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Mind and Body: An Apparent Perceptual Error

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A process model of concept development is proposed as a means of understanding the mind body problem. This paper (a) reviews some definitions and views of mind, (b) reiterates Karl Popper's description of the development of scientific as compared to essentialist methods of concept definition, (c) compares the development of physical and psychological concepts, (d) notes an apparent illogic of the mind and body issue, and (e) discusses a range of psychological theories in relation to this process model, that is, from Skinner's behavior view, to Pribram's presentation of cognitive theory, to Epstein's theory of the self concept, and to existentialistic views. In terms of meaning and usefulness, mind and behavioral concepts appear to evolve in the same manner.

This paper attempts a better understanding of the mind and body problem by suggesting a process model of concept development which is drawn in part from Karl Popper's (1963) nominalistic interpretation of the devlopment of scientific concepts. A second purpose is to illustrate an apparent perceptual error in historical efforts to disinguish mind and body concepts in terms of their purported observability.[1]

Proponents of different theoretical views re-examine the question of the relation of mind and body every few years. For psychology, the issue is more often addressed as a problem of the relation of mind and behavior. Does the mind affect behavior? Does behavior affect the mind? Do they interact? Are

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[1]Historically, the mind-body problem is much broader and more complex than the psychological perspective presented here. For a more complete account viewed from metaphysical and other perspectives consult the works of Malcolm (1971) and Campbell (1984).

the mind and body to be understood by different methods and theory? The debate appears as a cyclical sequence. First some theorists seek simplification of psychological knowledge often with ensuing conceptual restrictiveness as with Watsonian and radical behaviorism. Seemingly, in reaction, other theorists then seek less encumbersome conceptualizations of human functioning often with ensuing theoretical complexity and confusions. This encourages a return again to simpler models.

Efforts seeking a re-examination of basic psychological principles appear in present day views among both more traditional behavioral psychologists as represented in a book honoring B.F. Skinner (Modgil and Modgil, 1987) and in the writing of those seeking to establish more cognitive (e.g., Pribram, 1986) and also more philosophically existentialistic perspectives of the human condition (e.g., Faulconer and Williams, 1985; Packer, 1985).

Seemingly, the mind-body debate goes on because, at either an explicit or implicit level, the problems of the mind and body complicate theory and research in contemporary psychology and in science in general. The mind/body problem may account in part for Kuhn's remarks (1970) in his study of paradigms and scientific revolutions:

> Particularly, I was struck by the number and extent of overt disagreements between social scientists about the nature of legitimate scientific problems and methods. (p. viii)

The present consideration of the mind and body problem (a) begins with some definitions of mind and body, (b) paraphrases Popper's view of definitions as they relate to concept development, (c) proceeds with a proposed process model for understanding the development of both mind and body concepts, (d) identifies an apparent perceptual error that appears to illogically confound the study of mind and body, and finally, (e) discusses contemporary perspectives of mind and body in relation to this process model.

Views and Definitions

A hundred years ago, William James (1890/1951) referred to mind as a mental state of "inward activity or passion" (p. 185). James noted that the minds studied in psychology "are objects, in a world of other objects" (p. 183). In this respect, he considered that psychology was a natural science. This is in contrast to the radical behaviorist view which suggests that references to mind have unnecessarily complicated the study of human behavior. For example, Skinner (1989) stated the following: "Perhaps it is of the very essence of mind that it cannot be defined" (p. 17).

Also in more recent times, Rachlin (1987) has examined several perspectives of mind ranging from the mentalistic view that mind mediates between

environment and behavior to the view that "Overt behavior does not just reveal the mind – it is the mind" (p. 156). The mind may also be related to the self concept (Epstein, 1973), to cognition (Pribram, 1986), to articulations of the temporal world (Faulconer and Williams, 1985) and to existentialism as presented by Packer (1985). The mind is also referred to by noted physicists. For example, in his presentation of physical concepts as they relate to the nature of the universe, Hawking (1988) depicts the mind as the source of theories of physics.

For this presention *mind* refers to one's apparent subjective life and to such mental activities as perceiving, remembering, thinking, feeling, imagining and reasoning. Campbell (1984) states the following with regard to definitions of mind: "Without begging questions . . . an inventory of the mind . . . includes sensation, perception, thinking, memory . . . [and much more]" (p. 3). And, for this presentation, *body* refers to one's apparent objective life and to the corresponding physical things and activities occurring in the world of three dimensional space.

Mind and body are most often distinguished in three ways: mind (mental) as compared to body (physical) phenomena are considered to be (a) intangible, (b) publicly unobservable, and (c) phenomena that may be understood, if at all, by other than the scientific method. The following presentation agrees with the first of these beliefs, if tangible simply refers to stimuli which act on exteroceptive senses. However, the mind is suggested to be publicly observable and researchable in the same manner as bodily, behavioral, and other physical phenomena. This view will be elaborated.

Popper's Essentialist and Nominalist Views

For the purpose of minimizing confusions about definitions, theories and findings, and to clarify how concepts are usefully evolved in terms of the model presented in the next section of this paper, the writing of Karl Popper (1963) on the use of definitions in science is pertinent (also see Hempel, 1965). Popper (1963) distinguished the Aristotelian essentialist as compared to nominalist methods of definition:

> Aristotle taught that in a definition we have first pointed to the essence – perhaps by naming it – and that we then describe it with the help of the defining formula. . . . (p. 13)

Thus, the essentialist interpretation reads a definition "from the left to the right." On the other hand, according to Popper, in modern science a definition is read "from right to left." Modern science begins with the defining formula and asks for a short label to it. The scientific view of the definition, "A puppy is a young dog," would be that it is an answer to the question "What

shall we *call* a young dog?" rather than an answer to the question "What *is* a puppy?" In modern science, nominalist definitions are commonly used as shorthand symbols or labels "to cut a long story short." The purported advantages of this nomimalist method are (a) to introduce new arbitrary shorthand labels with no intrinsic additional meaning, and (b) to provide symbols for easy communication as compared to using lengthy referents, for example, as in the case of a bacteriologist repeating descriptions and methods of dyeing a strain of bacteria whenever he or she spoke of a particular strain of bacteria. This nominalist method is relevant for an understanding of the process model.

A Process Model of Concept Development

Seemingly, some concepts have been with us for so long that we may tend to think of them as having been mysteriously created rather than having evolved over the long history of our civilization (e.g., length, distance, and weight). However, the evolution of both the human condition and concepts is readily documented. Conant (1951) well illustrates the evolutionary continuity of the concepts of physics, chemistry, and biology from everyday human experiences to their measurement and study in the natural sciences. He describes the historical threads that link everyday experience with the increasingly sophisticated methods and findings of science: the concept of atmospheric pressure arose in part from observations of the flow of fluids from a barrel; the principles of hydrostatics originated in part from noting that water would seek its own level; and Boyle's law followed from the observation that heating a volume of air caused it to expand (p. 131). Similarly, regarding temperature, Conant states ". . . the concept of temperature developed from crude, common-sense ideas about one object being hotter or colder than others" (p. 152).

The process model presented here begins with the basic assumption that both physical and mental concepts originate from everyday experiences in a manner that Conant has particularly elaborated only for the physical sciences. This process model is thought to be important for the development of both mind and physical concepts. The model consists of five steps. Thus, in Step 1, *naturalistic observation* involves the describing or the developing of a cluster of observations that seem interrelated. Step 2 is the *naming* of the cluster, and in Popper's sense, the denoting of a short-hand symbol for the more cumbersome and elaborate descriptions associated with initial observations. Step 3 is the *measuring* of the concept thereby providing a quantitative and/or operational definition of the concept. Step 4 is *determining the reliability* of the concept, that is, the intra and inter, and temporal consistency of observations. Step 5 is the *determining of the validity* of the concept (i.e., that

Table 1

A Process Model of Concept Development: Scenario of Precursors to, and Parallel Development of, the Concepts of Intelligence and Temperature

Intelligence	*Temperature*
1. Naturalistic Observations Reasoning, vocabulary, problem solving, abstraction, information, perceptiveness.	Subject warmth, annual season, standing near a fire, sun rays.
2. Naming of Concept Intelligence	Temperature
3. Measuring or Operationalizing Concept Binet and Henri (1896) or Wechsler (1939) tests.	A thermometer (1650), Academia del Cimento.
4. Determining Reliability of Concept The finding that one or many can obtain consistent measures of intelligence as defined.	The finding that one or many can obtain consistent measures of temperature as defined.
5. Determining Validity of Concept The test appears to measure reasoning, information, abstraction. It predicts performance, is useful in examining hypothesized relations with achievement, heredity and environment influences on adjustment, education, the course of psychotherapy.	The device appears to measure what we experience in terms of warmth and cold. Provides for concepts and findings of latent and specific heat, the invention of the steam engine, the heat of fusion.

measured observations have face validity in that they appear to correspond to initial naturalistic observations; and that they have validity as predictor, process, construct and outcome variables).

These five steps would seem to be a common path for the development of many concepts in science. As depicted in Table 1, the psychological concept of intelligence (a mental or mind concept) and the physical concept of temperature (a physical or body concept) are suggested to evolve in the same manner in terms of these five steps or stages of concept development. Thus the model proposed here suggests that mind and body concepts are subject to the same methods of knowing by way of our experiences and by the methods of science. By contrast is the ready human perception that mind and body are of different realms, a topic to be considered next.

Mind/Body: An Apparent Perceptual Error

In our history, there have been many blocks both to an easy conceptualization of the mind and body problem and to the resolution of the problem by logical, empirical, and/or scientific methods. Early on, mind was con-

founded with the idea of soul, the latter transcending material existence and our knowing of it except by way of faith and religious teaching.

Few persons would treat the idea of mind and soul as equivalent. However, there are recent instances of this perspective, for example, Ebel (1974) with his analogy of the dryads of the mind and tree nymphs taken from Heyl (1930), "Every tree had its protecting spirit who was born with the tree . . ." (p. 485). Soul may be a useful concept for religion, but soul has spiritual and mystical meanings that have not been well addressed by psychology as a science. Mind, as a concept that is distinguished from the concept of soul, refers to acts of consciousness and to related mental concepts such as reasoning, feeling, and perception. These have been differentiated as useful concepts that have anatomical, physiological and psychological significance for scientific study and the understanding of human functioning.

Seemingly, the greatest block to resolving the mind/body issue is related to our individual *conceptual fixedness* about our exteroceptive experiencing of the world. The problem, and the illusion for us as individuals and scientists, is most basically presented by Kenny (1972) in a lecture at the University of Edinburgh:

> Each one of us, we feel, has in addition to his public bodily history another inward life in which there occur events which are private to him, of which he alone is a witness, and of which others can know only by his testimony. (p. 9)

Note that this perspective from Kenny is based on the view that an individual's outward life, "a public bodily history," is not private and can be witnessd by others. This will be examined.

There are some differentiating criteria of mind and body (mental and physical/material) that appear to be generally accepted as true and valid. For example, physical (body) events, by definition, act directly on our exteroceptive senses as compared to mental (mind) events. However, a problem of our perception of exteroceptive events concerns the assumption that we observe the same physical events in a manner that is different from the observing of so-called mental events. What appears to have occurred early in the history of our development was a separation of mental and physical events based upon arbitrary and incorrect assumptions about mind as compared to body events, and, forever thereafter, endless efforts to resolve a problem that has the false assertion that body (physical) events can be publicly observed but mental ones cannot. The problem is then further exacerbated by the common proclamation that science deals primarily and most adequately with publicly observable events.

An example of this mind-body difference is illustrated in a debate between Skinner and Blanshard (Blanshard, 1965; Skinner, 1964). According to Blanshard, by the apparent denial of the importance of private consciousness for

understanding human functioning, behaviorism would seem to deny the importance as well of mental images, headaches and toothaches, and "the world's happiness is abolished at one stroke" (p. 28). On the other hand, Skinner (1964) has suggested that observable behavior has traditionally and erroneously been attributed to a drama played in nonphysical space by an inner state (e.g., a Freudian triumvirate) that is "scarcely to be distinguished from the spirits and demons of early animism" (p. 482). What seems to be difficult to recognize is that mental and behavior/physical events cannot be differentiated in this manner. For both mental and physical events we depend on the discriminative verbal report and/or behavioral response of another individual to confirm the similarity of our perceptions and conceptions. For example, a table and chair are physical structures considered to be publicly observable, that is, to be equally well observed by two or more persons each of whom is assumed to perceive the same table and chair. Although we do not actually know that we perceive the same table and chair, we make this assumption about physical (body) events because we describe them similarly.

Do we know any more or less adequately that we imagine the same table and chair? According to common science, we cannot observe another's imaginings. However, neither can we observe another's perception of a table and chair. For both perceiving and imagining of an event, the similarity and differences of our descriptions are all that we have for the development of our knowledge and science. Toothaches are observable in that they are similarly described, rated, and evaluated under similar conditions of tooth decay and nerve damage. We attribute a special reality to such things as chairs because they impinge on our exteroceptive senses, but *we do not know* that we observe the same physical things anymore than we know that we experience the same anxiety, toothache, depression and other mind events which are also describable but with less certainty than are chairs.

Discussion and Contemporary Theory

Wittgenstein (1933/1971) suggested that language clothes our experiences of the world (p. 63). Seemingly, language has also provided for our conceiving of the world of experience and the world of reality, a mind and body dualism as a persistent issue of our knowledge.

The present study of mind and body has suggested the following points: (a) the issue pervades and complicates social and physical theory and findings; (b) Popper's ideas, together with the proposed process model of concept development, provide an alternative to mind and body dualism. From this model, mind and body concepts are observable and verifiable in the same manner as illustrated by the concepts of intelligence and temperature; (c) the concept of observability is suggested to be erroneously associated with the

false assumption that individuals and scientists can observe the same public events. Actually, "publicly observable" appears to mean no more than events that we know by way of our exteroceptive and proprioceptive receptors, that is, those things that we see, hear, smell, touch and weigh. The greater apparent reality of physical events is because we have devised very reliable and valid ways of talking about them and, especially, in measuring these experiences of the world in useful and agreed upon ways. Moreover, as suggested by Conant (1951), physical concepts originated so early in our evolution that often we fail to recognize that they, too, began as vague subjective experiences. They continue to be subjective experiences regardless of being observed either under a microscope or as vapor trails of subatomic particles. This view is elaborated in a quotation from William James (1890/1951):

> The intellectual life of man consists almost wholly in his substitution of a conceptual order for the perceptual order in which his experience originally comes . . . (a conceptual order) abstracted and generalized from long-forgotten perceptual instances. . . . (p. 32)

What are the implications of this process model and reasoning about "publically observable" events for some of the current writing representing a range of theory that relates to mind? Behavioral theory as represented by Skinner (1989), cognitive theory by Pribram (1986) and existential theory by Faulconer and Williams (1985) and Packer (1985) will be examined as representing a range of theories to consider in relation to the ideas presented in this paper. Humanism will be referred to here only indirectly as represented in Epstein's (1973) review of theory and research of the self concept.

Skinner (1989) continues his "attack," as he describes it, on the concept of mind and cognition by suggesting that such concepts double for "the person whose mind it is." Moreover, he notes that the word, mind, originally meant "do." "Cognitive processes are behavior processes . . . things people do" (p. 17). Skinner argues that mental and cognitive concepts are derived from observed behavior.

As presented previously, the process model would seem to be an alternative to Skinner's dualism in proposing that concepts regardless of their physical, behavioral, mental, and cognitive nature originate in the same manner. Skinner's approach would seem to emphasize concepts that arise from exteroceptive stimulation. However, that these exteroceptive sources of stimulation are "observable" in some other manner different from proprioceptive and interoceptive sources of stimulation would appear to be a result of the apparent perceptual error previously described. As with other physical events, we do *not* know that we observe the same behavior as another person. We do seem to describe physical and behavioral concepts more readily with regard to their reliability and validity than most mind concepts and perhaps most cognitive concepts. But the apparent advantage, particularly of Skinner's behaviorism,

may depend on the human functioning being studied; and differences of theory and findings may be resolved by research rather than by reference to apparent differences of the "observability" of mind and body events.

Pribram (1986) also appears to take a dualistic position, namely, that mind and cognitive concepts can be inferred from behavioral and measured brain functions. For example:

> Inferences from reaction time data, recordings of event-related brain potentials . . . have led to the acceptance of the idea that cognitive operations are taking place in the brains of sensing and behaving organisms. (p. 507)

Pribram attempts to avoid dualism by suggesting that two "optical isomers" (i.e., two mirror images) are constructed from experience, one material and one mental. Thus, for body and physical concepts we have a mode of experience that operates downward, seemingly, as in reductionistic sciences of cause and effect relations; and in the case of mind we have an upward mode toward other persons in obtaining consensual validation by communicating and comparing experiences.

The process model appears consistent with Pribram in suggesting that concepts are constructed from experience. The model differs from Pribram in suggesting that the "communicating and comparing" of experiences is the first step of naturalistic observation involved in the origin and development of both mind and body/brain concepts. Moreover, concepts arising from the study of anatomy, physiology, recordings of the brain, computer hardware and software, behavior, cognition, intellectual functioning, and other mind states can be defined in measurable form, interrelated, experimentally researched, and the finding generalized to theory and practice as in the process model presented previously. Seemingly, concepts derived from these diverse sources are equally "publicly observable." However, some of these concepts have as yet been poorly defined and have limited reliability and validity.

Epstein's (1973) presentation and review of theory and research on the self concept seem consistent in part with the process model presented here, that is, his appraisal of the self concept in terms of attributes by which all theories and concepts are judged: extensivity, parsimony, empirical validity, internal consistency, testability, and usefulness. Epstein (1973) assumes a dualistic view that he extrapolates from Kelly (1955), that is, that the data of experience can be organized into a "self-system and a world system." He notes as well that for social communities the concept of responsibility is necessary, a concept that depends on a distinction between self and nonself. The concept of responsibility, seemingly, could involve both mind and body concepts. From the view presented here, the "nonself" is still distinguishable from "self" in that nonself is stimulated by way of exteroceptive sensory systems. But both "self" and "nonself" concepts are equally observable and researchable by way of the process model.

A final brief reference to dualism in contemporary psychology is found in the works of existential philosophers. A central idea of existential philosophy and psychology is that of "temporality in human action." Temporality is a concept that I interpret as referring to a human experience at this very moment in time that cannot be altogether understood by reference to generalizations or "atemporal" findings and principles from the social sciences. Faulconer and Williams (1985) suggest that "natural science has not been particularly hurt by giving precedence to atemporality" (p. 1183). However, they argue that if a science of human action is to be possible, the concept of "temporal must be made fundamental" (p. 1183). What is implied from the statements of these authors is that the mind and behavior are subject to different consideration than phenomena of the natural sciences, that is, the world of physical things. This dualism has already been addressed in prior discussion of the process model. If the process model has merit, seemingly, the concept of "temporality" would be relevant for understanding both mental and physical or natural science phenomena.

Packer (1985) has described a "hermeneutic" alternative to cognitive and behavioral theory. Hermeneutics refers to the study of a practical activity that exists prior to any theorizing about it. A practical human activity is the source of knowledge (e.g., mailing a letter, talking to a friend or using a hammer). A prisoner's dilemma game is used by Packer to illustrate a hermeneutic approach in examining an issue of morality in an academic setting. Increased sensitivity to student concerns and conflicts was thought to occur by the use of this method. From this hermeneutic perspective, less attention is given to the more formal concepts, findings, and theories of the social sciences. As with the existential perspective of Faulconer and Williams (1985), Packer appears to propose a method for understanding human behavior that is removed from traditional psychology as a science.

Implications for Theory and Research

In this paper the theories of others have been referred to only briefly and, therefore, out of the broader and more meaningful context of their completed works. However, the process model presented here would seem to accommodate these diverse theoretical positions at different stages or steps of development: Skinner's (1989) behaviorism would seem to operate primarily at Stages 3 through 5. The basic concepts have already been determined, operationally defined, and the reliability and validity of concepts assumed or established. The existential views of Faulconer and Williams (1985) and Packer (1985) seem to be at Stages 1 and 2 (i.e., the naturalistic observational and naming or labeling stages or steps). Humanism, as reflected in the study of the self concept (Epstein, 1973), and cognitive psychology (Pribram, 1986), appear to bridge

the five stages or steps. That is, some concepts are clearly defined and measurable as in Steps 3 through 5. Other concepts are evolving in Stages 1 and 2, presumably, with efforts to subsequently define and measure them.

The process model appears to have the following advantages for theory and research:

1. The model suggests an alternative view of mind and body concepts: both are definable and researchable in the same manner if we can overcome our tendency to assume that we observe differently for "body" and "mind" phenomena.

2. The model emphasizes the continuity of the development of both mind and body concepts from their vague inception to their later quantitative definition, research study and application. Seemingly, from this model, predictions comparing the value of different theories become more possible.

3. Mind and body concepts can be appraised in terms of their usefulness in extending knowledge and application to human problems. *From a traditionally dualistic perspective*, we self consciously wonder if our quantitative operations/tests "really" measure cognitive activities, such as thinking and remembering, feeling, and how we perceive ourselves. *And, from a traditionally dualistic perspective*, we appear to wonder *not at all* about our measurements of physical phenomena: Does a thermometer really measure temperature? Does a ruler really measure distance? Does a clock really measure time? Is there a scale that actually measures what we experience as just noticeable difference in weight? *In the process model*, physical and mental phenomena are appraised in the same manner. Both mind and body concepts are derived from experience, and they are accepted and valued, ultimately, as they are defined in a reliable and valid way, found to be lawfully related to other concepts, and demonstrated to have utility for understanding and influencing the human condition.

I have presented a process model of concept development that attempts to resolve differences between contemporary theories that appear to be based in part upon the dualism of mind and body concepts. The model follows from Popper's (1963) nominalist view of concept development (p. 14), that is, that modern science begins with a defining formula or referent and asks for a short-hand label to it, a concept. This approach to concept development has the advantage of avoiding the development of concepts without referents; developing less confusing and debatable concepts as to their meaning and study; and of avoiding an infinite regress in determining the meaning of a particular concept. With the flourishing of cognitive, computer simulated, linguistic, biological behavioral, cognitive behavioral, health and other theoretical systems in present day psychology, this consideration of concept development may be important as a reminder of the problems that may ensue with the novelty of new concepts and theoretical conceptions.

A concept may be usefully elaborated in terms of measurable definition, the establishment of its reliability and validity, and the subsequent application and study of the concept in the naturalistic settings in which it originated. Seemingly, the model is consistent with some contemporary theory and study in psychology. In fact, it would seem to be the manner in which many psychological phenomena are already fruitfully examined and studied. Epstein's (1973) review of the self concept by way of measurable definition and study is one example. And, Eron (1987) suggests a second example. From his 20 year study he concluded:

> Thus, it becomes obvious that in order to predict complex human behavior like aggression, we must know, in addition to "drive, cue, response, and reward," what is going on inside the head of the subject. (p. 441)

Thus, the process model is in part a reflection of the present day study of human functioning. But more than that, the model provides an alternative to competing perspectives in psychology: it is an alternative to the common philosophical belief often espoused by behaviorists that we only can know and study publicly observable behaviors and possibly infer aspects of mind. It is an alternative to the assumption often espoused by phenomenologists that we examine our experiences of mind and infer an external reality of physical events and behavior. Seemingly, both of these perspectives explicitly or implicitly assume a dualism of mind and body (behavior) as do the more specific behavioral, cognitive, and existentialistic views presented in prior discussion. The process model offers an alternative to this dualism, a dualism seemingly based upon the false assumption that we can as individuals and scientists observe physical events in a manner different from mind or mental events. I believe that we have this perceptual set, this functional fixedness, as a result of the long history of assuming that exteroceptive events are observable in a special manner. This perceptual error seems to have as well resulted from our failure to recognize that most basic well-delineated concepts originated from vague subjective experiences in the history of our evolution.

The value of the model proposed here is to encourage a perspective on human knowledge that is ultimately based upon advances of research methods and findings and less upon the recycling of theoretical views confounded by assumptions related to mind and body dualisms. Thus, we may have a more elaborated and internally consistent model from which to view different theories. Radically behavioral theorists may more fluidly move between mind and behavior analyses. Radically phenomenological theorists may more readily describe their concepts and implications, perhaps, in terms of behavior. And, integrative theories of human problems and functioning may more readily draw from both perspectives.

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