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**SPECIAL ARTICLE**

The presentation of the mind-brain problem in leading psychiatry journals

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**Objective:** The mind-brain problem (MBP) has marked implications for psychiatry, but has been poorly discussed in the psychiatric literature. This paper evaluates the presentation of the MBP in the three leading general psychiatry journals during the last 20 years.

**Methods:** Systematic review of articles on the MBP published in the three general psychiatry journals with the highest impact factor from 1995 to 2015. The content of these articles was analyzed and discussed in the light of contemporary debates on the MBP.

**Results:** Twenty-three papers, usually written by prestigious authors, explicitly discussed the MBP and received many citations (mean = 130). The two main categories were critiques of dualism and defenses of physicalism (mind as a brain product). These papers revealed several misrepresentations of theoretical positions and lacked relevant contemporary literature. Without further discussion or evidence, they presented the MBP as solved, dualism as an old-fashioned or superstitious idea, and physicalism as the only rational and empirically confirmed option.

**Conclusion:** The MBP has not been properly presented and discussed in the three leading psychiatric journals in the last 20 years. The few articles on the topic have been highly cited, but reveal misrepresentations and lack of careful philosophical discussion, as well as a strong bias against dualism and toward a materialist/physicalist approach to psychiatry.

**Keywords:** Body-mind relations; psychiatry; philosophy; neurosciences; neuropsychiatry

**Introduction**

The mind-brain problem (MBP) – the problem of how to address the relation between mental phenomena and neural or physical phenomena in general – is one of the most fundamental philosophical and scientific questions that psychiatry faces.1-4 Independently of whether it is considered a singular, general problem, or a series of interrelated specific problems (qualia, intentionality, mental causation, etc.), the fact is that different solutions have been proposed over time, but fundamental questions remain unexplained. Contemporary debates have incorporated advances in both science and philosophy, leading to new insights from theoretical and empirical research. However, despite all these innovations and variations, essentially, two general metaphysical positions remain at stake. According to physicalism, mind is a material or physical process, a product of brain functioning. In contrast, nonphysicalism claims that mind is something different from, and may exist beyond, the brain.1 This antagonism between physicalist and nonphysicalist perspectives on human nature and the MBP has assumed different forms throughout the centuries, being a constant feature of Western thought, dating back at least to ancient Greece and remaining alive in contemporary debates.5,6 Here, two points should be made. First, both physicalism and antiphysicalism appear under different forms in the literature. On the one hand, there is a difference between reductive and nonreductive physicalist approaches,7-10 which leads to the epistemic problem of whether mental phenomena can or cannot be reduced to more basic physical phenomena. In the latter case, emergentism – the theory according to which the mind emerges somehow from the brain – has been defended as one of the best candidates for a physicalist worldview.11-13 On the other hand, there are various versions of nonphysicalism as well, usually represented by different types of dualism, such as substance dualism, nonsubstantial interactionist dualism, and property dualism.14-17 Second, there is little agreement on how to formulate both general positions, to the extent that some theses, such as property dualism, can be understood either in physicalist or nonphysicalist terms.18-21 This happens, as Kim18(p.33) observes, “for the simple reason that there is no consensus about either how physicalism is to be formulated or how we should understand reduction.”

This brief overview of contemporary debates on the MBP reveals that, despite claims to the contrary, it is far from being solved. For example, the problem of explaining conscious experience remains an elusive mystery.22,23 Besides, there is an explanatory gap between known neurobiological mechanisms and many phenomena of fundamental importance for understanding human functioning...
(e.g., the qualitative properties of experience, meaning-making, and creativity). This situation has direct implications for psychiatry, since the adoption of a theory of the mind-brain relation impacts our views and attitudes about human nature, free will, and treatment approaches. For example, if a professional psychiatrist adopts a reductive physicalist perspective on mental phenomena (i.e., mind is reduced to/explained by brain activity), he or she will probably end up believing that clinical phenomena, such as depression, are basically an imbalance of physico-chemical properties in the patient's brain; this belief, in turn, tends to predispose to specific treatment choices. Consequently, as Kendler argues, “as a discipline, psychiatry should be deeply interested in the MBP.”

Given the relevance of discussions about the MBP for psychiatric training and practice, we raise the question of how debates surrounding this topic have appeared in leading psychiatry journals. In other words, to what extent is the complexity of the MBP reflected in such journals? Accordingly, the aim of this study is to evaluate the presentation of the MBP in the three leading general psychiatry journals. In other words, to what extent is the complexity of the MBP reflected in such journals? Our intention is not to defend any specific position on the MBP, but to analyze how accurately it has been presented in such journals.

Methods

We searched the three general psychiatry journals with the highest impact factors since 2007 (the oldest date available at the Journal Citation Reports) for articles (original papers, commentaries, reviews, and editorials). These journals – the American Journal of Psychiatry, British Journal of Psychiatry, and JAMA Psychiatry (formerly Archives of General Psychiatry) – were chosen because they reflect the most cited and influential journals in the last decades. We are aware that our selection is restrictive and may not reflect general psychiatric discussion on the MBP; however, this was intentional, as our central goal was to analyze how the MBP appears in the three leading general psychiatry journals in the last 20 years. Our intention is not to defend any specific position on the MBP, but to analyze how accurately it has been presented in such journals.

After reading all the selected documents, we grouped their content into five different categories, as described below. Most papers fell into two categories (e.g., critique of dualism and defense of mind as a brain product).

Critique of Cartesian dualism or dualism in general

Among the 23 papers analyzed, 12 harshly criticized dualism, especially Cartesian dualism. In summary, these papers tended to cover the three topics described below.

Description of dualism

Mirescu & Kirmayer accurately described mind-brain dualism as “the idea that the mind is somehow distinct from the brain and that its essence cannot be reduced to purely material and deterministic neurological mechanisms.” But dualism often is reported to not allow mind-brain interaction, as if mind and brain were compartmentalized, noncommunicating parts of human beings.

For example, it was stated that Cartesian dualism “splits people into a mind and a brain” or “fragments the patient into a ‘brain’ and a ‘mind’” thereby not allowing the integration of mind and brain and not accepting that mental activity (thought) could influence brain function.

In contrast, Kendler rightly acknowledged that Descartes defended the reciprocal influence of mind and brain (interactionist dualism), despite Descartes’s difficulties to explain it.

Dualism’s dangers and harms

Based on the assumption that mind-brain dualism does not allow mind-brain interactions, dualism was presented as a major block to neuropsychiatry and to an integrative or biopsychosocial understanding of patients, mental disorders, and their treatments. Mind-body dualism was described as a “perennial source of public confusion” and “of the stigmatization of the mentally ill,” a “problematic dichotomy,” in a section titled “Shedding the chains of Descartes,” one study claimed that “No philosophical concept has been as... potentially pernicious in its effects as that of Cartesian dualism,” while...
another stated that approaches based on Cartesian dualism have “potential adverse consequences for patients.”32(p.202)

Dualism is not intellectually credible

This strong claim was usually made without providing any evidence or rationale to sustain it. For example, authors spoke of “primitive dualist views of mind,”25(p.1) affirmed that dualistic assumptions in psychiatry “have long since been abandoned by all thinking physicians,”33(p.491) and that “it is necessary to put aside the absurd brain-mind dualisms of the past.”34(p.480) Other authors, despite acknowledging that “dualism has a long and venerable history in Western tradition,” argued that “the idea that mind and brain are different entities is no longer credible in medical science.”4(p.913) Since “few working scientists today give much credence to classical Cartesian substance dualism,”3(p.997) as it “seems too incredible,”3(p.991) “it is time for the field of psychiatry to declare that Cartesian substance dualism is false.”31(p.434) Although one paper recognized that neuroimaging raises metaphysical questions, it soon dismissed the subject by claiming that “this has the potential for degenerating into the old mind-body duality of Descartes.”35(p.672)

Table 1 Papers on the mind-brain problem published in the three leading general psychiatry journals of the last 20 years and their citation counts (Web of Science)

<table>
<thead>
<tr>
<th>Journal/ year</th>
<th>Author</th>
<th>Title</th>
<th>Web of Science citations</th>
</tr>
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<tbody>
<tr>
<td>American Journal of Psychiatry</td>
<td>1998</td>
<td>Kandel ER</td>
<td>A new intellectual framework for psychiatry</td>
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<td></td>
<td>1999</td>
<td>Kandel ER</td>
<td>Biology and the future of psychoanalysis: a new intellectual framework for psychiatry revisited</td>
</tr>
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<td></td>
<td>1999</td>
<td>Leshner Al</td>
<td>Science is revolutionizing our view of addiction - and what to do about it</td>
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<td></td>
<td>2001</td>
<td>Kendler KS</td>
<td>A psychiatric dialogue on the mind-body problem</td>
</tr>
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<td></td>
<td>2001</td>
<td>Gabbard GO, Kay J</td>
<td>The fate of integrated treatment: whatever happened to the biopsychosocial psychiatrist?</td>
</tr>
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<td></td>
<td>2001</td>
<td>Gabbard GO</td>
<td>Empirical evidence and psychotherapy: a growing scientific base</td>
</tr>
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<td></td>
<td>2001</td>
<td>Kendler KS</td>
<td>A psychiatric dialogue on the mind-body problem</td>
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<td></td>
<td>2002</td>
<td>Yudofsky SC, Hales RE</td>
<td>Neuropsychiatry and the future of psychiatry and neurology</td>
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<td></td>
<td>2005</td>
<td>Kendler KS</td>
<td>Toward a philosophical structure for psychiatry</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>Gabbard GO</td>
<td>Mind, brain, and personality disorders</td>
</tr>
<tr>
<td></td>
<td>2006</td>
<td>Miresco MJ, Kirmayer LJ</td>
<td>The persistence of mind-brain dualism in psychiatric reasoning about clinical scenarios</td>
</tr>
<tr>
<td></td>
<td>2008</td>
<td>Beck AT</td>
<td>The evolution of the cognitive model of depression and its neurobiological correlates</td>
</tr>
<tr>
<td></td>
<td>2010</td>
<td>Insel T et al.</td>
<td>Research domain criteria (RDoC): toward a new classification framework for research on mental disorders</td>
</tr>
</tbody>
</table>

| British Journal of Psychiatry | 1995 | Karlsson H, Kamppinen M | Biological psychiatry and reductionism. Empirical findings and philosophy | 10 |
| | 1999 | Rutter ML | Psychosocial adversity and child psychopathology | 103 |
| | 2000 | Gabbard GO | A neurobiologically informed perspective on psychotherapy | 78 |
| | 2001 | Kendall RE | The distinction between mental and physical illness | 47 |
| | 2002 | Persaud R | Ten books | 1 |
| | 2003 | Turner MA | Psychiatry and the human sciences | 10 |
| | 2006 | Peveler R, Katona C, Wessely S, Dowrick C | Painful symptoms in depression: under-recognised and under-treated? | 15 |

| Archives of General Psychiatry/JAMA Psychiatry | 2009 | Insel TR | Translating scientific opportunity into public health impact: a strategic plan for research on mental illness | 194 |
| | 2015 | Ross DA, Travis MJ, Arbuckle MR | The future of psychiatry as clinical neuroscience. Why not now? | 0 |
**Defense of mind as a brain product and mental disorders as brain disorders**

Nine papers stated that mind is a product of brain activity and/or that mental disorders are brain disorders. However, such crucial statements were often presented as plain facts (e.g., “what we call ‘mind’ can be understood as the activity of the brain”). Also, generalizations were made with no supporting references, such as “most psychiatrists in the post-Cartesian era regard the mind as the activity of the brain,” and “in accord with an overwhelming degree of clinical and scientific evidence, we should conclude that the human first-person world of subjective experience emerges from and is entirely dependent upon brain functioning.”

One exception was the description of “enormous scientific support” for physicalism: “specific lesions of the brain produce specific alterations in behavior, and specific alterations in behavior are reflected in characteristic functional changes in the brain.” Some authors acknowledged that how the brain generates mind/behavior or how mind can influence the brain remain obscure. In a call for a “new intellectual framework for psychiatry,” the first principle was: “All mental processes, even the most complex psychological processes, derive from operations of the brain. The central tenet of this view is that what we commonly call mind is a range of functions carried out by the brain.”

Another reference stated, “studies of brain and behavior have shown addiction to be the quintessential biobehavioral disorder.” More recently, a proposition of a new framework for psychiatric classification “conceptualizes mental illnesses as brain disorders. In contrast to neurological disorders with identifiable lesions, mental disorders can be addressed as disorders of brain circuits.”

**Critical discussion of physicalism in psychiatry**

We found only two papers discussing a physicalist, neuroscience-based approach to psychiatry in a critical way (i.e., considering it a hypothesis or pointing to unresolved conceptual and methodological difficulties). Their defense of materialism notwithstanding, two authors affirmed that “biological psychiatry is in a confused state,” and that the disadvantage of reductionist models in psychiatry “has been that they have fostered research designs in biological psychiatry which seem to favour over-simplistic interpretations of the results.”

Another author argued that, in terms of aetiology, the claim that mental illness can have physical causes is not enough to sustain Kendall’s [physicalist] claim. The physical symptoms of illness are presumably related to underlying physical causes by laws that can be sharpened as science improves our knowledge of the physical universe. In the case of mental symptoms, since there are no laws there is no such hope. Generally, we are not arguing that physicalism (either in its reductive or nonreductive forms) is false. Given the current state of our knowledge, it should be considered a viable and
promising hypothesis for the MBP, a good framework for research. The problem, in our view, is the misrepresentation of alternative hypotheses and the presentation of physicalism as the only game in town or as a proven fact. Let us discuss these points in detail (summary presented in Table 2).

Beginning with the problem of misrepresentation, Cartesian dualism usually appears as a caricature. The articles that criticize it do not contain concrete references to Descartes’s texts, let alone sustained philosophical discussions about the complexities of his position on the MBP. For example, there is no mention of the distinction between the metaphysical and the empirical levels of analysis, which is crucial for a proper understanding of Cartesian dualism. Specifically, at the metaphysical level, body and soul are completely different substances, but at the empirical level of daily life, which is the level of interest for psychiatrists, they are not separated, instead constituting a tightly knit, indivisible psychophysical unit, as Descartes himself described:

Nature also teaches me, by these sensations of pain, hunger, thirst and so on, that I am not merely present in my body as a sailor is present in a ship, but that I am very closely joined and, as it were, intermingled with it, so that I and the body form a unit. If this were not so, I, who am nothing but a thinking thing, would not feel pain when the body was hurt, but would perceive the damage purely by the intellect, just as a sailor perceives by sight if anything in his ship is broken.44(p.56)

In this sense, Cartesian dualism does not deny the empirical unity of mind and body that psychiatrists find in their daily practice. Instead, this unity appears throughout Descartes’ analysis of psychological phenomena, as one can read in his Passions of the Soul,45 where he presents and discusses psychosomatic symptoms. In summary, rather than defending a deep gap between the mind and the brain, Descartes clearly proposed a kind of interactionist dualism. Therefore, if the lack of interaction between mind and brain is the reason for rejecting Cartesian dualism in psychiatry, then there is no reason at all. The problem, so it seems, is that Descartes has been often mentioned but very rarely read and understood in the psychiatric literature.

It is worth noting that these misrepresentations of Descartes in the medical literature have been previously explored.46-48 For example, the conclusions of Brown seem to apply to our data regarding the psychiatric literature:

Many similar references in the literature exhibit the characteristic features of a shared mythology. Rather than presenting a nuanced and unfolding interpretation based on fresh readings of the primary historical texts, modern authors in the field of psychosomatics regularly repeat stock phrases and offer minor variations of identical interpretations. Descartes is depicted as a villain whose dualistic theory sharply separated mind from body, leaving an earlier holistic medicine in disarray.47(p.322)

If Cartesian dualism is to be presented more accurately and in accordance with current scholarship in the philosophy of mind, one should avoid pejorative terms, such as “absurd,” “pernicious,” “old,” and the like, and consider that it is alive in ongoing mind-brain debates.49-52 Moreover, it is important to note that Cartesian dualism is not the only form of dualism that appears in the literature as alternative to physicalism.14-16,53-55 David Chalmers, for example, defends a form of dualism that takes conscious experience as a basic feature or reality, which cannot be reduced to anything else in nature. While avoiding the problem of reductionism, his naturalistic dualism is also intended to be compatible with a nonreductive form of physicalism. In his own words:

Although a remarkable number of phenomena have turned out to be explicable wholly in terms of entities simpler than themselves, this is not universal. In physics, it occasionally happens that an entity has to be taken as fundamental.
Fundamental entities are not explained in terms of anything simpler. Instead, one takes them as basic, and gives a theory of how they relate to everything else in the world. I suggest that a theory of consciousness should take experience as fundamental. We know that a theory of consciousness requires the addition of something fundamental to our ontology, as everything in physical theory is compatible with the absence of consciousness. We might add some entirely new nonphysical feature, from which experience can be derived, but it is hard to see what such a feature would be like. More likely, we will take experience itself as a fundamental feature of the world, alongside mass, charge, and space-time.53(p.353-60)

Unfortunately, we could not find any effort in the selected publications to distinguish the various types of dualism, nor any discussion about dualistic alternatives to the Cartesian model. This may indicate that psychiatrists tend to conflate dualism with Cartesian dualism (frequently, with one of its caricatures).

Apart from misrepresentation and lack or relevant philosophical literature, we also found a strong bias in most theoretical discussions. In contrast with dualism, which is constantly criticized (often in a very superficial way), materialist/physicalist approaches are hastily presented as the only plausible model for a scientific psychiatry. Only two papers discussed the problems and impasses of biological psychiatry. Materialism/physicalism is usually presented not as a hypothesis, but as a plain fact, which warrants no further discussion. As previously indicated, this does not reflect the state of the art in philosophy of mind and consciousness studies, in which physicalist approaches appear as hypothetical models of explanation that are frequently criticized and have their limits exposed.17,56,57 For example, Nagel reminds us of how consciousness remains intractable from our current physicalist point of view:

Consciousness is the most conspicuous obstacle to a comprehensive naturalism that relies only on the resources of physical science. The existence of consciousness seems to imply that the physical description of the universe, in spite of its richness and explanatory power, is only part of the truth, and that the natural order is far less austere than it would be if physics and chemistry accounted for everything. If we take this problem seriously, and follow out its implications, it threatens to unravel the entire naturalistic world picture.57(p.35)

In the papers we analyzed, it is often assumed that the mere correlation of brain states with mind activity or the empirical verification that brain damage or stimulation generates changes in mental function constitute undeniable evidence that the mind is a product of the brain. However, it may be argued that such empirical findings fit both physicalist (the brain produces the mind) and nonphysicalist (the brain is a tool or filter for manifestation of the mind) perspectives. William James recognized this possibility more than a century ago, as did two pairs of philosophers and neuroscientists after him.58,60 None of the papers we identified made any effort to discuss alternative hypotheses that might explain the same empirical data advanced in favor of a physicalist explanation.

Additionally, despite a clear defense of physicalism, no sufficient justification is presented for accepting it. Some claim that dualists cannot adequately explain how the mind, being an immaterial substance, would interact with the brain. That is true, but likewise, no one has succeeded in explaining how the brain gives rise to various mental processes.53(p.460) In fact, defenders of physicalism often recognize that "we are far from having a realist neurobiology of clinical syndromes and even farther from having a neurobiology of psychotherapy."24(p.467) However, none of this is taken as a possible reason for raising doubts about the validity of the physicalist model, as Nagel does. In fact, several authors who defend this kind of physicalism revive what Popper called "promissory materialism," which "consists, essentially, of a historical (or historicist) prophecy about the future results of brain research and their impact. [...] No attempt is made to resolve the difficulties of materialism by argument. No alternatives to materialism are even considered."59(p.56)

Additionally, they do not address the failure of materialism to deliver on its promise over the centuries or in modern psychiatry.5,61

In the same line, it is also assumed, with no presentation of supporting evidence, that all rational and science-oriented minds reject dualism and accept physicalism. This can be empirically refuted at different levels. First, many scientists and philosophers cited in the present paper defend a nonphysicalist position on the MBP. Second, surveys of European university students and health professionals62 and of Brazilian psychiatrists53 found high levels (ranging from 40 to 67%) of rejection of physicalist perspectives on the MBP. Third, a recent international survey among professional philosophers (mainly from Europe and North America) revealed that only 34.6% fully accepted a physicalist view of mind.64 This evidence shows that many well-educated and learned individuals from distinct areas related to the MBP do not endorse physicalism, despite claims to the contrary in the articles reviewed herein. Although this cannot be taken as a philosophical argument, it serves as empirical evidence against the claim that all educated persons are committed to physicalism.

Another case of bias is present in discussions about topics associated with research and clinical practice in psychiatry is valorization of neuroscience, promotion of integrative approaches, and reduction of stigma on patients. Again, physicalist views on the MBP are often presented as the only way to achieve the laudable goals just described. However, neuroscience is important not only to the physicalist but also to the dualist psychiatrist. Assuming close and constant interconnections between the mind and the brain is the essential factor in understanding, promoting, and practicing an integrative biopsychosocial approach to mental disorders. The problem lies in the extremes of brainless and mindless approaches.65 For example, regarding stigma, two recent systematic reviews66,67 found that narrowly biogenetic explanations of mental disorders (e.g., "brain diseases," "chemical imbalances") unintentionally produce more stigma and rejection of patients, who are perceived as not in charge of themselves, unpredictable, and dangerous.
Alternative approaches recognize that mind-body interactions can empower patients with the hope and confidence needed to promote health by increasing their freedom from prior conditioning.68,69

Some authors seem to conflate a methodological with a metaphysical claim. It may be argued that most scientists are committed to methodological naturalism – minimally understood as the thesis that scientific research deals only with natural phenomena – and that, therefore, psychiatrists as natural scientists should follow this precept and study mental phenomena as natural phenomena, often understood in a narrow sense, i.e., in their relation to the brain. However, methodological naturalism does not entail physicalism, which is a metaphysical thesis about the ultimate nature of reality. As Hudson70(p.169) argues, “one could take naturalism to be a restriction on the sources and scope of knowledge without taking any stand whatsoever on whether those sources were adequate to investigate all the furniture of the world.” Moreover, jumping to hasty metaphysical conclusions can lead psychiatrists to conflate science with scientism, the belief that everything in the world must be “belonged to the structures of science or to those causal dependencies that are the stock in trade of the developed sciences.”71(p.39) In other words, if something defies traditional scientific explanations, as consciousness has done so far, it does not mean that it must be forced at all costs into those same explanatory schemes.

Given the problems above, we conclude that the MBP has not been properly presented and discussed in the three leading psychiatric journals in the last 20 years. The few articles in which the topic appears have been highly cited, but often reveal misrepresentations and lack of careful philosophical discussions, as well as a strong bias against dualism and toward a materialist/physicalist approach to psychiatry. This lack of theoretical clarification may lead to unfortunate consequences in psychiatric training and clinical practice. Accepting neuroscience and promoting the advancement of psychiatry and the wellbeing of our patients does not necessitate hastily adopting a certain metaphysical perspective on the MBP or considering its solution. It is in the best interest of science and of patients that we keep a scientific mind, which involves open-minded critical thinking. According to philosopher of science Imre Lakatos, scientific progress is facilitated by open-minded competition among alternative approaches:

It would be wrong to assume that one must stay with a research programme until it has exhausted all its heuristic power, that one must not introduce a rival programme before everybody agrees that the point of degeneration has probably been reached. (...) The history of science has been and should be a history of competing research programmes (...): the sooner competition starts, the better for progress. ‘Theoretical pluralism’ is better than ‘theoretical monism.’72(p.154-9)

In this sense, given the status of our current knowledge and the absence of a satisfactory theory of the MBP, the best way to achieve progress in psychiatry is to recognize that the MBP is far from being solved and to be open to competing theoretical models, as is being done in contemporary physics and philosophy of mind. It is crucial that several models of the MBP, including physicalist and nonphysicalist ones, be allowed to develop and show their value (or lack thereof). Rather than misrepresenting potential candidates, it is more productive to consider alternative hypotheses seriously and test them rigorously with respect for what they propose. Psychiatry could benefit from such competition to move beyond its current limitations.

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Disclosure

The authors report no conflicts of interest.

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