Psychiatry Beyond the Brain: Externalism, Mental Health, and Autistic Spectrum Disorder

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Abstract: Externalist theories hold that a comprehensive understanding of mental disorder cannot be achieved unless we attend to factors that lie outside of the head: neural explanations alone will not fully capture the complex dependencies that exist between an individual's psychiatric condition and her social, cultural, and material environment. Here, we first offer a taxonomy of ways in which the externalist viewpoint can be understood, and unpack its commitments concerning the nature and physical realization of mental disorder. Second, we apply a strongly externalist approach to the case of autistic spectrum disorder, and argue that this condition can be illuminated by appeal to the hypothesis of extended cognition. We conclude by briefly considering the significance this strongly externalist approach may have for psychiatric practice and pedagogy.

Keywords: Externalism, mental disorder, autism

Varieties of Externalism

A family of recent *externalist* approaches in the philosophy of mind argues that when attempting to explain the nature of psychological phenomena such as beliefs, desires, thoughts, emotions, and capacities of reasoning, we must attend not only to facts about the thinker's brain, but also to features of her embodiment, and to the rich and complex ways in which she is situated within a social and material environment. These approaches, which can be captured under the heading of "4E" cognition, treat the mind as something that is essentially *embodied* (a creature's mental life is structured and governed by her physiological makeup as well as her neurological properties); *embedded* (a subject's mental states unfold within a particular environmental niche, that includes various forms of material and informational scaffolding capable of supporting and enhancing her cognitive powers); *enacted* (thinking things are living things with a concerned perspective, who find and create meaning for themselves in the course of their ecological dealings with their surroundings); and/or *extended* (the material underpinnings of an individual's psychological states and processes can include resources that are physically located outside of that individual's biological boundaries). Of course, some of these "Es" have more philosophically radical implications than others, and acceptance of one does not compel acceptance of all of the others. For example, the final "E"—the extended mind hypothesis—commits its proponents to the view that minds are literally spatially distributed

across brains, bodies, and the outside world; while the view that minds are embedded holds only that environmental resources provide an important structuring context in which cognition takes place. The approaches are united, however, by the guiding thought that a comprehensive explanatory picture of the mind cannot be achieved by appeal only to facts expressed in the vocabulary of neuroscience, and that it is profitable to adopt a wider lens that recognizes that psychological properties belong to living things with embodied concerns, whose lives are conducted within highly organized social, cultural, and material settings. They are univocal in rejecting a purely internalist, neuro-centric model of the mental.

The question of whether this family of analyses can be applied fruitfully to the psychiatric domain has received comparatively little attention in the literature (but see, e.g., Cooper, 2017; Davies, 2016; De Haan, forthcoming; Drayson, 2009; Glackin, 2017; Hoffman, 2016; Krueger, 2018; Krueger & Colombetti, forthcoming; Merritt, 2013; Sneddon, 2002; Sprevak, 2011), and it is our intention in this article to lay the foundations on which such a project might be constructed, and to explore how externalist ways of thinking about mental illness and disorder[1] might reconfigure some of the existing debates in the philosophy of psychiatry. Mental illnesses, too, belong to living, embodied persons who are embedded within an environment that is replete with informational resources and technologies, complicated interpersonal dynamics, and sociocultural practices. Suppose that one were motivated to think—as we do—that explanations of mental illness pitched solely at the neurological level were apt to omit much of the complexity revealed by 4E approaches to the mind: how might this proposition be unpacked, and what are its consequences?

We begin by presenting a taxonomy of possible varieties of externalism—that is, competing ways in which the claim that mental phenomena *depend on* external, non-neural considerations might be understood. These vary from the moderate proposal that the symptoms of mental illness are especially likely to emerge when particular environmental conditions are met, to the stronger view that the material underpinnings of psychiatric

phenomena are capable of including extra-bodily constituents. Rather than defending the general thesis that *all* varieties of mental disorder can profitably be explained in externalist terms, in the second half of the article we apply the conceptual resources of externalism to the case of autistic spectrum disorder (ASD), with the aim not only of illuminating this specific condition but of showcasing the theoretical value of externalist thinking in the domain of mental disorder.

It is important to note first of all, that there are two possible explananda that an externalist approach to psychiatry might attempt to illuminate. Two ways, that is, of addressing the question of what a psychiatric condition *is*. There is, on the one hand, the explanatory task of determining the conditions under which it is intelligible and appropriate to attribute a mental illness or disorder to an individual. We can call this the *status* question: what must be true of an individual if she is to be reasonably attributed the status of having a particular psychiatric condition? In contrast, there is the question of where the material underpinnings of a mental state are to be found, and what their properties are. We can call this the *constitution* question: what is the physical basis for a person's individual psychiatric condition, if there is one?

To see the distinction between these two questions, consider briefly how they apply to a common everyday object: a passport. Here, the status question and the constitution question permit of different kinds of answer. What gives the passport its *status as a passport* is its position within a web of social and legal conventions—it is a passport in virtue of entitling the bearer to international travel. What makes up the passport—its constitution—is the card, paper, ink, and so forth from which the item is made. In this sense, our answer to the passport-status question is externalist (it appeals to facts about the context in which the object is situated, without which it would not be a passport), while the passport-constitution question is given an internalist answer (it requires no more than an appeal to the material composition of the object).

The question of what a mental illness *is* divides along equivalent lines. First, there is the issue of what makes it the case that a person is, or is not, psychiatrically healthy—the facts to which we

must appeal in justifying a diagnosis of mental illness. Second, there is the issue of how that illness is manifested or realized in the world—facts that concern physical constitution. In the taxonomy below, certain externalist approaches are more naturally construed as answers to one or other of these questions, for the case of mental disorder. Moderate versions of externalism, we will see, can concede that although environmental or social considerations bear upon our answer to the status question, the constitution of a mental illness remains strictly inside an individual's head. More radically externalist approaches, meanwhile, propose that both questions must be answered by ineliminable reference to extra-bodily factors.

Causal Externalism

The least controversial brand of externalist thinking that might be applied to psychiatric conditions, we suggest, proposes only that an agent's mental health *causally* depends on things that are located outside of her head. This is to hold simply that the events and states of affairs that an individual encounters over the course of a life can exert a range of effects upon her psychological states—for instance, how she thinks and feels about a person or situation; how she is disposed to react to stimuli of different kinds; or the way she conceives of herself and her place in the world. Causal factors influence one's psychiatric state from the outside in at least two ways—they can be responsible for the acquisition or development of a mental illness (as, e.g., in cases of post-traumatic stress disorder), and they can be responsible for the triggering of specific symptoms at a time (as, e.g., when a panic attack is brought about by a challenging social situation).

Causal claims of this sort are externalist in the sense that the explanation they offer of why a certain condition or symptom is manifested appeals to factors that lie outside of the subject's biological boundaries. But such explanations are largely agnostic in regard to both the status question and the constitution question. To say that an individual's past experience has contributed to her current mental health, or that it has led to the manifestation of symptoms, is to say little about what it *is*

for her to be mentally well or unwell, nor about the material underpinnings of her psychological condition. Causal externalism is consistent with an internalist answer to both questions; that is, it is consistent with saying that mental disorders are dysfunctions of the brain, and grounded wholly in neural properties. The only metaphysical commitments of this moderate brand of externalism are the presupposition that psychiatric conditions can be influenced causally from outside of the subject, and that these impingements are broadly linear in character, such that causes can be distinguished from the effects that they precede.

Embedded or *situated* views of mental illness align with this form of externalism, in holding that a person's psychiatric condition depends sensitively upon her environmental setting—for instance, the setting of the modern city, or the prison, or the classroom. Embedded theories of mind treat external states of affairs (such as where an individual lives; with whom she interacts; how her material habitat is structured) as explanatorily relevant to the psychological properties of an agent, without adopting the more radical view that the physical realizers of those mental features lie beyond the confines of the head. An externalist of this stripe can hold, for instance, that we can expect a greater preponderance of mental disorder under certain environmental conditions, or that there are particular contexts in which a symptomatology is likely to find expression.

Population Externalism

Second, it is possible to analyze a person's mental health in terms of that individual's relation to the community or society in which they are located, and the extent to which their psychiatric condition deviates from the norm. On a conception of this sort, a person is mentally unwell just when certain of her cognitive, affective or behavioral capacities fall short of a standard set by the wider population. A person has an anxiety disorder, a simple version of such a view would hold, just when they experience anxiety significantly more frequently, and to a significantly greater degree, than other members of their peer group (see, e.g., the biostatistical theory of disease in Boorse, 1975;

Boorse, 1977). The population against which normal performance is to be measured might be the general populace, or it might be a restricted subset thereof—for example, the population of children or adolescents, the population of drinkers or gamblers, and so forth.

An explanatory appeal to members of the population in which an individual is situated counts as an externalist solution to the status question: what makes it the case that the individual has a mental disorder is that her condition fails to align with a standard that is set by factors located outside of her head. Were that standard to change for some reason (were the pattern of symptoms exhibited by the individual to become *the norm*), this form of externalism entails that the person would no longer be mentally unwell—even if all of the internal facts about her remained the same. One way to see the significance of this is to note that population externalism thus makes mental disorder entirely a matter of *relational* properties, and so uniquely susceptible to so-called "mere Cambridge changes" (Guerrero 2010; *cf.* Geach, 1980, p. 321). That is to say, it is possible to change an individual's status without changing the individual themselves in any way, simply by making sufficient changes to the other members of the reference population. To take a toy example; if one were to eliminate all low-anxiety members of society (by execution, for example, although the mere threat might suffice to make them anxious) then high-anxiety states would become the norm; individuals previously regarded as disordered would no longer have higher-than-normal anxiety, even if their anxiety level remained unaltered, since the norm had changed around them.

Population externalism is therefore silent on the constitution question. It is to say that some pattern of symptoms should be classified as a psychiatric disorder on the grounds that the manifestations in question diverge from those exhibited by the population at large; the view need not take a stand on whether those symptoms have a distinctive physical basis, nor whether such a basis would have to be neurally realized.

Two related points about population externalism are worth noting at this point, since they further differentiate it from the social externalism considered in the next subsection. First, propo-

nents such as Boorse claim it to be *objective*; although the selection of a reference class or the threshold for statistical significance might be regarded as arbitrary, it is thereafter purely an empirically measurable matter whether an individual meets the relevant standard or not. Second, it is the statistical prevalence of the intrinsic properties of *individual members* of the reference class against which the patient's own intrinsic properties are compared; group-level or emergent features are irrelevant to this form of externalism.

Social Externalism

An alternative externalist answer to the status question—that is, the question of which criteria must be satisfied for it to be appropriate to attribute a mental illness to a person—comes in the form of social externalism. On this class of views, whether some cluster of symptoms counts as a manifestation of a particular mental illness is determined by the sort of emergent facts that lie at the level of society, and its members, conventions, and institutions, rather than of individuals.

Consider two simplified versions of this approach. According to the first, a person has a mental illness just when it is commonly accepted, within the practices and conventions of a particular society, that her symptoms characterize that illness. According to the second, it is the consensus judgment of a community of experts that determines this status: the person has the illness just when the medical profession is inclined to attribute it to her (e.g., Kukla, 2014).[2] In both cases, what matters is how a social group thinks about, conceptualizes, and diagnoses a particular psychiatric condition, where these classificatory practices may be highly contingent upon cultural and medical-historical facts concerning the society in which they are enacted. That is, the attributions of mental illness made by a society or institution need not be objectively determined, but may reflect its customs, preferences, conventions, economics, folklore, religion, and so on—and also, more perniciously, its prejudices, biases, and stigmas (e.g., the *Diagnostic and Statistical Manual of Mental Disorders*' classification of homosexuality as a mental illness until 1973).

Social externalism is present, too, in theories that hold that the attribution of psychiatric illness is a normative as well as a descriptive matter (e.g., Reznek, 1998; Glackin, 2010, 2016, 2018). Suppose, for example, that we conceive of the symptoms of a particular mental illness as lying on a continuum with ordinary psychological phenomena—say, that the subject of disordered anxiety undergoes an exaggerated form of normal anxiety, or that depression involves an inhibition or dampening of normal emotional responses. In contrast with the position of population externalism, again, what counts as "normal" here is essentially evaluative. The implication is that there is a threshold of anxiety, or a degree of emotional inhibition, that it is appropriate to pathologize, and thus to adopt as a target of treatment, intervention, and management. Identifying that threshold, whether this is carried out by the psychiatric profession, by the patient, or by society at large, involves making informed choices that have both a pragmatic and a moral dimension; choices concerning whether it is in the patient's interests to pathologize a certain suite of symptoms; choices concerning the distribution of finite medical resources and care; and so forth. Similar choices must be made in deciding whether some behavior is the result of a weak or morally defective character, rather than being the symptom of poor mental health; whether behavior is criminal or clinically disordered; *etc*. That is, the status of an individual *as psychiatrically unhealthy*, on approaches of this sort, is not to be determined simply by appeal to descriptive facts concerning her physical and behavioral symptoms. It is determined, instead, by the diagnostic and evaluative practices of a community, where privileges might be assigned to the practices of medical experts and clinicians (e.g., the harmful dysfunction analysis of Wakefield, 1992; Wakefield, 2007).

Socially externalist views need not commit to a particular answer to the constitution question; indeed, they are consistent with a range of perspectives on what the underlying nature of mental illness is. We will briefly outline three of these, to give shape to the explanatory terrain.

The first way of thinking about the diagnostic judgments of psychiatric professionals is to treat them as tracking some real, underlying facts about pathophysiology; some internal, neural features that unify common sets of symptoms whenever they are found. According to this perspective—known as the *biomedical model* of psychiatric illness—mental disorders are, at bottom, brain disorders (e.g., Insel & Quirion, 2005; but *c.f.* Engel, 1977). This strongly internalist answer to the constitution question is consistent with a social externalist approach to the issue of which sets of symptoms ought to be packaged together as the relevant objects of inquiry and intervention. Suppose that symptoms A, B, and C are classified together as marks of schizophrenia, for example, and then mapped onto some underlying neural dysfunction. The initial classification of a syndrome (which answers the status question) can vary among social contexts, even when the facts about which brain states generate those symptoms (the answer to the constitution question) do not.

Secondly, however, it is open to the social externalist to deny that the physical realization base of a mental illness is restricted to the neural. As we shall see, the final two varieties of externalism in the current taxonomy hold that—at least in certain cases—the material underpinnings of an individual's psychiatric condition can include resources that are located outside of the head. These approaches represent a shift away from the "neurocentric" thinking that characterizes the biomedical model, and instead promote the idea that psychiatric phenomena are more widely constituted. We will unpack these options in the following sections.

Third, the social externalist might adopt a view of mental illness that is anti-realist or fictionalist, and deny that we should expect to identify any particular physical realization of psychiatric phenomena. On this view, diagnostic categories do not correspond to natural kinds with a manifestation in the brain or body, and terms like 'bipolar disorder' and 'psychosis' are systematically non-referring. Instead, they can be seen as labels that are overlaid upon (potentially relatively disparate) clusters of behavioral symptoms that need not share an underlying neural basis. A radically anti-realist position is defended by Thomas Szasz (e.g., 1960, 2001), who argues that mental illness

is not physically constituted anywhere, because it is purely a social construct. It is open to the anti-realist to accept that there may be pragmatic or clinical value in retaining the use of psychiatric classification and discourse, rather than rejecting it on the grounds of its failure to pick out physical kinds.

It follows from the availability of these three alternatives that the social-externalist principle that psychiatric classification and diagnosis is affected by the sociocultural context in which it transpires does not tie its proponents down to any particular metaphysical account of what it is—if anything—that constitutes mental illness. These three answers to the constitution question are all consistent with the guiding social-externalist thought that psychiatric classification can vary across different times, cultures, and environments.

Epistemic Externalism

The discussion of Social Externalism suggests another form of externalism. The brain represents something of a "black box" as far as functional decomposition is concerned; its internal mechanisms are not directly perceptible in the way that those of the rest of the body are (Murphy & Woolfolk, 2000, pp. 247-250). So someone might suppose that we can straightforwardly discern the purpose of a bodily mechanism such as the knee, or the ear, or the heart, by simply looking at it (although this claim is not uncontroversial!). However, this kind of reverse-engineering is certainly not possible for the brain, and so we cannot recognize most neural malfunction just by observing what it is that the brain is doing.

Now, suppose that all the other externalist accounts presented here are wrong, and that the biomedical model is correct; mental illnesses are entirely constituted, and given their status as illnesses, by neural malfunctions, perhaps even lacking external causes. How can we *tell* if such malfunctions are taking place? Not, remember, by simply observing the brain and its workings. Our only clue that something is going wrong at a neural level, even if we refuse it any explanatory role, is that something is going wrong at a surface level *which we regard as a problem*; the malfunctioning

brain is producing behavior that we find inconvenient, embarrassing, disgusting, and so on. And these are inescapably external, social, judgments.

So a further sort of externalism is epistemic. Whatever disorders are like, ontologically speaking, we can only recognize them—become aware of their existence in the first place, let alone differentiate and understand them—by regarding them through the prism of their social significance. The point is not merely that neural malfunctions require external manifestation to come to our attention, but that our criteria for identifying them are inherently social and evaluative, even if we insist that the malfunctions themselves are localized and objective. And even where we do understand pretty well the neural mechanism involved in some cognitive process, it is typically because disvalued symptoms have caused us to go looking for it.

Vehicle Externalism

The *hypothesis of extended cognition* asserts that, when certain conditions are met, the physical underpinnings of an agent's mental states and processes include not only neural phenomena, but also constituents of her material environment (Clark & Chalmers, 1998; Clark, 2008). A cognitive system, on this view, is the kind of thing that need not be confined exclusively to the inside of an individual's head—it can constitutively involve a dynamic coadunation of the living organism, her brain and body, and the material and informational resources with which she is closely integrated.[3]

A standard argument for this position proceeds by first identifying the functional properties of some mental state or process, and then showing that these functional properties can be instantiated by a system whose constituents span brain, body, and world. For instance, if memory is essentially the storage and retrieval of information, to which the agent has stable and fluent access, then readily available extra-neural resources such as notebooks and smartphones can be properly thought of as physical realizers of memory. Similarly, if arithmetical reasoning is essentially a capacity to manipulate numerical symbols to reach a problem solution, then the pen and paper on which an agent performs calculations can count among

the physical realizers of mathematical cognition. This is *vehicle* or *realizer* externalism: the things out of which a mental phenomenon is constituted are not simply neurophysiological—they are also extra-bodily, technological, artefactual. Were we to take those external resources away, it would no longer be the case that the person possesses the cognitive functions in question; not simply because those resources support or enhance her cognitive powers, but because they are—literally and not just metaphorically—part of what makes them up.

It is a typical commitment of extended mind theory that cognition has an essentially representational character.[4] Beliefs, desires and so forth are in the business of representing the world as being one way or another, and cognitive processes such as thinking, reasoning, and planning are operations over these representations. This picture of mentality holds that the subject's cognitive and perceptual contact with the world is indirect, and mediated by intentional states that bear semantic properties. Vehicle externalism, then, is a thesis that concerns how such representations are realized, and which systems are capable of performing such operations. Otto's notebook, in Clark and Chalmers's classic defense of constitutive vehicle externalism, contains a representation of the location of the museum of modern art, and it forms a part of a hybrid Otto-notebook system that is capable of intelligently directing itself to that location.

The extended mind hypothesis, while controversial, has been defended for a wide domain of psychological states and processes, including emotions (Colombetti & Roberts, 2015; Carter & Czarnecki, 2016; Krueger & Szanto, 2016); character traits (Alfano & Skorburg, 2017); conscious states (Rowlands, 2015; Vold, 2015); memory (Clark & Chalmers, 1998); and knowledge (e.g., Brogaard, 2014; Carter & Czarnecki, 2016; Hetherington, 2012). Mental illnesses that can be analyzed as disorders of these varieties of mental phenomena may thus be capable of being understood—according to this radical form of externalism—as belonging to systems whose constituent parts include more than just the brain. If thoughts and experiences can have material underpinnings that span the neural, the somatic, and the environmental, then there is little reason to believe that the same will not also be true of *disordered* patterns of thought and experience (see e.g., Sprevak, 2011).[5]

According to this brand of externalism, mental states and processes can be realized, *as a matter of contingent fact*, in systems whose constituents are both internal and external to the biological agent. That is, it holds that the functional properties that define some mental phenomenon can be instantiated in a variety of ways, sometimes by purely brain-bound systems and at other times by extended systems.

Importantly for our purposes, this is not the only possible externalist answer to the constitution question. In the next section—the final element in our taxonomy of externalist lines of thinking—we consider the proposal that there are psychological phenomena that are never internally realizable, but which instead are necessarily world-involving in nature. On this family of views, there are perceptual, cognitive, and emotional states that have a dynamic, relational character—they essentially involve a complex interplay between the biological agent and her material and social surroundings.

Relational Externalism

Outside of the psychological domain, there are many activities and processes in which we partake that have an essentially relational character. Being an instance of playing the piano, for example, necessarily involves the interplay between a person and the instrument; and likewise for driving a car or using a typewriter. Some of the things we do, like dancing a tango or shaking hands, entail the involvement of more than one person at a time. Phenomena such as these are relationally defined, in that they can be specified only by reference to multiple entities—here, a person and her interaction with something external to her.

There are a number of ways in which psychological phenomena can be understood in relational terms, too. Naïve realist theories of perception, for example, hold that perceptual experiences are episodes in which unmediated sensory contact is instantiated between the subject and her surroundings (e.g., Brewer, 2008; Fish, 2009; Noë, 2004). Similarly, enactivist views treat cognition

as an activity of sense-making brought about in the course of the embodied agent's interaction with her environment (e.g., Hutto & Myin, 2014; Varela, Thompson, E., & Rosch, 1991; Ward, 2016). On these approaches, perceiving and thinking are never carried out in the head: instead, an individual's mental life is understood as relationally constituted. It comprises a suite of complex interactive phenomena that cannot be specified except by appeal to the living organism, her external habitat, and their coupled inter-dynamics. These relational views are thus strongly externalist about the physical basis of cognitive and perceptual states. Their position is that mentality is not located in, nor determined solely by, the brain. It occurs, instead, over the course of a living subject's embodied interaction with the world around her.[6]

Relational accounts of the mental thus offer a strongly externalist perspective on how an individual's psychological capacities are constituted. Again, if it is possible to understand the mental phenomena that are implicated in psychiatric illness in such relational terms, then it will be possible that psychiatric illness is not only neurophysiologically constituted. If we suppose, for example, that a mental disorder involves a disruption to the perception of affordances (as it is plausible to do for the case of utilization behavior or obsessive-compulsive disorder (de Haan, Rietveld, Stokhof, & Denys, 2013), and the perception of affordances is not a neural but a relational phenomenon, then a strongly externalist picture emerges of the condition in question.

Externalizing Autism

We now apply this taxonomy to a particular case study, that of ASD, to illustrate how the categories we have outlined might earn their explanatory keep. After a brief characterization of how the *status question* should be understood in this case, we consider *relational* and *vehicle externalism*, and promote the latter as a candidate solution to the *constitution question*. As we have seen, these are the two strongest brands of externalism on offer in that both challenge the idea that the material underpinnings of an individual's psychological condition are found entirely in the brain.

Autism: The Status Question

Recall that the status question concerns the set of conditions that must be satisfied for it to be appropriate to attribute a certain psychological state to an agent. Here, the question is that of when it is appropriate for a person to receive a diagnosis of autism, and whether and how this is to be distinguished from related categories such as social communication disorder.

ASD is generally thought to be a complex developmental disorder spanning a spectrum of social, communicative, imaginative, and behavioral abnormalities. ASD is diagnosed when a person exhibits some or all of a package of symptoms including non-verbal communicative deficits; repetitive behaviors; difficulties in adjusting actions to suit a social context; fixated interest, especially in the sensory qualities of objects; and diminished imaginative capacities (e.g., absence of pretend play in childhood; Frith, 2003; Rutter & Schopler, 1987; Stone et al., 1997). In recent years, conditions such as Asperger's and pervasive developmental disorder have been subsumed within the autistic spectrum.

A necessary condition for the diagnosis of ASD, according to the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders*, is that symptoms of these kinds "cause clinically significant impairment in social, occupational, or other important areas of functioning" (American Psychiatric Association, 2013, p. 21). A lack of a common measure of clinical significance, in combination with the requirement that a diagnosis be applied when an individual's capacities are diminished or abnormal relative to a wider population, entail that both *population externalism* and *social externalism* are at work here. Whether a person has ASD, that is, is determined by whether her community evaluates her symptomatology as causing significant impairment, relative to her peers.

Autism: The Constitution Question

We will not examine the status question further for the case of ASD, and will accept for the remainder of the article that there are at least some

uncontroversial cases in which it is appropriate to diagnose this condition. It is the *constitution question* that we turn to in this final section: what is the physical basis for autism, and is it to be found inside a person's head?

Although there is little consensus about the material underpinnings of ASD, there are currently five "big ideas" (Frith, 2003), all of which are committed to an internalist solution to the constitution question.

i. *Theory of mind* explanations argue that symptoms of ASD stem from a dysfunction of "mentalizing" modules in the brain, which impedes the individual's ability to read others' underlying emotions and intentions from their overt behavior (Baron-Cohen, 1995).
ii. *Weak central coherence theory* holds that symptoms result from neural deficits that lead to excessive focus on piecemeal details of objects, events, and contexts, coupled with a difficulty integrating these details into a meaningful whole or contextualizing *gestalts* (Frith, 2003; Happé & Frith, 2006).
iii. *Executive function theories* argue that symptoms result from a dysfunction of frontal lobe activity responsible for executive control of behavior and attention (Ozonoff, Pennington, & Rogers, 1991; Russell, 1997).
iv. The *broken mirror neuron hypothesis* states that social impairments in ASD result from a dysfunctioning mirror neuron system, which is responsible for our ability to mirror the actions and behavior of others (Ramachandran & Oberman, 2006).
v. The *social motivation hypothesis* argues that people with autism lack an inherent social drive that would lead them to exploit opportunities for developing their social competence (Chevallier, Kohls, Troiani, Brodkin, & Schultz, 2012).

Despite their differences, all five perspectives maintain that ASD is something realized entirely within a person's brain. But there are reasons to be skeptical about this neurocentric individualism. First, there are deficiencies with each of these big ideas (see, e.g., Boucher, 2012;; López, Leekam, & Arts, 2008; Mottron, 2011; Plaisted, Swettenham, & Rees, 1999; Frith, 2008). Second, each is likely on its own incapable of providing a comprehensive explanation of ASD (Gallagher & Varga, 2015; Happé & Frith, 2006). Growing evidence suggests that ASD is not a static condition determined by a single cause, but is rather a multidimensional phenomenon whose outcome is driven by the interplay of diverse factors operating at different time-scales (evolutionary, cultural, social, individual-psychological) and levels of description (biological, cognitive-behavioral, phenomenological, sociocultural) (Bolis, Balsters, Wenderoth, Becchio, & Schilbach, 2017; Kendler, Zachar, & Craver, 2011; Walter, 2013). Third, all of these big ideas show little concern for the embodied and situated nature of the individual and thus fail to give interactive factors a significant explanatory role, which weakens their scope (De Jaegher, 2013; Hobson, 2002; Schilbach, 2016). This last point is particularly important. There is now growing sensitivity to the fact that ASD is characterized by distinct ways of perceiving and moving through the world, as well as expressing and sharing emotions (Donnellan, Hill, & Leary, 2012). Externalist frameworks can help illuminate these aspects of ASD.

We are not the first to put forward an externalist approach to ASD. Hanne De Jaegher (2013) has recently characterized ASD in relational-externalist terms. For De Jaegher, autism is characterized by distinct styles of "sense-making," or particular ways of perceiving, moving, emoting, and responding to the world. Social difficulties arise when autistic ways of sense-making are not responsively integrated with the sense-making practices of people without autism. And because sense-making is always a two-way process involving various forms of interpersonal coordination, it is essentially relational: embodied, active, and behaviorally engaged interaction between multiple individuals. Approaches that characterize root causal mechanisms of ASD in purely individualistic and neurocentric terms adopt an overly narrow perspective that overlooks the roles that both subjective and interactive factors play in shaping autistic forms of sense-making.

There is much to recommend De Jaegher's relational-externalist account. In what follows, however—in the interests of further mapping the externalist terrain—we instead sketch a vehicle externalist account of autism. This account is not intended to be comprehensive; nor is it incompatible with De Jaegher's analysis. It is simply offered to draw attention to further ways externalist ap-

proaches can enrich our understanding of autism (and other psychiatric disorders) by highlighting aspects potentially overlooked by neurocentric and individualistic perspectives.

ASD and Vehicle Externalism

As far as we know, there have so far been no systematic attempts to apply vehicle externalism to ASD.[7] Recall that for vehicle externalism, some external resources become so fluently and deeply integrated into our everyday cognitive practices that we could not accomplish our cognitive goals without their ongoing input. How might this view apply to ASD?

Gallagher (2013; Gallagher & Crisafi, 2009) has recently defended a *social* form of vehicle externalism that can help to answer this question. Gallagher argues that "mental institutions"—legal systems, scientific research and experimentation, religious texts and practices, social scripts, and many other cultural practices and organizations—are (or at least can be) external vehicles of cognition. They function as what Humphreys terms "epistemic enhancers" (Humphreys, 2004). Sometimes they *extrapolate* an existing cognitive capacity, the way telescopes and microscopes bring far away or very small things into the range of visual detection, or computers increase the speed of our ability to perform mathematical calculations. Sometimes they *convert* phenomena accessible in one modality into a form accessible in another, such as sonar devices with visual displays or numerical results converted to graphical form (e.g., as in statistical analysis). And sometimes they *augment* cognition by furnishing access to novel abilities and/or features of the world that are otherwise beyond our reach.

Gallagher is primarily interested in the way mental institutions augment cognition. He argues that certain legal judgments, for example—like evaluating the legitimacy of a particular claim—are only possible when individuals engage with artefacts and practices that make up the mental institution of law. This institution provides an array of external resources (contracts, systems of rights and laws, texts, technologies, norm-governed procedures, and precedence) that enable individuals to manipulate and work through large amounts of empirical information they could not process without this external support. For Gallagher, "these cognitive practices are such that in principle they could not happen just in the head" (Gallagher, 2013, p. 7). And he concludes that, if we are prepared to say that cognition supervenes on the vehicle of Otto's notebook (Clark & Chalmers, 1998), we ought to likewise grant cognitive status to mental institutions designed specifically to augment our cognitive capacities in certain domains (Gallagher, 2013, p. 7).

This is not the place to independently motivate Gallagher's argument.[8] We are instead interested in exploring how mental institutions may offer a way to think about ASD in vehicle externalist terms. Gallagher mainly focuses on large-scale mental institutions like legal systems and research practices. But norm-governed mental institutions regulate everyday life at a more *local* level, too, within the dynamics of ordinary face-to-face engagements—and sometimes they "merely" extrapolate or convert existing capacities, in addition to augmenting them. These different dimensions of mental institutions and their transformative power speak to the multilayered complexity of our social life. More pertinent to present concerns, we suggest, is that thinking about mental institutions in local terms can help illuminate how mechanisms of autistic dysfunction may extend across both internal and external factors. Individuals with autism often lack fluent access to many local mental institutions that structure our everyday social interactions; they fail to develop the "psycho-practical know-how" (McGeer, 2001) needed to exploit the informational resources within these institutions. Accordingly, this lack of access impairs their overall social-cognitive competence—much the way that Otto is cognitively impaired without reliable access to his notebook.

To see how so, consider first how much social-cognitive work is accomplished not by in-the-head processes but rather by external practices designed specifically to make us intelligible to one another as social agents (Zawidzki, 2013). These external practices are epistemic actions (Clark, 1997; Kirsh & Maglio, 1994) that bring order to a messy and often unpredictable social world; their norm-gov-

erned character reduces the descriptive complexity of the environment and simplifies computational demands by regulating our thoughts, dispositions, and behavior in socially recognizable ways. The character of these practices and institutions varies considerably depending upon time and place. And they are comprised of different techniques and strategies (imitation, pedagogy, norm construction and enforcement, narrative practices, etc.) and take many forms: playing chess; lining up in the queue to board a train; placing our menu on the table when we are ready to order; dressing up for an important interview; taking turns in conversation; creating improvised jazz music with a group; or expressing suspicion or disapproval via a well-timed eyebrow raise.

These practices—and the mental institutions they are part of—do social-cognitive work by predictably regulating our thoughts, feelings, and actions in ways that make us easier for others to understand. Consider playing chess. To play chess is to temporarily inhabit a norm-governed institution organized via a well-structured array of rules, practices, artefacts, and behavioral expectations. While part of this institution, we need not use some complex intracranial capacity to *infer* our partner's desire to play chess and intention to do so fairly; we see it unfold directly in their playing as they continue to follow the rules, just as they see our desires and intentions in our chess-playing behavior. As chess players, we make ourselves intelligible to one another by conforming over time to the institutional practices, the rules and strategies, of playing chess (McGeer, 2015). Of course, either of us *could* fall back on our internal folk psychological resources to work out what the other is thinking and intending at any moment. But the point is that we do not have to. To use Humphreys' terminology, the local mental institution regulating this interaction converts a more difficult folk psychological task (inferentially attributing mental states) into an easier perceptual-motor task (jointly conforming our behavior to shared rules of chess)—and in so doing reduces the descriptive complexity of the environment by guiding our attention to salient bits of our partner's norm-governed behavior.

The broader point, then, is this: by habitually conforming our actions to these and other shared practices—and the larger institutions of which they are part—we let these external resources do much of the social-cognitive work for us. From this externalist perspective, institutional factors beyond the individual must be included in our explanation of social cognition. Many aspects of social understanding are done already and carried by the world, embedded in the norms and routines—the external vehicles—that regulate our interactions, and which have their social significance built into them (McGeer, 2001).[9]

ASD, EXTERNALISM, AND UNDERSTANDING OTHERS

But why characterize our engagement with mental institutions as an embodied skill—a kind of "psycho-practical know-how," as McGeer refers to it? For several reasons, all of which can help clarify how this vehicle externalist perspective can be applied to ASD.[10] First, although the acquisition of this know-how can generate propositional knowledge (e.g., folk psychology), an individual's ability to skillfully act in ways conforming to mental institutions is largely independent of the ability to *articulate* this knowledge. Young children—including prelinguistic infants lacking folk psychological competence—are responsive to culturally specific interactive norms governing early dyadic interactions (Krueger, 2013). And even if an individual possesses full propositional knowledge of institutional practices like playing chess or making office small talk, they can be more or less skilled in actually *playing* chess or *making* small talk; embodied skills come in degrees. Second, conforming to norm-governed practices like playing chess, using a microscope to gather and analyze scientific data, or engaging in cocktail party conversation involves a rich array of subsidiary competencies like visualization, imagination, higher-order pattern recognition, expectancy formation, and attunement to facial expressions and gestures. These embodied skills together shape our thought and action in institutionally compliant ways. Finally, this know-how is characterized by practice-dependent epistemic gain. The more

we develop the relevant skills through practice, correction, and conforming to the examples set by others, the more we will understand what others are doing when they, too, conform their actions to the norm-governed mental institutions we jointly inhabit.

So how does all this apply to ASD? We suggest that mental institutions—understood as external social-cognitive vehicles—are relevant to autism in both a *synchronic* and *diachronic* sense. On a moment-to-moment basis, they provide tracks along which token episodes of social interaction run and acquire their normative character. But over time, repeated engagement with mental institutions also shapes long-term habits and skills that become part of our more general repertoire of embodied social capacities (i.e., our ability to smoothly negotiate different types of social situations). Crucially, people with autism lack fluent synchronic and diachronic access to the mental institutions of those *without* autism ("neurotypicals")—and without access to this external support, they cannot realize the epistemic gain that enables neurotypicals to understand one another as fluently as they do by becoming responsive participants within the same social game.[11]

There is ample developmental evidence that children with autism fail to develop the embodied skills needed to hook up with the mental institutions of neurotypicals. Autistic individuals struggle with various aspects of social attunement: they often avoid direct gaze, have difficulty perceiving and decoding nonverbal cues found within facial expressions, gestures, and postures, and they struggle to connect and develop relationships with peers. In short, within ASD "nearly all behaviors necessary to establish and regulate social interactions seem to be impaired" (Gallese & Rochat, 2018). From an early age, many autistic symptoms—disinterest in living beings or social stimuli like voices and faces; lack of responsiveness to emotional displays; difficulties imitating others' actions; preference for inanimate objects; diminished sensitivity to biological motion; trouble adapting to rhythmic turn-taking contingencies, and so on—impede social interaction long before the child is thought to acquire a (deficient) theory of mind (Dawson, Meltzoff, Osterling, Rinaldi, & Brown, 1998;

Hobson & Lee, 1998; Jones, Carr, & Klin, 2008; Klin, Volkmar, & Sparrow, 1992; Trevarthen & Delafield-Butt, 2013). Crucially, there is also evidence that while children and adults with ASD can imitate others' goal-directed actions, they struggle recognizing and imitating the *style* of the action (Hobson & Hobson, 2008; Rochat *et al.*, 2013; Wild, Poliakoff, Jerrison, & Gowen, 2012). The same gesture or action can be performed gently or forcefully, warmly or with an air of detachment, sincerely or ironically, depending on the context (i.e., mental institution) in which it occurs. Sensitivity to the these expressive qualities of movement kinematics are important for understanding the emotions and intentions of others—and the ability to *imitate* these kinematics is a core skill needed to be responsively regulated by the different (local) mental institutions through which we move on a day-to-day basis.

In light of these considerations, there is a sense in which children and adults with ASD can be said to inhabit a different social world—understood as a collection of mental institutions—than do neurotypicals (Klin, Jones, Schultz, & Volkmar, 2003). However, to be clear, we are not suggesting that people with autism lack access to neurotypical mental institutions entirely. Clearly, they do have some degree of access to the latter. People with autism are part of our shared world and, to varying degrees, responsive to what others say and do. The point is that they have diminished *practical fluency* with these institutions, the way a non-scientist may lack practical fluency with a microscope or set of research practices and thus lack access to the cognitive benefits scientific technologies and practices confer.

However, it is important to note that in the case of ASD, this diminished access is symmetrical: people *without* autism likewise lack fluent access to the mental institutions of those *with* autism. A takeaway lesson from this externalist perspective on autism, therefore, is that characteristic social impairments are *two-way* impairments. Non-autistic persons have trouble perceiving and entering into the mental institutions of those with ASD every bit as much as they have trouble perceiving and entering into *ours* (McGeer, 2009, p. 310). An externalist approach to ASD can thus

help show how social difficulties in autistics are, in part, linked to interpersonal expectations of putatively normal expectation partners. It is telling, for instance, that high-functioning autistic people report that, despite difficulties interacting with non-autistic people, their interactions with other autistic persons are efficient and pleasurable (Schilbach, 2016). Factors such as these may have important consequences for thinking about intervention and therapeutic strategies.

Conclusion

Our primary interest in the article has been to map the landscape of externalist approaches to mental disorder: what does mean to say that a person's psychiatric condition depends not only upon her neural state but upon the wider context of her social, material, and cultural environment? Two kinds of enquiry were distinguished—first, that of determining what makes it the case that an individual has a certain psychiatric status, such as being mentally healthy or disordered; and second, that of identifying the material substrate that underpins or constitutes that status. Factors located beyond an agent's head—such as the evaluative practices of the medical profession; the rate of symptom incidence in a population; or cultural consensus—can help to settle the former question. A subject is psychologically unwell, externalist perspectives of this sort will assert, just when she has a cognitive or emotional deficit that is statistically significant within a population, for example, or that members of a collective deem to involve a substantial impairment or deviation.

The 4E approaches to the nature of the mental, we have argued, provide a profitable theoretical foundation for an externalist treatment not only of the status question, but also of the constitution question. From the 4E family of views, a comprehensive explanation of the constitutive basis of psychiatric phenomena cannot be achieved unless our attention is directed beyond the neural and towards the embodied, social, cultural, and material setting within which individual subjects reside. Moderate externalist perspectives of this sort recognize that psychiatric symptoms might be best analyzed in terms of their essentially embod-

ied character—for instance, as deficits of practical, bodily skill, know-how, and coordination—or in terms of their being constrained, scaffolded, or otherwise shaped by the environment within which the agent is situated. Going a step further, socially oriented versions of the extended mind thesis, whose emphasis lies on the ways in which complex interpersonal forms of cognitive success are achieved through synthesis with spatially distributed resources such as artefacts and tools, props, shortcuts, and shared habits and routines, provide a framework for reconceiving the material realizers of mental disorder. Symptoms of ASD, we have indicated, can involve a diminished degree of engagement and integration with those local mental and communicative institutions that enhance and augment a neurotypical person's powers of social cognition. Just as Otto's memory might be attenuated were he to suffer obstructed access to the stored contents of his notebook, so an impairment to an individual's fluency in everyday interpersonal forms of thinking might reflect a failure to successfully negotiate a distributed, participatory space of rule-governed practices, and a concomitant failure to exploit these resources' cognitive potential. It is the complex, dynamic, and tightly integrated character of this kind of negotiation, as it unfolds between persons and within a richly structured material habitat, that motivates us to resist the dyed-in-the-wool internalist's view that it is the neural state of the subject alone that matters, constitutively, to her sociocognitive capacities. ASD, according to the vehicle externalist perspective, is not—or not simply—the result of neuronal dysfunction. It arises, instead, within an intricate, temporally and spatially extended context of which the brain is only a single part, and from which it cannot readily be extricated.

Lastly, let us turn briefly to the question of why such an externalist proposal might have significance for psychiatric practice and pedagogy. A strongly externalist approach to psychiatric disorders could, for better or worse, impact diagnostic decision making, reveal new types of treatment, enhance therapist empathy, reconfigure research priorities, and even change how psychiatrically affected individuals think about themselves and their possibilities for living (Hoffman, 2016, p.

1161). We conceive of these possibilities in terms of modifications of emphasis on the part of those who think about, live with, treat, or manage mental disorder. A de-emphasis of the neural in our frameworks for understanding the psychiatric domain might encourage a de-emphasis of forms of intervention, such as the use of pharmaceuticals, that treat the brain as the principal locus of disorder. Techniques that focus, instead, upon improving awareness of one's embodied relation to the world—such as interactive music therapy or cognitive behavioral therapy (e.g., Srinivasan & Bhat, 2013; Wood et al., 2009) —may be afforded renewed credibility. Such a shift of emphasis may yield an increased recognition of the importance of a subject's psychosocial situation (her position within a web of interpersonal relations, hierarchies, and conventions, and the impact these have upon her cognitive and affective condition), and of the need to guard against potentially deleterious consequences arising from ill-considered changes to this situation. And conceiving of mental disorder as something that arises within shared and participatory social spaces, and not simply within the neural structures of individual brains, may alter our perspective on who and what bears responsibility for psychiatric symptoms, and so effect changes in the self-conception of diagnosed persons. These are suggestive possibilities, whose details remain to be unpacked in future work. But they do indicate that externalist treatments of the status and material constitution of mental disorder are of more than academic interest—they direct our attention to matters of importance that lie beyond the confines of the brain, and enable a fuller understanding of the place of psychiatric phenomena within a sociocultural and material context.

Notes

1. We recognize that the medicalized language used in making psychiatric attributions can itself be controversial and divisive. For present purposes, we will often speak of psychiatric or mental *disorder*, as a general, neutral term intended to capture a range of potentially diverse phenomena, including mental illness and ill-health, and cognitive, behavioral, and developmental dysfunction. Where, for clarity and convenience, we choose to speak instead of mental *illness*, we do not intend to mark a substantial distinction between this and other forms of disorder.

2. Compare this view to the institutional theory of art (e.g., Dickie, 1974), according to which what determines an object's status as an artwork is to be found not (only) in its intrinsic properties, nor (only) in its formal or sensory properties, but in how it is treated by members of 'the artworld'—the community of qualified experts and the institutions in which they are embedded. The same object might be an artwork in one society, time, or place, and not in another.

3. The philosophical roots of vehicle externalism include work in cybernetics and systems theory, Gibson's ecological psychology, pragmatism, and phenomenology, all of which stress the importance of dynamic agent-environment couplings for understanding cognition. However, whereas these approaches tend to focus on low-level sensorimotor processes, an important contribution of vehicle externalist approaches like the hypothesis of extended cognition is to stress the central role sociocultural, material, and institutional resources play in linking neurobiology to higher cognitive processes (Kiverstein, Farina, & Clark, 2013). We consider this idea in more detail in our discussion of "mental institutions."

4. Although not all proponents of extended cognition endorse this claim. For example, Fuchs (2018) and Gallagher (2017) are both broadly sympathetic with extended mind-style approaches but nonetheless harbor reservations about the explanatory usefulness of "mental representations." Additionally, so-called second-wave approaches to extended cognition (e.g., Sutton, 2010)—which move away from focusing on the functional parity of internal and external resources and instead focus on their mutual *complementarity* and *integration*—often downplay the need to appeal to mental representations in explaining cognition. This is a complicated issue that we cannot deal with here. Our use of vehicle externalism remains agnostic about the representational character of cognition. Although some cognitive states and processes likely do have a representational character, nothing in our discussion entails a commitment to the idea that *all* cognition is necessarily representational.

5. Sterelny (2003), for instance, raises the possibility that Otto will be susceptible to episodes of thought-insertion and -deletion if other agents interfere with his notebook contents.

6. Consider, for instance, an ecological approach to sensory perception (e.g., Gibson 1966, 1979) according to which experiences of one's surroundings involve the direct pickup of information concerning opportunities for behavioral engagement. In relational-externalist terms, this is to understand perception as an unmedi-

ated encounter with affordances, which are the salient pattern of ways in which an object or feature can be acted upon by the agent, given her own embodied powers and skills. An experience of an affordance is not something that happens inside the perceiver's head—it is the establishment of a particular relation between that subject and her surroundings. On a perspective like this, it is not the case that there are external entities that act as vehicles of a perceptual state that might have been realized by neural resources alone (contrary to the tenets of the extended mind hypothesis). Instead, the very nature of perception is reconceived as something that is essentially an embodied, active, behaviorally engaged relationship between subject and object.

7. Sneddon (2002) makes a few suggestive remarks in this direction but does not develop them in a substantive way.

8. For critical engagement with Gallagher's view, see the articles in Merritt and Varga (2013).

9. This last point helps to distinguish a vehicle externalist perspective from other approaches that might initially appear to advance similar ideas, such as Searle's (1983) discussion of "the Background" or Husserl's (1970) analysis of the "lifeworld". Despite important differences that need not concern us here, both Searle and Husserl conceive of the Background and lifeworld, respectively, as *preintentional*—the collection of skills, habits, dispositions, and culturally established practices and meanings that makes intentional states possible. A vehicle externalist approach, in contrast, stresses the active, real-time role environmental resources play in driving and constituting cognition. We discuss this idea in more detail in the following section.

10. These points are taken from McGeer (2015, pp. 261–262).

11. Sneddon gestures toward this idea when he says that, from a vehicle-externalist perspective, social difficulties are "the result, in part at least, of an (intransitive) over-reliance on oneself and (intransitive) under-reliance on sociocultural aspects of widely distributed cognitive systems" (Sneddon, 2002, p. 309).

References

Alfano, M., & Skorburg, A. (2017). The embedded and extended character hypotheses. In: J. Kiverstein (ed.), *Handbook of philosophy of the social mind.* London: Routledge.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (DSM-5®). American Psychiatric Publishing.

Baron-Cohen, S. (1995). *Mindblindness: An essay on autism and theory of mind*. Cambridge: MIT Press.

Bolis, D., Balsters, J., Wenderoth, N., Becchio, C., & Schilbach, L. (2017). Beyond autism: Introducing the dialectical misattunement hypothesis and a Bayesian account of intersubjectivity. *Psychopathology, 50* (6).

Boorse, C. (1975). On the distinction between disease and illness. *Philosophy and Public Affairs*, *5*, 49–68

Boorse, C. (1977). Health as a theoretical concept. *Philosophy of Science*, *44*, 542–573.

Boucher, J. (2012). Putting theory of mind in its place: psychological explanations of the socio-emotional-communicative impairments in autistic spectrum disorder. *Autism: The International Journal of Research and Practice*, 16(3), 226–246.

Brewer, B. (2008). How to account for illusion? In: A. Haddock & F. Macpherson (eds.), *Disjunctivism: Perception, action, knowledge* (pp. 168–179). Oxford: Oxford University Press.

Brogaard, B. (2014). A partial defense of extended knowledge. *Philosophical Issues, 24* (1), 39–62.

Carter, J. A., & Czarnecki, B. (2016). Extended knowledge-how. *Erkenntnis, 81* (2), 259–273.

Chevallier, C., Kohls, G., Troiani, V., Brodkin, E. S., & Schultz, R. T. (2012). The social motivation theory of autism. *Trends in Cognitive Sciences, 16* (4), 231–239.

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

Clark, A. (2008). *Supersizing the mind: Embodiment, action, and cognitive extension.* Oxford: Oxford University Press.

Clark, A. (1997). *Being there: Putting brain, body and world together again.* Cambridge: MIT Press.

Colombetti, G., & Roberts, T. (2015). Extending the extended mind: the case for extended affectivity. *Philosophical Studies*, 172(5), 1243–1263.

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.

Davies, W. (2016). Externalist Psychiatry. *Analysis, 76* (3), 290–296.

Dawson, G., Meltzoff, A. N., Osterling, J., Rinaldi, J., & Brown, E. (1998). Children with autism fail to orient to naturally occurring social stimuli. *Journal of Autism and Developmental Disorders, 28* (6), 479–485.

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

De Haan, S.E., Rietveld, E., Stokhof, M., & Denys, D. (2013). The phenomenology of Deep Brain Stimulation-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* (15), 1–19.

Dickie, G. (1974). What is art? An institutional analysis. In: G. Dickie (ed.), *Art and the aesthetic: An institutional analysis*. Ithaca, NY: Cornell University Press.

Donnellan, A. M., Hill, D. A., & Leary, M. R. (2012). Rethinking autism: Implications of sensory and movement differences for understanding and support. *Frontiers in Integrative Neuroscience, 6* (124), 1–11.

Drayson, Z. (2009). Embodied Cognitive Science and its Implications for Psychopathology. *Philosophy, Psychiatry, and Psychology, 16*(4), 329–340.

Engel, G. L. (1977). The need for a new medical model: A challenge for biomedicine. *Science, 196* (4286), 129–136

Fish, W. (2009). *Perception, hallucination, and illusion*. New York: Oxford University Press.

Frith, U. (2003). *Autism: Explaining the enigma*. New York: Wiley-Blackwell.

Frith, U. (2008). *Autism: A very short introduction*. Oxford: Oxford University Press.

Fuchs, T. (2018). *Ecology of the brain: The phenomenology and biology of the embodied mind*. Oxford: Oxford University Press.

Gallagher, S. (2013). The socially extended mind. *Cognitive Systems Research, 25–26*, 4–12.

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

Gallagher, S., & Crisafi, A. (2009). Mental institutions. *Topoi. An International Review of Philosophy, 28* (1), 45–51.

Gallagher, S., & Varga, S. (01/2015). Conceptual issues in autism spectrum disorders. *Current Opinion in Psychiatry, 1*.

Gallese, V., & Rochat, M. J. (2018). Forms of vitality: Their neural bases, their role in social cognition, and the case of autism spectrum disorder. *Psychoanalytic Inquiry, 38* (2), 154–164.

Geach, P. (1980). *Logic matters*. Berkeley: University of California Press.

Gibson, J. J. (1966). *The senses considered as perceptual systems*. Boston: Houghton Mifflin.

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

Glackin, S. N. (2010). Tolerance and illness: The politics of medical and psychiatric classification. *Journal of Medicine and Philosophy, 35* (4), 449–465.

Glackin, S. N. (2016). Three Aristotelian accounts of disease and disability. *Journal of Applied Philosophy, 33* (3), 311–323.

Glackin, S. N. (2017). Individualism and the medical: What about somatic externalism? *Analysis*, 77(2), 287–293.

Glackin, S. (2018). Grounded Disease: Constructing the Social from the Biological in Medicine. *Philosophical Quarterly*, 69(275), 258–276.Guerrero, J. D. (2010). On a naturalist theory of health: A critique. *Studies in the History and Philosophy of Biological and Biomedical Sciences, 41*, 272–278.

Happé, F., & Frith, U. (2006). The weak coherence account: Detail-focused cognitive style in autism spectrum disorders. *Journal of Autism and Developmental Disorders, 36* (1), 5–25.

Hetherington, S. C. (2012). The extended knower. *Philosophical Explorations, 15*, 207–218.

Hobson, P. (2002). *The cradle of thought: Exploring the origins of thinking*. London: MacMillan.

Hobson, P., & Lee, A. (1998). Hello and goodbye: A study of social engagement in autism. *Journal of Autism and Developmental Disorders, 28* (2), 117–127.

Hobson, R. P., & Hobson, J. A. (2008). Dissociable aspects of imitation: A study in autism. *Journal of Experimental Child Psychology, 101* (3), 170–185.

Hoffman, G.A. (2016). Out of Our Skulls: How the Extended Mind Thesis Can Extend Psychiatry. *Philosophical Psychology, 29*(8), 1160–1174.

Humphreys, P. (2004). *Extending ourselves: computational science, empiricism, and scientific method*. Oxford: Oxford University Press.

Husserl, E. (1970). *The crisis of European sciences and transcendental philosophy: An introduction to phenomenological philosophy*. (D. Carr, Trans.). Evanston, IL: Northwestern University Press.

Hutto, D. D., & Myin, E. (2012). *Radicalizing enactivism: Basic minds without content*. Cambridge, MA: MIT Press.

Insel, T. R., & Quirion, R. (2005). Psychiatry as a clinical neuroscience discipline. *JAMA: The Journal of the American Medical Association*, 294(17), 2221–2224.

Jones, W., Carr, K., & Klin, A. (2008). Absence of preferential looking to the eyes of approaching adults predicts level of social disability in 2-year-old toddlers with autism spectrum disorder. *Archives of General Psychiatry, 65* (8), 946–954.

Kendler, K. S., Zachar, P., & Craver, C. (2011). What kinds of things are psychiatric disorders? *Psychological Medicine, 41* (6), 1143–1150.

Kirsh, D., & Maglio, P. (1994). On distinguishing epistemic from pragmatic action. *Cognitive Science, 18* (4), 513–549.

Kiverstein, J., Farina, M., & Clark, A. (2013). *The extended mind thesis*. Oxford Bibliographies Online. Oxford University Press. Available from: www.oxfordbibliographies.com/view/document/obo-9780195396577/obo-9780195396577–0099.xml. Accessed 27 June 2019.

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.

Klin, A., Volkmar, F. R., & Sparrow, S. S. (1992). Autistic social dysfunction: Some limitations of the theory of mind hypothesis. *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 33* (5), 861–876.

Krueger, J. (2013). Ontogenesis of the socially extended mind. *Cognitive Systems Research, 25–26,* 40–46.

Krueger, J. (2018). Schizophrenia and the scaffolded self. *Topoi. An International Review of Philosophy.* Advance online publication. doi: 10.1007/s11245–018–9547–3.

Krueger, J., & Colombetti, G. (2018). Affective affordances and psychopathology. *Discipline Filosofiche,* Special Issue: "Philosophical Perspectives on Affectivity and Psychopathology," 18(2), 221–247.

Krueger, J., & Szanto, T. (2016). Extended emotions. *Philosophy Compass, 11* (12), 863–878.

Kukla, R. (2014). Medicalization, 'normal function', and the definition of health. In J. D. Arras, E. Fenton, & R. Kukla (eds.), *The Routledge companion to bioethics.* London: Routledge.

López, B., Leekam, S. R., & Arts, G. R. J. (2008). How central is central coherence? Preliminary evidence on the link between conceptual and perceptual processing in children with autism. *Autism: The International Journal of Research and Practice, 12* (2), 159–171.

McGeer, V. (2001). Psycho-practice, psycho-theory and the contrastive case of autism. How practices of mind become second-nature. *Journal of Consciousness Studies, 8* (5–6), 109–132.

McGeer, V. (2009). The skill of perceiving persons. *The Modern Schoolman, LXXXVI,* 289–318.

McGeer, V. (2015). Mind-making practices: The social infrastructure of self-knowing agency and responsibility. *Philosophical Explorations: An International Journal for the Philosophy of Mind and Action, 18* (2), 259–281.

Merritt, M. (2013). Instituting impairment: Extended cognition and the construction of female sexual dysfunction. *Cognitive Systems Research, 25–26,* 47–53.

Merritt, M., & Varga, S. (eds.). (2013). Socially extended cognition. *Cognitive Systems Research, 25–26,* 1–72.

Mottron, L. (2011). Changing perceptions: The power of autism. *Nature, 479* (7371), 33–35.

Murphy, D., & Woolfolk, R. L. (2000). The harmful dysfunction analysis of mental disorder. *Philosophy, Psychiatry, & Psychology, 7* (4), 241–252.

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

Ozonoff, S., Pennington, B. F., & Rogers, S. J. (1991). Executive function deficits in high-functioning au-

tistic individuals: Relationship to theory of mind. *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 32* (7), 1081–1105.

Plaisted, K., Swettenham, J., & Rees, L. (1999). Children with autism show local precedence in a divided attention task and global precedence in a selective attention task. *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 40* (5), 733–742.

Ramachandran, V. S., & Oberman, L. M. (2006). Broken mirrors: A theory of autism. *Scientific American, 295* (5), 62–69.

Reznek, L. (1998). On the epistemology of mental illness. *History and Philosophy of the Life Sciences, 20* (2), 215–232.

Rochat, M. J., Veroni, V., Bruschweiler-Stern, N., Pieraccini, C., Bonnet-Brilhault, F., Barthélémy, … D. N., Rizzolatti, G. (2013). Impaired vitality form recognition in autism. *Neuropsychologia, 51* (10), 1918–1924.

Rowlands, M. (2015). Consciousness unbound. *Journal of Consciousness Studies, 22* (3–4), 34–51.

Russell, J. (1997). *Autism as an executive disorder.* Oxford: Oxford University Press.

Rutter, M., & Schopler, E. (1987). Autism and pervasive developmental disorders: Concepts and diagnostic issues. *Journal of Autism and Developmental Disorders, 17* (2), 159–186.

Schilbach, L. (2016). Towards a second-person neuropsychiatry. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences, 371* (1686), 20150081.

Searle, J. R. (1983). *Intentionality: An essay in the philosophy of mind.* Cambridge: Cambridge University Press.

Sneddon, A. (2002). Towards externalist psychopathology. *Philosophical Psychology, 15* (3), 297–216.

Sprevak, M. (2011). Neural sufficiency, reductionism, and cognitive neuropsychiatry. *Philosophy, Psychiatry, & Psychology, 18* (4), 339–344.

Srinivasan, S., & Bhat, A. (2013). A review of "music and movement" therapies for children with autism: Embodied interventions for multisystem development. *Frontiers in Integrative Neuroscience, 7* (22), 22.

Sterelny, K. (2003) *Thought in a hostile world: The evolution of human cognition.* Oxford: Blackwell.

Stone, W. L., Ousley, O. Y., Yoder, P. J., Hogan, K. L., & Hepburn, S. L. (1997). Nonverbal communication in two- and three-year-old children with autism. *Journal of Autism and Developmental Disorders, 27* (6), 677–696.

Sutton, J. (2010). Exograms and Interdisciplinarity: History, the extended mind, and the civilizing process. In R. Menary (ed.), *The extended mind* (pp. 189–225). Cambridge: MIT Press.

Szasz, T. (1960) The myth of mental illness. *American Psychologist, 15*, 113–118.

Szasz, T. (2001) *Pharmacracy: Medicine and politics in America*. Westport, CT: Praeger.

Trevarthen, C., & Delafield-Butt, J. T. (2013). Autism as a developmental disorder in intentional movement and affective engagement. *Frontiers in Integrative Neuroscience, 7*, 49.

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

Vold, K. (2015). The parity argument for extended consciousness. *Journal of Consciousness Studies, 22* (3–4), 16–33.

Wakefield, J. C. (1992). The concept of mental disorder: On the boundary between biological facts and social values. *American Psychologist, 47*, 373–388.

Wakefield, J. C. (2007). The concept of mental disorder: Diagnostic implications of the harmful dysfunction analysis. *World Psychiatry, 6*, 149–155.

Walter, H. (2013). The third wave of biological psychiatry. *Frontiers in Psychology, 4* (582), 1–8.

Ward, D. (2016). Achieving transparency: An argument for enactivism. *Philosophy and Phenomenological Research, 93* (3), 650–680.

Wild, K. S., Poliakoff, E., Jerrison, A., & Gowen, E. (2012). Goal-directed and goal-less imitation in autism spectrum disorder. *Journal of Autism and Developmental Disorders, 42* (8), 1739–1749.

Wood, J. J., Drahota, A., Sze, K., Har, K., Chiu, A., & Langer, D. A. (2009). Cognitive behavioral therapy for anxiety in children with autism spectrum disorders: A randomized, controlled trial. *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 50* (3), 224–234.

Zawidzki, T. W. (2013). *Mindshaping: A new framework for understanding human social cognition*. Cambridge: MIT Press.