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Mental Causation

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This article aims to provide a brief overview of the mental causation problem and its proposed solutions. Indeed, mental causation turns out to be one of the most difficult philosophical conundrums in contemporary philosophy of mind. In the first two sections, we offer an outline of the problem and the philosophical debate about it, and show that the mental causation problem is pivotal within the contemporary philosophy of mind. In the third section, we focus on the most popular models of mental causation, namely Kim's and Davidson's accounts, also discussing the objections raised against them. In the final section, we take into consideration some recent proposals poised to solve the mental causation problem, including powerism. Given the logical and metaphysical plausibility of almost all these different options, our conclusion is that mental causation is still an open problem and it is far from being resolved.

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1. Mental causation: the problem

In this paper we present the problem of mental causation and its possible solutions within the landscape of today's philosophy of mind. Our conclusion is that none of these solutions is definitive, so that mental causation is still an open problem. In the present section we provide a definition of mental causation and in Section 2 we examine why mental causation constitutes a problem for the contemporary philosophical debate. In Section 3 we focus on the most popular models of mental causation, also discussing the main objections that have been made against them. Finally, in Section 4, we highlight some relevant contemporary solutions to the problem.

Mental causation occurs when a mental property or state causes another property or a behavior. Folk psychology is almost entirely based on mental causation, so that if it were not real our entire personal and social lives would have to be rethought at the personal, social, and legal levels.[1] However, the question is whether mental causation is possible in the light of certain metaphysical assumptions and principles, as well as of several scientific findings. The problem arises from the fact that (1) bodily actions perhaps have mental causes; but (2) bodily actions have physical causes as well; (3) mental causes are different from physical causes; (4) and every bodily action can only have one cause.[2] Indeed, the problem of mental causation (or psychophysical causation) has played a significant role in a wide range of different fields, from philosophy of mind and metaphysics to

[1] It may be worth mentioning that an anti-causalist view committed to the explanatory power of reason explanation of behavior had been a consensus view in philosophy before Davidson's essay *Actions, Reasons, and Causes* (1963) was published. And now there is a comeback of anti-causalism, with explanatory efforts distributed among philosophy of action and moral philosophy (cf. D'Oro and Sandis, 2013).

[2] Unless one is prepared to admit systematic causal overdetermination. A classic reference in this sense is Heil and Mele (1993).

epistemology and philosophy of science. We cannot examine here the many relevant ideas concerning mental causation in all these fields, so we shall focus on the most prominent solutions proposed by contemporary philosophers of mind.[3]

For a long time, mental items (mostly identified with consciousness and intention) have been considered non-physical, and this has raised the question how these essentially different entities (mental and physical entities) can interact. Similarly, if we maintain that mental states and events are experienced by a non-physical substance (the Cartesian *res cogitans*), we need to explain how they could causally influence, and be causally influenced by, physical events. In fact, if we defend a sort of irreducibility of mental items (i.e., the impossibility for mental items to be identical with physical items, based on logical, metaphysical or scientific grounds), we are forced to seek an explanation for mental causation. Supposing that mental items belong to a non-physical domain and they are not reducible to physical items, the relation between mind and body could be defined as a sort of *interactionism*. The three main objections that have been historically made against mind-body interactionism are the following:

1) *The nature of the causal power of the mind*. It seems hard to explain how the mind, if it is not a physical item, could causally interact with the brain;
2) *The causal closure of the physical*. Physicalism assumes that every physical effect must only have a physical cause. According to this idea, every physical event necessarily has a physical cause;
3) *The principle of the conservation of energy*. If we admit that a non-physical mind has a causal influence on the physical world, the consequence is a violation of the First Law of Thermodynamics. In fact, an immaterial substance's causal influence on the brain would determine the change of the position of some particles in the brain at the microphysical level. A change of this kind would introduce additional energy *ex nihilo*. This process contradicts the principle according to which the total energy of an isolated system must remain constant.

Thus, alternatives need to be considered to traditional interactionism. In order to provide an overview, in the next section, we settle to examine the problem of mental causation as it has been analyzed and structured in the contemporary debate.

[3] Cf. Crane (1995), Sider (2003), Lowe (2006), Marcus (2005), Horgan (2007), McLaughlin (2007).

2. The contemporary debate on mental causation

Causal interactions between mental and physical states are accepted by the position of substance dualism, which has its historical origin in the Cartesian perspective.[4] According to the Cartesian account, the human mind is a non-physical substance that can causally influence physical events. However, if we maintain that our world is physically closed, we cannot explain how a non-physical mind may causally bring about physical effects.

Indeed, mental causation becomes a serious problem even if one takes a physicalist perspective. For instance, the causal efficacy of the mental is deprived of any explanatory power whatsoever by reductive physicalism.[5] According to this view, mental properties or events have no causal power, given that the only states that exert a causal influence on our behavior are physical states (of the brain). It is worth mentioning that some of the physicalist perspectives are *identity theories*,[6] which can be divided into *type-identity theories* and *token-identity theories*. Identity theories assert that mental aspects are identical to physical aspects in terms of types or tokens. Recently, at the empirical level, neuroscientists have also been trying to demonstrate that brain events are indeed the sole causal events that determine our behavior. Therefore, according to reductive physicalism, mental facts or mental statements can be explained in terms of basic physical facts or physical statements.

On the other hand, non-reductive physicalism – probably the most shared view in philosophy of mind – supports the idea that mental facts *depend* on physical facts but cannot be reduced to the physical domain. In John Heil's definition, non-reductive physicalists embrace three theses:

– (1) *Distinctness*: mental properties are distinct from physical properties;
– (2) *Dependence*: mental properties depend on physical properties;

[4] For a contemporary version of substance dualism, see Ducasse (1951), Ewing (1968), H. Robinson (1982), H. D. Lewis (1982), Swinburne (1986), Hart (1988), Foster (1991), Meixner (2004), Lavazza and Robinson (2014).
[5] See Churchland (1981), (1985) and Dennett (1987), (1991).
[6] On type-identity theories, see Place (1956) and Smart (1959). On token-identity theories, see Davidson (1970).

– (3) *Autonomy*: the physical realm is causally self-contained. In particular, it must be stressed that physical effects have purely physical causes (Heil, 2013).

When discussing non-reductive physicalism, it is important to describe the significant role played by the concept of *multiple realizability* as developed by supporters of so-called *functionalism*. Such concept has been employed to deny the legitimacy of reductive physicalism. According to Putnam (1975), for instance, following the analogy between minds and machines, mental states are functional states of a computational system. In this respect, since they are functional states, mental states appear to be multiply realizable but non-reducible to physical states in light of their abstract nature. By contrast, Davidson's (1970) view of non-reductive physicalism aims to defend a token-identity theory by focusing on the nomological difference between mental properties and physical properties without appealing to a form of multiple realizability.

However, some philosophical views maintain the non-reducibility of mental facts by considering the qualitative aspects of conscious experience, such as the experience of seeing the color yellow or feeling joy.[7] In fact, in order to preserve the possibility of mental causation, contemporary dualist perspectives on the mind-body problem support *property dualism*.[8] Property dualism basically maintains that there are at least some mental properties (for example, phenomenal properties) that are irreducible to physical facts, whereas the substances that have these properties are physical. Mental properties are owned by physical substances but are not physical and do not depend on any physical property. Jackson (1982) defends a weaker kind of property dualism, by embracing *epiphenomenalism*. Mental states are epiphenomenal if they are irreducible to physical states and causally inert.

Despite being considered controversial by some critics, an original analysis of the problem is proposed by Chalmers (1996). Chalmers argues that there are phenomenal or protophenomenal properties at a metaphysically fundamental level of reality which constitute a new kind of intrinsic non-physical properties. In this way, if mental properties are fundamental properties of the world just like basic physical properties, they do not require any causal explanation, just as we don't have to (conceptually) explain how certain physical properties cause physical

[7] On the arguments for the non-reducibility of phenomenal consciousness, see the *qualia* arguments discussed in Shoemaker (1982), Block (1990), and the *conceivability* argument in Chalmers (1996).
[8] See Jackson (1982), Strawson (1994), and Chalmers (1996).

events. There is no conceptual problem as regards mental causation because mental properties are intrinsic fundamental properties, and there is no need to look for a further causal explanation: we only have to accept these fundamental facts. However, some approaches have proposed a way to save mental causation within a physicalist account without appealing to the existence of intrinsic non-physical properties. Having now provided a general background, in the next section we focus on what are currently the most popular frameworks for dealing with the mental causation problem.

3. The most popular models of mental causation

In the last few decades, a number of philosophers have tried to solve the mental causation problem within a physicalist perspective without postulating a mind-body interaction. Indeed, as described above, a large part of contemporary philosophers of mind have tried to avoid the classical objections by defending a physicalist view, both on the reductive and on the non-reductive side.

3.1. The model of mental causation proposed by Kim

The most popular approach in this sense is probably the one proposed by Jaegwon Kim (1993, 1998, 2005). Kim's aim is to break down the fundamental ideas of the mental causation problem. Kim's argument is based on the idea that the supervenience of mental events on physical events basically shows the *elimination* of mental causes through the exclusion argument (if all physical effects have sufficient physical causes, and physical effects cannot be brought about by different physical and mental causes, than irreducible mental causes cannot exist); this idea is generally accepted within the contemporary debate and provides a clear analysis of the relation between mental and physical causes as well as of their supposed incompatibility. Nevertheless, Kim's theory is influenced by the assumption of the causal closure of the physical world, which leads to a physicalist conclusion.

Kim developed a general framework of the problem by determining how two different kinds of causes, mental and physical, can be connected, and if it is plausible to accept the existence of a psycho-physical causal pair. Several contemporary philosophers have developed their views by considering the problem of mental causation as structured by Kim's model. Kim's main goal is to demonstrate that any non-reductive physicalist

approach is inadequate for the analysis of the mental causation problem. According to Kim (2005), we need to explain how mental states are causally relevant and justify how they may affect the world in a causal way. Our concept of cognitive skills presupposes the causal efficacy of mental states, and the notion of intentionality is also strictly connected to the presence of mental causation. Kim argues that the problem arises if we consider the world as a *causally closed system*, given that we are unable to find a role for mental causation in a world that is *fundamentally* physical.

Indeed, the existence of mental causation and our immediate acquaintance with it are ruled out by the concept of the causal closure of the physical domain. If every event that occurs at time t necessarily has a physical cause that occurs at t, our world is causally closed. Contemporary science and neurophysiology believe that this idea is supported by the findings of physical and neurological sciences. Within such a closed physical world there is no room for mental causation, given that the only properties, states and events that are causally relevant are physical states and events. According to Kim, non-reductive physicalism, Nagelian *bridge-laws*[9] and *type-physicalism*[10] therefore offer inadequate solutions to the problem at hand as they are insufficient to find a place and a role for mental causation in the physical world.

Non-reductive physicalism, moreover, is implausible because, according to the *supervenience argument* proposed by Kim, it is doomed to eliminate mental causes.[11] Kim's supervenience argument is described as follows: if we assume that two mental events m and m^* supervene respectively on two physical events p and p^*, then, to demonstrate the existence of mental causation, we need to analyze the problem of m to m^* causation. We consider that p causes p^*, but we must make sense of how m can cause m^*. Since m^* supervenes on p^*, m will cause m^* by causing p^*. Consequently, we can focus on m to p^* causation. There are two possible cases:

[9] If one reduces psychology to physics, one has to account for psychological terms like 'belief', 'desire', and 'pain', which do not occur in the basic physical theory. In these cases, assumptions ("bridge laws") must be added to the laws of the basic science (physics) stating relations between these (psychological) terms and the terms that are already present in the basic science (Nagel, 1961).

[10] Unlike token-identity physicalism, type physicalism states that mental events can be grouped into types and can then be correlated only with types of physical events.

[11] The concept of *supervenience* implies that there is no mental difference without a physical difference. The mental supervenes on the physical because items that are identical as regards their physical properties don't have any difference in their mental properties.

A: there is only one mental cause, namely *m*, causing the physical event p^*.
B: there are two sufficient causes of the physical event p^*: *m* and *p*.

If A is the case, we face the problem of *Cartesian dualism*, according to which we don't know how two essentially different entities can causally interact. As we accept causal closure, mental event *m* cannot be the only cause of p^*. The principle of the *causal closure* of the world, by which whenever a physical event has a cause it has a sufficient physical cause, cannot be overlooked. This implies the explanatory completeness of physics, and also vindicates the abovementioned principle of conservation of energy or the first law of thermodynamics: the total energy in the universe is constant and fixed.

In case B, we assume the *principle of causal exclusion*.[12] The mental event m appears to be *redundant* because there cannot be two sufficient causes for one physical event occurring at any given time. The role of the mental cause in this case is superfluous; otherwise we would have a case of causal *overdetermination*.[13] By accepting causal closure and causal exclusion, *m* to p^* causation is not plausible, as we have to reject the mental cause *m*. The outcome is that one should accept *p* to p^* causation because the supervenience of *m* and m^* on *p* and p^* leads us to eliminate the mental cause *m* in favor of the physical cause *p*.

3.2. The model of mental causation proposed by Davidson. And beyond

In the field of non-reductive physicalism, Donald Davidson (1970) proposed one of the most relevant accounts of mental causation. His main goal was to preserve physicalism without a having a strong reduction of the mental to the physical. In fact, he argued that mental properties are nomologically irreducible to physical properties. So, according to Davidson, mental properties represent a different *category* compared to physical ones - he defines this the "anomaly" of the mental. Despite this nomological difference, mental aspects actually *supervene* on physical aspects: they are

[12] In Kim's words, if a state S_1 is causally sufficient for a state S_2, then no distinct state obtaining at the same time as S_1 can cause S_2, unless it is a case of genuine overdetermination.
[13] An event or state of affairs is *overdetermined* if it has two or more sufficient causes. If a mental state (M) is realized by a physical state (P) and M can cause another mental state (M*) or another physical state (P*), then P can cause M* or P* too. Consequently, M* and P* are both determined by M and P. Since either M or P are sufficient causes for M* or P*, both M* and P* are overdetermined.

dependent on physical facts but they are not identical to them because of the nomological irreducibility.

According to Davidson, the identity between mental and physical facts takes place on the basic physical level in terms of *tokens* or bare events. Since there are causal relations between bare events which can be described in both physical and mental ways, any mental *event* is token-identical to a physical event, even though there are no strict laws connecting mental events to physical ones. In fact, these causally interacting events must instantiate some strict laws that can be identified only by physical descriptions. Therefore, since Davidson supports the causal closure of the physical domain, according to which every physical event has a physical explanation, he maintains that those laws must be physical.

Several critics have considered this account controversial. For example, Kim (1998) argues that if there are no strict laws connecting mental states to physical states, mental states cannot be causally relevant and this results in a sort of property epiphenomenalism. However, it should also be said that Davidson does not believe that events involve properties: a mental event is such due to its mental description, "and there is no ontological fact about or feature of an event that makes its description as mental true or false" (Gibb, 2013). In light of the above, if we endorse a non-reductive approach, we should in any case reject the existence of mental causation, given that it is hard to identify its causal relevance with respect to physical events.

Some philosophers, like McGinn (1989), think that the problem of mental causation will never be solved. In any case, many agree that Kim's influent exclusion argument can hardly be the ultimate solution. The main reason is that it leads to the following conclusion: mental events (that are causally relevant in the physical domain) are identical with physical events. As Gibb (2013) argues, though the claim appears plausible, it clashes with the consequences of the argument from multiple realizability, which states that mental properties are multiply realized by, and therefore cannot be identical with, physical properties. This argument defeats the type-identity version of physicalism, while weakens the token-identity version, since the same type of mental states can be instantiated by different brain state and we currently don't have a theory that binds specific types of mental states to whatever brain state.

Despite Kim's theoretical efforts, the conflict between the (alleged or often presumed) causal efficacy of mental states and the causal closure of the world makes it so that mental causation is still an open problem. Moreover, Kim himself (2005) admits that there are mental aspects that we cannot functionalize and reduce, namely the phenomenal qualitative aspects

of consciousness. These are the intrinsic features of *qualia*, i.e. the qualitative and subjective characters of our phenomenal mental states. Despite this fact, Kim claims that we are able to reduce intentional mental states and certain relational features of qualia, so that physicalism provides a description of the world that is *close enough to the truth*. Indeed, Kim thinks that some mental features are not amenable to physicalist explanation by stressing that the intrinsic aspects of qualia are epiphenomenal. But if Kim acknowledges the existence of such intrinsic features, he cannot exclude their causal relevance *a priori*. This aspect should be further investigated.

In fact, in the discussion above we rejected case A because of the causal closure of the world. However, given that there are some non-relational aspects to the qualitative features of consciousness, this implies that the world is *not* fundamentally physical. Accordingly, we could critically assess the explanatory role of causal closure based on the fact that the world may not be physically closed (that is, the intrinsic aspects of qualia may after all be more than just epiphenomenal). Thus, it cannot be simply assumed that physicalism offers a complete causal description of the world: this might be the limit of Kim's proposal. In the next section, we explore some other tentative solutions to the mental causation problem.

4. New paths towards mental causation

The debate on mental causation seems to primarily revolve around the physicist perspective and Kim's exclusion argument. However, the idea of denying our ordinary mode of causal explanation – not just the mentalistic one – clashes both with many plausible philosophical intuitions and with natural sciences other than physics. In fact, many causal explanations are made in terms of macrophysical phenomena that supervene on microphysical ones. In this sense, if such supervenience is more difficult to refute, one may question the causal closure of the physical world, as it leads to the rejection of scientific realism itself (understood as the view that the objects of all physical sciences, not just those of basic physics, are real). And if one accepts macrophysical causes, thereby rejecting causal closure in a microphysical sense, then this makes room for non-physical causes like the mental ones (Baker, 1993). In other words, in many special sciences we tend to accept macrophysical causes that supervene on microphysical phenomena as real causes (for example, hurricanes and earthquakes), and if we didn't do this, we should endorse a form of antirealism and many physical events would go unexplained in a understandable way.

Based on the multiple realizability of behavioral properties and in accordance with the thesis of the *completeness of physics*, Yablo (1992) uses the determinable-determinate relation in order to try to solve the problem of mental causation. Consider the situation in which I am at my friend's door and decide to press the buzzer instead of knocking. A neuroscientist is monitoring my brain and her neurometer indicates my neural state (event *e*). Like any mental event, my decision *m* (the *determinable*) has a physical determination *p* (the *determinate*, a specific action). For the neuroscientist, *e* would not have occurred if the decision had been taken in a different neural way, in particular if it had occurred in *p*'s absence. P looks roughly proportional to *e* and so has the better claim to cause it. It is true that this mental event did not cause that effect. But Yablo explains: "When do we attribute effects to mental causes? Only when we believe (...) that the effect is relatively insensitive to the finer details of *m*'s physical implementation. (...) The decision had a physical determination *p*; but (...) it would still have been succeeded by the ringing, if it had occurred in a different physical way, that is, if its physical determination had been not *p* but some other physical event. And this is just to say that *p* was not *required* for the effect" (Yablo, 1992: 278).

In short, the supervenient property may be identified as the cause of its supervenience base. Another example is the green traffic light that causes a driver to move. It should be said that the cause of the movement is the specific shade of green (the determinate), acting as the supervenience base for the color green (the determinable) seen by the driver. However, the driver would move at the sight of any shade of green, as the latter is what acts as a cause. Similarly, a cause could be the instantiation of a mental property rather than its microphysical supervenience base.

Nevertheless, these are not completely convincing confutations as they admit mental causes on the basis of ordinary causal attributions. Kim, however, does not seem inclined to accept that his arguments may result in antirealism with respect to the objects of scientific disciplines other than physics. Therefore, it might be useful to present here two more recent approaches to the problem of mental causation that appear to be more promising: the *difference-making* account and *powerism*.

Menzies (List and Menzies, 2009; Menzies, 2013) has developed a view that, drawing on a difference-making account of causation, makes room for genuine mental causation within the framework of non-reductive physicalism (which states that higher-level properties are both causes and effects of other properties). The difference-making account of causation states that causes make a difference in their effects: that is, changing the

value of the cause variable changes the value of the effect variable. According to Menzies, difference-making is opposed to causal sufficiency because the latter does not amount to causation. As Menzies explains, "while a man's taking a contraceptive pill is causally sufficient for his not getting pregnant, there is no causal relevance here, as the man's taking a contraceptive pill makes no difference to his not getting pregnant. Even if he had not taken the pill, he wouldn't have got pregnant" (Menzies, 2013: 72).

Based on the arguments made by Yablo, List and Menzies (2009) claim that the exclusion principle can be weakened if not refuted. They therefore propose a new version of it by which if a property F* supervenes on F, then F and F* do not both cause a property G. Taking up the idea that an event might have causally sufficient antecedents that might not properly be described as the causes of the event, and considering the transmission of causal sufficiency across realization, Menzies shows that generalizing the new exclusion argument implies not only that mental causation is unreal, but also that biological, chemical, and atomic causation are all unreal. Causation holds only at the most fundamental physical level. The so-called problem of causal drainage suggests that one should give up causal sufficiency and embrace another criterion, namely the difference-making account of causation.

This leads to a new formulation of the exclusion principle, called *downward formulation*: if a property F causes a property G, then no distinct property F* that supervenes on or realizes F causes G. According to this formulation, higher-level causes exclude lower-level causes and therefore acquire their own causal autonomy. Specifically, a mental property can cause a behavioral property without a specific underlying neuronal property performing that causation. This is especially the case in the so-called *realization-insensitive* cases, when the production of an effect is not closely linked to the instantiation of a specific lower-level causal property, but the same effect is compatible with the instantiation of other realizations of the lower-level cause. As Menzies (2013) claims, if one uses counterfactuals, one can show that the intention to move one's arm is a sufficient cause of one moving one's arm, given non-reductive physicalism and the fact that in some possible worlds the intention is realized by a different neural realizer and the arm still moves (neural multiple realizability). However, this argument lends itself to criticism by the supporters of the principle of closure of the physical domain, as it implies its ubiquitous violation.

Unlike the difference-making account, *powerism* is the view that "takes the attribution of causal powers and dispositions to be metaphysically

fundamental. The laws of nature and the truth-values of subjective conditionals are both grounded in the actual powers of things" (Koons and Pickavance, 2015: 63). The relation between a property or a kind and the powers it confers is an internal relation, and part of the essence of that property or kind is to confer the powers it does on its members. There may also be fundamental powers that are immanent to a single entity, be it a person or an atom. This is a revival of the Aristotelian perspective that considers dispositional properties, i.e. powers, as genuine and self-contained properties that are fundamental in nature. This recovery of the Aristotelian perspective is also made possible by the failure of the Rylean reductive analysis of the attribution of powers.[14] If Aristotelian causality is assumed as the exercise or manifestation of powers that are mutually dependent, and powers are individuated based on the ability that they bestow on their bearers, then one can suppose that the power that manifests in – say – the movement of a leg can be a mental power, or one involving mental characteristics (typically consciousness and intentionality). This would solve some classic difficulties of mental causation (Mayr, 2011).

Gibb (2013; 2015) adopted a power theory of causation to develop a new proposal about mental causation, called *double prevention view*. She makes the following example (Gibb, 2013: 198-199): consider a fun fair where one of the attractions is a simple game in which the player must break a glass bottle by hitting it with a ball. The game, though, is rigged: the bottle is protected by an invisible barrier, which prevents the ball from ever hitting and breaking the bottle. Fred is about to take aim at the bottle and Sally, who is running the fairground attraction, suddenly takes pity on him. She presses a button and this invisibly destroys the barrier at the moment he releases the ball. Fred's ball smashes the bottle and he wins the prize. So, the fact that Sally pressed the button is a double preventer.

According to this theory of causation, a double preventer is not a cause of the event that it prevents from being prevented. However, Gibb claims, the double preventer still plays a crucial role in accounting for the event's occurrence, as it is the double preventer that *allows* for the event to be caused. If one accepts powerism as well as the view that mental events are double preventers, this provides a way of reconciling the premises of the argument from causal overdetermination (Kim's argument) with dualism (the distinctness of mental and physical properties and, possibly, substances). According to this dualist account of psychophysical causation, a mental event allows a bodily movement to take place by permitting a

[14] Molnar (2003), Marmodoro (2007), (2017).

neurological event to cause the bodily movement. Such a view allows for this causal relation by preventing a mental event that would have prevented it.

Despite being novel and ingenious, Gibb's argument has been criticized for not overcoming the objection of the systematic overdetermination of the causal relevance of mental events and the problem of mind-body interaction (Davies, 2016).

So far, therefore, there are seemingly no uncontroversial and perfectly viable solutions to the mental causation problem, as they are each based on a particular view of the relation between mind and brain. This leaves room for further metaphysical and scientific research.[15]

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