

A Defense of Physicalism

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In their 1972 article, "What Pain States Are Not," Ned Block and Jerry Fodor reject the physicalist definition of psychological states. Physicalism defines psychological states as being identical to physical (brain) states. Block and Fodor appeal to an argument against physicalism put forth by Hilary Putnam in his 1967 article "Psychological Predicates," later re-titled "The Nature of Mental States." Putnam's argument is based upon the multiple realizability of psychological states. Because psychological states can be realized in many different physical systems, Putnam argues that psychological states are not identical to physical states. Block and Fodor highlight three empirical considerations to which Putnam's argument appeals. These considerations are based on (1) the Lashleyan doctrine of neurological equipotentiality, (2) the possibility of the convergent evolution of psychologies and (3) the possibility of attributing psychological predicates to artifacts. Block and Fodor then go on to address the possibility that the nature of correspondence between psychological states and physical state may be many-to-one rather than one-to-one. They offer arguments against this possibility.

In this paper, I will provide a brief outline of physicalism and Putnam's argument against it. In response to Putnam, I will suggest that his objection against physicalism is the result of an insufficiently abstract definition of the physical type. I will address and criticize each of the three empirical considerations posited by Block and Fodor and argue that they fail to provide compelling evidence against physicalism. Though I do not support the many-to-one correspondence hypothesis, I will address and criticize the arguments against this hypothesis put forth by Block and Fodor. I will conclude by offering reasons for accepting the physicalist definition of psychological state.

Physicalism is the position that claims all things are physical. Within the philosophy of mind, physicalism is the view that psychological states are identical to physical states. As indicated by Block and Fodor, "some (though not all) varieties of physicalism claim that organisms are in type-identical psychological states if and only if certain of their physical states are type identical." (Block and Fodor 237) 'Type' refers to a category classified by shared features. Type-type physicalism holds that psychological states with shared features are identical to physical states with shared features. Another version of physicalism is token-token physicalism. A token is a particular instance of a type. Token physicalism is the weaker of the two theories because it does not account for the similarities between token occurrences. In token-token physicalism, a particular instance of a psychological state corresponds to a particular instance of a physical state. 'Pain' is an example of a psychological type. The type 'pain' comprises every occurrence of a psychological state that shares the characteristic of being an unpleasant sensation resulting from injury. Every particular instance of one of the aforementioned psychological states is a token of the type 'pain.' Examples of tokens of the type 'pain' would include the pain Chuck experienced at 3:00 p.m. on Tuesday and the pain experienced by the buck the hunter shot last weekend.

The crux of Putnam's argument against physicalism is based on the multiple realizability of psychological states. As summarized by Block and Fodor, "The argument against physicalism rests on the empirical likelihood that creatures of different composition and structure, which are in no interesting sense in identical physical states,

can nevertheless be in identical psychological states; hence the types of psychological states are not in correspondence with types of physical states.” (Block and Fodor 237-238) The anti-physicalist claim is that because it seems that psychological states can be realized by a large number of disparate physical systems, it follows that psychological states do not correspond to type-identical physical states. The conditions of physicalism are “insufficiently abstract” to account for the multiply realizable nature of psychological states. (Block and Fodor 237-238)

Physicalism is further criticized for being a “chauvinistic” theory, to quote Block from his article, “Troubles With Functionalism”: “In saying mental states are brain states, for example, physicalists unfairly exclude those poor brainless creatures who nonetheless have minds.” (Block 270) Block does not provide an example of such a brainless creature in possession of a mind, and despite my inability to fathom what kind of creature he was envisioning, I will still attempt to address this attack and its implications. First of all, physicalism does not claim that possessing mental states is in any sense better than not possessing mental states, so it not chauvinistic in that regard. Also, physicalism does not promote a speciestic morality. It offers no normative basis for discrimination against species with different physical compositions. If even the physicalist claims (note, I am not making this claim) that the physical state of the earthworm is so different from that of the human brain that the earthworm cannot be said to experience a psychological state type-identical to ‘pain’ as experienced by humans, this is not grounds to justify inflicting physical harm upon the earthworm.

Going back to the claim that physicalism is “insufficiently abstract,” it is this claim that motivates many to accept the theory of functionalism. Physical type states are assumed to be not abstract enough to capture the true defining characteristic of psychological type states. The next logical step, it is assumed, would be to classify psychological states in terms of what they do. This is the functionalist theory. So, the poor little brainless creature, or the robot for that matter, can be considered to be in the same psychological states if their respective physical states do the same thing (for example, express the same need or carry out the same function).

It is not the case that the conditions of physicalism are insufficiently abstract. It is, rather, that the psychological type and physical type are defined at disproportionate levels of abstraction that accounts for objections of multiple realizability. Block wants us to consider brainless creatures to have minds. It is obvious that his definition of “mind” is generous. No other species has a “mind” quite like our own. Allowing for the “mind” (and hence, psychological states) to be vaguely defined while holding the definition of physical type states to rigid constraints places an unfair burden on physicalism. This is analogous to arguing that because ‘red’ can be realized at wavelengths of both 750 nanometers and 650 nanometers, color isn’t identical to the wavelength of light. If we let the type ‘red’ correspond to the range of wavelengths 780-620 nanometers, the type-type identity holds true. Similarly, if we allow the physical type to be as loosely defined as the psychological type, the identity relationship is maintained. In responding to the empirical considerations raised by Block and Fodor, I will attempt to show that a definition of physical types that is characterized by basic similarities in the physical states allows for a type-type identity relationship between physical and psychological states.

In their first empirical consideration, Block and Fodor refer to the Lashleyan doctrine of neurological equipotentiality which, “holds that any of a wide variety of

psychological functions can be served by a wide variety of brain structures.” (Block and Fodor 238) Block and Fodor use as example the ability of the right hemisphere to take over linguistic functions after injury to the left hemisphere. (Block and Fodor 238) The ability of more than one brain structure to serve one psychological function is assumed to be evidence against the one-to-one psychophysical correlation that physicalism claims.

To begin, I do not deny the Laschleyan doctrine. It is granted that the brain can change its function when damaged. Further, “Deaf people use areas of their temporal cortex for processing visual information. Blind people hear better than the sighted, probably because the visual cortex goes over to hearing. When you learn a second language, the first can move position in the brain.” (Ornstein 64) What I do deny is the validity of Block and Fodor’s argument, “equipotentiality (if true) provides evidence against physicalism.” (Block and Fodor 238) Block and Fodor make this argument despite the fact that they themselves acknowledge, “there may be some relevant neurological property in common to the structures involved.” (Block and Fodor 238) If there is some relevant neurological property in common (there is), this shared property would allow for type-identical characterization of the physical states involved. Neurological equipotentiality is not sufficient evidence against physicalism.

Though I’ve shown Block and Fodor’s argument to be invalid, I will continue to provide evidence of the neurological similarities that typify the physical state in instances where neurological equipotentiality is exhibited. I will explain, in evolutionary terms, why our brains have the plasticity they do. I will also explain, in neurophysical terms, how the functional restructuring of the brain occurs. These explanations show that the structures and processes involved in instances related to neurological equipotentiality are physically type identical.

According to Polish anthropologist Konrad Fialkowski, “The human brain’s rapid growth was primarily due to protecting brain cells from heat.” (Ornstein 61) Increased cortical size was selected for to protect against heat and to cool the brain. This large heat-shedding cortex lacked a specific information-processing assignment and was later recruited for other uses. (Ornstein 62) It must be appreciated that, “The uniformity of the cortex is striking; almost any piece of the cortex looks like any other piece.” (Ornstein 63) The uniform redundancy of the cortex allows for back-up systems to be created so that cells can take on different functions if need be, as in Block and Fodor’s example. (Ornstein 64) Given the uniformity and redundancy of the cortex, it is would be ridiculous to argue that areas of the cortex are not type identical.

In explaining how these back up systems work, I refer to the studies of Vilayanur Ramachandran involving cases of phantom limbs. “These studies indicate a significant degree of functional plasticity exists in the human cerebral cortex; the term functional plasticity is used because the effects are not caused by physical reorganization in cortical neuronal circuitry, but rather, the receptive fields of neurons overlap more than what is apparent from recordings from a single neuron. Ramachandran has suggested that since these effects can be seen in some cases as soon as several hours after an amputation, that they are based on the unmasking of pre-existing connections rather than new connections being formed from neighboring neurons.” (Meek, notes) These pre-existing connections are the back-up system of the brain. They are also grounds for establishing type-identity between regions of the cortex.

The second empirical consideration put forth by Block and Fodor, “depends on the assumption that the Darwinian doctrine of convergence applies to the phylogeny of psychology as well as to the phylogeny of morphology and of behavior.” (Block and Fodor 238) First in order is a definition of key terms. Convergent evolution is, “The evolutionary processes by which responses to similar ecological features bring about similarities in behavior and structure among animals that are only distantly related (i.e., that differ in genetic heritage).” (Rosenzweig et al G-6) Phylogeny is, “The evolutionary history of a particular group of organisms.” (Rosenzweig et al G-18) According to Block and Fodor, if we assume that psychologies could have evolved as a result of similar environmental pressures rather than similar genetic histories, it seems that similarities in psychological states of organisms are in no way evidence of physical similarities. Psychological similarities that are the result of convergent evolution could indicate that psychological type states correspond to different physical states, and the one-to-one psychophysical correlation asserted by physicalism is lost.

This argument ignores the fact that psychological states are the result of certain physical processes. Block and Fodor assume, “we have no particular reason to suppose that the physiology of pain in man must have much in common with the physiology of pain in phylogenetically remote species.” (Block and Fodor 238) This is false. What we can assume is that if the species is in pain, it possesses a central nervous system. We can assume that the organism suffered tissue damage. If the species is a vertebrate, mollusk, or insect, we can assume it has a brain. If the species is a vertebrate, we can assume the following features of its nervous system: development from a hollow dorsal neural tube, bilateral symmetry, segmentation, hierarchical control, separate systems, localization of function. (Rosenzweig et al 162-163) Given these similarities, it is plausible that an abstract physical-type could be characterized such that the physical ‘pain’ state of man is type-identical with the physical ‘pain’ state of some remote species. This depends on the level to which the concept of the psychological ‘pain’ state is abstracted. If ‘pain’ is taken to necessitate a sort of self-awareness, then it is possible that only humans experience that type of ‘pain.’ If ‘pain’ is characterized at a very basic level, it is easy to assume that all mammals, fish, amphibians, reptiles etc. experience ‘pain.’ The basic psychological type ‘pain’ would correspond to a physical type ‘pain’ that reflects the aforementioned similarities in nervous system structure. In conclusion, this argument from convergent evolution is ignorant of the fact that regardless of phylogeny, the brains and nervous systems of different species are similar in composition and function.

As their third empirical consideration, Block and Fodor argue that, “if we allow for the conceptual possibility that psychological predicates could apply to artifacts, then it seems likely that physicalism will prove empirically false.” (Block and Fodor 238) For instance, if we allow the psychological predicate ‘paranoid’ to describe the psychological state of both a human and an android, we will see that the corresponding physical states will be quite different. The paranoid human will have an organic physical state, as opposed to the synthetic state of the paranoid android. One psychological state, ‘paranoid,’ will have more than one corresponding physical type state.

To understand why artifacts do not pose threat to physicalism, one must appreciate how an artifact capable of realizing a psychological state would be created. The first steps in the creation of artificial intelligence provide example of this process. One such step is the creation of the silicon retina by Carver Mead and his doctoral student,

Misha Mahowald, at Cal Tech in Pasadena. I will leave out much of the technical detail for the sake of brevity. The important point to be stressed is that they created this silicon retina by using the technology of integrated circuits to etch, on small silicon chips, “electronic analogs of *biological* neural networks.” (Churchland, P. M. 236) As analogs of biological neural networks, the physical states of artifacts in psychological states type-identical those of other organisms can be considered to be type-identical as well. Material composition is not an issue. What would typify the physical state would be the process involved in the realization of the psychological state.

Block and Fodor go on to address the suggestion that instead of a one-to-one correspondence between physical and psychological states, it is possible that physical and psychological states may correspond many-to-one. They assume the same relationship between behavioral and psychological states. In a many-to-one correspondence, “it is supposed that, for each type of psychological state, there is a distinct disjunction of types of behavioral (or physical) states, such that an organism is in the psychological state if and only if it is in one of the disjuncts.” (Block and Fodor 239) For every psychological state, ‘happy’ for instance, an organism is in the state if and only if it is in physical state “neurons x, y, z firing” or “neurons a, b, c firing”. As reminder, I do not endorse this many-to-one theory.

Block and Fodor see the many-to-one correlation as problematic, as “it is less than obvious that there is, in fact a *distinct* disjunction of behavioral (or physical) states corresponding to each psychological state.” (Block and Fodor 239) They say that, “one should bear in mind that practically any behavior might, in the appropriate circumstances, become the conventional expression of practically any psychological state and that a given organism in a given psychological state might exhibit almost any behavioral disposition depending on its beliefs and preferences.” Similarly, “it seems plausible that practically any type of physical state could realize practically any type of psychological state in some kind of physical system or other.” (Block and Fodor 239)

Examples from everyday life seem to support Block and Fodor’s claim that practically any behavior can be the manifestation of practically any psychological state. Silent rage can be a manifestation of the same psychological state that causes a violent outburst. People shed tears of joy. We could imagine a world where people laugh when they are sad. The inability to specify a distinct disjunct of behaviors corresponding to a psychological state poses threat to the many-to-one psycho-behavioral correlation theory.

Block and Fodor’s claim, however, that practically any behavior can be the manifestation of practically any psychological state is too strong of a claim. While it is true that different behaviors can express the same psychological state, and there are no strict rules preventing an individual from expressing a psychological state via some obscure behavior, there is evidence of very specific correlations between psychological states (especially emotions) and their behavioral expressions. I refer to the work of Antonio Damasio. Damasio has explained that spontaneous smiles (a behavior) that come from genuine delight (a psychological state) and spontaneous sobbing (a behavior) that is caused by grief (a psychological state) are executed by brain structures deep in the brain stem and are under control of the cingulate region. Humans have no means of exerting direct control over the neural processes of these regions. Spontaneous sobbing and smiling are two examples of behaviors that correspond to psychological states which, being outside the realm of conscious control, could not have expressed otherwise,

regardless of belief or preference. According to Damasio, “We can try to prevent the expression of an emotion, and we may succeed in part but not in full. Some of us, under the appropriate cultural influence, get to be quite good at it, but in essence what we achieve is the ability to disguise some of the external manifestations of emotions without ever being able to block the automated changes that occur in the viscera and internal milieu.” (Damasio 48-49)

Behavior is not completely independent of psychological state. Turning again to examples from everyday life, it becomes more apparent that behavior is not entirely a matter of belief and preference, and it is not the case that anything goes. Behavior has a direct and often uncontrollable connection to an organism’s psychological state. Imagine blushing with embarrassment, sweating when nervous, experiencing gut-wrenching pangs of anxiety. As much as one would prefer not to engage in these behaviors, if one is in a certain psychological state, it seems like there is nothing one can do but engage in said behaviors.

Analogously, and contrary to the claim of Block and Fodor, if one is in a physical state, it is not the case that any old psychological state will arise. Returning to Damasio’s examples, physical states deep in the brain stem can be viewed as identical to the psychological states of genuine delight or grief. It is not the case that given these physical states practically any psychological state will manifest. Another example of a physical state corresponding to a specific psychological state would be the physical state produced by electrically stimulating the reticular formation and the resulting psychological state of rapid awakening. (Rosenzweig et al 454) There are many more examples, but these suffice to show that Block and Fodor’s claim that any practically any physical state could give rise to practically any psychological state is an overstatement. This evidence shows that there is reason to assume a *distinct* disjunction (although in the case of physicalism, there is only a single disjunct I believe) of physical states corresponding to psychological states. As far as behaviorism is concerned, this evidence merely provides examples where specific psychological states express specific behaviors.

Another argument put forth by Block and Fodor is that “even if there *is* a disjunction of types of behavioral (or physical) states corresponding to each type of psychological state, there is no reason whatsoever to believe that this correspondence is lawlike; and it is not obvious what philosophical interest would inhere in the discovery of a behavioral (or physical) property which happened, accidentally, to be coextensive with a psychological predicate.” (Block and Fodor 239) Block and Fodor are saying that even if there is a finite list of physical states corresponding to a given psychological state, the correspondence could be merely a coincidence and not of any philosophical interest.

This argument does not appreciate the claim of physicalism that physical states are *identical to* psychological states. Physicalism is not expressing the weaker claim that physical states *correspond to* psychological states. Identity relationships are not accidental. A type of physical state would not just happen to be coextensive with a type of psychological state. A type of physical state *is* a type of psychological state. Still, one could argue for the possibility that the relationship between physical states and psychological states is causal in nature. One could say that a physical state causes the experience of a psychological state. A causal connection would be the lawlike correspondence Block and Fodor seek. This maneuver is problematic. The task of distinguishing causally and coincidentally connected events is difficult. With roots

tracing back to Hume, it is still the case that, “Causation as a *metaphysical* issue remains an unsolved problem.” (Churchland, P.S. 57) If the psycho-physical connection does in fact turn out to be causal, proving this connection to be lawlike as Block and Fodor demand would entail solving the metaphysical problem of causation, which would be an extremely arduous philosophical undertaking. Assuming a causal relationship does not meet Block and Fodor’s demand for reason to believe in a lawlike psychophysical connection, but it does present one with a convenient scapegoat. If one assumes the relationship between psychological and physical states to be causal, one can admit that one has no evidence that the relationship is lawlike, but maintain that this is because of the nature of causation rather than a reflection of the psychophysical relationship.

The final objection raised by Block and Fodor is that, “a theory which says that each psychological predicate is coextensive with a distinct disjunction of behavioral (or physical) predicates is incompatible with what we have been assuming to be an obvious truth: namely, that a given behavioral state may express (or a given physical state realize) different psychological states at different times.” (Block and Fodor 239) To illustrate the problem with this theory, Block and Fodor describe a scenario wherein:

“Psychological predicate  $p_1$  is coextensive with the disjunctive behavioral predicate  $A$  and psychological predicate  $p_2$  is coextensive with the disjunctive behavioral predicate  $B$ . Suppose further that  $S_i$  designates a type of behavior that has sometimes expressed  $p_1$  but not  $p_2$  and at other times expressed  $p_2$  but not  $p_1$ . Then  $S_i$  will then have to be a disjunct of both  $A$  and  $B$ . But the disjuncts of  $A$  are severally sufficient conditions for  $p_1$  and the disjuncts of  $B$  severally sufficient conditions of  $p_2$ , Hence the theory entails that an organism in  $S_i$  is in both  $p_1$  and  $p_2$ , which is logically incompatible with the claim that  $S_i$  expresses  $p_1$  (but not  $p_2$ ) at some times and  $p_2$  (but not  $p_1$ ) at others.” (Block and Fodor 239-240)

Put into example, assume as true a theory that claims the psychological predicate ‘anger’ is coextensive with the disjunctive behavioral predicate  $A$ , which includes the disjuncts ‘yelling,’ ‘cursing,’ ‘flushing’ and so on and the psychological predicate ‘bashful’ to be coextensive with the disjunctive behavioral predicate  $B$ , which includes the disjuncts ‘stammering,’ ‘flushing,’ ‘averting one’s eyes’ and so on. Let ‘flushing’ be  $S_1$ . Flushing sometimes expresses anger, and sometimes expresses bashfulness, but not at the same time. However, flushing is a disjunct of both  $A$  and  $B$  and is therefore a sufficient condition for the psychological states ‘anger’ and ‘bashfulness.’ If one flushes, one is expressing both the psychological states ‘anger’ and ‘bashfulness’ at the same time, something the theory itself denies. This *reductio ad absurdum* shows the theory to be false.

I am not going to attempt to salvage behaviorism; that is not the intent of this paper. If I were defending behaviorism, I would question that claim that exhibiting behavior is a sufficient condition for being in a psychological state. However, I will argue that this argument of Block and Fodor does not apply *mutatis mutandis* to physicalism. Despite the fact that a given behavior may express different psychological states at different times, it is not the case that a given physical state will realize different psychological states at different times. There is no  $S_1$  or physical equivalent to ‘flushing.’ There is no many-to-one correlation, so this argument is not even an issue.

In conclusion, I have shown that the arguments put forth against physicalism fail to provide a compelling reason for rejecting physicalism. Further, I would like to provide some reasons for accepting type-type physicalism. First, physicalists theories account for psychological phenomena in purely physical terms. There is no “soul” or other such

notions by which to be distracted. Also, type-type physicalism accounts for the shared characteristics in psychological and brain states in animals, human or not. Finally, physicalism allows for an appreciation of the physical processes not captured by functionalist theories. To quote Paul Churchland, "We have learned that it does matter what physical processes take place inside of us, and they are not just executing a program. Most of the major features of human and animal cognition arise not because of any program we are running. They arise because of the peculiar organization of the nervous system, because of the peculiar way in which information is physically coded, and because of the physically distributed means by which that information gets transformed." (Churchland, P. M. 251)

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