the sense-making as such, but the tumor or the thyroid gland. If there is only an arbitrary physiological cause, it is not really a sense-making problem, as sense-making refers to the relation of a person to herself and her world. With only a local disturbance, and no global, relational person-to-world disturbance, it is not a sense-making disorder.

Dividing interventions in 'physiological or psychological' is unhelpful too. Psychotherapy for instance affects the person, that is: a bodily being. Changing one's conduct, one's feelings and attitudes, implies bodily changes as well, such as changes in posture, in muscle tension, in neuronal connectivity. If our way of being in the world changes this change will be an *embodied* change. Medication, on the other hand, is not a purely physiological intervention either. It takes place in the context of a treatment, in which the relation between practitioner and patient plays an important role, as do the patient's expectations and prior experiences with medications— which may in turn be influenced by the stance of their sociocultural community toward medication. The 'effect of the medication' includes such so-called 'placebo-effects'—which shows that this 'physiological' cause is only a cause *in a specific context*; in combination with other (experiential, sociocultural, existential) influences.

This goes for any cause in a complex, dynamic system: whether anything reaches the status of a cause depends on the context: the present state of the person-in-her-world—which in turn depends on her history and background. The effects of drugs are not simply due to the drugs 'an sich': it is these drugs *for this specific person, in this specific (physiological and experiential) state, in this specific social setting, with this particular history, and this particular existential stance toward her situation*. Similarly, it is not the traumatic event 'an sich' either that causes PTSD: it is this event *for this specific person, in this specific (physiological and experiential) state, in this specific social setting, with this particular history, and this existential stance toward her situation*. How a perturbation affects a complex system depends on how the system is attuned: on the already established sensorimotor patterns, the loops of interactions with the environment, and the loops of the existential stance. If, for instance, someone has a panic attack, her subsequent stance on the attack will matter for its consequences: if it makes her worried and anxious that it might happen again, and if she has a tendency to avoid challenging situations, the anxiety about the anxiety may deteriorate and generate a negative spiral. If, on the other hand, she is able to put into perspective the meaning of the panic attack, for instance because she understands where it came from, the anxiety for the anxiety may remain within bounds. Whether one succeeds in adopting a relativizing perspective will depend on a whole variety of factors, such as one's initial level of stress, one's learned coping style, and reactions from friends and family. To trace back the overall effects of a perturbation to this initiating cause only would thus be a mistake.

The complex dynamic system's perspective also clarifies that initiating causes need not be the same as maintaining factors. Typically, the focus in psychiatric research is on finding the initiating causes of a disorder. Although this makes sense both in terms of treatment and possibly for future prevention, an enactive complex system's approach implies that one should not overestimate the role of originary causes. In many cases, the factors that *keep* someone in a specific state are at least as important. Job loss may mark the onset of a depression, but sleeping problems and reversal of day-night rhythm may contribute to keeping someone depressed. These maintaining factors can thus also be proper targets for interventions.

Summing up: dividing the physiological, experiential, sociocultural and existential aspects of person-world interactions into either physiological or psychological provides little by way of understanding what is happening in psychiatric disorders or their treatment. Four interdependent dimensions of one complex person-world system, by contrast, offer an encompassing rough division, while still being manageable.

The Sociocultural Dimension: Socially Constituted Sense-Making and a Shared World

By defining psychiatric disorders as disorders of sense-making, the sociocultural dimension is included from the very start. First, interaction with the environment is a necessary precondition for any sense-making to emerge, and for us the environment we make sense of is a social, cultural world. One can only determine whether this sense-making is 'off' or 'inappropriate' by taking into account the situation that this sense-making is directed at. Second, our (existential) sense-making capacities are to a large extent learned in and through social interactions. And this is not simply a social 'stage' in the development of sense-making that we at some point surpass: our sense-making rather continues to be shaped by our interactions with others and with our culture at large. In social interactions, sense-making can become *participatory* sense-making (De Jaegher & Di Paolo, 2007). That is when the interaction itself influences the sense-making of the participants, leading to a shared process of sense-making rather than a mere exchange of the individuals' points of view. Because our socially learned sense-making is of a social world, the sociocultural dimension is far from the static background, the décor, against which the real action takes place: it is rather an inseparable part of 'the action' itself.

Stressing the sociocultural dimension of psychiatric disorders does not mean that an enactive account considers psychiatric disorders to be sociocultural constructs. In fact, the very opposition of 'biological' versus 'cultural' is another unhelpful dichotomy that an enactive perspective aims to dissolve. The implicit idea behind this opposition seems to be that 'physiology = real = universal' whereas 'sociocultural = construct = relative.' From an enactive point of view, however, the pattern of sense-making is *both* real and socioculturally co-constituted. This sociocultural co-determination does not turn psychiatric disorders into completely relative 'constructs,' for our sense-making is not arbitrary, and our sociocultural norms come from somewhere. As human beings, we share many characteristics, we share our human bodies, with the specific abilities and vulnerabilities that come from being thus embodied; we live in social communities, with all the possibilities and impossibilities that come from being thus embedded. We share the need to belong, to love and be loved; and we share the anxieties of being cast out, of loss and death.

Given these shared needs and concerns there is considerable overlap in how we make sense of the world, in what is meaningful to us. We can think of these meanings in our world in a 'layered' way: from universally shared to culturally shared to highly idiosyncratic. In light of the structural similarities of our human condition and sense-making, it is not surprising that breakdowns of sense-making show similar structures too. Some 'core' psychiatric disorders such as depression, schizophrenia, and anxiety disorders, seem to occur across various times and cultures—although their specific physiognomies will be culturally influenced (Kirmayer, 2001). For example, people from all times and cultures can suffer from disproportionate anxieties, but what it is that they are anxious about, will likely vary. Other disorders may be more culturally and historically dependent, such as attention deficit/hyperactivity disorder and hysterical conditions. As social norms and practices shift, so does the appropriateness of sense-making.

Even so, these culturally shaped worlds are shared by their participants. Phenomenologically oriented psychiatrists have often remarked that psychiatric patients live in 'a world of their own.' In '*A different existence*,' psychiatrist Van den Berg (1972) argues that living in one's own world makes out the core of psychiatric disorders. As he puts it: 'Our world is not primarily a conglomeration of objects that can be described scientifically. Our world is our home, a realization of subjectivity' (pp. 39–40). Consequently, 'when the psychiatric patient tells what his world looks like, he states, without detours and without mistakes, what he is like' (p. 46). Psychiatric patients live in a different world, in a world that is more threatening, or more meaningful, or less meaningful, or more chaotic, or more 'flat' than our shared world. The patient suffering from obsessive-compulsive disorder of the mysophobic type lives in a world

full of germs and possibilities of contamination. The depressed patient lives in a gray world in which nothing attracts and the future looks just as uninviting (de Haan, Rietveld, Stokhof, & Denys, 2013). The paranoid patient lives in a world full of persecutors and (hidden) meanings. Using the terminology from ecological psychology (Chemero, 2003; Gibson, 1979), we can say that the perceived affordances (e.g., the possibilities for action that someone perceives in the world) are changed: patients are surrounded by a different field of affordances (de Haan et al., 2013; Fuchs, 2007; Krueger & Colombetti, 2018). In enactive terms, we can say that their sense-making is insufficiently attuned to the relevant aspects of the situation at hand.

It is not a coincidence that social withdrawal is a prominent element of many psychiatric disorders, such as depression, schizophrenia, and anxiety disorders. Even though the motivation to withdraw from social interactions is different, the withdrawal itself leads to a reinforcement of the patient living in his own world, which functions as a negative spiral. The anxious patient avoids the situation he fears, which prevents him from having experiences that could correct his worries (Beck & Clark, 1997). A depressed patient avoids social contact, because he feels unworthy—and his withdrawal is yet another example of how he always lets other people down. A schizophrenic patient may feel more at ease by avoiding social interactions, but his social isolation can reinforce his experience of being detached and estranged. To interact with others, to take part in a shared world, helps to put things in another perspective. In line with this, we can regard therapy as a way of practicing participatory sense-making (de Haan, 2020; Maiese, M. (2015), Embodied Selves and Divided Minds. Oxford University Press).

The Existential Dimension

Perhaps more than in any other specialty, psychiatrists are confronted with the struggle between adopting the naturalist perspective characteristic of medicine and the wish to account for the role of values and meaning (Sadler, 2005). By defining psychiatric disorders as disordered patterns of sense-making, by explaining sense-making as an evaluative activity, and by classifying our sense-making as existential sense-making, values take their place as an inescapable part of psychiatric disorders in the enactive framework elaborated above. As we saw, the existential dimension is not just an extra layer of meaning added on top of basic physiological processes as the icing on a cake. Rather, our evaluative relation to our selves and our interactions fundamentally changes those interactions. The extra 'loop' changes the whole system. This means that the existential dimension shapes all the other dimensions—including the physiological. Not in a simplistic sense of positive-thinking-can-cure-cancer kind of way, but by co-determining the state we are in, how we feel, and how we interact. Our expectations can influence the effect of medication, our fear of future harm influences our behavior, our shame affects our posture as well as our social interactions. From an enactive perspective then, the opposition between physiological processes and values is misconceived.

Our evaluative relation to ourselves, to others, and to our situation affects our selves both in a direct mereological way (e.g., feeling ashamed implies certain physiological processes), but also by shaping our subsequent actions, thus co-determining the causal trajectories of psychiatric problems (e.g., my shame may lead to postponing seeking help for my problems, or to getting addicted to alcohol). Given the importance of the existential stance in the development and sustenance of psychiatric disorders, it is no wonder that various forms of psychotherapy target the existential stance of patients. Some are aimed at increasing insight; making patients' evaluative stances explicit and scrutinizing them. Think for instance of how mindfulness therapy, acceptance and commitment therapy, and cognitive behavioral therapy all, in different ways, address the existential stance.

Treatment Implications

What are the treatment implications of this enactive view? Many health care professionals already work in a holistic way. The enactive framework provides a theoretical grounding for a holistic practice of psychiatry. As an integrative

model it does not so much advocate a specific, novel form of treatment, but rather helps better understand how various influences cohere, which in turn helps navigate and substantiate treatment decisions. The dynamical complex system's approach of enactivism has several implications for treatment, as does the enactive definition of psychiatric disorders as disorders of sense-making.

Taking the dynamic, complex person-world system as the unit of analysis may at first seem too complex to be workable. However, the complexity of the system also implies many routes to change. In an enactive approach, no form of treatment is ruled out a priori, on theoretical grounds. It rather embraces the full plurality of forms of treatment, as a complex system can be stirred in many ways. The non-linearity of complex dynamic systems also implies that combining various interventions may enhance—or decrease—their effectiveness. That is, through feedback loops, operating at different time-scales, effects may be mutually reinforcing, and both positive and negative spirals may occur. Medication for instance can help lower anxiety levels and thus enable patients to engage in therapy and practice new ways of interacting.

We already saw that originary factors (what caused the person's problematic state) and maintaining factors (what keeps the person in this state) need not be the same. Treatment can likewise be targeted at these maintaining factors. Besides, the non-linearity of complex systems implies that the effectiveness of a certain treatment does not allow 'reverse engineering' to conclusions about what caused the problems. For instance, if the price of alcohol goes up this reduces the number of alcoholics (Chaloupka, Grossman, & Saffer, 2002), but the previously lower prices were obviously not the cause of people becoming alcoholics. Exercise can help to improve depressive symptoms (Rimer et al., 2012), but that does not mean the depression was caused by lack of exercise. Similarly, if we find that a certain type of drug working on a specific neurotransmitter is helpful, we cannot conclude that this neurotransmitter was the cause of the problems.

A complex systems' perspective also clarifies how removing the initial disturbance of the system does not necessarily make the problems disappear. The disturbance may have tipped the person into a so-called 'alternative stable state'; and much more may now be required to extricate them. Think for instance of the relation between forest and grazers: a mature forest will remain a forest even though grazers eat young trees. However, a forest destroyed by a fire may not return because all the young trees get eaten by grazers, resulting in a steppe landscape. Return of the forest requires specific measures and time. Similarly, cannabis use may induce a psychotic episode, but quitting smoking does not guarantee full recovery.

Furthermore, the complexity of each person-in-her-world, with their specific etiological trajectories to their disturbed sense-making, and their specific current maintaining factors, make it highly unlikely that a single treatment will work for all patients sharing a diagnosis. In each individual case an assessment is needed of the originating and maintaining factors of the problems, as well as the positive, supportive factors. In this way, personalized network models can be constructed to clarify both beneficial and harmful interactions (de Haan, 2020).

Adopting a personalized approach, and considering a plurality of treatment options aimed at different aspects of the problem at hand, is hardly controversial. An enactive approach, however, clarifies how interactions between these various aspects work, as well as providing a basic model of the four dimensions, to be spelled out in more detail for each individual patient. More substantial implications for treatment follow from the enactive definition of psychiatric disorders as disorders of sense-making—in particular the characteristics of our sense-making as being embodied, embedded, and existential.

Acknowledging the role of patients' existential stances toward themselves and their situation, including their disorder, is a vital aspect of treatment. As psychiatric disorders pertain to how we feel, think, and act, they pertain to what makes us who we are. Psychiatric disorders concern us as persons and we thus need to relate to them in a more profound way than to somatic disorders (e.g., how does the disorder relate to me, is it part of me or rather something 'external?' How do I know what of my sense-making I can and cannot

trust, how do I know what is me and what is my disorder? What do my problems say about me?). The affective nature of our sense-making implies that the kind of problems that psychiatry deals with are emotionally invested. Some types of therapy will specifically focus on patients' emotions, but no type of treatment can ignore that patients are persons and thus affective beings.

Our sense-making, our preferred patterns of interaction with the world, is embodied. Our bodies express our personal histories and personhood; from how we move through the world, to how we approach and avoid others, what stresses us and how we relax, and the memories that have become part of our flesh. This means that, from an enactive perspective, treatments that are directed at our embodiment, i.e. body and movement therapies, form an important resource for psychiatric problems (Röhricht, Gallagher, Geuter, & Hutto, 2014).

Similarly, the embeddedness of our sense-making implies the value of treatments that focus on patients' relationships, such as system's therapy. But taking the sociocultural dimension of psychiatric disorders seriously goes further than that: it suggests that in all forms of treatment it makes sense to engage family and friends, especially in case of severe disorders. Treatment can profit from the perspectives of the patients' loved ones and from their support in practicing new ways of interacting. An 'open dialogue' (Galbusera & Kyselo, 2018; Seikkula et al., 2006) between the patient, caregivers, and family members provides a good example of how this could work, but less ambitious variants can also help. Last, the enactive focus on the person-in-her-world helps us see how even though it is the individual person who has sense-making problems, it makes sense to take both sides of interactions into account, and to try to find or construct a particular niche in which this person may flourish. How can patients' environments be 'scaffolded' (Anderson & Honneth, 2005) to support their strengthening interaction patterns and diminish the pull of unhelpful patterns (Krueger, 2018; Krueger & Colombetti, 2018)?

Because enactivism embraces a plurality of treatment forms we must ask, to avoid the appearance of any 'anything goes' attitude, if there is a navigational logic, a hierarchy of relevance on how to proceed. This is a difficult issue. The enactive framework for integrating the four dimensions is not a *vertical* hierarchy: none of the dimensions is considered to be more basic or fundamental or 'underlying' the other ones. In the horizontal person-world system we can distinguish between more local and more global processes: physiological processes are for instance more local than experiential processes. Sense-making is the capacity of a person in her world: a global level capacity. The aim of treatment is on this more global level too, namely to better enable the patient to re-engage meaningfully with their world. Should we then privilege global over local interventions? Psychotherapy over medication? It is not that easy. For the local depends on and influences the global—and the other way around. As explained with the cake-metaphor, there are differences between local-to-global and global-to-local influences, they have different causal trajectories and different effects, but both can be effective. Selective serotonin reuptake inhibitors can make me less anxious, and so can psychotherapy, even though the one intervenes mostly on local and the other on global processes. If selective serotonin reuptake inhibitors lower my anxiety, this can enable me to try out different ways of engaging with the world, over time establishing more adaptive interaction patterns. Besides, we should not reify either 'local' or 'global': as if we were talking about independent things, the 'local' parts like marbles, the 'global' as the jar that contains them. And 'local' and 'global' remain imprecise indications anyway. Physiological processes may be more 'local' than experiential processes, but in the end the functioning of the whole complex dynamic system of a person interacting with her world depends on all its parts and as such precisely defies any easy stratification.

There is then no preferred or privileged dimension, and no single navigational rule either. Because all dimensions of the person-world system can only be properly understood in relation to the whole they co-constitute, what follows is a hermeneutical back and forth between a focus on the whole *Gestalt* and its dimensions. And even

though there are commonalities in different types of disordered patterns (e.g., depressed, anxious, paranoid, controlling biases, etcetera), it still requires a person-tailored approach to clarify this patients' strengths and weaknesses and decide on treatment options accordingly.

Conclusion

We began by noting the complexity of psychiatry, in particular the many factors contributing to the development of psychiatric disorders. How are we to relate these highly diverse factors that encompass existential worries, neurochemical misbalances, relational conflicts, and childhood trauma? A proper theoretical framework helps structure these elements and clarifies what one is doing and why one is doing it. We briefly looked at the existing models and saw that a properly integrative approach was still lacking. I introduced enactivism as a general paradigm that can be put to use for psychiatry. I argued that an enactive approach elucidates how the experiential, physiological, sociocultural, and existential dimensions of psychiatric disorders relate. These diverse dimensions can be regarded as different *excerpts* from the one complex system of a person in interaction with her (social) world. By integrating these dimensions, while at the same time acknowledging the differences between them, it offers grip on the complexity of psychiatric disorders. An enactive approach thus offers an integrative perspective on persons, from their physiological and bodily makeup to their social nature and existential values. As such, it fits the richness and vulnerabilities of human life that come to the fore in psychiatry.

Acknowledgments

The author thanks Richard Gipps, Hanne De Jaegher, Judy Luigjes, Han van Wietmarschen, and two anonymous reviewers for their helpful feedback on this article. This article is partly based on my PhD thesis and I have much benefitted from the discussions with my supervisors Thomas Fuchs and Gerrit Glas.

Notes

1. Thompson and Stapleton (2009) suggest a similar definition: 'sense-making is the intentional and normative engagement of the system with its environment' (p. 28), as do Di Paolo and Thompson (2014): "Sense-making' describes behavior or conduct in relation to norms of interaction that the system itself brings forth on the basis of its adaptive autonomy.'

2. The concept of emergence is highly debated (Bedau & Humphreys, 2008; O'Connor & Wong, 2015). Enactivism depends on a viable account of emergence. Humphreys' (1997a, 1997b) account of emergence in terms of 'fusion' is a very apt candidate (de Haan, 2020).

3. This tendency to stress the active role of the organism in its sense-making of the world at the expense of the receptive aspect of sense-making is understandable in the light of what enactivist theorists argue against, namely what Hurley (1998) called a 'sandwich model' of the mind, in which perception is the passive absorption of information, cognition does the juicy real work of processing this information, typically through forming an inner representation of the outer world, and action follows the outcomes of this information processing. Such passive information processing disregards the formative share of the organism with its particular body, sensing organs, abilities, and needs in its sense-making process. But this should not tilt over into an idealist, projectionist theory—as some phrasings of meaning as being 'constructed' could suggest. An idealist or overly constructivist understanding of sense-making however goes against the very heart of enactive ontology, which is precisely *relational*.

4. I do not want to claim that only humans are capable of stance-taking: it is an empirical question whether, or to what extent, other organisms are capable of such stance-taking too. As I am only interested in human beings here, I use 'persons' as a shorthand for humans capable of stance-taking.

5. Some recent literature has applied an *extended mind* approach to psychiatric disorders (Cooper, 2017; Hoffman, 2016; Krueger, 2018; Roberts, Krueger, & Glackin, 2019). The enactive approach and the extended mind approach are similar in two ways: 1) they reject the idea that psychiatric disorders could be explained by referring only to what is happening inside the individual, specifically its brain; and 2) and they both acknowledge the fundamental role of patients' social and material environments. They fundamentally differ, however, when it comes to explaining how physiological, experiential, and environmental processes relate. Extended mind theory proposes that a part of the world can (temporarily) be part of our cognitive processes specifically if such parts of the world play a similar functional role as cognitive mechanisms do (Clark & Chalmers, 1998). As such, it still accepts an internal mind-external world topology, even though it proposes to be liberal about where to draw the lines. Enactivism by contrast does not propose to extend the inner, but rather rejects this very inner mind-outer world division (Di Paolo, 2009). So

while extended mind approaches are still trying to localize disorders and find their 'underpinnings' (distributed as these may be), from an enactive, relational view these quests do not make sense. For what would 'underlie' a pattern? Or how to locate an emergent feature of a complex dynamic system?

6. Note that the sense-making that is disordered in psychiatric disorders is the 'existentialized' sense-making of those who are capable of stance-taking. The basic sense-making of other organisms can go astray too; they could for instance be allergic to something innocent, or have some sort of perceptual bias. And they can suffer too. But psychiatric disorders specifically pertain to the integrity of being a person in the world—in contrast to somatic diseases that threaten the precariousness of living beings' self-organization. Still, there are differences between disorders in terms of how 'basic' the sense-making is that is affected. Following the 'old-fashioned' distinction between psychotic and neurotic disorders, we can say that in psychotic disorders the enaction of fundamental or basic aspects of personhood, such as the boundary between self and others and self and world, is at stake. Contact with reality is too threatening to the self to be endured, leading to drastic means as transitivism, thought disorder, or delusions to try to safeguard the self. Neurotic problems by contrast concern the safeguarding of one's *ideal* self by avoiding certain feelings or situations or insights. We could say that here contact with one's self in all its anxiousness, smallness, vulnerability, and dependence is avoided (de Haan, 2020).

7. This is why enactivism is neither a form of aspect-dualism nor of identity theory, for these theories both try to give an account of physiological and experiential/psychological processes as if these two would make up all of reality. From an enactive perspective, however, these processes rather both stand in a mereological relation to the more encompassing system of a person interacting with her world. Consequently, physiological and psychological processes are not 'two sides of the same coin,' or two aspects of one process—as aspect-dualism would have it—for these are not the only sides or aspects and they are not mutually exclusive either. Identity theory, on the other hand, advocates a one to one mapping of psychological and physiological or even just neuronal states, relating them *to each other*. But following the enactive perspective this is simply not possible: my experiences include certain physiological processes, but both my experiences *and* the bodily processes involved depend on the more encompassing system of an agent interacting with an environment. Mapping experiences onto neuronal states is like relating the taste of a cake with just the flour used in it: the flour is a necessary component, but so are the sugar and the eggs, and so is the mixing of all these ingredients and their heating in the oven.

Similarly, the concept of 'supervenience' is unhelpful too. Experiential processes are often said to 'supervene' on physiological processes, meaning that there can be no change in experiences without there also being a change in the 'underlying' physiological processes. Again the problem is that experiential and physiological processes are directly related to each other. Besides, the concept of supervenience does not offer any clues on how to *understand* this relation.

8. There is some discussion about whether we can speak of 'causality' when it comes to the relations between the local and global processes of a system. Some suggest that a relation of constitution (parts that make up a whole) is a *synchronic* relation, which distinguishes them from causal processes as these take place over time (Adams & Aizawa, 2008; Aizawa, 2010). Others, however, argue that part-whole or local-global relationships can be diachronic as well, calling for a different view on what marks causal and constitutional relations (Gallagher, 2017; Kirchhoff, 2015; Krickel, 2017). And when it comes to living beings and their sense-making capacities a static view of constitution is not very helpful. For here we are looking at dynamic processes, forming a complex, dynamic system. Nonetheless, there are various part-whole relations at play. Even if we only consider the body as such, we can distinguish various interdependent systems (such as the central nervous system, the blood circulation system, the digestive system, etc.) which in turn consist of various elements (organs such as the brain and the heart, blood vessels, bowels, etc.), which in turn consist of specific cells, and so on. Their relations are far from static though: they affect each other in complex ways, with processes going on at various time-scales. Such a complex, dynamic system calls for a different conception of constitution: as *diachronic and dynamic constitution* as Kirchhoff (2015) and Gallagher (2017) argue. Global and local processes can refer to processes taking place at different timescales.

Some enactivist theorists speak of bottom-up and top-down causality, or circular or reciprocal causality to denote similar ideas (Fuchs, 2011, 2018; Hanna & Thompson, 2003; Thompson & Varela, 2001). I find these terms misleading, though. Bottom-up and top-down causality still invokes the idea of a vertical hierarchy of levels where these levels easily get reified and can be thought to 'work on each other.' Although a bit better, circular causality also still allows for an interpretation of one thing working on the other and the other working on the one in turn. Instead of vertical hierarchies of levels, a more helpful picture is a *horizontal*, network structure, in which some elements

are more encompassing, more global, and others more local, but which can partly overlap as well.

References

Adams, F., & Aizawa, K. (2008). *The bounds of cognition*. Malden, MA: Blackwell.

Aizawa, K. (2010). The coupling-constitution fallacy revisited. *Cognitive Systems Research, 11* (4), 332–342.

Anderson, J., & Honneth, A. (2005). Autonomy, vulnerability, recognition, and justice. In J. Christman & J. Anderson (Eds.), *Autonomy and the Challenges to Liberalism: New Essays* (pp. 127–149). Cambridge: Cambridge University Press.

Ataria, Y. (2015). Trauma from an enactive perspective: The collapse of the knowing-how structure. *Adaptive Behavior, 23* (3), 143–154.

Bartz, J. A., Zaki, J., Bolger, N., & Ochsner, K. N. (2011). Social effects of oxytocin in humans: Context and person matter. *Trends in Cognitive Sciences, 15* (7), 301–309.

Beck, A. T., & Clark, D. A. (1997). An information processing model of anxiety: Automatic and strategic processes. *Behaviour Research and Therapy, 35* (1), 49–58.

Bedau, M. A., & Humphreys, P. (Eds.). (2008). *Emergence: Contemporary readings in philosophy and science*. Cambridge, MA: The MIT Press.

Borsboom, D. (2017). A network theory of mental disorders. *World Psychiatry, 16* (1), 5–13.

Brendel, D. H. (2007). Beyond Engel: Clinical pragmatism as the foundation of psychiatric practice. *Philosophy, Psychiatry, & Psychology, 14* (4), 311–313.

Chaloupka, F. J., Grossman, M., & Saffer, H. (2002). The effects of price on alcohol consumption and alcohol-related problems. *Alcohol Research and Health, 26* (1), 22–34.

Chemero, A. (2003). An outline of a theory of affordances. *Ecological Psychology, 15* (2), 181–195.

Clark, A., & Chalmers, D. J. (1998). The extended mind. *Analysis, 58* (1), 7–19.

Colombetti, G. (2007). Enactive appraisal. *Phenomenology and the Cognitive Sciences, 6* (4), 527–546.

Colombetti, G. (2010). Enaction, sense-making and emotion. In *Enaction: Towards a new paradigm for cognitive science*. Cambridge, MA: MIT Press.

Colombetti, G. (2013). Psychopathology and the enactive mind. In K. W. M. Fulford, M. Davies, R. G. T. Gipps, G. Graham, J. Z. Sadler, G. Stanghellini, & T. Thornton (Eds.), *The Oxford handbook of philosophy and psychiatry* (pp. 1083–1102). Oxford: Oxford University Press.

Colombetti, G., & Thompson, E. (2008). The feeling body: Towards an enactive approach to emotion. In W. F. Overton, U. Mueller, & J. Newman (Eds.), *Body in Mind, Mind in Body: Developmental Perspectives on Embodiment and Consciousness* (pp. 45–68). New York: Erlbaum.

Cooper, R. (2017). Where's the problem? Considering Laing and Esterson's account of schizophrenia, social models of disability, and extended mental disorder. *Theoretical Medicine and Bioethics, 38* (4), 295–305.

Corrigan, P., & Watson, A. (2004). At issue: Stop the stigma: Call mental illness a brain disease. *Schizophrenia Bulletin, 30* (3), 477.

de Haan, S. (2017). The existential dimension in psychiatry: An enactive framework. *Mental Health, Religion & Culture, 20* (6), 528–535.

de Haan, S. (forthcoming). *Enactive psychiatry*. Cambridge: Cambridge University Press.

de Haan, S., Rietveld, E., Stokhof, M., & Denys, D. (2013). The phenomenology of DBS induced changes in OCD—An enactive affordance-based model. *Frontiers in Human Neuroscience, 7*, 1–14.

De Jaegher, H. (2013). Embodiment and sense-making in autism. *Frontiers in Integrative Neuroscience, 7*.

De Jaegher, H., & Di Paolo, E. (2007). Participatory sense-making: An enactive approach to social cognition. *Phenomenology and the Cognitive Sciences, 6* (4), 485–507.

De Jaegher, H., & Froese, T. (2009). On the role of social interaction in individual agency. *Adaptive Behavior, 17* (5), 444–460.

Dew, R. E. (2009). Why psychiatry is the hardest specialty. *American Journal of Psychiatry, 166* (1), 16–17.

Di Paolo, E. (2009). Extended life. *Topoi, 28* (1), 9–21.

Di Paolo, E., & Thompson, E. (2014). The enactive approach. In L. Shapiro (Ed.), *The Routledge handbook of embodied cognition* (pp. 68–78). New York: Routledge.

Di Paolo, E. A., Cuffari, E. C., & De Jaegher, H. (2018). *Linguistic bodies: The continuity between life and language*. Cambridge, MA: MIT Press.

Drayson, Z. (2009). Embodied cognitive science and its implications for psychopathology. *Philosophy, Psychiatry, & Psychology, 16* (4), 329–340.

Engel, G. (1977). The need for a new medical model: A challenge for biomedicine. *Science, 19 6*(4286), 129–136.

Engel, G. L. (1980). The clinical application of the biopsychosocial model. *American Journal of Psychiatry, 137* (5), 535–544.

Fausto-Sterling, A. (2005). The bare bones of sex: Part 1—Sex and gender. *Signs: Journal of Women in Culture and Society, 30* (2), 1491–1527.

Froese, T., & Di Paolo, E. (2009). Sociality and the life–mind continuity thesis. *Phenomenology and the Cognitive Sciences, 8* (4), 439–463.

Fuchs, T. (2007). Psychotherapy of the lived space: A phenomenological and ecological concept. *American Journal of Psychotherapy, 61* (4), 423–439.

Fuchs, T. (2008). *Das Gehirn—ein Beziehungsorgan. Eine Phänomenologisch-Ökologische Konzeption*. Stuttgart: Kohlhammer.

Fuchs, T. (2009). Embodied cognitive neuroscience and its consequences for psychiatry. *Poiesis & Praxis, 6*, 219–233.

Fuchs, T. (2011). The Brain: A Mediating Organ. *Journal of Consciousness Studies, 18* (7–8), 196–221.

Fuchs, T. (2012). The phenomenology and development of social perspectives. *Phenomenology and the Cognitive Sciences*, 1–29.

Fuchs, T. (2018). *Ecology of the brain*. Oxford: Oxford University Press.

Fuchs, T., & Schlimme, J. (2009). Embodiment and psychopathology: A phenomenological perspective. *Current Opinion in Psychiatry, 22* (6), 570–575.

Fulford, K., Broome, M., Stanghellini, G., & Thornton, T. (2005). Looking with both eyes open: Fact and value in psychiatric diagnosis? *World Psychiatry, 4* (2), 78–86.

Fulford, K. W. M. (2008). Values-based practice: A new partner to evidence-based practice and a first for psychiatry? *Mens Sana Monographs, 6* (1), 10–21.

Galbusera, L., & Kyselo, M. (2018). The difference that makes the difference: A conceptual analysis of the open dialogue approach. *Psychosis, 10* (1), 47–54.

Gallagher, S. (2017). *Enactivist interventions: Rethinking the mind*. Oxford: Oxford University Press.

Ghaemi, S. N. (2009). The rise and fall of the biopsychosocial model. *British Journal of Psychiatry, 195* (1), 3–4.

Gibson, J. J. (1979). *The ecological approach to visual perception*. Boston: Houghton Mifflin.

Hanna, R., & Thompson, E. (2003). The mind-body-body problem. *Theoria et historia scientiarum: International Journal for Interdisciplinary Studies, 7* (1), 24–44.

Hobson, R. P. (2002). *The cradle of thought*. London: Macmillan.

Hoffman, G. A. (2016). Out of our skulls: How the extended mind thesis can extend psychiatry. *Philosophical Psychology, 29* (8), 1160–1174.

Humphreys, P. (1997a). How properties emerge. *Philosophy of Science, 64* (1), 1–17.

Humphreys, P. (1997b). Emergence, not supervenience. *Philosophy of Science, 64*, 337–345.

Hurley, S. (1998). *Consciousness in action*. London: Harvard University Press.

Hutto, D. D., & Myin, E. (2013). *Radicalizing enactivism. Basic minds without content*. Cambridge, MA: The MIT Press.

Hutto, D. D., & Myin, E. (2017). *Evolving enactivism: Basic minds meet content*. Cambridge, MA: MIT Press.

Insel, T. , Cuthbert, B., Garvey, M., Heinssen, R., Pine, D. S., Quinn, K., Sanislow, C., & Wang, P. (2010). Research Domain Criteria (RDoC): Toward a New Classification Framework for Research on Mental Disorders. *The American Journal of Psychiatry, 167, 7*, 748–751.

Jonas, H. (1966/2001). *The phenomenon of life. Toward a philosophical biology*. Evanston, IL: Northwestern University Press.

Kirchhoff, M. D. (2015). Extended cognition & the causal-constitutive fallacy: In search for a diachronic and dynamical conception of constitution. *Philosophy and Phenomenological Research, 90* (2), 320–360.

Kirmayer, L. J. (2001). Cultural variations in the clinical presentation of depression and anxiety: Implications for diagnosis and treatment. *Journal of Clinical Psychiatry, 62*, 22–30.

Klin, A., Jones, W., Schultz, R., & Volkmar, F. (2003). The enactive mind, or from actions to cognition: Lessons from autism. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences, 358* (1430), 345–360.

Kramer, P. D. (1997). *Listening to Prozac*. New York: Penguin Group USA.

Krickel, B. (2017). Making sense of interlevel causation in mechanisms from a metaphysical perspective. *Journal for General Philosophy of Science, 48* (3), 453–468.

Krueger, J. (2018). Schizophrenia and the scaffolded self. *Topoi*, 1–13.

Krueger, J., & Colombetti, G. (2018). Affective affordances and psychopathology. *Discipline Filosofiche, 2* (18), 221–247.

Kyselo, M. (2016). The enactive approach and disorders of the self. The case of schizophrenia. *Phenomenology and the Cognitive Sciences, 15* (4), 591–616.

Maiese, M. (2015), Embodied Selves and Divided Minds. Oxford University Press.

Maiese, M. (2018). An enactivist approach to treating depression: Cultivating online intelligence through dance and music. *Phenomenology and the Cognitive Sciences*. doi:10.1007/s11097–018–9594–7

McGann, M., De Jaegher, H., & Di Paolo, E. (2013). Enaction and psychology. *Review of General Psychology, 17* (2), 203–209.

Merleau-Ponty, M. (1942/1963). *The structure of behavior* (A. L. Fisher, Trans.). Boston: Beacon Press.

Moreno, A., Ruiz-Mirazo, K., & Barandiaran, X. (2011). The impact of the paradigm of complexity on the foundational frameworks of biology and cognitive science. In C. Hooker (Ed.), *Philosophy of complex systems* (Vol. 10, pp. 311–334). Amsterdam: Elsevier.

Myin, E., & Degenaar, J. (2014). Enactive vision. In L. Shapiro (Ed.), *Routledge handbook of embodied cognition*. London: Routledge.

Myin, E., O'Regan, K. J., & Myin-Germeys, I. (2015). From a sensorimotor account of perception to an interactive approach to psychopathology. In R. J. Gennaro (Ed.), *Disturbed consciousness* (pp. 347–368). Cambridge MA: MIT Press.

Noë, A. (2004). *Action in Perception*. Cambridge, MA: MIT Press.

O'Connor, T., & Wong, H. Y. (2015). Emergent properties. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy* (Summer 2015 ed.). Stanford, CA: Metaphysics Research Lab, Stanford University.

O'Regan, J. K., & Noë, A. (2001). A sensorimotor account of vision and visual consciousness. *Behavioral and Brain Sciences, 24* (5), 883–917.

Olff, M., Frijling, J. L., Kubzansky, L. D., Bradley, B., Ellenbogen, M. A., Cardoso, C., . . . van Zuiden, M. (2013). The role of oxytocin in social bonding, stress regulation and mental health: An update on the moderating effects of context and interindividual differences. *Psychoneuroendocrinology, 38* (9), 1883–1894.

Pescosolido, B. A., Martin, J. K., Long, J. S., Medina, T. R., Phelan, J. C., & Link, B. G. (2010). "A disease like any other"? A decade of change in public reactions to schizophrenia, depression, and alcohol dependence. *American Journal of Psychiatry, 167* (11), 1321–1330.

Ratcliffe, M. (2014). *Experiences of depression: A study in phenomenology*. Oxford: Oxford University Press.

Ratcliffe, M. (2017). *Real hallucinations: Psychiatric illness, intentionality, and the interpersonal world*. Cambridge, MA: MIT Press.

Reddy, V. (2008). *How Infants Know Minds*. Cambridge, MA: Harvard University Press.

Rimer, J., Dwan, K., Lawlor, D. A., Greig, C. A., McMurdo, M., Morley, W., & Mead, G. E. (2012). Exercise for depression. *Cochrane database of systematic reviews* (7).

Roberts, T., Krueger, J., & Glackin, S. (2019). Psychiatry beyond the brain: Externalism, mental health, and autistic spectrum disorder. *Philosophy, Psychiatry & Psychology, 26, 3*, 51–68.

Röhricht, F., Gallagher, S., Geuter, U., & Hutto, D. D. (2014). Embodied cognition and body psychotherapy: The construction of new therapeutic environments. *Sensoria: A Journal of Mind, Brain & Culture, 10* (1), 11–20.

Ross, D. A., Travis, m. J., Arbuckle, M. (2015). The Future of Psychiatry as Clinical Neuroscience: Why Not Now? *Jama Psychiatry, 72, 5*, 413–414.

Sadler, J. Z. (2005). *Values and psychiatric diagnosis*. Oxford: Oxford University Press.

Seikkula, J., Aaltonen, J., Alakare, B., Haarakangas, K., Keränen, J., & Lehtinen, K. (2006). Five-year experience of first-episode nonaffective psychosis in open-dialogue approach: Treatment principles, follow-up outcomes, and two case studies. *Psychotherapy Research, 16* (2), 214–228.

Slaby, J., Paskaleva, A., & Stephan, A. (2013). Enactive emotion and impaired agency in depression. *Journal of Consciousness Studies, 20* (7–8), 33–55.

Stewart, J. R., Gapenne, O., & Di Paolo, E. A. (Eds.). (2010). *Enaction: Toward a New Paradigm for Cognitive Science*. Cambridge, MA: MIT Press.

Thompson, E. (2007). *Mind in Life: Biology, Phenomenology, and the Sciences of Mind*: Cambridge, MA: Harvard University Press.

Thompson, E., & Stapleton, M. (2009). Making sense of sense-making: Reflections on enactive and extended mind theories. *Topoi, 28* (1), 23–30.

Thompson, E., & Varela, F. J. (2001). Radical embodiment: Neural dynamics and consciousness. *Trends in Cognitive Sciences, 5* (10), 418–425.

Torrance, S. (2005). In search of the enactive: Introduction to special issue on Enactive Experience. *Phenomenology and the Cognitive Sciences, 4* (4), 357–368.

Van den Berg, J. H. (1972). *A different existence: Principles of phenomenological psychopathology*. Pittsburgh, PA: Duquesne University Press.

van den Herik, J. C. (2017). Linguistic know-how and the orders of language. *Language Sciences, 61*, 17–27.

Van Oudenhove, L., & Cuypers, S. (2014). The relevance of the philosophical 'mind–body problem' for the status of psychosomatic medicine: A conceptual analysis of the biopsychosocial model. *Medicine, Health Care and Philosophy, 17*(2), 201–213.

Varela, F. J., Thompson, E., & Rosch, E. (1991). *The embodied mind: Cognitive science and human experience* (6th ed.). Cambridge, MA: MIT Press.

Varga, S. (2018). Embodied concepts and mental health. *Journal of Medicine and Philosophy, 43* (2), 241–260.

Verhagen, P. (2017). Psychiatry and religion: Consensus reached! *Mental Health, Religion & Culture, 20, 6*, 516–527.

Von Bertalanffy, L. (1950). An outline of general system theory. *British Journal for the Philosophy of Science, 1* (2), 134–165.

Von Uexküll, J. (1920). *Theoretische Biologie*. Berlin: Paetel.

Weber, A., & Varela, F. J. (2002). Life after Kant: Natural purposes and the autopoietic foundations of biological individuality. *Phenomenology and the Cognitive Sciences, 1* (2), 97–125.

Wittchen, H. U. L., Jacobi, F., Rehm, J., Gustavsson, A., Svensson, M., Jönsson, B., …, & Steinhausen, H. C. (2011). The size and burden of mental disorders and other disorders of the brain in Europe 2010. *European Neuropsychopharmacology, 21, 9*, 655–679.

Wittgenstein, L. (1958). *Philosophical Investigations* (G. E. M. Anscombe, Trans.). Oxford: Blackwell.