

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 Kim^{7(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

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(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.²⁻⁴ 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^{3(p.989)} 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 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.

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 most prestigious and influential (i.e., most cited) general psychiatric journals. We are equally aware that some more philosophically oriented psychiatrists may publish in different journals, but this does not reflect the broad-spectrum tendency we are interested in.

We searched the three selected journals' websites for the terms Descartes OR dualism OR monism OR materialism from January 1995 to May 2015. We then selected papers that described these concepts and/or discussed their implications for the MBP and psychiatry.

After this selection, we carefully read those papers that presented a view on the MBP and its relation to psychiatry. Papers that did not discuss the MBP specifically despite matching the search parameters were excluded from qualitative analysis. To evaluate the impact of the selected papers, the number of citations of each was obtained from Web of Science (February 2016). We then grouped papers into thematic categories based on their focus and approach to the MBP. After describing what these papers stated about the MBP, we compared their content with the original sources (e.g., what was written about Descartes was compared with Descartes's writings)

and with contemporary debates on the MBP, with special emphasis on the current literature in philosophy of mind and consciousness studies.

Results

Among the 442 documents retrieved by our search strategy (articles, book reviews, and editorials), only 23 contained explicit discussions of or references to the MBP: 14 published in the *American Journal of Psychiatry*, seven in the *British Journal of Psychiatry*, and two in *JAMA Psychiatry* (Table 1). Those papers were usually written by prestigious authors in the field and received a very high level of citation: 2,996 citations overall, mean (SD) 130.3 (190.1) per paper. Nine of 23 articles received more than 100 citations, one received 863, and only two received fewer than 10 citations.

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

Miresco & Kirmayer^{4(p.913)} 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.^{4,24-26} For example, it was stated that Cartesian dualism "splits people into a mind and a brain"^{27(p.117)} or "fragments the patient into a 'brain' and a 'mind',"^{28(p.1959)} thereby not allowing the integration of mind and brain and not accepting that mental activity (thought) could influence brain function.^{29,30} In contrast, Kendler rightly acknowledged that Descartes defended the reciprocal influence of mind and brain (interactionist dualism), despite Descartes's difficulties to explain it.³

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,"^{26(p.1262)} a "problematic dichotomy."^{30(p.648)} 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,"^{31(p.434)} while

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)

Journal/ year	Author	Title	Web of Science citations
<i>American Journal of Psychiatry</i>			
1998	Kandel ER	A new intellectual framework for psychiatry	420
1999	Kandel ER	Biology and the future of psychoanalysis: a new intellectual framework for psychiatry revisited	318
1999	Leshner AI	Science is revolutionizing our view of addiction - and what to do about it	111
1999	Nemeroff CB, Kilts CD, Berns GS	Functional brain imaging: twenty-first century phrenology or psychobiological advance for the millennium?	30
2001	Kendler KS	A psychiatric dialogue on the mind-body problem	28
2001	Gabbard GO, Kay J	The fate of integrated treatment: whatever happened to the biopsychosocial psychiatrist?	77
2001	Gabbard GO	Empirical evidence and psychotherapy: a growing scientific base	117
2001	Kendler KS	A psychiatric dialogue on the mind-body problem	28
2002	Yudofsky SC, Hales RE	Neuropsychiatry and the future of psychiatry and neurology	28
2005	Kendler KS	Toward a philosophical structure for psychiatry	145
2005	Gabbard GO	Mind, brain, and personality disorders	45
2006	Miresco MJ, Kirmayer LJ	The persistence of mind-brain dualism in psychiatric reasoning about clinical scenarios	41
2008	Beck AT	The evolution of the cognitive model of depression and its neurobiological correlates	287
2010	Insel T et al.	Research domain criteria (RDoC): toward a new classification framework for research on mental disorders	863
<i>British Journal of Psychiatry</i>			
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	Kendell 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
<i>Archives of General Psychiatry/JAMA Psychiatry</i>			
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

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)}

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”^{27(p.117)}). 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,”^{30(p.648)} 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.”^{31(p.434)} 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.”^{24(p.460)} Some authors acknowledged that how the brain generates mind/behaviour^{24,35,36} or how mind can influence the brain^{31(p.434)} 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.”^{24(p.460)} Another paper was less definitive, proposing that “emergent materialism is a plausible stance in biological psychiatry.”^{37(p.434)}

Since mind is assumed to be a product of brain activity, mental disorders were presented as brain disorders.^{38(p.130)} According to a neuroscientific approach to psychiatry, “The diseases that we treat are diseases of the brain.”^{39(p.414)} Another reference stated, “studies of brain and behavior have shown addiction to be the quintessential biobehavioral disorder.”^{6(p.1)} 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.”^{40(p.749)}

Defense of mind-brain dualism

We found three papers defending some form of mind-brain dualism. One author recognized that investigations of cognitive and biological aspects of depression pose a philosophical problem, namely, “How can one reconcile two totally different levels of abstraction: mentalism and materialism? The cognitive and neurophysiological approaches use different concepts, research strategies, and technical procedures.”^{41(p.974)} Setting this problem aside, he continued, “I believe that it is possible to present a pragmatic formulation of the interaction of the two levels.”^{41(p.974)} Another author argued that, “This view that the brain is the seat of consciousness, but that its conscious states are not just physical states, is called dual aspect theory and this is what I personally subscribe to.”^{42(p.261)} Finally, one paper affirmed “The different constitutive principles of the mental and physical give reason to think that not all mental illness has a physical cause.”^{43(p.473)}

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,”^{37(p.434)} 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.”^{37(p.435)} Another author argued that,

in terms of aetiology, the claim that mental illness can have physical causes is not enough to sustain Kendell’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 [...]^{43(p.473)}

Overview of different philosophical positions

The last thematic category included two papers. In a very broad dialogue-like article, Kendler^{3(p.989)} offered a “selective primer for past and current perspectives on the mind-body problem,” which includes Cartesian dualism, eliminative materialism, and others. In the same vein, Persaud listed a series of books and intellectuals that, according to him, have contributed to understanding the situation in contemporary psychiatry.⁴²

Discussion

Our findings indicate that the MBP has been neither carefully nor systematically addressed in the three leading general psychiatry journals with the highest impact factors during the last 20 years. We found only 23 papers published in this period which discussed, or made explicit reference to, this challenging problem that affects psychiatric training, research, and practice so greatly. Moreover, these papers were usually authored by prestigious and highly cited psychiatrists and had high citation rates – much higher than the three top cited journals’ average. This suggests that those views on MBP have been influential and may have helped shape the field’s stance on the subject.

A careful reading of those articles on the MBP, however, reveals a series of misrepresentations of theoretical positions (often based on secondary literature), lack of relevant contemporary literature on the topic, and a strong bias toward reductive physicalism in psychiatry. In summary, without further discussion or evidence, these authors present the MBP as solved, dualism as an old-fashioned/superstitious idea, and physicalism (mind as a brain product) as the only rational option and the only one that has undoubtedly been empirically confirmed. 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

Table 2 Main misrepresentations of the mind-brain problem in leading psychiatry journals

Topic	Misrepresentation	More balanced/accurate view
Description of Cartesian dualism	Mind and brain as compartmentalized, noninteracting parts of human beings	Descartes proposed an interactionist dualism, with profound, constant, and mutual mind-body influences
Dangers and harms of dualism	Major block to neuropsychiatry and a biopsychosocial approach	Interactionist dualism does not deny neuropsychiatry and fosters a biopsychosocial approach
Academic reputation of dualism	Dualism is a primitive/superstitious view, not intellectually credible. No learned person accepts it	Dualism is alive in contemporary mind-brain debates, defended by reputable philosophers and neuroscientists
Mind-brain relationship	It has been proved that mind is a product of brain activity (physicalism)	The mind-brain relationship is still an open question. Most empirical findings can be accommodated to both physicalist and nonphysicalist views of the mind
Psychiatrists' views of the MBP	Most psychiatrists accept physicalist views of mind	There are very few studies on the subject, and the available evidence suggests that a substantial portion of psychiatrists, health professionals, and university students reject physicalist views of mind
Nature of mental disorders	Mental disorders are brain disorders/diseases and this view would reduce stigma	The nature of mental disorders is a controversial topic. Mental disorders are related to a wide range of biopsychosocial factors. There is consistent evidence that biogenetic explanations of mental disorders are related to more stigma

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.359-60)}

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 of 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 James⁵⁸ recognized this possibility more than a century ago, as did two pairs of philosophers and neuroscientists after him.^{59,60} 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.”^{24(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.^{6,61}

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 psychiatrists⁶³ 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 reviews^{66,67} 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 Hudson^{70(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 “beholden to the strictures 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 well-being of our patients does not necessitate hastily adopting a certain metaphysical perspective on the MBP or considering it solved. 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.154-5)}

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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References

- Chalmers DJ. Consciousness and its place in nature. In: Stich SP, Warfield TA, editors. *The Blackwell guide to philosophy of mind*. Oxford: Blackwell; 2003. p. 102-42.
- Cloninger CR. The importance of ternary awareness for overcoming the inadequacies of contemporary psychiatry. *Rev Psiquiatr Clin*. 2013;40:110-3.
- Kendler KS. A psychiatric dialogue on the mind-body problem. *Am J Psychiatry*. 2001;158:989-1000.
- Miresco MJ, Kirmayer LJ. The persistence of mind-brain dualism in psychiatric reasoning about clinical scenarios. *Am J Psychiatry*. 2006;163:913-8.
- Crane T, Patterson S. Introduction. In: Crane T, Patterson S, editors. *History of the mind-brain problem*. London: Routledge; 2000. p. 1-12.
- Araujo SF. O eterno retorno do materialismo: padrões recorrentes de explicações materialistas dos fenômenos mentais. *Rev Psiquiatr Clin*. 2013;40:114-9.
- Kim J. *Physicalism, or something near enough*. Princeton: Princeton University; 2008.
- Papineau D. The rise of physicalism. In: Gillet C, Loewer B, editors. *Physicalism and its discontents*. Cambridge: Cambridge University; 2001. p. 3-36.
- Pereboom D. *Consciousness and the prospects of physicalism*. Oxford: Oxford University; 2011.
- Poland J. *Physicalism. Its philosophical foundations*. New York: Oxford University; 1994.
- Bedau M, Humphreys P. *Emergence: contemporary readings in philosophy and science*. Cambridge: MIT; 2008.
- Stephan A. Varieties of emergentism. *Biol Theory*. 1999;5:49-59.
- Vision G. Emergentism. In: Schneider S, Velmans M, editors. *The Blackwell companion to consciousness*. Malden: Wiley-Blackwell; 2017. p. 337-48.
- Göcke B. *After physicalism*. Notre Dame: University of Notre Dame; 2012.
- Lavazza A, Robinson H. *Contemporary dualism: a defense*. New York: Routledge; 2014.
- Popper K. *Knowledge and the mind-brain problem: In defense of interaction*. London: Routledge; 1994.
- Koons R, Bealer G. *The waning of materialism*. Oxford: Oxford University; 2010.
- Mackie P. Property dualism and substance dualism. *Proc Aristotelian Soc*. 2011;111:181-99.

- 19 Robinson WS. Developing dualism and approaching the hard problem. *J Conscious Stud.* 2011;21:156-82.
- 20 Yang E. The compatibility of property dualism and substance materialism. *Philos Stud.* 2015;172:3211-9.
- 21 Zimmerman D. From property dualism to substance dualism. *Proc Aristotelian Soc.* 2010;84:119-50.
- 22 Chalmers D. The hard problem of consciousness. In: Schneider S, Velmans M, editors. *The Blackwell companion to consciousness.* 2nd ed. Malden: Blackwell; 2017. p. 337-48.
- 23 McClelland T. The problem of consciousness: Easy, hard or tricky? *Topoi (Dordr).* 2017;36:17-30.
- 24 Kandel ER. A new intellectual framework for psychiatry. *Am J Psychiatry.* 1998;155:457-69.
- 25 Leshner AI. Science is revolutionizing our view of addiction--and what to do about it. *Am J Psychiatry.* 1999;156:1-3.
- 26 Yudofsky SC, Hales RE. Neuropsychiatry and the future of psychiatry and neurology. *Am J Psychiatry.* 2002;159:1261-4.
- 27 Gabbard GO. A neurobiologically informed perspective on psychotherapy. *Br J Psychiatry.* 2000;177:117-22.
- 28 Gabbard GO, Kay J. The fate of integrated treatment: whatever happened to the biopsychosocial psychiatrist? *Am J Psychiatry.* 2001;158:1956-63.
- 29 Gabbard GO. Empirical evidence and psychotherapy: a growing scientific base. *Am J Psychiatry.* 2001;158:1-3.
- 30 Gabbard GO. Mind, brain, and personality disorders. *Am J Psychiatry.* 2005;162:648-55.
- 31 Kendler KS. Toward a philosophical structure for psychiatry. *Am J Psychiatry.* 2005;162:433-40.
- 32 Peveler R, Katona C, Wessely S, Dowrick C. Painful symptoms in depression: under-recognised and under-treated? *Br J Psychiatry.* 2006;188:202-3.
- 33 Kendell RE. The distinction between mental and physical illness. *Br J Psychiatry.* 2001;178:490-3.
- 34 Rutter ML. Psychosocial adversity and child psychopathology. *Br J Psychiatry.* 1999;174:480-93.
- 35 Nemeroff CB, Kilt CD, Berns GS. Functional brain imaging: twenty-first century phrenology or psychobiological advance for the millennium? *Am J Psychiatry.* 1999;156:671-3.
- 36 Kandel ER. Biology and the future of psychoanalysis: a new intellectual framework for psychiatry revisited. *Am J Psychiatry.* 1999;156:505-24.
- 37 Karlsson H, Kamppinen M. Biological psychiatry and reductionism. Empirical findings and philosophy. *Br J Psychiatry.* 1995;167:434-8.
- 38 Insel TR. Translating scientific opportunity into public health impact: a strategic plan for research on mental illness. *Arch Gen Psychiatry.* 2009;66:128-33.
- 39 Ross DA, Michael MJ, Arbuckle MR. The future of psychiatry as clinical neuroscience: why not now? *JAMA Psychiatry.* 2015;72:413-4.
- 40 Insel T, Cuthbert B, Garvey M, Heinssen R, Pine DS, Quinn K, et al. Research domain criteria (RDoC): toward a new classification framework for research on mental disorders. *Am J Psychiatry.* 2010;167:748-51.
- 41 Beck AT. The evolution of the cognitive model of depression and its neurobiological correlates. *Am J Psychiatry.* 2008;165:969-77.
- 42 Persaud R. Ten books: chosen by Raj Persaud. *Br J Psychiatry.* 2002;181:258-61.
- 43 Turner MA. Psychiatry and the human sciences. *Br J Psychiatry.* 2003;182:472-4.
- 44 Descartes R. *Meditations on first philosophy.* In: Cottingham J, Stoothoff R, Murdoch D, editors. *The philosophical writings of Descartes.* Cambridge: Cambridge University; 1641/1984. v. 2, p. 1-62.
- 45 Descartes R. *The passions of the soul.* In: Cottingham J, Stoothoff R, Murdoch D, editors. *The philosophical writings of Descartes.* Cambridge: Cambridge University; 1649/1985. v. 1, p. 325-404.
- 46 Duncan G. Mind-body dualism and the biopsychosocial model of pain: what did Descartes really say? *J Med Philos.* 2000;25:485-513.
- 47 Brown TM. Cartesian dualism and psychosomatics. *Psychosomatics.* 1989;30:322-31.
- 48 Kirkeboen G. Descartes' embodied psychology: Descartes' or Damasio's error? *J Hist Neurosci.* 2001;10:173-91.
- 49 Eccles J. Part II. In: Popper K, Eccles J, editors. *The self and its brain. An argument for interactionism.* New York: Routledge; 1983. p. 225-422.
- 50 Foster J. *The immaterial self. A defense of the Cartesian dualist conception of the mind.* London: Routledge; 1991.
- 51 Robinson H. Naturalism and the unavoidability of the Cartesian perspective. In: Lavazza A, Robinson H, editors. *Contemporary dualism: a defense.* New York: Routledge; 2014. p. 154-70.
- 52 Swinburne R. What makes me me? A defense of substance dualism. In: Lavazza A, Robinson H, editors. *Contemporary dualism: a defense.* New York: Routledge; 2014. p. 139-53.
- 53 Chalmers D. Naturalistic dualism. In: Velmans M, Schneider S, editors. *The Blackwell companion to consciousness.* Malden: Blackwell; 2007. p. 68.
- 54 Antonietti A, Corradini A, Lowe EJ. *Psycho-physical dualism today. An interdisciplinary approach.* Lanham: Lexington; 2008.
- 55 Smythies JR, Beloff J. *Case for dualism.* Charlottesville: University of Virginia; 1989.
- 56 Chalmers D. *The conscious mind: In search of a fundamental theory.* Oxford: Oxford University; 1996.
- 57 Nagel T. *Mind and cosmos: why the materialist neo-Darwinian conception of nature is almost certainly false.* Oxford: Oxford University; 2012.
- 58 James W. Human immortality: two supposed objections to the doctrine. In: Murphy G, Ballou RO, editors. *William James on psychical research.* New York: Viking; 1898/1960. p. 279-308.
- 59 Popper KR, Eccles J. *The self and its brain.* Berlin: Springer Verlag; 1977.
- 60 Bennett MR, Hacker PMS. *Philosophical foundations of neuroscience.* Malden: Blackwell; 2003.
- 61 Moreira-Almeida A, Santos FS. *Exploring frontiers of the mind-brain relationship.* New York: Springer; 2012.
- 62 Demertzi A, Liew C, Ledoux D, Bruno MA, Sharpe M, Laureys S, et al. Dualism persists in the science of mind. *Ann N Y Acad Sci.* 2009;1157:1-9.
- 63 Moreira-Almeida A, Araujo SF. Does the brain produce the mind? A survey of psychiatrists' opinions. *Arch Clin Psychiatry (São Paulo).* 2015;42:74-5.
- 64 Bourget D, Chalmers D. What do philosophers believe? *Philos Stud.* 2014;170:465-500.
- 65 Eisenberg L. Mindlessness and brainlessness in psychiatry. *Br J Psychiatry.* 1986;148:497-508.
- 66 Kvaale EP, Gottdiener WH, Haslam N. Biogenetic explanations and stigma: a meta-analytic review of associations among laypeople. *Soc Sci Med.* 2013;96:95-103.
- 67 Angermeyer MC, Holzinger A, Carta MG, Schomerus G. Biogenetic explanations and public acceptance of mental illness: systematic review of population studies. *Br J Psychiatry.* 2011;199:367-72.
- 68 Baumeister RF, Bauer IM, Lloyd SA. Choice, free will, and religion. *Psychol Relig Spiritual.* 2010;2:67-82.
- 69 Cloninger CR, Cloninger KM. People create health: effective health promotion is a creative process. *Int J Pers Cent Med.* 2013;3:114-22.
- 70 Hudson H. Non-naturalistic metaphysics. In: Clark K J, editor. *The Blackwell companion to naturalism.* Malden: Blackwell; 2016. p. 168-81.
- 71 Robinson D. Science, scientism, and explanation. In: Williams R, Robinson D, editors. *Scientism: the new orthodoxy.* London: Bloomsbury; 2015. p. 23-40.
- 72 Lakatos I. Falsification and the methodology of scientific research programmes. In: Lakatos I, Musgrave A, editors. *Criticism and the growth of knowledge.* Cambridge: Cambridge University; 1970. p. 91-195.