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Investigating Contrasting Portrayals of the Embodiment of Mental Disorder

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Abstract

Public conversation about biological contributors to mental disorder often centers on whether the problem is "biological or not." In this paper, we propose moving beyond this bifurcation to a very different question: *how exactly* are these problems understood to be biological? Specifically, we consider four issues around which different interpretations of the body's relationship to mental disorder exist: 1. *The body's relationship to day-to-day action*; 2. *The extent to which the body is changeable*; 3. *The body's relationship to context*; 4. *The degree to which states of the body directly cause mental disorder*. Drawing on the work of Merleau-Ponty and other phenomenologists, we examine different responses to these questions and associated implications for how mental health treatment and recovery come to be experienced. Finally, we consider broader questions these patterns raise, including why certain portrayals of the brain dominate public attention and how to foster more deliberation in this regard.

Keywords: Neuroplasticity; embodiment; Merleau-Ponty; discourse.

Narrating the Brain: Investigating Contrasting Portrayals of the Embodiment of Mental Disorder

Before I had my first depression, I believed that depression was a bunch of crap, you know, “pull yourself up...quit feeling sorry for yourself, go into a damn cancer ward for kids and you’ll see something to be depressed about....what the hell do you have to be depressed about?” (12)¹

A common experience for those facing severe mental disorder is being encouraged by well-meaning friends or family to “just choose” to feel differently: to be happier, to be less anxious, to pay attention, to just get over it, and so on. One young woman facing anorexia spoke of a family member urging, “Just eat! You know how important it is to take care of your body, don’t you?” (20) Another woman who had struggled with depression said, “It’s hard for family and friends to understand that you are really, really, *really* not doing this intentionally” (16). Over time, such doubts can be internalized by those facing mental disorder: “I would always say to myself ‘I’m a smart guy, why can’t I control this [depression]? . . . I’m an intelligent person . . . I take care of myself: why can’t I handle this? I should be able to!’” (10).

Among other things, such attitudes reflect one reason why ongoing research into the biology of mental disorder is crucial. In recent decades, neuroscience and other physiological research approaches have begun to document how the body can arrive at a point where basic human capacity and choice (to think, feel, or live well) can be constrained and limited in profound ways. Many of these findings are validating and reassuring to those experiencing debilitating disorders—so much so that they often become shared with family and friends in overly simplistic ways such as, “see, what I’m facing *is biological!*” Information campaigns by patient advocacy organizations have likewise prioritized biological contributors to mental illness—in part, to reduce stigma around its diagnosis and treatment.

At the same time, those with critical concerns or questions about how exactly biology is related to mental disorder are sometimes taken to be denying any real role for the body in occasioning mental disorder at all – being seen, perhaps, as advocating for “environmental” or “lifestyle” factors as exclusive explanations for such problems. The resulting national conversation has, thus, often centered on the dichotomy of *whether* these kinds of problems are fundamentally biological in nature (or not). Within such a framework, conversants are forced into one of two camps – e.g., nature or nurture, mind or body, environment or genes, etc. Among the many philosophical problems with this sort of biological/environmental bifurcation, this dichotomy has been critiqued for encouraging over-simplified and reductive explanations for an otherwise complex interplay between biology and environment (e.g., see Bell, 2002; Murphy & Brown, 2007; Slife & Williams, 1995; Tallis, 2011). Indeed, public and professional discourse has become replete with mention of certain disorders being “biologically-based,” while others are characterized as being “more environmental” in nature (see, e.g., Pennington, 2002). As this happens, more nuanced possibilities and distinctions are potentially obscured and minimized, resulting in an overall reduction in the level of sophistication of communication and inquiry about mental disorders.

Given these concerns, we would suggest that whether a given mental disorder is fundamentally

¹ Throughout the manuscript, first-person quotations are referenced according to the following system: Interview comments from adults who have faced depression are identified by numerical tags ranging from 1 to 20 (see Hess, 2009). Excerpts from interviews from adolescent girls facing serious mental disorder and their parents are identified by numerical tags from 1 to 180 *and* markers indicating the participant role: mother (m), father (f), or daughter (d) (see Hess, Bjorklund, Preece & Draper, 2013). [In order to keep the submission anonymous, these two source references (here and on page 6) will be added following review].

biological or environmental is perhaps not the central question at issue in better understanding the nature and phenomenological meaning of mental disorders. After all, even casual observation of day-to-day experience confirms that all human experiences are biological in *some way* – i.e., everything that we do, we do in and through our bodies – be it eating dinner, driving a car, watching television, arguing with a neighbor, taking a nap, or thinking through a complex philosophical problem. Transcendent religious and meditative practices are now acknowledged to involve the circuitry of the brain in various, profound ways as well (Beauregard & O’Leary, 2007; Joseph, et al., 2003). At the same time, it is also quite clear that human experiences are not *solely* biological in nature. Just as all human action intimately involves biological processes and correlates, these same actions are also inherently embedded and “emplaced” within surrounding social and physical contexts (see, e.g., Feld & Basso, 1997; Goldstein, 1995). Thus, to argue that an emotional or behavioral problem – or, for that matter, any meaningful human experience – is “biological” or “environmental” seems, once again, to simultaneously oversimplify and overcomplicate the question—running the risk of obscuring other questions worth discussing.

Rather than public and professional discussion pivoting around *whether or not* various mental disorders are “biological,” another question merits additional attention, namely: precisely *how* a particular condition is biological and *how exactly* the body relates to different experiences of mental, social or emotional distress. By shifting attention to this set of distinctions, a richer public and professional discussion may be possible—one that prioritizes meaningful differences in how the biology of conditions like depression, anxiety, eating disorder or inattentiveness is being interpreted, framed and understood. While highlighting some lesser-known discoveries of modern neuropsychology and genetics, this discussion may further clarify continuing misconceptions regarding the role of biology in serious mental, emotional and behavioral disorder.

In what follows, we examine what it might mean to re-orient public and professional attention in precisely this direction. Central to the inquiry are contributions from various thinkers in the phenomenological tradition, both in philosophy and psychology, whose work offers a conceptual frame for the systematic reconsideration of the meaning of human embodiment and experience (pathological and otherwise).² By “embodiment” we are referring to those myriad ways in which psychological conditions or events are understood to occur within the material context of a body, wherein the body provides an important and inescapable horizon enveloping psychological and social life (Merleau-Ponty, 1989/1962; see also, Varela, Thompson, & Rosch, 1991 and Welton, 1999). In order to focus our analysis, we have elected to explore the way in which embodiment is articulated – in both the cultural and professional spheres – in the context of one of the more pervasive mental disorders: depression. In a few cases where illustrations from other conditions are especially helpful (e.g., eating disorders, ADHD), they are also provided.

As a way to break down the complex discourse on this subject, we first consider four key issues: 1. *The body’s relationship to day-to-day action*; 2. *To what extent the brain and body are changeable*; 3. *The body’s relationship to environment and context*; and 4. *The degree to which states of the body cause mental disorder*. Across each of these questions, diverging stances and interpretations are reviewed, alongside associated conceptual issues.³ Sources for this inquiry will include scientific, theoretical, and practitioner accounts, as well as material drawn from mental health advocacy organizations, popular

² As viable alternatives to both essentialist realism and anti-realist relativism, both phenomenological and hermeneutic approaches have become increasingly popular in psychology (see, e.g., Ashworth & Chung, 2010; Martin & Sugarman, 2001; Slife, Reber, & Richardson, 2005), including in their offering more nuanced characterizations of mental disorder and its treatment (e.g., McCann & Clark, 2004; Rohde, 1996; Schmidt-Degenhard & Feldmann, 2003).

³ The philosophical grounding for this inquiry is Charles Taylor’s emphasis on the need to examine “perspicuous contrasts” as part of human science, alongside recognition of the overall power of language to partially constitute human experience (Taylor, 2002).

news-outlets and marketing campaigns. This diversity of sources offers a rich sampling of the overall discourse on the embodiment of depression. It is the voices of patients and clients, however, which constitute our primary source--specifically, firsthand quotations from original interview studies with adults who have faced depression (Hess, 2009) and the parents of adolescent girls facing serious emotional and behavioral problems (Hess, et al., 2013)⁴. After exploring some of the contrasting interpretive frames advanced by those trying to understand the nature of mental disorders in this way, we then identify some of the concrete treatment and recovery implications that follow from these varied viewpoints.

Interpreting the Brain and Body: Key Issues

While distinct in important ways, the following four issues have related and overlapping roles in shaping contemporary cultural and professional discourse about serious mental and emotional disorder.

1. *The body's relationship to day-to-day action.*

Two unique viewpoints are apparent in considering how exactly the body is linked to moment by moment action and lived experience.

Body as entity: Most commonly, the body is understood to be a distinct entity in some fundamental way *separable* from the meaningful context of everyday choices, actions and relationships. This reflects what the French phenomenologist, Maurice Merleau-Ponty (1989/1962), referred to as the “body as object” or the “objective body” (see pp. 90-97). The roots of this view can be found in Cartesian dualism, wherein the mind and the body are regarded as two parallel yet distinct entities. Compared with the mind or *cogito* seen as the seat of reason and free will (characterized by its freedom, creativity, intentionality, innate ideas and rational capacities), the body is portrayed as essentially a machine – an extremely complex clockwork mechanism whose actions are primarily governed by natural laws and guided by reflex (Bennett & Hacker, 2003). In a famous passage of the *Meditations*, Descartes (2008/1641) likens the body and its operations to those of a clock that is either poorly made and malfunctioning or well-made and properly functioning. In another essay, he describes the body as “nothing but a statue or machine made of earth,” but one that is capable of certain movements in much the same way that “clocks, artificial fountains, mills, and other such machines . . . have the power to move of their own accord in many different ways” (1985, p. 99).

As neuroscientific accounts of the mind and brain have increased in popularity in recent decades, these older Cartesian distinctions between mind and body have begun to fall out of favor, both within the scientific community itself and among the general public (see, e.g., Damasio, 1994). Even so, the emphasis on body as object has nonetheless been retained. Rather than a clock, the brain is now characterized as a sort of computer that contains complex hardware and wiring programmed to generate a variety of behaviors, sentiments, and thoughts (see, e.g., Tancredi, 2005). From this vantage point, physiological processes possess a seeming automaticity and machine-like independence. And like a computer, the circuitry of this “meat machine” (Marvin Minsky, cited in Clark, 2000) may occasionally break down, malfunction, or simply be defective. One parent, for instance, remarked that “some of our daughter’s issues have more to do with hardwiring than with behavior . . . there are some neurological issues [there]” (166f).

Rather than highlighting two distinct substances, such comments reflect a more strictly materialist monism, wherein attention is collapsed onto the physical – so much so that discussion of

⁴ These references have been removed to comply with your policies on blind review.

intentions, desires, reasoning and other psychological phenomena often now center on the structures and processes of the body. It is, for example, not uncommon to hear talk of how “the brain manages to confront and deliberate” (Churchland, 2007, p. 181), that “neurons in the brain communicate with one another” (Thompson, 2000, p. 119), that neurons “know a great deal” (Gazzaniga, 2005, p. 93), and that “the body makes sure the brain has multiple ways to become aware” (Herbert, 2007, p. 252). Likewise, we are told that “the brain makes many decisions” (Gazzaniga, 2005, p. 95), that it “tells lies” (Frith, 2007, p. 29), that it seeks to make “the best interpretation it can according to its previous experience” (Crick, 1995, p. 30), that the brain “teaches itself to learn” (Andreasen, 2001, p. 47), “learns mathematics” (Souza, 2008), and, perhaps most impressively, that “neurons present arguments to the brain based on the specific features that they detect, arguments on which the brain constructs its hypotheses of perception” (Blakemore, 1977, p. 91).

This same tendency to see the body (or brain) as distinct in some important way from the self, and to concomitantly endow it with certain psychological capacities, is also evident in the way that depression survivors often speak of their body in the third-person. For example:

My body reached a point that it had had it . . . but when I take the medication . . . my body kind of goes 'okay' . . . and then I'm okay. (4)

You get – your body gets to a point, I guess, that it just can't handle any more – or at least mine did Something goes off . . . sometimes I feel like my body just gets so depressed, it just can't handle it. (9)

In these ways, the body (and brain) are not only assumed to be a distinct entity unto itself; they are increasingly thought to possess those very psychological features and capacities once seen to pertain only to the subjective realm or the mind.⁵

Body as lived: In contrast to seeing the brain/body as an objective and machine-like entity, another, more hermeneutic-phenomenological view depicts human physiology as lived: an embodiment manifest in our everyday “being-in-the-world” (Heidegger, 1962).⁶ In contrast to traditional, Cartesian-inspired conceptions of the body as fundamentally an object, a new view of the body began to emerge in what Merleau-Ponty (1989/1962) called “embodiment,” the “lived body,” or the “phenomenal body.” As Merleau-Ponty (1989/1962) demonstrates in his chief philosophical work, *The Phenomenology of Perception*, the body is the basic medium through which we are in the world--constituting a fundamental “existential condition” and “intersubjective ground” for human experience. As one of Merleau-Ponty's foremost commentators, Gary Madison (1981) explains:

I am a subject only by means of the many unbreakable bonds which tie my consciousness and my body together; I am an embodied subject only by being in a direct mutual relation with the world; and I am in the world only through my co-existence with others who, themselves, are also

⁵ This sort of thinking reflects what Bennett and Hacker (2003) identify as the “mereological fallacy” (pp. 68-107). That is, the “mistake of ascribing to the constituent *parts* of an animal attributes that logically apply only to the *whole* animal. . . .” (p. 73). Other scholars have argued that sort of explanatory tactic amounts to a case of anthropomorphizing the brain (see, e.g., Tallis, 2007). A common response to this sort of critique is to claim that the neuroscientist is merely relying on metaphors and comparative analogies as a means of more easily conveying deeper, more complex technical insights. As such, then, such accounts are not meant to be taken literally, but only figuratively. However, as Bennett and Hacker (2003) demonstrate conclusively, this response is ultimately unconvincing and fails to afford a viable escape from such criticisms (see, in particular, pp. 74-81).

⁶ Human being, Heidegger (1962) taught, is always already “under way” in a world of shared meanings, social relationships, and historical and physical contexts. To be a person at all is, for Heidegger, first and foremost to be “about something,” fully engaged cognitively, behaviorally, emotionally, morally, and physically in a world of vibrant concerns and projects.

so many beings in the world. Inversely, the other exists for me only because I am directly linked to the world by a body which is inseparable from my existence. (p. 22)

In other words, we are as Heidegger (1962) wrote “always already” situated beings, simultaneously enmeshed in social, physical, temporal, and spatial fields of various relationships and meanings. Just as human action is recognized as always occurring in the context of an inescapable and ever-present biological reality, embodiment is also not in any meaningful way separable from the social, moral, cultural, and historical contexts in which all human actions are inherently embedded. This “lived-body” is thus understood as a fundamental dimension of our existence, “always already” functioning as the horizon within which life and human development unfolds.

This perspective suggests that the body is more than a mechanical object, governed by natural forces and driven by reflexive responses. It is through the body that we possess an intimate familiarity and engagement with the world long before undertaking such abstracting activities as scholarly reflection or empirical objectification, long before the body is reflectively conceptualized as a mechanical, anatomical object, and long before speculation begins as to the possible role that a given component piece of that object (genes, neurons, hormones, etc.) might play in that object's functioning. As Matthews (2004), commenting on Merleau-Ponty, points out:

Except in certain contexts, we experience living human bodies, our own and those of other people, not as bits of machinery, but as the expression of a human person and his or her mode of being in the world" (p. 194).

Merleau-Ponty's concept of “bodily being-in-the-world” (see, e.g., Csordas, 1995, p. 143), then, encourages us to regard the body not just as “*some* body, some particular physiological entity, but *my* (or your) body as I (or you) experience it (Audi, 1999, p. 258). “At the same time,” Matthews (2004) goes on to note, “the concept of the ‘body-subject’ implies that a human person is an essentially *embodied* being, who can interact with and find significance in his or her world only because of the structures of the human body” (p. 194). In this way, such an approach no longer requires that human behavior “*either* be ‘understood’ in terms of the agent’s intentions *or* be ‘causally explained’ in terms of the neurological or other physical processes which it involves” (Matthews, 2004, p. 194). In contrast to the traditional view of the mechanical “body in itself,” then, the lived-body is both the site and the source of our intentional being-in-the-world as we engage and are engaged by the world in all of our projects: the necessary condition or grounds for the undertaking of any actions whatsoever (reflective or otherwise).⁷

2. *The extent of changeability in the brain and body.*

Next, we turn to the ongoing evolution in theory and findings regarding the relative changeability of both the brain and the larger body proper (see, e.g., Raskin, 2011; Schwartz & Begley,

⁷ “Consciousness,” Merleau-Ponty (1989/1962) famously wrote, “is in the first place not a matter of ‘I think that’ but of ‘I can’” (p. 159). For example, one builds up a “lived familiarity with the *hands as instruments of grasping and pointing*, before acquiring the knowledge that this is a hand or that the hand has a muscle called the ‘palmar brevis’ and a bone called the ‘trapezium’” (Moss, 1989, p. 66; italics in the original). Accordingly, Merleau-Ponty (1989/1962) argues that consciousness is more fruitfully conceptualized as: being-toward-the-thing through the intermediary of the body. A movement is learned when the body has understood it, that is when it has incorporated it into its ‘world,’ and to move one’s body is to aim at things through it; it is to allow oneself to respond to their call, which is made upon it independently of any representation. Motility, then, is not, as it were, a handmaid of consciousness, transporting the body to that point in space of which we have formed a representation beforehand. In order that we may be able to move our body towards an object, the object must first exist for it, our body must not belong to the realm of the ‘in-itself.’” (pp. 160-161).

2002) – a notion that, compared to the other assumptions, lends itself more readily to empirical examination.

Fixed and static physiological contributors. The prevailing view of physiological contributors to mental disorder was for a long time that the body and brain are largely static and unchanging. From genetic influences to particular chemical levels in the brain, human physiology has often been assumed (both by professionals and by the lay public) to be fairly fixed and constant. For example, when asked “how do you define depression?” one interview participant responded, “It’s that little glitch in my brain that’s not producing the chemical that lets me be happy and content” (5). Speaking of his daughter’s emotional struggles, one parent said, “the biochemistry just doesn’t work like it’s supposed to” (28f).

In addition to brain functioning being seen as defective, this defect is usually assumed to be relatively stable and constant. The belief in brain permanency can be traced back to early neuroanatomy researchers, such as Cajal’s influential 1913 treatise: “In adult centres the nerve paths are something fixed, ended, immutable. Everything may die, nothing may be regenerated” (1928, p. 750). It has been general knowledge, of course, that meaningful neurological changes occur during the development of children and adolescents. The assumption over the years, however, was that as individuals matured into their adult years, their brains became set and fixed in ways that were more or less stable for the rest of their lives. Imbalances of neurotransmitters (“chemical imbalances”), in particular, have and continue to be emphasized as permanent deficiencies that, without external intervention, are likely to remain largely constant throughout life (Leo & Lacasse, 2008).

Other areas of the body have similarly been viewed as fixed. For example, until recently, the gene has typically been thought of as a sort of immutable blueprint that directs the unfolding of life in a fairly set and unilateral way (Marcus, 2004). Whether due to unchanging deficiencies in one’s genetics or brain, mental disorder itself has thus been often presumed to be similarly permanent in nature. This static conceptual picture has been further codified by the near universal use of categorical diagnostic systems that assign discrete, fixed labels to mental disorders implying some degree of inherent stability to the conditions (Widiger & Simpson, 2005; see also Jacobs & Cohen, 2003).

Malleable and dynamic physiological contributors. More recently, however, neuroscientists have discovered and documented the degree to which the *mature, adult brain* appears to change – often dramatically – over time, a phenomena known as neuroplasticity (Arbib & Amari, 2003). “Plastic” here refers to the general malleability of brain networks or “the ability of neurons to forge new connections, to blaze new paths through the cortex, even to assume new roles . . . [signifying a] rewiring of the brain” (Schwartz & Begley, 2002, p. 15). This capacity to change reflects what one researcher calls “the adaptable brain” (Levy-Reiner, 1999). Such ongoing adaptations and changes may occur in response to a wide range of stimuli and experiences. Studies have confirmed that neural network growth, for instance, when individuals learn a language (Osterhout et al., 2008), participate in cognitive-behavioral therapy (Goldapple, et al., 2004) and engage in meditation practice (Garland & Howard, 2009; Lutz, Brefczynski-Lewis, Johnstone & Davidson, 2008). Other changes occur for negative events, such as car accidents or child abuse (Teicher et al., 2003). As Marcus (2004) states:

The brain is capable of . . . impressive feats of experience-driven reorganization. . . The structure of the brain is exquisitely sensitive to experience. Nature has been very clever indeed, endowing us with machinery not only so fantastic that it can organize itself but also so supple that it can refine and retune itself every day of our lives (pp. 45, 148).

As one psychiatric researcher, Jeffrey M. Schwartz, has elaborated, “Contrary to the notion that the brain has fully matured by the age of eight or twelve . . . it turns out the brain is an ongoing construction site . . . The neurons that pack our brain at the moment of birth continue to weave themselves into circuits throughout our lives . . . as mutable as a map of congressional districts in the hands of gerrymanderers” (Schwartz & Begley, 2002, pp. 128, 130, 366). Steve Yantis, a professor of brain sciences at Johns Hopkins University further summarizes, “The bottom line is, the brain is wired to adapt There’s no question that rewiring goes on all the time” (Connelly, 2010).

Perhaps even more intriguing, it is not just the brain that is being found to be more dynamic than previously thought. In contrast to the long-held notion of genes-as-blueprint, researchers have also documented how genes frequently manifest *differently* depending on individual lifestyles and actions. This gene-environment responsivity is formally known as *epigenetics* – what Nobel laureate Barbara McClintock has called the “fluid genome” (Federoff & Botstein, 1992).

In recent years, these research advances in understanding changeable biological vulnerabilities have prompted substantive revisions to theories of various mental health conditions– including with clinical depression (Siegle, 1999; Ottowitz, Tondo, Dougherty, & Savage, 2002), general fear and anxiety (Stein, & Ludik, 1998; Hariri, Bookheimer, & Mazziotta, 2000), obsessive-compulsive disorder (Ludik & Stein, 1998), attention problems (Berger, & Posner, 2000; Posnera, Sheesea, Odludaşa, & Tangb, 2006) and delusional disorders and schizophrenia (Chen & Berrios, 1998; Vinogradov, Poole & Willis-Shore, 1998). These advances likewise parallel efforts to adopt a more dimensional approach to assessment that better aligns with the possibility of ongoing change (Widiger & Simonsen, 2005; Helzer, 2008).

None of these developments, however, are likely to come as a surprise to phenomenological philosophers and psychologists who have long argued for the dynamic, vibrant, and holistic nature of human embodiment. At least since the pioneering insights of the neurologist Kurt Goldstein (1995/1934), through the ontological analyses of Merleau-Ponty (1989/1962), and the more recent work of physician Drew Leder (1990, 1992), as well as that of the biologist and neuroscientist Francisco Varela and his colleagues (Varela, Thompson, & Rosch, 1991), the phenomenological tradition has long recognized that a mechanically static or fixed conception of biological functioning reflected entrenched philosophical bias far more than it did an attentive description of actual human embodiment.⁸ Indeed, the central findings of contemporary research on neuroplasticity and psychosocial genomics – i.e., human beings are “holistic, recursive systems structurally coupled with their environments in a process of mutual change” and that “intentionality and volition can generate changes in the structure of the brain, the very organ assumed to produce such mental phenomena” (Garland & Howland, 2009, p. 197) – sounds suspiciously like what many phenomenologists have been claiming all along.

3. The body’s relationship to environment and context.

Physical states as interacting with other factors. For those who see the body as largely unchanging (Issue 2) and separable in fundamental ways from lived-experience (Issue 1), it is easy to then see the body as essentially “inserted” into its surrounding context and relating to that environment in a causally “interactive” way. Interactions are here defined as mutual or reciprocal actions/reactions that occur as two or more objects exert causal force (and have resultant effects) upon one another – with culminating, interactive effects on mental disorder itself. Illustrating this view, one research team stated “life events . . . interact with this [biological] vulnerability, triggering severe or chronic distress that

⁸ This may also reflect some limitations of conventional scientific technique and method broadly. That is, It is much easier to study biological systems at one time point, than to study and understand them over time.

affects the individual's resilience and leads to symptoms of depression. The pathogenesis of depression is symbolized by a negative downward loop, in which interactions among symptoms, vulnerability, and stressors drive the patient toward a depressive condition" (Schotte, Van Den Bossche, De Doncker, Claes, & Cosyns, 2006). Dominant biopsychosocial models draw heavily on such interactive or mutually causal language in examining the activity of multilevel processes and mapping out their complex interplay. Indeed, this is often seen as the only sensible way of characterizing the relationship between the body, the environment, and the mental disorder itself. Nonetheless, problems with the prevailing interactionist portrayal have been highlighted by scholars in both psychology and neuroscience (see, e.g., Miller & Keller, 2000). Most fundamentally, once the body is assumed to be ontologically distinct from other aspects of experience, explanations of how exactly these distinct dimensions relate and connect to each other have remained abstract and inadequate (Murphy & Brown, 2007). Furthermore, even when acknowledged as a part of the picture, larger environmental influences are almost inevitably minimized within an interactionist portrayal.

Physical states as transacting with other factors. By comparison, for those who see physiology as changeable (2) and largely inseparable from lived-experience (1), another view of the body's relationship to context and environment becomes apparent. Indeed, it becomes clear, in the words of Goldstein (1959), that what is needed is "a new approach to study the functioning of the brain, the so-called *holistic approach*, which assumes that every phenomenon – normal as well as pathological – is an activity of the whole organism, in a particular organization of the organism" (p. 7).

A number of theoreticians have sought to articulate a more intimate relationship among various aspects of human experience. Altman and Rogoff (1984), for instance, propose an alternative to the traditional interactive model – what they term the "transactional model" – in which they call for "the study of the changing relations among psychological and environmental aspects of holistic entities" – the unit of analysis being "holistic entities such as events . . . not composed of separate elements but a confluence of inseparable factors that depend on one another for their very definition and meaning" (p. 24). Thus, bodily states associated with depression may be understood to as inseparably linked, even mutually constitutive of the psychological and experiential aspects of the same. A comprehensive account of the "event of depression," for example, would attend to logically distinct elements – body, context, interpretation, time – as inseparable features of the same holistic entity. As Slife and Hopkins (2005) note:

Mind and body mutually constitute one another. They are not, in this sense, independent or self-contained. Moreover, mutual constitution is not mutual interaction Mutual constitution, on the other hand, means that *other* entities contribute to the very nature of the entity. Mind and body have a shared existence, with neither being entirely separable or localizable in the traditional sense. (pp. 138-139; italics in the original)

Many such attempts at articulating an alternative to interactionist portrayals hearken back to Heidegger's (1962) portrayal of "Dasein"--the human way of being that "finds 'itself' proximally in *what it does, uses, expects, avoids* – in those things environmentally ready-to-hand with which it is proximally *concerned*" (p. 155; italics in the original).⁹ From this vantage point, our primordial

⁹ In other words, in this ordinary practical involvement in the world we inhabit – and which we constitute even as we are constituted by it – that we make use of things and engage others. In doing so, we do not typically notice or attend to things or others as objects in a perceptual field, stimulus configurations to be processed and responded to in the way that a discrete, autonomous (i.e., Cartesian) ego must interact with the objects of an external world. For example, when we insert a key into the ignition of our car in order to drive across town to visit a sick friend, we do not attend to the objective physical or perceptual characteristics of the key, or even the car – and certainly not the friend. Rather, our concern is with what we are doing, where we are going, and why we are going there. The key (like the car and the friend) is fundamentally a meaning in

engagement with the world and others takes place, not as one object “bumping up” against another object in some causally necessitated chain of events, but as an embodied intentionality which is fundamentally situated in spatially, temporally, and socially meaningful ways (see Gantt & Reber, 1999). The body is, therefore, in Merleau-Ponty’s (1964) words, a self “that is caught up in things, that has a front and a back, a past and a future. . . . Things are an annex or prolongation of itself; they are encrusted into its flesh, they are part of its full definition; the world is made of the same stuff as the body” (p. 163). “Our own body,” Merleau-Ponty (1989/1962) also writes, “is in the world as the heart is in the organism; it keeps the visible spectacle constantly alive, it breathes life into it and sustains it inwardly, and with it forms a system” (p. 203).

Similar language is beginning to be employed by some brain scientists as well. Neuroscientist Gregory Miller, past president of the *Society for Psychophysiological Research*, has critiqued interactionist models of the brain and encouraged colleagues to acknowledge the mutual and intimate interplay between body and mind, recommending a language of biological processes “implemented” in the psychology – and vice-versa, “cognition and emotion as implemented in neural systems” (Miller & Keller, 2000, pp. 213-15).

From this vantage point, the body's relationship to the environment is seen a new way. As a pioneer on this question, Goldstein’s central thesis is that persons function as whole beings in whole contexts, and that “symptoms resulting from pathology...are not isolated phenomena. Rather, they are solutions tried by the modified organism to cope with the new specific demands” (Lester, 1995, p. 137). In Goldstein’s view, then, “symptoms are expressions of the total organism and involve widespread changes” and fruitful inquiry must consider “mind and body to be merely different aspects of unitary life process” (Lester, 1995, p. 137). On this model, then, the “performances of the organism, whether normal or abnormal, are only expressions of the organism’s attempt to come to terms with the world in which it lives” (Rogers, 1998, p. 533). Ultimately, then, according to Goldstein, “the behavior of this integrated organism cannot be studied without taking into account the environment in which the organism dwells” (Lester, 1995, p. 137). Indeed, Goldstein (1957) speaks of human being as an “organism-world unity” or an “organism-environment unit,” arguing that all human behavior is “an activity in an ‘organism-environment’ realm” (p. 186). Human being, then, as an “organism-environment unit,” must be approached and understood in terms of a “true unitary pattern of life in which the person and his environment are interwoven, and we have therefore to reject the doctrines of the extreme environmentalist, as well as those of the extreme believer in heredity” (Goldstein, 1963, p. 198).

4. *The degree to which states of the body cause mental disorder.*

Physical states as a primary, direct cause of problems. Once the body is viewed as a mechanical object that is fundamentally distinct in some way from the self, largely unchangeable, and fundamentally interacting with an external and distinct environment, then it becomes more likely to think of the body as relating to mental states in fairly unidirectional and efficient causal ways. In other words, thoughts, feelings, and desires – once firmly believed to originate solely in an internal realm of private subjectivity – are thus more easily taken to be largely the necessary byproducts of physiological processes and events occurring in the brain and body (see, e.g., Berthoz, 2006; Ledoux, 1998).

the world, a meaning with which we are profoundly familiar and something that we use automatically and skillfully in a familiar setting. As Heidegger (1962) notes, “that with which we concern ourselves primarily is the work – that which is to be produced at the time” and, even more deeply, “the work bears with it that referential totality within which the equipment is encountered” (p. 99).

In the case of depression and other mental conditions, then, biological states and processes come to be seen as the proximal cause of such conditions, largely “underlying” and responsible for one’s psychological experiences. For example, in his review of the neurobiology of depression, Nemeroff (1998) stated, “considerable evidence indicates that regardless of the initial triggers, the final common pathways to depression involve biochemical changes in the brain. It is these changes that ultimately give rise to deep sadness and the other salient characteristics of depression” (p. 42).

This same emphasis is evident in the material of a number of mental health advocacy organizations:

- “Whatever the specific causes of depression, scientific research has firmly established that major depression is a biological brain disorder” (TMS Chicago, 2011).
- “Scientists believe that if there is a chemical imbalance in these neurotransmitters, then clinical states of depression result” (NAMI, 2011c).
- “[Depression] is an illness. Researchers have demonstrated that it results from biochemical imbalances in the brain” (AllIzWell, 2011).

While it is often admitted that the precise causes of depression are uncertain, both research and lay statements nonetheless tend to emphasize the evidence for some kind of fixed, underlying brain dysfunction as conclusive. Accounts from individual patients reflect this same theme. One interview participant recalled a doctor commenting that depression “was something that had to do with my brain not working the way it was supposed to work” (2). In his account of depression, one author writes, “Never let it be doubted that depression, in its extreme form . . . [results] from an aberrant biochemical process. It has been established . . . that such madness is chemically induced amid the neurotransmitters of the brain . . . [reflecting] the distress of an organ in convulsion” (Styron, 1992, p. 47).

The presumed causal relationship of genes to mental disorder is also framed in much the same way. For example, Rose (1995) observes, “At its simplest, neurogenetic determinism argues that there is a directly causal relationship between gene and behavior . . . a woman is depressed because she has genes ‘for’ depression” (p. 380-381).

While environmental and social factors are still acknowledged in this portrayal, they are typically framed as “triggers” that activate or aggravate underlying physiological deficiencies (see, e.g., Zuckerman, 1999). Outside factors are thus relegated to more of a secondary role. One girl described growing up with parents who ignored her for their drug habits, sending her to a treatment center when she began to struggle. She remarked, “I’ve had therapists tell me that something in my central lobe was out of balance: . . . ‘it’s just your brain, honey’ . . . They would tell my dad, ‘that’s because this sector of her brain is damaged and that is why she is saying that.’” Thinking back on the situation, this girl reflected, “I got mad . . . and would tell [the doctor] how I felt . . . ‘maybe the reason I’m doing these things is because my dad is not taking care of me and is doing drugs himself!’” (140d).

Physical conditions as contributions and constraints. Discoveries of neuroplasticity and epigenetics, especially against the backdrop of the phenomenological insights of Goldstein, Merleau-Ponty and others regarding the nature of embodiment and social context, have much to offer in the way of fostering new frameworks for thinking about the relationship between bodies and mental disorder. Indeed, once the body and brain are seen as dynamic entities that change over time and in concert with an individual’s choices, social relationships, and physical environment, the nature and meaning of the physiological in mental disorder can be seen to be much more complex and nuanced than has usually been assumed. Rather than being simply the source of isolated and fixed causes, the physiological comes to be seen as a companion to the environmental, to matters of lifestyle, cognition, and social

relationship – without any one direction of necessary or superior influence presupposed. Talking to fellow neuroscientists, Dr. Gregory Miller proposed:

Rather than attributing mood changes to activity in specific brain regions, why not attribute changes in brain activity to changes in mood? In light of EEG or behavioral data on regional brain activity in depression, are people depressed because of low activity in left frontal areas of the brain, or do they have low activity in these areas because they are depressed? (Miller & Keller, 2000, p. 214).

Thus, instead of emphasizing the environment as a network of causal stimuli that impinge upon the individual, triggering internal dysfunction, this alternative view suggests that external and lifestyle influences can literally mold physiological processes over time as individuals respond to broader cultural and interpersonal prompts. A destructive home atmosphere, for instance, may shape brain pathways in a way that predispose youth, in turn, to seek out particularly destructive behavior such as substance abuse (which, in turn, prompts further physiological changes). From this vantage point, then, environmental and cultural forces come to have a much larger role in shaping the brain.

The success of cognitive training programs across a variety of conditions illustrates this view. In a recent study exploring the “the developmental progression of executive attention,” the authors recapitulate, “The relation of genetic factors to the functioning of the executive attention system does not mean that the system cannot be influenced by experience” – going on to note several training-oriented programs documented to improve attention and produce measurable neurological shifts (Rueda, et al., 2004, p. 1426). Early trials of cognitive training for schizophrenia have also produced impressive results (Eack et al, 2009). And in the case of severe obsessive-compulsive disorder, as patients focus attention away from negative behaviors and toward positive ones, researchers document permanent changes to their own neural pathways. Reflecting on these outcomes, one author concludes:

Our physical brain alone does not shape our destiny. How can it, when the experiences we undergo, the choices we make, and the acts we undertake inscribe a diary on the living matter of our cortex? The brain continually refines its processing capacities to meet the challenges we present it, increasing the communicative power of neurons and circuits that respond to oft-received inputs or that are tapped for habitual outputs (Schwartz & Begley, 2002, p. 373).

In short, this view of a dynamic, lived and transacting biology accompanies psychological experience, rather than underlying it. From this view, a condition like depression may be understood to arise not from isolated factors of body or mind alone, but from a dynamic interplay between multiple aspects unfolding over time. Slife and Hopkins (2005) summarize:

The mind and the body are *necessary* rather than *sufficient* conditions for the understanding and explaining of human behavior. No one condition can be sufficient in itself for explanation and understanding. . . . Each condition plays an irreducibly necessary role in understanding human behavior. (pp. 132-133)

This approach represents a striking contrast with the conventional view, proposing a balance wherein no single area of influence holds dominance over the other.¹⁰ As Miller and Keller (2000)

¹⁰ In other words, while the materiality of the human body constitutes a necessary context within which any psychological events must occur, and within which they must be understood, it does not of itself then, constitute the sufficient grounds on which one can adequately account for the origins or nature of psychological events. Thus, for example, while uttering a meaningful sentence such as “I feel alone and worthless” requires nervous system and muscular activity for its production, such a sentence and its meaning cannot be adequately reduced to the processes and functions of either the nervous system or

write, cognitive science and neuroscience “greatly benefit from the other, but neither encompasses, reduces or underlies the other” (p. 214). Furthermore, they note that:

The psychological and neural are not simply different “levels” of analysis, except in a very loose, metaphorical sense. Neither “underlies” the other, neither is more fundamental, and neither explains away the other. We simply have two domains of data, and each can help to explicate the other, because of relationships between them that our theories propose. We should stop talking in terms of what “underlies” what. (p. 214)

They continue, “Biological data provide valuable information that may not be obtainable with self-report or overt behavioral measures, but biological information is not inherently more fundamental, more accurate, more representative, or even more objective.” In this way, they note, “A person in any given psychological state is momentarily in some biological state as well. . . . [but] the psychological phenomenon implemented in a given neural circuit is not the same as, is not accounted for by, and is not reducible to that circuit. . . . there is no necessary identity between psychological states and brain states.” Given this, then, these neuroscientists recommend a “nondualistic, nonreductionist, noninteractive perspective with psychological and biological concepts both having central, distinct roles” (pp. 212-15).

Discussion

In review, the above exploration compares contrasting interpretations of the brain and body in relation to a condition like depression. Each issue reflects one assumption that may or may not be made by a patient or professional in their understanding of the body’s role in a given mental disorder. While it is valuable to explore individual assumptions in this way, it is important to point out that no assumption functions in isolation. Instead, they generally cluster into coherent webs of interpretation and meaningful frameworks or narratives – some of which were hinted in the analysis above. Although the possible groupings are limitless, two general clusters of ideas seem especially common in the current, prevailing mental health discourse (see Table 1).

Table 1: How different assumptions about the brain often cluster together.

<i>Issue</i>	<i>Brain Interpretive Cluster #1:</i>	<i>Brain Interpretive Cluster #2:</i>
<i>1. The body's relationship to day-to-day action</i>	Body as entity.	Body as lived.
<i>2. The extent to which the brain and body are changeable</i>	Fixed and static physiological contributors.	Malleable and dynamic physiological contributors.
<i>3. The body's relationship to environment and context</i>	Physical states as interacting with other factors.	Physical states as transacting with other factors.
<i>4. The degree to which states of the body cause mental disorder</i>	Physical states as a primary, direct cause of problems.	Physical states as a contributing, indirect cause of problems.

As summarized in Table 1, those who view the brain and body as largely unchanging are also more likely to see biological states as somewhat separable from, interacting with and underlying

the musculature of the body. Likewise, the deep emotional turmoil, profound sense of alienation, and unrelenting psychic pain that such a sentence articulates for a given depressed client is also much more than whatever biological states happen to be necessary for the experience of such emotion in the first place.

psychological experience, including mental disorder (cluster #1). By contrast, those who view the brain and body as potentially changeable and fluid are more likely to see biological states as intimately connected with and mutually constituting psychological experience, including something like depression (cluster #2). In the final examination that follows, these two general groupings of ideas are referred to as diverging “portrayals” or “narratives” of the body.

As a coherent set of ideas, these two “brain interpretive clusters” are also proposed as having particular, identifiable implications for professional practice and the lived experience of patients. Below, we consider several consequences that may logically flow from these narratives to the degree they are “downloaded,” adopted and lived out. In this final section, we move beyond philosophical examination to inquire into the practical implications ensuing from diverging views of the brain – especially, in relation to individuals’ own experience of mental disorder. These include implications for (1) personal action and agency, (2) treatment choices and (3) overall hope for recovery.

1. How is individual choice and action related to mental disorder (if at all?)

The first implication of diverging portrayals of the brain and body concerns self-efficacy and choice in relation to severe mental disorder.

Personal action as not directly related to these problems. The first portrayal’s emphasis on unchanging, interacting physiology as the primary cause of mental disorder readily leads one to wonder as to the relevancy of personal action and choice when it comes to the onset or relief of mental disorder. Acknowledging real limits can be a welcome admission, of course, contributing to a healing atmosphere of acceptance by subverting the tendency towards unhealthy emphasis on personal or moral failing. One interview participant commented:

I’ll just never forget reading a book that said telling someone with depression to ‘just get feeling better’ is like telling somebody who’s had a heart attack to run to the top of a mountain. You know, there’s really no difference. There’s something physically wrong . . . and you can’t force your brain to do something it can’t do any more than you can force yourself to run to the top of the mountain just after you’ve had a heart attack . . . [after] reading that there is something chemically wrong . . . I just remember feeling a little bit better about myself. (2)

More than acknowledging certain provisional limitations on personal action alone, however, the insinuation of this first prevailing narrative moves one step further. “This isn’t your fault” another interview participant told her friend facing depression, “there is this chemical in your brain that says you *can’t* be happy and content” (5). Another woman spoke of her brother trying to help her realize that depression “didn’t have *anything* to do” with her efforts and that recovery didn’t rely on her making any changes (16). Another woman expressed gratitude for realizing that “there was nothing I could have done to keep me from getting depression . . . I mean, it’s not like if you don’t smoke you won’t get lung cancer, you know? I mean, it’s not that kind of a thing; you can’t say, ‘well it’s because I ate the wrong thing, you know. . . it *couldn’t* be helped” (5).

As reflected here, there is little by way of personal change that is relevant to depression’s arrival or its relief. Advocacy websites likewise underscore this notion:

- “Mental illnesses are biologically based brain disorders. They cannot be overcome through ‘will power’ and are not related to a person’s ‘character’ or intelligence” (NAMI, 2011a).
- “Mental illnesses are not the result of personal weakness, lack of character or poor upbringing. No one is to blame” (NAMI, 2011b).

While these implications are seen by some as liberating and relieving, others see them differently. In their discourse analysis of newspaper representations of mental illness, Bilic and Georgaca (2007) note a pattern of “people with mental health problems” being framed in the prevailing treatment discourse “as passive sufferers of their condition” (p. 167). In her research on women with depression, Vidler (2005) also notes that “a sense of being stuck in an enforced withdrawal or hibernation permeated the majority of the women’s descriptions of depression.” “Participants’ statements” she continued, often “referred to feelings of helplessness, powerless, and an inability to take action, or feeling they were not in control of their lives” (p. 296).

According to the first portrayal of the brain and body, then, individuals may come to see themselves as having little potential of meaningfully impacting the going or coming of mental disorder. The one exception may be in relation to treatment management, cooperation and compliance, where individuals are often encouraged to maintain resolute commitment to a treatment regimen attempting to extinguish or control troubling emotions and thoughts. Illustrating this unique stance on personal control, one woman said the “best change in my attitude was that I *couldn’t help* that this happened,” adding “but I can control it now, you know. I can take control of it” – going on to detail her careful management of the depression through medical means (5). Another individual said, “*I’m responsible* every single day for doing this mental inventory of ‘where am I?’ and when I notice the warning signs it’s my responsibility to do whatever it is I need to do. Whether I need to get in and see the doctor, get my medication adjusted, make an appointment, etc” (13). Treatment compliance may, thus, become the primary thrust of personal control and effort – with a lack of compliance often seen as the signal of failure for both the patient and the provider.

As a byproduct of this portrayal, individual learning and development can, thereby, come to be seen as *less relevant* to those facing serious mental disorder, since the problems are seen to arise primarily from biological deficiencies – and explicitly, *not* be caused by cumulative lifestyle aspects or personal habits. This can lead to a minimization of associated personal experiences, meaning and lessons (see Gantt, 2002). When asked about the take-home message from 15 years of fighting depression, one woman responded that the primary lesson of her overall experience had been the importance of finding the right dosage level (2). Schreiber and Hartrick (2002) surveyed the case of a woman with a history of tragic abuse – noting how she explained away any connection to her depression during the interview: “There was no consideration of the possibility that the past life trauma that she spontaneously related in her depression story may have contributed to her current depression.” In light of this, they propose one of the “unintended consequences” of the dominant biological narrative (see again, grouping #1) as “shift[ing] attention away from the meaningful psychological, relational, or situational dynamics that women talked about within the context of their depression.” Across all the women they interviewed, these researchers note that in spite of difficult marriages, work relationships or other experiences, “in managing their depression, their attention was focused on finding the right medication to alleviate the symptoms of depression” – suggesting that prevailing biological explanations seem to effectively drive out or “render the situational factors in a depression story irrelevant” (pp. 100-101).

Personal action as related to these problems. Equal to the first, the second portrayal’s emphasis on changing, transacting physiology also has implications for how personal action and choice are understood in relation to mental disorder. Most basically, this accords a central and meaningful place for personal choice in directing one’s lifestyle and environment – this, in ways that eventually shape one’s brain and body over time. The growing research on contributions of nutrition, physical activity

and sleep patterns towards depression vulnerability are illustrative. Speaking of their own lifestyles, two individuals commented:

- You're not going to be able to let yourself get sleep deprived your whole life . . . you can't. You've got to kind of watch this and not think that you can go without sleep just because it feels like you could . . . (*laughs*) you can't do that to your brain for years on end. You can't not feed yourself. . . . You've got to take care of your body because your body takes care of your brain. (2)
- If I go without sleep and start partying a lot and get over extended and stressed, yea, I'll hit depression . . . I know I could bring myself another depression--I know the recipe for madness. . . I lose my sleep; I drink too much. . . . I get involved in too many things: that's the recipe for madness for me. (12)

These same kinds of lifestyle considerations, to be clear, are also acknowledged in prevailing interactionist views – albeit as limiting “triggers,” noted earlier. In this case, a more transactional and dynamic view highlights a hopeful message – instilling greater optimism regarding personal action, including those efforts not attempting to directly address the biology itself. An appreciation of biological fluidity, in particular, unsettles notions of a very limited range of treatment interventions being effective – pointing to the potential of other practices such as meditation, counseling, and academic learning, which have each also been shown to shape brain pathways over time (Osterhout et al., 2008; Goldapple, et al., 2004; Lutz, et al., 2008). Personal actions may therefore be viewed as meaningful in recovery, reflecting a sense that ‘my brain will change as I change; I can do something and my brain will change with me.’

Rather than constituting a dreadful impediment or constraint, then, the brain and body may thus be understood as ready to cooperate, encouraging an individual to act independently in choosing to direct how his or her body is used. In this way, our physiology becomes intimately linked to the actual work, actions and experiences we choose to pursue as embodied beings in the social, cultural, and historical worlds we inhabit. Reflecting this intimate relation between intentional action and embodiment, Slife and Hopkins (2005) write that “Biology is not meaningfully human without human agency,” in that “embodied agency means that agency occurs in and through the context of the body, or the body occurs in and through the context of the agent” (pp. 136-137). From this vantage point, then, “agency is manifested in, and is not separate from, the body” (p. 137)—with the body inescapably intertwined with choice, a materially structured feature of ongoing human decisions and actions and meanings.

This same body may then be expected to change one direction or another, depending on moment-by-moment actions. The first time a woman binges and purges food, for instance, her body will likely react negatively to this unusual behavior. But as she turns to this coping mechanism again and again, her body can gradually begin to attune and adjust to this behavior, until the physiology itself can ultimately come to reinforce that very impulse and manifest a full blown eating disorder. Other compulsions (such as addiction to drug use or gambling) may likewise reflect similar progressions of an evolving physiological tendency or penchant. Depending on choices made and the resulting direction of these changes, individual brains may thus become more or less vulnerable to mental distress such as depression or anxiety over time.

Citing “the brain’s astonishing power to learn and unlearn, to adapt and change, to carry with it the inscriptions of our experiences,” Schwartz and Begley (2002) suggest, “It is the life we lead that creates the brain we have” (p. 366). More specifically, they later explain, “The life we lead, in other words, leaves its mark in the form of enduring changes in the complex circuitry of the brain – footprints

of the experiences we have and the actions we have taken” (p. 373). Dr. Louann Brizendine (2006) reaches a similar conclusion as to the personal impact of neuroplasticity research:

The brain is nothing if not a talented learning machine. Nothing is completely fixed. Biology powerfully affects but does not lock in our reality. We can alter that reality and use our intelligence and determination both to celebrate and, when necessary, to change the effects of [other factors] on brain structure, behavior, reality, creativity – and destiny. . . . If we acknowledge that our biology is influenced by other [environmental] factors . . . we can prevent it from creating a fixed reality by which we are ruled. (pp. 6-7)

While this second portrayal of the brain may thus be experienced as liberating to many, for others even a hint that one's actions may contribute to painful emotional states can feel quite uncomfortable – perhaps threatening to blame individuals or stigmatize them for experiencing mental disorder. And indeed, those who take the role of personal freedom to an unhealthy extreme may see the changeability of the body as confirmation that individuals should just “snap out of it” or “buck up.”¹¹

Once again, Merleau-Ponty's (1989/1962) articulations of embodiment offer one helpful way to remedy this view--this, while resituating its impulse towards freedom. Counter to the notion of radical, context-free power to choose, Merleau-Ponty elucidates multiple ways the body establishes a contextual horizon in which things show-up or “come to light” for us (see, e.g., pp. 98-147). He pointed out, for instance, that mountains are tall for us, and that where they are passable or not is not up to us but is a function of our embodied capacities: “In so far as I have hands, feet, a body, I sustain around me intentions which are not dependent upon my decisions and which affect my surroundings in a way which I do not choose” (p. 440). In the same manner, the particular shape and condition of our body (e.g., exercise, nutrition, sleep) may determine the way emotions and thoughts “show up for us” – with dynamics set in motion by our bodies (and previous choices) – which we do not (and cannot) *presently* choose to suddenly experience otherwise.

In this way, tensions may be reconciled between responsibility and limitation, as they are both honored. Specifically, the *real and legitimate* constraints of mental disorder (physical or otherwise) are explained, alongside the possibility of these same constraints *changing over time*. An embodiment portrayal can thus both limit and “open up the world” as a vehicle for choice – presenting a view of personal action that avoids both determinism and radical agency. Among other things, the meaning and role of past events such as abuse may thus be better understood and appreciated for their role in shaping individual vulnerability. Furthermore, rather than seeing personal freedom (e.g., to be happy, to eat, to pay attention) as ‘present or not,’ willpower and responsibility may thus be seen more like a continuum, with a capacity that can rise and fall/ebb and flow *over time* depending on actions *now* (see Williams, 1992; Abbey, 2004).

Overall, personal action may thus be appreciated for its potential impact on physiology and mental disorder itself, while still taking seriously the immediate constraints of each. Individuals facing mental disorder may therefore be understood as not completely responsible for the current mental disorder – this, without seeing them as wholly victims. Illustrating this balance, the father of a girl struggling with psychotic behavior noted, “It becomes important to be nonjudgmental and compassionate, but also saying, ‘you’re responsible for your behavior; you need to deal with your behavior.’ In this way, you are not judging, but also being really honest about what life is like” (28f).

¹¹ This notion of a personal agency as being “free” of any constraints, including biological ones—arguably represents an extreme view of agency and choice: a notion most famously reflected in Sartre’s extreme view of freedom (Sartre, 2000).

2. What is the recommended treatment for these conditions?

A second set of implications from these diverging biological narratives involve treatment decisions – specifically, distinct emphases placed on what exactly ‘works’ to alleviate mental disorder and what does not.

Medical interventions as central and essential. Once fixed biological deficits are taken to be the primary causes of mental disorders (cluster #1), then it becomes easy to assume that the central thrust of recovery efforts must be some kind of direct, external intervention into those same biological deficiencies—attempting to address, adjust, or alter them in some way. This typically implies some kind of medical intervention aiming to correct fundamental, inherent limitations in the body.

The most common rationale offered for such interventions is the existence of a chemical imbalance of some sort, which creates the logical need for some re-balancing to restore properly functioning. For example, as one educational website states “Research has shown that imbalances in neurotransmitters like serotonin, dopamine, and norepinephrine can be corrected with antidepressants” (Mental Health For Teens, 2011).

Psychopharmacological treatments may then come to be seen as indispensable, ‘like insulin for diabetes.’ Indeed, clinicians often insist that genuine relief from mental disorder cannot come in any other way – or at least, not without medications as a central part of any treatment plan. As one mother asserted, “The only way to manage a condition such as our daughter’s . . . it *has to be* the blend of the right medication and the therapeutic side . . . when not stable with the illness, her thinking patterns were completely off” (49m). For some families, this belief can become so deeply rooted that when the effects of medications wear off over time, they assume that the inevitable next step in treatment is something that promises an even greater direct impact on the body, such as vagus nerve stimulation or electroconvulsive therapy (ECT).

Overall, improvement is thus seen to depend on the features of a particular treatment strategy or technology – e.g., of medications working right or not, or electrical/stimulation machines applying the right amount of shock. Conversely, addressing a condition such as depression (and its associated biological correlates) without a medical form of treatment can come to be seen as quite dangerous, leading as it must to poor outcomes and the probable exacerbation of other complications. For example, researchers Andersen and Navalt (2004) state, “Little research is available on the outcomes of un-medicated childhood depression due to inherent risks of developing other psychiatric disorders, abusing substances, committing suicide, and having poor academic, work and social functioning” (pp. 425-426). Harvey, McEwen and Stein (2003) call “discontinuation of drug treatment and noncompliance” a “leading cause of long-term morbidity during treatment of depression” (p. 1105).

These same assumptions of permanent physiological deficiency can also reinforce the expectation of a continuous, even life-long need for treatment. Speaking of her depression, one woman said that she had to keep telling herself “it’s a *chemical* imbalance – it’s not gonna go away with...you know; I can’t – I’m not one of those that could take medication for a couple of years and then be good...I’m stuck” (8). Similarly, another woman who had been taking medications for many years reported:

I’m a firm believer in medication because I don’t think, I mean, I think therapy is good, but it doesn’t help if you’re not calmed down, it doesn’t, I mean . . . *You can’t talk it out; it’s chemical!* Talking it out or going for a jog isn’t going to help the chemical imbalance that’s going on. I just, like I said, I don’t . . . you can’t get better without medication. You can talk and talk and talk but you can’t get better without, if your chemicals are messed up. (7)

An emphasis on the need for life-long medical intervention, as reflected here, frequently entails a de-emphasis of the possibility of non-medical interventions. Indeed, as long as semi-permanent biological impairments are seen as underlying emotional or mental pain, it is not entirely clear why activities and interventions *not directly addressing* this biological deficiency would make much of a difference at all. In this way, the current, prevailing view is that other, non-medical interventions (alone) *cannot* adequately treat a problem such as serious depression.

No single intervention as central and necessary. Once the brain and body are seen as something more than fixed and set (cluster #2), the question of what sorts of treatment interventions are possible comes alive in a very different way. Most basically, this second portrayal of the body suggests that direct medical intervention in the biology itself is not always necessary. Indeed, if the brain changes over time in response to various stimuli, then actions in a variety of areas may shift one's biological vulnerability over time. Rather than trying to make feelings go away directly, this encourages attention to more gentle, indirect ways of engaging painful emotional patterns.

From psychotherapy and meditation, to nutritional adjustments and exercise, more and more health and lifestyle practices are being linked to positive changes in physiology itself (e.g., Schmidt & Bland, 2006; Goldapple, et al., 2004; Lutz, Brefczynski-Lewis, Johnstone & Davidson, 2008). Like other physiological patterns, of course, well-worn neural networks cannot simply be "zapped" like tumors with chemotherapy – nor do these findings imply that the solution to mental distress is spontaneously "choosing to be happy." Rather, this portrayal emphasizes the potential of the brain to be re-wired and for genes to manifest differently over time, depending on the cumulative actions and choices of individual patients.

In addition to expanding optimism about the range of viable treatments, contemporary findings regarding neuroplasticity also unsettle the role that medication is typically assumed to play in treatment. On a general level, these research discoveries imply less of a natural impetus and justification for the use of medication. Indeed, it is not clear what pharmacological intervention means for complex neural networks – with a possibility that interfering in neurotransmitter systems could cause a worsening of the target symptom long-term, perhaps by disturbing the process of neurogenesis (Whitaker, 2010). Others, of course, argue that these same interventions are beneficial for brain growth – or perhaps a mechanism through which the drug actually works (Andersen & Navalt, 2004).

Differences in drug action aside, what this second portrayal *does do* is provide other options to cases where drugs were assumed to be the only option. After commenting that medication was initially helpful in "working to bring me down," one person added, "I think if I had been weaned off the benzodiazepine and put in a nurturing environment . . . it would have done the same thing" (12). As individuals come to appreciate the range of potential actions that may alleviate a given mental disorder, there is a natural lessening of dependence on any one treatment strategy. Affirming this point, Miller and Keller (2000) have cautioned fellow neuroscience researchers against "the assumption that dysfunctions conceptualized biologically require biological interventions" (p. 214). Further, they also suggest:

The best way to alter one system may be a direct intervention in another system. Even, for example, if the chemistry of catecholamines (chemicals used for communication to nerve, muscle and other cells) were the best place to intervene in schizophrenia, it does not follow that a direct biological intervention in that system would be optimal. A variety of experiences...may prompt the adrenal glands to flood [these areas] with catecholamines. There are psychological

interventions associated with this chemistry that can work more effectively or with fewer side effects than interventions aimed directly at the chemistry (p. 214).

As reflected here, opening up the range of treatment options does not minimize the importance of the brain or body – nor does it question the utility of medication in certain instances. What this portrayal does caution against is simply over-reliance on any one approach to intervention. Indeed, when psychiatric drugs are prescribed, the presence of a life-long biological need may no longer be taken for granted; instead, it becomes plausible to believe that biological problems can eventually adjust and adapt and are not necessarily intractable. Medical treatment, then, can be seen more as a skillful attempt at temporary symptom management and support.

3. Is there a hope or possibility of recovery?

Depending on the particular portrayal of the brain and body one takes up, there are also clear implications for how recovery itself is understood.

Recovery focused on effective management of symptoms. On one hand, when the brain and body are seen as unchanging and machine-like entities that underlie and causally produce psychological experience, recovery itself is typically seen as having similarly fixed boundaries. After all, since the underlying physiological states thought to produce mental disorder are assumed to be fairly permanent, it makes little sense to work towards and expect fundamental shifts in psychological and emotional experience. As one mother remarked when asked about her daughter:

She's schizoaffective bipolar; the prognosis is that there is no cure – that she needs to learn to live with it the best she can. I'm expecting her to regress. . . . Her brain is wired in a way that her mental illness will be a monkey on her back the rest of her life. It is unlikely she will ever be able to hold down a real job. (64m)

As evident in this quote, a fixed view of biology fosters a belief in the impossibility of complete recovery or transformation. When asked, “Do you ever talk about ‘getting fully better’ from depression?” one young person said: “I don’t think that’s possible. I just . . . I *want to*, but I don’t think that I . . . I think, just a couple years ago I just faced it that I’m just always gonna have to have something” (8). Similarly, the parent of a youth facing serious emotional struggles remarked, “I don’t think there’s going to be a time that she’s going to be well. We’re going to have to stay on it, stay on it, stay on it forever” (135f).

While this viewpoint can feel somewhat dismal, it is also remarkably pervasive across families facing these kinds of problems. To combat a sense of hopelessness, professionals often encourage individuals to direct their confidence in the various treatments available. While perhaps not believing a full or lasting recovery is possible, the message is that there is *still hope* because of treatment that can help individuals manage and cope with painful symptoms; these outcomes are often then presented as a kind of recovery itself (see Hess, Lacasse, Harmon, Williams, & Vierling-Claassen, in press).

Although many feel relief in the promise of supportive treatment, the underlying emphasis is that severe emotional or mental problems will almost surely never permanently go away because the underlying physical conditions that produce them – while capable of some melioration – are essentially static and persistent in nature. In severe cases, most mental disorders are seen as being literally chronic illnesses that are susceptible only to careful and continuous management, rather than genuine recovery or healing. For example, one well-known treatment website declares that “Just as diabetes is a disorder

of the pancreas, mental illnesses are medical conditions that often result in a diminished capacity for coping with the ordinary demands of life” (NAMI, 2011c). Thus, while treatment efforts can help with the management of symptoms and potentially reduce their severity or frequency, on this view, there is typically little expectation that personal actions will elicit any substantive changes in the body.

Recovery focused on ways to enhance freedom. In contrast, when the brain and body are seen as the intrinsic, but malleable, context in which psychological life and mental distress take place, a very different view of recovery becomes available. The possibility of bodily changeability, in particular, engenders the notion that a return to healthy functioning is a viable expectation and a goal to which suffering persons may genuinely aspire.

Most basically, what this implies is more hope for individuals and families facing mental disorder. As one mother summarized: “It used to be the common thought that brain synapses stopped growing; neuroplasticity provides an explanation for why CBT (cognitive-behavioral therapy) works and a reason to hope. It provides [optimism] that we can change as human beings” (18m).

Rather than simply a theoretical extrapolation from new biological findings, this view of recovery is being confirmed by recent reviews of the long-term treatment literature (e.g., Whitaker, 2010). In 1999, a U.S. Surgeon General report summarized the recovery literature as follows:

Long-term outcome studies . . . uncover[ed] a more positive course for a significant number of patients with severe mental illness in populations from virtually every continent, including landmark cross national studies by the World Health Organization from the 1970s and 1990s, showing unexpectedly high rates of complete or partial recovery (see also World Health Organization, 1979; Jablensky, Sartorius, Ernberg, et al., 1992).

Rather than seeing mental disorder solely in terms of long-term, chronic illness, this suggests it may be more fruitfully understood as being akin to other kinds of conditions from which people heal over time. The evidence is such that top researchers in the social sciences are beginning to advocate for this more optimistic view of recovery. Leading cognitive psychologists, for instance, have created new treatment protocols with a stated aim of helping individuals achieve “freedom” from a problem like severe depression (Segal, Williams & Teasdale, 2001; Williams, Teasdale, Segal & Kabat-Zinn, 2007). And in the U.S., the White House’s (2003) commission on mental health proposed the national mental health system shift away from traditional management services towards a restoration of functioning. That commission’s report begins with this statement: “We envision a future when everyone with a mental illness will recover” (p. 1).

Conclusions

The central inquiry of this paper has been not whether, but *how* exactly the body is perceived to contribute to a condition like serious depression. Where public and professional attention has focused on this question of how – it has typically emphasized the *quantity* or amount of biological contribution to a particular condition (*‘how much* is this biological?), such as twin and adoption studies of genetic predispositions. By contrast, our examination calls for attention to *qualitative* distinctions regarding how biology might contribute to and provide meaningful context for mental disorder. Like statistical differences only showing up through the lens of high-powered assessment technology, these qualitative distinctions may remain obscure and hidden without the assistance of rigorous theoretical analysis. By exploring viable contrasts to dominant narratives of the body from the phenomenological tradition especially, we hope to foster more critical thinking among professionals and consumers alike on how best to talk about the brain in relation to mental disorder.

Even so, a number of questions still remain. While such theoretical distinctions may be philosophically interesting, one might still wonder whether this kind of exploration makes any practical difference. In other words, what does all this “philosophizing” about recovery, the brain, and treatment strategies really mean for those facing mental disorder?

As detailed above, for those who see the brain and body as largely fixed and static entities composed of various complex mechanisms that underlie and produce our psychological and emotional experience, it appears they will be more likely to approach treatment, recovery and even their own personal sense of freedom in instrumental ways focused on correcting, controlling, managing and maintaining the body directly. And for those who see the brain and body as meaningfully malleable over time and intimately transacting with lifestyle and environment, they seem more likely to approach treatment, recovery and their own personal agency in very different ways, centered on cultivating conditions in the body that may indirectly alleviate mental distress and symptoms.

The practical differences between these two portrayals are anything but abstract. In one recent interview, a young woman told the lead author that her suicidal thoughts began the same day she was told by her doctor that she would likely have to face depression the rest of her life. In our work, we have encountered several other cases where an individual attempted or completed suicide within a day of being encouraged by their care provider to accept the fact that they had a brain disease that would require medical management for the rest of their lives.

Any given situation, of course, has a range of complex factors that defy easy explanation. Whereas many would be inclined to attribute such suicidal behavior to depressive disorder itself, this paper hints at a second possible explanation: Expectations and interpretations are powerful; diverging narratives *do matter* – even, arguably, to the point of influencing whether someone is willing to keep trying for one more day. Within a larger discourse consumed with interest in physiological predispositions, we highlight the foregoing inquiry as evidence for another kind of predisposition in the biological realm--a kind of “interpretive predisposition” reflecting the tangible, practical influence of diverging ways of conceptualizing and framing this physiology itself. Depending on the particular interpretative frame taken, there are indications of its influence on actual practice and experience – each set of assumptions exerting a sway as real and distinct as any genetic matrix.

In exploring these portrayals of embodiment, however, our purpose has only been to examine possible consequences of these diverging viewpoints. Rather than proposing the ‘right answers,’ we focus on calling attention to distinctions and questions that deserve greater discussion. In doing so, we hope this exploration supports a broader and more thoughtful collective deliberation among practitioners, researchers and individual patients. We recognize there are many important nuances still to be unexplored and we anticipate others offering different perspectives on the various issues we have raised. To close, we consider some of the reasons public attention to non-dominant biological views may have been minimized to date – and what may be done to change that. While more researchers have been articulating nuanced understandings of the brain and body, these remain out of the awareness of most of the general public. Why is this so?

Considering the research-practice awareness gap. In considering the disparities of power and prevalence between different brain narratives, some have pointed out ways that dominant views of mental disorder and its appropriate treatment have been shaped by the pharmaceutical industry (Gomory, Wong, Cohen, & Lacasse, 2010; Greenberg, 2011). Clearly, the identification of corporate influence in research, practice or education (e.g., Sismondo, 2009; Spurling et al., 2011) does warrant systematic attention. Corporate influence alone, however, does not fully explain the current gap between research and practice. Instead, a myriad of complex and interrelated factors are involved,

including issues of psychiatric classification, reimbursement systems for psychiatric care, the evolution of clinical interactions in medicine more generally, and the contemporary primacy of medication over psychosocial interventions such as psychotherapy (Carlat, 2011; Healy, 2004, 2007; Shorter, 2009).

Another explanation worth considering is the fact that discoveries of neuroplasticity and epigenetics have gained the widespread attention of researchers only within the last decade. Scientifically speaking, then, it is only relatively recently that these areas of physiological research have advanced so dramatically – with additional time perhaps needed for doctors, therapists and the general public to catch up. At the same time, only a small percentage of the general and patient populations know anything of these philosophical and neuroscience developments—literally decades after their articulation and discovery. In an age where news of a blockbuster medication can sweep the nation in a matter of months, what else is preventing the dissemination of hopeful, new brain findings?

Addressing a biological imbalance . . . in education. We believe that one major reason for the discrepancy in public awareness of diverging brain narratives is found in the educational material and other information presented to the public. Most obvious, perhaps, is the abundant direct-to-consumer advertising promoting drug treatment for mental disorder that exists – literally none of which, to our knowledge, highlights any of these newest advances in brain plasticity research. Instead, there seems to be an almost inordinate focus on the very fixed and static explanations cited earlier – e.g., chemical imbalances, genetic predispositions (Lacasse, 2005). Clearly, not all narratives of the brain are of equal marketing value.

Less obvious, however, are patterns in the educational materials created to inform and instruct the general populace about mental health issues. In a similar, but troubling way, these community mental health curricula likewise *rarely mention* the changeability of the brain (Hess, in preparation). While omission of emerging brain science in marketing materials might make sense, this same exclusion in educational materials purportedly designed to teach those facing mental disorder how to recover is more difficult to explain.

Part of the answer emerged recently in a U.S. Senate probe that revealed upwards of 75% of budgets from premier mental health educational and advocacy organizations coming from pharmaceutical companies (Harris, 2009). To be clear, like industry-linked research, education associated with industry does not necessarily mean it is invalid; preliminary analyses, however, raise serious concerns regarding basic fairness and scientific integrity (Hess, in preparation).

In light of this trend, we call for more investment in advancing industry-independent education. If the general public is to make treatment decisions that are fully informed of the entire scope of costs and benefits, they deserve a picture independent of those standing to profit from those treatments (e.g., Gordon, 2008; Williams, Teasdale, Zindel, & Kabat-Zinn, 2007).

In the absence of this kind of educational effort, the general public will remain largely unaware of these fundamental differences between competing narratives of the brain. In turn, the influence of these ideas on practice will likewise remain hidden. By contrast, in calling for more extensive and sustained attention to the varying ways the brain and body may be interpreted, we hope to surface these patterns for broader discussion and examination. In this way, practitioners, caregivers and individual patients can more readily explore *how*, exactly, a condition like depression is biological after all.

References

- Abbey R. (Ed.) (2004). *Charles Taylor*. Cambridge, UK: Cambridge University Press.
<http://assets.cambridge.org/97805218/01362/sample/9780521801362ws.pdf>
- AllizWell (2011). *Depression*. Retrieved July 20, 2011 from: <http://www.allizwell.info/Depression.html>.
- Altman, I., & Rogoff, B. (1984). World views in psychology: Trait, interactional, organismic, and transactional perspectives. In D. Stokals & I. Altman (Eds.), *Handbook of environmental psychology* (pp. 1-40). New York: Wiley.
- Andersen, S. L. & Navalt, C. P. (2004). Altering the course of neurodevelopment: a framework for understanding the enduring effects of psychotropic drugs. *International Journal of Developmental Neuroscience*, 22(5-6), 423-440.
- Andreasen, N. C. (2001). *Brave new brain: Conquering mental illness in the era of the genome*. Oxford, UK: Oxford University Press.
- Arbib, M. A. & Amari, S. (Eds.). (2003). *The handbook of brain theory and neural networks*. (2nd ed). Boston, MA: The MIT Press.
- Ashworth, P. D., & Chung, M. C. (2010). *Phenomenology and psychological science: Historical and philosophical perspectives*. New York: Springer.
- Audi, R. (Ed.) (1999). *The Cambridge Dictionary of Philosophy* (2nd ed.). Cambridge, UK: Cambridge University Press.
- Beauregard, M., & O'Leary, D. (2007). *The spiritual brain: A neuroscientist's case for the existence of the soul*. New York: HarperOne.
- Bell, A. (2002). *Debates in psychology*. New York: Routledge.
- Bennett, M. R., & Hacker, P. M. S. (2003). *Philosophical foundations of neuroscience*. London, UK: Blackwell Publishing.
- Berger, A. & Posner, M. I. (2000). Pathologies of brain attentional networks. *Neuroscience and Biobehavioral Reviews*, 24 (1), 3-5.
- Berthoz, A. (2006). *Emotion and reason: The cognitive neuroscience of decision making*. Oxford, UK: Oxford University Press.
- Bilic, B., & Georgaca, E. (2007). Representations of "mental illness" in Serbian newspapers: A critical discourse analysis. *Qualitative Research in Psychology*, 4(1-2), 167-186
- Brizendine, L. (2006). *The female brain*. New York: Broadway Books.
- Cajal, S.R. (1928). *Degeneration and regeneration of the nervous system* (R. M. May, Trans. & Ed.). London, UK: Oxford University Press.
- Carlat, D. (2011). *Unhinged: The trouble with psychiatry – A doctor's revelations about a profession in crisis*. New York: Free Press.
- Chen, E. Y. H. & Berrios, G. E. (1998). The nature of delusions: A hierarchical, neural network approach. In D.J. Stein & J. Ludik (Eds), *Neural networks and psychopathology: Connectionist models in practice and research* (pp. 167-188). Cambridge, UK: Cambridge University Press.
- Churchland, P. S. (2007). Neuroscience: Reflections on the neural basis of morality. In W. Glannon (Ed.), *Defining right and wrong in brain science: Essential readings in neuroethics* (pp. 179-182). New York: The Dana Press.
- Clark, A. (2000). *Mindware: An introduction to the philosophy of cognitive science*. Oxford, UK: Oxford University Press.
- Connelly, M. (2010, June 6). More Americans sense a downside to an online existence. *New York Times News Service*.
- Crick, F. (1995). *The astonishing hypothesis*. London, UK: Touchstone.

- Csordas, T. J. (1995). *Embodiment and Experience: The Existential Ground of Culture and Self*. Cambridge, UK: Cambridge University Press.
- Damasio, A. (1994). *Descartes' error: Emotion, reason, and the human brain*. New York: HarperCollins.
- Descartes, R. (1985). Treatise on Man. In J. Cottingham, R. Stoothoff, & D. Murdoch (Eds. & Trans.), *The philosophical writings of Descartes* (vol. 2). Cambridge, UK: Cambridge University Press.
- Descartes, R. (2008). *Meditations* (J. Veitch, trans.). New York, NY: Cosimo. (Original work published in 1641)
- Eack, S.M., Greenwald, D.P., Hogarty, S.S., Cooley, S.J., DiBarry, A.L., Montrose, D.M., & Keshavn, M.S. (2009). Cognitive enhancement therapy for early-course schizophrenia: Effects of a two-year randomized controlled trial. *Psychiatric Services*, 60(11), 1468-1476.
- Federoff, N. & Botstein, D. (1992). *The dynamic genome: Barbara McClintock's ideas in the century of genetics*. Cold Spring Harbor, NY: Cold Spring Harbor Laboratory Press
- Feld, S. & Basso, K. H. (Eds.) (1997). *Senses of Place* (School of American Research Advanced Seminar Series) School of American Research Press.
- Frith, C. D. (2007). *Making up the mind: How the brain creates our mental world*. Malden, MA: Blackwell Publishing.
- Gantt, E. E., & Reber, J. S. (1999). Sociobiological and social constructionist accounts of altruism: A phenomenological critique. *Journal of Phenomenological Psychology*, 30 (2), 14-38.
- Gantt, E. E. (2002). Agency, embodiment, and the ethical: On saving psychology from biology. In H. Atmanspacher and R. C. Bishop (Eds.), *Between Chance and Choice: Interdisciplinary Perspectives on Determinism* (pp. 447-467). Exeter, UK: Imprint Academic.
- Garland, E.L. & Howard, M.O. (2009). Neuroplasticity, psychosocial genomics, and the biopsychosocial paradigm in the 21st century. *Health and Social Work*, 34(3), 191-199.
- Gazzaniga, M. (2005). *The ethical brain*. New York: The Dana Press.
- Goldapple, K., Segal, Z., Garson, C., Lau, M., Bieling, P., Kennedy, S., & Mayberg, H. (2004). Modulation of cortical-limbic pathways in major depression: Treatment-specific effects of cognitive behavior therapy. *Archives of General Psychiatry*, 61, 34-41.
- Goldstein, K. (1957). The smiling of the infant and the problem of understanding the "Other". *The Journal of Psychology*, 44, 175-191.
- Goldstein, K. (1963). *Human nature in the light of psychopathology*. New York, NY: Schocken Books.
- Goldstein, K. (1995). *The organism: A holistic approach to biology derived from pathological data in man*. New York, NY: Zone Books. (Original work published 1934)
- Gomory, T., Wong, S.E., Cohen, D., & Lacasse, J.R. (2011). Clinical social work and the biomedical industrial complex. *Journal of Sociology and Social Welfare*, 38(4), 135-165.
- Gordon, J. S. (2008). *Unstuck: Your guide to the seven-stage journey out of depression*. New York: Penguin Press.
- Greenberg, G. (2011). *Manufacturing depression: The secret history of a modern disease*. New York: Simon and Schuster.
- Hariri, A. R., Bookheimer, S. Y. & Mazziotta, J. C. (2000). Modulating emotional responses: Effects of a neocortical network on the limbic system. *Motivation, Emotion, Feeding, Drinking*, 11(1), 43-48.
- Harris, G. (2009, October 22). Drug makers are advocacy group's biggest donors. *The New York Times*, A23.

- Harvey, B. H., McEwen, B. S. & Stein, D. J. (2003). Neurobiology of Antidepressant Withdrawal: Implications for the Longitudinal Outcome of Depression. *Biological Psychiatry*, 54(10), 1105-1117.
- Healy, D. (2004). Shaping the intimate: Influences on the experience of everyday nerves. *Social Studies of Science*, 34(2), 219–245.
- Healy, D. (2007). The new anecdotes. *Ethical Human Psychology and Psychiatry*, 9(3), 131-137.
- Hebb, D. O. (1949). *The organization of behavior*. New York: Wiley.
- Heidegger, M. (1962). *Being and time* (J. Macquarrie and E. Robinson, Trans.). New York, NY: Harper & Row. (Original work published 1927)
- Helzer, J. E., Kraemer, H. C., Krueger, R. F., Wittchen, H-U, Sirovatka, P. J., & Regier, D. A. (Eds.) (2008). *Dimensional Approaches in Diagnostic Classification: Refining the Research Agenda for DSM-V*. American Psychiatric Publishing, Inc.
- Herbert, J. (2007). *The minder brain: How your brain keeps you alive, protects you from danger, and ensures that you reproduce*. Singapore: World Scientific Publishing.
- Hess, J. Z. (2009). *Investigating the adoption, constitution and maintenance of distinct interpretations associated with depression and its medical treatment*. Dissertation manuscript. University of Illinois, Urbana-Champaign.
- Hess, J. Z., Bjorklund, E., Preece, N. & Draper, S. (2013). Poison apples, big bad wolves and other ‘happy ending’ spoilers: Overcoming barriers to enduring change following youth residential treatment. *Journal of Therapeutic Schools and Programs*, 6(1), 69-97.
- Hess, J. Z., Lacasse, J. R., Harmon, J., Williams, D., & Vierling-Claassen, D. (In press). "Is there a getting better from this, or not?" Examining the meaning and possibility of recovery from mental disorder. *Child and Youth Services*.
- Hess, J. Z. (in preparation). Does funding source influence the nature of mental health education? An archival, qualitative, narrative examination across resources and curricula.
- Hollon, S. D. (1995). Depression and the behavioral high-risk paradigm. In G. A. Miller (Ed.), *The behavioral high-risk paradigm in psychopathology* (pp. 289-302). New York: Springer-Verlag.
- Jablensky, A., Sartorius N., Ernberg, G., et al. (1992). Schizophrenia: Manifestations, incidence and course in different cultures: A World Health Organization ten-country study. *Psychological Medicine Monograph Supplement*, 20, 1-97. Cambridge, UK: Cambridge University Press.
- Jacobs, D.H. & Cohen. D. (2003). Hidden in plain sight: DSM-IV’s rejection of the categorical approach to diagnosis. *Review of Existential Psychology & Psychiatry*, 36(2 & 3), 81-95.
- Joseph, R., Newberg, A., Albright, C. R., Rausch, C. A., Persinger, M., James, W., & Nietzsche, F. (2003). *NeuroTheology: Brain, science, spirituality, religious experience*. University Press.
- Lacasse, J. R. & Leo, J. (2005). Serotonin and depression: A disconnect between the advertisements and the scientific literature. *PLoS Med* 2(12), e392.
- Lacasse, J. R. (2005). Consumer advertising of psychiatric medications biases the public against non-pharmacological treatment. *Ethical Human Psychology and Psychiatry*, 7(3), 175–179.
- Leder, D. (1990). *The absent body*. Chicago, IL: University of Chicago Press.
- Leder, D. (Ed.) (1992). *The body in medical thought and practice*. Dordrecht, The Netherlands: Kluwer Academic Publishers.
- Ledoux, J. (1996). *The emotional brain: The mysterious underpinnings of emotional life*. New York, NY: Touchstone.
- Leo, J., & Lacasse, J. R. (2008). The media and the chemical imbalance theory of depression. *Society*, 45, 35–45.
- Lester, D. (1995). *Theories of personality: A systems approach*. Washington, DC: Taylor & Francis.

- Levy-Reiner, S. (Ed.) (1999). *The Adaptable Brain Volume 2*. LC/NIMH Decade of the Brain series. Library of Congress.
- Ludik, J. & Stein, D. J. (1998). Neural-network modeling of cognitive disinhibition and neurotransmitter dysfunction in obsessive-compulsive disorder. In D.J. Stein & J. Ludik (Eds). *Neural networks and psychopathology: Connectionist models in practice and research* (pp. 231-247). Cambridge, UK: Cambridge University Press.
- Lutz, A., Brefczynski-Lewis J., Johnstone, T., & Davidson, R. J. (2008). Regulation of the neural circuitry of emotion by compassion meditation: Effects of meditative expertise. *PLoS ONE* 3(3): e1897
- Madison, G. B. (1981). *The phenomenology of Merleau-Ponty*. Athens, OH: Ohio University Press.
- Marcus, G. (2004). *The birth of the mind*. New York: Perseus.
- Martin, J. & Sugarman, J. (2001). Interpreting human kinds: Beginnings of a hermeneutic psychology. *Theory & Psychology*, 11(2), 193-207.
- Matthews, E. H. (2004). Merleau-Ponty's body-subject and psychiatry. *International Review of Psychiatry*, 16 (3), 190-198.
- McCann, T. V., & Clark, M. (2004). Embodiment of severe and enduring mental illness: Finding meaning in schizophrenia. *Issues in Mental Health Nursing*, 25 (8), 783-798.
- Mental Health For Teens (2011). Major Depression. Retrieved June 30, 2011 from: <http://mentalhealthforteens.com/page12.html>
- Merleau-Ponty, M. (1964). Eye and mind (C. Dallery, Trans.). In M. Merleau-Ponty (J. Edie, Ed.), *The primacy of perception* 9pp. 159-190). Evanston, IL: Northwestern University Press.
- Merleau-Ponty, M. (1989). *Phenomenology of Perception* (C. Smith, Trans.). London, UK: Routledge & Kegan Paul. (Original work published 1962)
- Miller, G.A. (2000). *From neurobiology to psychopathology: Integrating cognition and emotion*. NIMH Workshop, Bethesda, MD.
- Miller, G.A. & Keller, J. (2000). Psychology and neuroscience: Making peace. *Current Directions in Psychological Science*, 9, 212-215.
- Moss, D. (1989). Brain, body and world: Body image and the psychology of the body. In R. S. Valle and S. Halling (Eds.), *Existential-phenomenological perspectives in psychology: Exploring the breadth of human experience* (pp. 63-82). New York, NY: Plenum Press.
- Murphy, N., & Brown, W. S. (2007). *Did my neurons make me do it? Philosophical and neurobiological perspectives on moral responsibility and free will*. Oxford, UK: Oxford University Press.
- National Alliance for the Mentally Ill, NAMI (2011a). The Mind of America Foundation. Retrieved July 20, 2011 from: http://www.nami.org/Template.cfm?section=Mind_of_America_Foundation
- National Alliance for the Mentally Ill, NAMI (2011b). What is a serious mental illness? Retrieved July 20, 2011 from: http://www.nami.org/MSTemplate.cfm?Section=About_Us13&Site=NAMI_Johnson_County&Template=/ContentManagement/HTMLDisplay.cfm&ContentID=38913
- What is Mental Illness: Mental Illness Facts) Pamphlet: An Illness Like Any Other
- National Alliance for the Mentally Ill, NAMI (2011c). (Awareness and Support: A Pathway to Recovery/ (What is Mental Illness: Mental Illness Facts). Retrieved July 20, 2011 from: http://www.nami.org/Content/ContentGroups/Helpline1/Major_Depression.htm.
- Nemeroff, C. B. (1998). The neurobiology of depression. *Scientific American*, 278, 42-49.

- Office of the Surgeon General and various United States Government agencies (1999). *Mental Health: A report of the Surgeon General. Section 10: Overview of recovery*. Retrieved from: <http://www.surgeongeneral.gov/library/mentalhealth/chapter2/sec10.html>.
- Osterhout, L., Poliakov, A., Inoue, K., McLaughlin, J., Valentine, G., Pitkanen, I., Frenck-Mestre, C., & Hirschensohn, J. (2008). Second-language learning and changes in the brain. *Journal of Neurolinguistics*, 21, 6, 509-521.
- Ottowitz, W. E., Tondo, L., Dougherty, D. D. & Savage, C. R. (2002). The neural network basis for abnormalities of attention and executive function in major depressive disorder: Implications for application of the medical disease model to psychiatric disorders. *Harvard Review of Psychiatry*, 10, 2, 86-99.
- Pennington, B. F. (2002). *The development of psychopathology: Nature and nurture*. New York, NY: The Guilford Press.
- Posner, M. I., Sheese, B. E., Odludasa, Y., & Tang, Y. (2006). Analyzing and shaping human attentional networks. Special issue: Brain and attention. *Neural Networks*, 19(9), 1422-1429.
- Raskin, S. A. (Ed.) (2011). *Neuroplasticity and rehabilitation*. New York, NY: The Guilford Press.
- Rogers, W. K. (1998). On the mode of being of living beings and their environment: Preliminary ideas for an ecological approach in philosophy. In A-T. Tymieniecka (Ed.), *Analecta Husserliana, Vol. LII* (pp. 531-547). Dordrecht, The Netherlands: Kluwer Academic Publishers.
- Rohde, D. (1996). Uncovering a world of mental illness: An analysis in perceptual transformation in undergraduate nursing students. *Archives of Psychiatric Nursing*, 10(6), 347-54.
- Rose, S. (1995). The rise of neurogenetic determinism. *Nature*, 373(2), 380-382.
- Rueda, M. R., Fan, J., McCandliss, B., Halparin, J. D., Gruber, D. B., Pappert, L., et al. (2004). Development of attentional networks in childhood. *Neuropsychologia*, 42, 1029-1040.
- Sartre, J-P. (2000). *Jean-Paul Sartre: Basic Writings* (S. Priest, Ed). London, UK: Routledge.
- Schmidt-Degenhard, M., & Feldmann, H. (2003). Hermeneutic psychopathology of psychoses: Scientific basis, concepts, and clinical aspects. *Nervenarzt*, 74 (1), 16-22.
- Schmidt, M. A., & Bland, J. (2006). *Brain-building nutrition: How dietary fats and oils affect mental, physical, and emotional intelligence*. Bombay, India: Frog Books.
- Schwartz, J. M. & Begley, S. (2002). *The mind and the brain: Neuroplasticity and the power of mental force*. New York: Harper.
- Schotte, C.K., Van Den Bossche, B., De Doncker, D., Claes, S. & Cosyns, P. (2006). A biopsychosocial model as a guide for psychoeducation and treatment of depression. *Depression and Anxiety*, 23(5), 312-324.
- Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2001). *Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse*. New York: The Guilford Press.
- Shorter, E. (2009). *Before Prozac: The troubled history of mood disorders in psychiatry*. New York: Oxford University Press.
- Siegle, G. J. (1999). A neural network model of attention biases in depression. *Progress in Brain Research*, 121, 407-432.
- Sismondo, S. (2009). Ghosts in the machine: Publication planning in the medical sciences. *Social Studies of Science*, 39(2), 171-198.
- Slife, B. D., & Hopkins, R. H. (2005). Alternative assumptions for neuroscience: Formulating a true monism. In B. D. Slife, J. S. Reber, & F. C. Richardson (Eds.), *Critical thinking about psychology: Hidden assumptions and plausible alternatives* (pp. 121-147). Washington, DC: American Psychological Association Press.

- Slife, B. D., Reber, J. S., & Richardson, F. C. (Eds.) (2005). *Critical thinking about psychology: Hidden assumptions and plausible alternatives*. Washington, D C: American Psychological Association Press.
- Souza, D. A. (2008). *How the brain learns mathematics*. Thousand Oaks, CA: The Corwin Press.
- Spurling, G. K., Mansfield, P. R., Montgomery, B. D., Lexchin, J., Doust, J., Othman, N., & Vitry, A. I. (2010). Information from pharmaceutical companies and the quality, quantity, and cost of physicians' prescribing: A systematic review. *PLoS Medicine*, 7(10), e1000352.
- Stein, D. J., & Ludik, J. (Eds). (1998). *Neural networks and psychopathology: Connectionist models in practice and research*. Cambridge, UK: Cambridge University Press.
- Styron, W. (1992). *Darkness Visible: A Memoir of Madness*. New York: Vintage Press.
- Tallis, R. (2007). Not all in the brain. *Brain*, 130, 3050-3054.
- Tallis, R. (2011). *Aping mankind: Neuromania, Darwinitis and the misrepresentation of mankind*. Durham, UK: Acumen Publishing.
- Tancredi, L. R. (2005). *Hardwired behavior: What neuroscience reveals about morality*. Cambridge, UK: Cambridge University Press.
- Teicher, M. H, Andersena, S. L., Polcarib, A., Andersona, C. M., Navaltae, C. P. & Kima, D. M. (2003). The neurobiological consequences of early stress and childhood maltreatment. *Neuroscience and Biobehavioral Reviews*, 27 (1-2), 33-44.
- Thompson, R. F. (2000). *The brain: A neuroscience primer* (3rd Ed.). New York: Worth Publishers.
- TMS Chicago (2011). *Causes of major depressive disorder*. Retrieved, June 20, 2011 from: <http://www.tmschicago.com/causesofdepression.html>
- Taylor, C. (1989). Embodied agency. In H. Pietersma (Ed.), *Merleau-Ponty: Critical essays* (pp. 1-21). Washington, DC: University Press of America.
- Taylor C. (2002). Gadamer on the human sciences. In R. J. Dostal (Ed.), *The Cambridge Companion to Gadamer* (pp. 126-142). New York: Cambridge University Press.
- Varela, F. J., Thompson, E., & Rosch, E. (1991). *The embodied mind: Cognitive science and human experience*. Cambridge, MA: The MIT Press.
- Vidler, H.C. (2005). Women making decisions about self-care and recovering from depression. *Women's Studies International Forum*, 28, 289-303.
- Vinogradov, S., Poole, J. H., & Willis-Shore, J. (1998). 'Produced by either God or Satan': Neural network approaches to delusional thinking. In D.J. Stein & J. Ludik (Eds). *Neural networks and psychopathology: Connectionist models in practice and research* (pp. 189- 239), Cambridge, UK: Cambridge University Press.
- Welton, D. (Ed.) (1999). *The body: Classic and contemporary readings*. Malden, MA: Blackwell Publishers.
- Whitaker, R. (2010). *Anatomy of an epidemic: Magic bullets, psychiatric drugs, and the astonishing rise of mental illness in America*. New York: Crown Publishers.
- White House, President's New Freedom Commission on Mental Health (2003). *Achieving the promise: Transforming mental health care in America*. Retrieved February 16, 2012 from: <http://govinfo.library.unt.edu/mentalhealthcommission/reports/FinalReport/downloads/downloads.html>).
- Widiger, T.A. & Simonsen, E. (2005). Alternative dimensional models of personality disorder: Finding a common ground. *Personality Disorders*, 19, 110-130.
- Williams, R. N. (1992). The human context of agency. *American Psychologist*, 47(6), 752-760.
- Williams, M., Segal, J., Teasdale, Z. & Kabat-Zinn, J. (2007). *The mindful way through depression: Freeing yourself from chronic unhappiness*. New York: The Guilford Press.

World Health Organization (1979). Schizophrenia: WHO study shows that patients fare better in developing countries. *WHO Chronicle*, 33, 428.

Zuckerman, M. (1999). *Vulnerability to psychopathology: A biopsychosocial model*. Washington, DC: American Psychological Association.