
Psychology Defined



Gregg R. Henriques

James Madison University

A new form of knowledge technology is used to diagnose psychology's epistemological woes and provide a solution to the difficulties. The argument presented is that psychology has traditionally spanned two separate but intimately related problems: (a) the problem of animal behavior and (b) the problem of human behavior. Accordingly, the solution offered divides the field into two broad, logically consistent domains. The first domain is psychological formalism, which is defined as the science of mind, corresponds to animal behavior, and consists of the basic psychological sciences. The second domain is human psychology, which is defined as the science of human behavior at the individual level and is proposed as a hybrid that exists between psychological formalism and the social sciences. © 2004 Wiley Periodicals, Inc. *J Clin Psychol* 60: 1207–1221, 2004.

Keywords: Tree of Knowledge (ToK) System; psychological formalism; unified theory; mental behaviorism; Justification Hypothesis

We persevere in looking at small questions instead of large ones and our view of the forest is forever obscured by the trees. (Bevan, 1991, p. 475)

What is psychology? Is it a single, coherent scientific discipline awaiting transformation from the current preparadigmatic state into a more mature unified one? Or, is it a heterogeneous federation of subdisciplines that will ultimately fragment into a multitude of smaller, more specialized fields? This is, in essence, the “to be or not to be” question of the field. Currently, psychology exists as an uneasy compromise between unification and fragmentation. On the one hand, the existence of numerous societal institutions suggests that psychology is a singular entity at some level. Academic courses, degrees, and departments, as well as organizations like the American Psychological Association (APA) suggest that the concept of psychology is a specifiable, coherent entity (Matarazzo, 1987). On the other hand, a more detailed inquiry reveals a remarkable degree of confusion, fragmentation, and chaos at the theoretical level. So formidable is the problem of conceptual incoherence that several prominent authors have flatly stated that it is insurmountable (e.g., Koch, 1993).

Correspondence concerning this article should be addressed to: Gregg R. Henriques, MSC 7401, Department of Graduate Psychology, James Madison University, Harrisonburg, VA 22807; e-mail: henriqgx@jmu.edu.

The confusion inherent in the discipline becomes apparent when an attempt is made to precisely define the field. For example, in his *Dictionary of Psychology*, Reber (1995) wrote:

Psychology simply cannot be defined; indeed, it cannot even be easily characterized . . . Psychology is what scientists and philosophers of various persuasions have created to . . . understand the minds and behaviors of various organisms from the most primitive to the most complex . . . It is an attempt to understand what has so far pretty much escaped understanding, and any effort to circumscribe it or box it in is to imply that something is known about the edges of our knowledge, and that must be wrong. (p. 617)

The problems associated with defining psychology are not new. As noted by Leahy (1992), the field was actually founded on three distinct subject matters: (a) consciousness by thinkers such as Wundt and Ebbinghaus; (b) unconsciousness by thinkers such as Freud and Jung; and (c) adaptation by thinkers like Spencer and James. Of course, shortly after the turn of the century Watson (1913) rejected each of these perspectives, and during the behaviorist reign from the 1920s through the 1960s animal behavior was the proper subject matter of psychology. With the ascent of cognitive and humanistic approaches in the past three decades, the focus has shifted back to the level of the human individual. The deep philosophical concerns that fractionated the discipline at its inception have not been resolved, and Koch's prophesy that psychology can only exist as a collection of studies, rather than as a coherent science, seems to have been vindicated.

My purpose here is to diagnose psychology's epistemological woes and provide an overarching conception that clearly defines the proper subject matter of the field and shows how it exists in relationship to the physical, biological, and social sciences. Through the use of a new conceptual framework, I argue that the science of psychology has traditionally spanned two separate, but intimately related problems. The first problem of psychology, clearly specified by the behaviorists, is the delineation of the general laws of animal behavior. The early optimism associated with the development of behavioral theory was well expressed by Tolman in his 1937 APA Presidential Address, when he remarked:

[E]verything important in psychology (except such matters as the building up of a super-ego, that is everything save such matters as involve society and words) can be investigated in essence through the continued experimentation and theoretical analysis of the determiners of rat behavior at a choice point in a maze. (1938/1978, p. 364)

Human behavior at the individual level is psychology's second problem. Human behavior is distinctive from nonhuman animals because, as Tolman alluded to, it takes place within a larger sociolinguistic context. In accordance with this preliminary analysis and to be articulated in detail later, my solution to the difficulties is to divide the science of psychology into two broad, logically consistent domains of psychological formalism and human psychology that respectively deal with the problem of animal behavior in general and the problem of human behavior at the level of the individual.

My motive for pushing toward a theoretically unified psychology can be clearly expressed by analogy: the difference between fragmentation and unification is the difference between noise and music. If the current cacophony of conflicting perspectives can be orchestrated to function in concert with each other, the potential pay off is immense. Consider, for example, the highly contentious conflicts between scientists and practitioners. The confusion that permeates throughout the discipline creates massive amounts of static in their communications, and this, in turn, interacts with their differing motivational sets to create tensions. The consequences are the familiar accusations by scientists that practitioners are too loose with their conceptions and not well versed in science,

whereas practitioners complain that scientists have failed to generate knowledge that is useful to them. I contend that the failure to effectively define psychological science has been at the heart of the problem and that a precise definition will open the pathway for a much more harmonious dialogue between them (Henriques & Sternberg, in press). However, to construct such a precise definition, it is necessary to develop a new way of looking at psychology.

Carving Nature at Its Joints: The Tree of Knowledge System

Many of the problems that plague psychology are epistemological in nature, and a key element of my proposal for unifying the field is the introduction of an innovative form of knowledge technology called the Tree of Knowledge (ToK) System. The ToK System is a graphic depiction of the evolution of complexity from the Big Bang through the present. It offers a new vision of the nature of knowledge as consisting of four levels or dimensions of complexity (Matter, Life, Mind, and Culture) that correspond to the behavior of four classes of objects (material objects, organisms, animals, and humans), and four classes of science (physical, biological, psychological, and social). A full description of the ToK System was offered in an earlier article (Henriques, 2003); a more basic version of the system that depicts essential correspondences between the four fundamental levels is offered in Figure 1.

Each of the four dimensions in the ToK System is conceptualized as a meta-level that paradoxically exists both within and above the dimension beneath it. The position of the dimension and the reason it can exist in seemingly contradictory states depends on whether the perspective taken in relation to the dimension is bottom-up or top-down. To obtain a clearer picture of this concept, consider the following example offered by Nelson (1996) in his incisive analysis of meta-levels: "Thiss sentence has threee errors." To understand the validity of this sentence, a consideration must be made at the object level (the individual words) and the meta-level (the meaning of the sentence as a whole). There are two errors at the object level (the two misspellings) and one error at the meta-level (the fact that there are two spelling errors instead of three).

Relating this to the ToK System, consider the truism that object-level chemical wholes (organic molecules) interact to form biological parts (e.g., genes), which, in turn, form meta-level biological wholes (cells). Likewise object-level biological wholes (e.g., neuronal cells) interact to form psychological parts (e.g., computational neural nets), which, in turn, form meta-level psychological wholes (animals). Finally, object-level psychological wholes (e.g., individual humans) interact to form sociological parts (micro-level social exchange), which, in turn, form meta-level sociological wholes (societies). Thus, in the ToK System, the biological dimension is meta-physical, the psychological dimension is meta-biological, and the social dimension is meta-psychological.

Another key element of the system (Fig. 1, bottom) is that each of the four dimensions is associated with a theoretical joint point that provides the causal explanatory framework for its emergence. Accordingly, there are four formal theoretical joint points: (1) Quantum Gravity (Theory of Matter; see Hawking, 1998; Smolin, 2001); (2) the Modern Synthesis (Theory of Life); (3) Behavioral Investment Theory (Theory of Mind); and (4) the Justification Hypothesis (Theory of Culture). The modern synthesis, the theoretical merger of Darwin's theory of natural selection and genetics, provides the clearest example of a joint point. The modern synthesis can be thought of as the unified theory of biology (Mayr & Provine, 1998) because it provides the framework for understanding how complex, self-replicating organic molecules were ultimately transformed into organisms (Maynard-Smith & Szathmary, 1999). Biology is a unified discipline precisely because

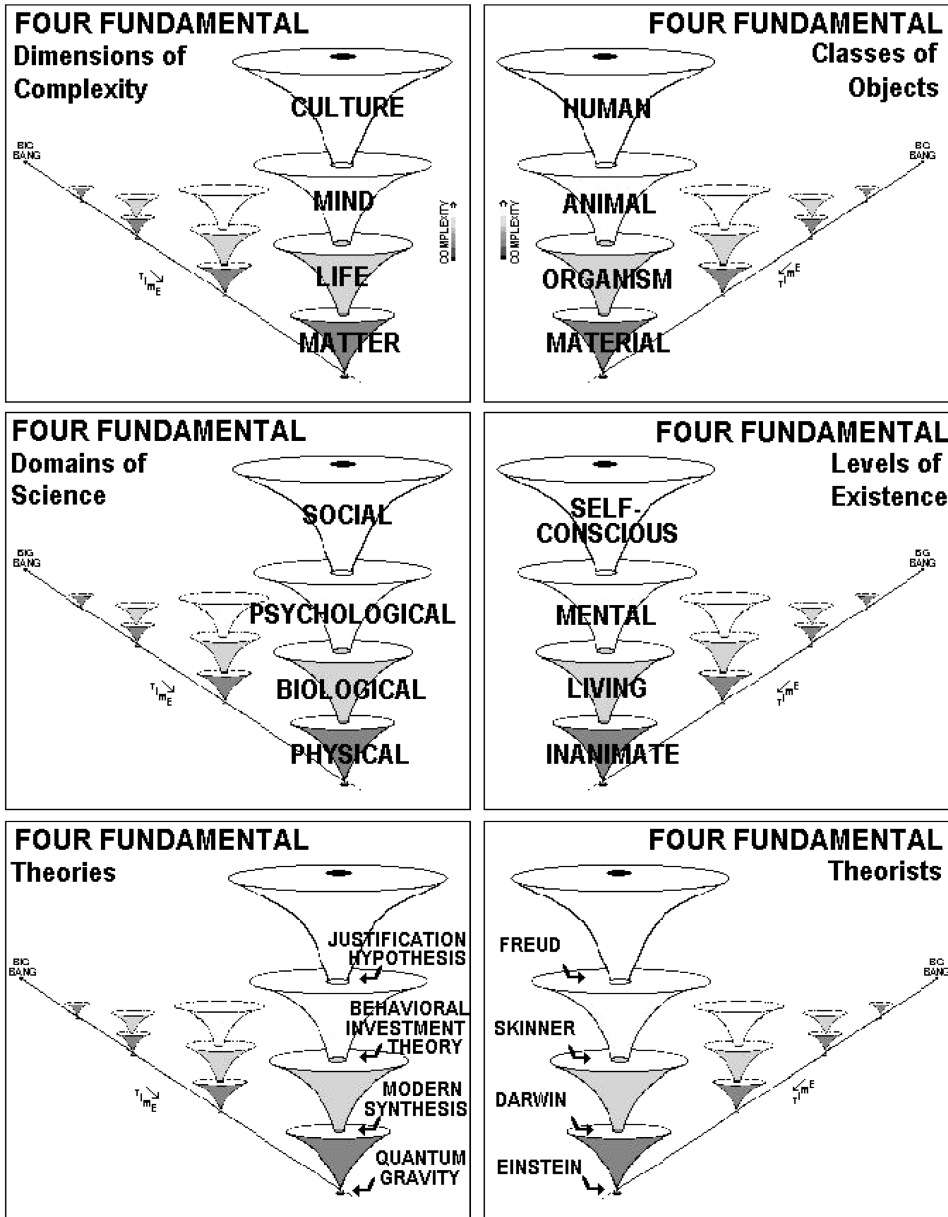


Figure 1. The four fundamentals of the Tree of Knowledge System.

it has a clear, well-established definition (the science of life), an agreed upon subject matter (organisms), and a unified theoretical system that provides the causal explanatory framework for its emergence (the modern synthesis). It is this crisp conceptual organization that leaves scientifically minded psychologists with feelings of bio-envy.

In a previous paper (Henriques, 2003) I described how the modern synthesis serves as the prototype example of a joint point and then formulated Behavioral Investment Theory (BIT) as the Life-to-Mind joint point and the Justification Hypothesis (JH) as the Mind-to-Culture joint point. Behavioral Investment Theory merges Skinner's

fundamental insight of behavioral selection with cognitive neuroscience in a manner that explains how Mind evolved out of Life. The JH anchors fundamental Freudian observations to basic psychological science and provides the framework for understanding the evolutionary changes in mind that gave rise to human culture. The current work specifies how the theoretical arguments set forth previously provide a clear definition of and proper subject matter for the science of psychology and resolve many of the primary schisms in the field.

Psychology's Puzzle: Two Subject Matters, One Science

The absence of a clearly defined subject matter has been a key to psychology's problems (Yanchar & Slife, 1997), and I believe the ToK System provides a powerful new tool in carving out the proper conception of the field. A preliminary analysis corresponding the ToK System with the varying conceptions of psychology suggests that the discipline has historically spanned two fundamentally separate problems: (a) the problem of animal behavior in general, and (b) the problem of human behavior at the individual level. If this insight is valid, it suggests that previous efforts to define the field have failed, in part, because they have attempted to force one solution onto a problem that consists of two fundamentally distinct dimensions.

To remedy this problem, I propose that psychology be divided into two large scientific domains of (a) psychological formalism and (b) human psychology. To be articulated in more detail later, psychological formalism is defined as the science of mind and corresponds to the behavior of animal objects. Human psychology is considered to be a unique subset of psychological formalism that deals with human behavior at the level of the individual. Because human behavior is immersed in the larger sociocultural context (level four in the ToK System), human psychology is considered a hybrid discipline that merges the pure science of psychology with the social sciences. The crisp boundary system that I am proposing is in contrast to others (e.g., Bunge, 1990) who have conceived of the science of psychology as existing in a vague, amorphous space between biology and the social sciences.

Psychological Formalism

New ways of formulating a discipline inevitably engender controversy and my proposal will likely be no exception. My claim that animal behavior is the proper subject matter of the formal science of psychology is expected to raise some objections for several reasons. One reason is that the vast majority of psychologists currently focus on human behavior. Another reason is that when students consider studying psychology, the majority undoubtedly does so with the intent of studying human behavior. A third objection is that there are disciplines that have traditionally been considered biological disciplines (e.g., ethology and sociobiology) that focus on animal behavior and would have to be reconceptualized as psychological disciplines. Given these considerations, it should be noted at the outset that my prescription requires a significant shift in the gravitational center of our discipline and thus inevitably faces a substantial amount of resistance in the form of institutional inertia.

Despite these concerns, there are good reasons to suspend judgment and entertain the possibility that animal behavior constitutes the proper subject matter for the formal science of psychology. First, conventional definitions have failed to deliver an effective conception of the subject matter, and this continues to leave many with the impression that psychology is a "would be" science (Staats, 1999). Second, humans are, of course, a type of animal and thus are obviously not excluded. Third, psychology was essentially

defined as the science of animal behavior for much of the 20th century; thus, there already exists a rich tradition in which this conception has been the rule. Fourth, behavioral theory exists precisely because biological theory cannot fully account for how animals behave as coordinated singularities (see Henriques, 2003) that produce a functional effect on the animal–environment relationship. Fifth, even the simplest nervous systems, such as that in the planarian, have been found to exhibit basic psychological phenomena such as associative learning (Rilling, 1996). Sixth, defining psychology solely in terms of human behavior opens up a host of serious problems (Daly & Wilson, 1999). For example, if only human behaviors are psychological behaviors, what kinds of phenomena are sensation, perception, motivation, emotion, motor development, memory, attachment, dominance, eating, mating, etc. that are currently studied in animals (Domjan & Purdy, 1995)? Seventh, conceptualizing psychology as the science of animal behavior opens up the door for an integrative theoretical approach to the behavior of the nervous system as a whole, called BIT. Finally, this conception also opens up the possibility of developing an effective, behaviorally grounded, scientific conception of mind.

Mind, Psychological Behavior, and the Philosophy of Mental Behaviorism

The problems defining psychology are intimately intertwined with the difficulties defining both mind and behavior. Merging mind and behavior is complicated, and the mentalist versus behaviorist schism remains one of the key epistemological problems facing the field (Uttal, 2000). One element confounding matters is the fact that mind and behavior mean very similar things to psychologists. Consider that *Webster's Unabridged Dictionary* (1994) defines *mind*, as it pertains to psychology, as “the totality of conscious and unconscious mental processes and activities of an organism” (p. 911) and *behavior*, as it pertains to psychology, as “a. the aggregate of observable responses of the organism in their interrelationships,” and “b. any activity of the organism taken as the subject matter of psychology” (p. 134). Given the substantial overlap in these basic definitions, it is not surprising that confusion arises when they are defined against one another or even together but as separate dimensions.

To further appreciate the paradoxical nature of the relationship between mind and behavior, consider the contrast between the following: (a) Most current and past definitions of psychology have included mind in some form or another (see Benjamin, Bryant, Campbell, Luttrell, & Holtz, 1997); and (b) B.F. Skinner was recently evaluated to be the single most eminent psychologist of the 20th century (Haggbloom et al., 2002) and was, of course, a rabid anti-mentalist. I submit that any successful conception of psychology should be able to reconcile these seemingly contradictory facts. My resolution to this conundrum is to use Skinner's conception of behavior to define mind. This solution effectively reduces the two separate dimensions of mind and (psychological) behavior to a single dimension. To see how this can be done, it is necessary to briefly summarize Skinner's position.

On the night before he died, Skinner (1990) completed an article for *American Psychologist* summing up his argument for why psychology could never be a successful science of mind. Skinner's anti-mentalist perspective can be summarized as follows: First, in a manner directly paralleling the ToK System, he argued that human behavior was the product of three separate levels of variation and selection: natural selection; behavioral selection; and verbal selection. He also corresponded each level to its own discipline: biology, psychology, and anthropology/social sciences. Second, Skinner defined mind as an unobservable cause of behavior, akin to a vitalistic life force that causes organism complexity. Third, Darwin's theory of natural selection provides the framework

for understanding how an environmental selection process can create biological complexity and, in so doing, it removed the need for vitalism. Finally, Skinner concluded that in the same manner that natural selection removed the need for vitalism, behavioral selection removed the need for mentalism. In short, Skinner argued that if we are to ever become a real science like biology, we must give up our notion of unobservable, mentalistic forces causing animal behavior.

To Skinner and his radical behavioral followers, this argument is straightforward, sound, and confers many scientific benefits. For example, it clearly defines the proper subject matter of psychology as the behavior of the animal as a whole. Second, it differentiates psychology from biology with the same basic logic that biology is differentiated from the physical sciences. Third, it defines psychology as a science of behavior and removes the problematic concept of something nonbehavioral (i.e., nonphysical), causing something physical to behave. All of these benefits are genuine, and I believe they should be embraced wholeheartedly.

However, the argument is not entirely sound. In fact, there is a glaring problem. According to the ToK System, Mind is the same type of concept as Life. Both are emergent levels of complexity generated by feedback loops of variation, selection, and retention. Darwin's theory of natural selection removed the need for the concept of vitalism, but it did not, of course, remove the need for the concept of life. Indeed, the idea of Darwin being "anti-life" is absurd. Biology is crisply defined as the science of life, and the set of living behaviors are what biologists are attempting to describe, explain, and predict. Likewise, this formulation suggests that psychology can be crisply defined as the science of mind, and the set of mental behaviors are what psychologists are trying to describe, explain, and predict. Furthermore, just as Darwin's concept of natural selection (when merged with genetics) provides the causal explanatory framework for the emergence of life, I argue that Skinner's concept of behavioral selection (when merged with an information processing view of the nervous system) provides the causal explanatory framework for the emergence of mind (see Henriques, 2003).

The philosophical position that I am advocating can be legitimately characterized as mental behaviorism (MB). The mental behaviorist answers Skinner's (1990) question, "Can psychology be the science of mind?" with the answer, "Yes, so long as mind is defined as a particular type of behavior." The key, then, is defining the specific subset of behaviors that make up the construct of mind and are of interest to psychologists. In accordance with both the ToK System and Skinner's three layers of selection, the proper subject matter of psychology is animal behavior mediated by the nervous system that produces a functional effect on the animal-environment relationship. Thus, a beaver building a dam, a rat pressing a bar, and a depressed person making a suicide attempt are all psychological behaviors. A subatomic particle bouncing off the nucleus of an atom, a cell metabolizing a sugar molecule, and an animal falling out of a tree are all behaviors, but they are not behaviors that are of interest to a psychologist.

In further accordance with Skinner's system, the set of psychological behaviors can be divided into two broad categories: (a) overt mental behaviors, which are behaviors that take place between the animal and the environment, and (b) covert mental behaviors, which take place within an animal's nervous system. Both sets of behaviors are conceptualized as being mediated by the nervous system. Furthermore, neither set is viewed as fully determining the other; rather, both sets are viewed as sets of effects that exist in a nonlinear, reciprocal cycle of causation.

A substantial advantage of MB is that it simultaneously overcomes the major weaknesses of both behaviorism and mentalism, while at the same time it retains their primary strengths. A major weakness of the behaviorist position is that the concept of behavior is

too general. All sciences are sciences of behavior and thus defining psychology as *the* science of behavior (e.g., Kimble, 1994) prevents it from being conceptually distinct from other sciences. Psychologists are not interested in behavior in general, but instead are interested in a unique subset of behavior that needs explicit specification. A major weakness of mentalistic positions is that they are often not defined in terms of measurable behavior, but instead are conceived of as being a science of something unobservable. Both perspectives share another major weakness: they have traditionally been defined *against* one another (e.g., Blumberg & Wasserman, 1996; Kaye, 1996), which has led to much confusion, straw men characterizations, and constructs (e.g., operant conditioning, thinking) being ineffectively conceptualized as either behavioral or cognitive (Hishinuma, 1998). The mental behaviorist views these issues as arising from incomplete, partially correct knowledge systems being defined against one another in a manner that is more political than scientific.

Another advantage to the philosophy of MB is that it coherently connects science with practice. Earlier I alluded to the relationship between science, theory, and practice and suggested that a coherent meta-theory would build a much more effective bridge between scientists and practitioners. Currently, cognitive-behavior therapy (CBT) is one of the most widely promoted and practiced forms of psychotherapy. Cognitive-behavior therapy utilizes advances in the cognitive and behavioral sciences to inform the development of empirically supported psychosocial interventions. It is widely practiced because it makes good pragmatic sense to draw on both cognitive and behavioral science to effect human change. At a deep theoretical level, however, CBT is poorly constructed (see Foa & Kozak, 1997). The reason is because cognitivism is, by definition, mentalistic. Conversely, one of the defining features of behavioral epistemology is that it is anti-mentalistic (Day & Leigland, 1992). Thus, practical considerations aside, at a philosophical level CBT can rightfully be considered a mentalistic anti-mentalistic approach to psychotherapy. In contrast to this oxymoronic state of affairs, the philosophy of MB and the ToK System provides a coherent scientific and philosophical base from which CBT practitioners can operate. This is because MB opens up the possibility of developing a coherent scientific theory that merges the cognitive and behavioral science perspectives both with each other and with other dominant brain-behavior paradigms, including evolutionary theory, genetics, neuroscience, and systems theory.

Behavioral Investment Theory: A Cognitive-Behavioral, Bio-Physical Systems Theoretic Approach to the Science of Mind

As depicted in Figure 1, BIT attempts to do for the formal science of psychology what the modern synthesis does for biology. Paralleling the modern synthesis, BIT is proposed as a merger of the selection science of behaviorism with the information science of cognitive neuroscience. In accordance with the philosophy of MB, BIT is simultaneously a theory of the conceptual nervous system (Hebb, 1955) and the behavior of the animal as a whole. Behavioral investment theory posits that the nervous system evolved as an increasingly flexible computational control system that coordinates the behavioral expenditure of energy of the animal as a whole. Expenditure of behavioral energy is computed on an investment value system built phylogenetically through natural selection operating on genetic combinations and ontogenetically through behavioral selection operating on neural combinations. As such, the current behavioral investments of the animal are conceptualized as the joint product of the two vectors of phylogeny and ontogeny. A unique element of BIT is that it finds a core of agreement and builds bridges between extant paradigms.

A central idea in BIT is that the movement of an animal as a coordinated singularity is the “first” mystery of mind. The mystery was well seen by Bernstein (1967), a movement physiologist, who characterized the problem as a “degrees-of-freedom” problem. The problem can be stated in the form of a question: “How can an organism with thousands of muscles, billions of nerves, tens of billions of cells, and nearly infinite possible combinations of body segments and positions ever figure out how to get them all working toward a single smooth and efficient movement without invoking some clever ‘homunculus’ who has the directions already stored?” (Thelen, 1995, p. 80). The feat is accomplished through the hierarchical arrangement of neurocomputational control centers that “softly assemble” actions at an abstract level. “This type of organization allows the system great flexibility to meet the demands of the task within a continually changing environment, while maintaining a movement category suitable to the goal in mind.” (Thelen, 1995, p. 81)

Ultimately, BIT posits that the answers to the mysteries of mind are to be found in the conceptual overlap and eventual amalgamation of five brain-behavior paradigms: (a) cognitive science, (b) behavioral science; (c) evolutionary theory and genetics, (d) neuroscience, and (e) systems theory. Because the focus here is on the proper definition of psychology, the reader is referred to my earlier work (Henriques, 2003) for details regarding the theoretical convergence. For current purposes, the argument is that these five scientific domains make up the proposed discipline of psychological formalism. Table 1 lists the five domains and many of the specific fields that fall under each domain or currently exist as combinations of them. Behavioral investment theory is proposed to provide the basic theoretical foundation that unifies these fields.

Human Psychology

A perusal of the 53 subdivisions that currently make up the APA will demonstrate a remarkable lack of correspondence between psychological formalism and the primary

Table 1
Disciplines That Fall Under the Construct of Psychological Formalism

Basic Cognitive Science	Neuroscience
Information/Computational Science	Psychophysiology
Artificial Intelligence	Biopsychology
Animal Cognition	Psychobiology
Cognitive Ethology	Behavioral Neuroscience
Cognitive Neuroscience	
Behavioral Science	Systems Theory
Radical Behaviorism	General Systems Theory
Methodological Behaviorism	Cybernetics
Neo-Behaviorism	Perceptual Control Theory
Theoretical Behaviorism	Dynamical Systems Theory
Behavioral Economics	Complex Adaptive Systems
Evolutionary Theory and Genetics	Other General and Related Disciplines
Sociobiology	Comparative/Animal Psychology
Ethology	Psychophysics
Behavioral Ecology	
Behavioral Genetics	

Note. This list is not necessarily complete. Also, some subdisciplines are combinations of disciplines, and these are categorized based on primary membership.

concerns of the APA. Some might be inclined to use the lack of correspondence as strong evidence that my conception of psychology is faulty. Others might vigorously object to BIT on the grounds that it does not provide for the massive influence of key elements such as language, self-awareness, and culture on human behavior. Such critics would be arguing that the problem of explaining animal behavior is a totally different "beast" than the problem of explaining human behavior. Both of these lines of thought carry validity. They are reconciled with my proposal through the recognition that human psychology is a unique and separate subdiscipline of psychological formalism.

The Justification Hypothesis and the Uniqueness of the Human Animal

Although the human–animal distinction is institutionalized within the field of psychology, it is usually more implicit than explicit (Dess & Chapman, 1998), and I believe that the lack of a well-specified theoretical distinction between humans and other animals has played a key role in psychology's definitional problems. Historically, religious explanations have dominated. The three domains of human uniqueness that currently attract the most scholarly attention are symbolic language/verbal behavior (e.g., Deacon 1997); self-consciousness (e.g., Crook, 1980); and culture (e.g., Tomasello, 1999). None of these specific ideas has obtained full support primarily because some other animals, particularly chimpanzees and bonobos, have shown evidence of basic capacities to acquire language (e.g., Savage-Rumbaugh & Lewin, 1994), basic elements of self-awareness (e.g., Gallop, 1970), and basic elements of cultural transmission (e.g., Wrangham & McGrew, 1994). Further, these three elements in isolation have generally failed to answer the "why" questions (e.g., why are humans uniquely capable of self-consciousness, or why do humans have a unique mode of cultural transmission; Rumbaugh, 2003).

The JH is proposed as a framework for understanding both the evolution of culture and for identifying what makes humans distinct animals. A basic initial claim of the JH is that the process of justification is a crucial component of human mental behavior at both the individual and societal level. Unlike all other animals, humans everywhere ask for and give explanations for their actions (Brown, 1991). Arguments, debates, moral dictates, rationalizations, and excuses all involve the process of explaining why one's claims, thoughts, or actions are warranted. These phenomena are both uniquely human and ubiquitous in human affairs. In virtually every form of social exchange, from warfare to politics to family struggles to science, humans are constantly justifying their behavioral investments to themselves and others.

Building on this basic observation and in concert with the overall theme of integration and unification, the JH interrelates language, self-awareness, and culture into a more coherent picture that clarifies the unique elements of human mental behavior. The JH consists of three formal postulates, which I have previously defined in detail (Henriques, 2003). The first postulate of the JH is that Freud's fundamental observation was that the self-consciousness system (SCS) functions as a "justification filter" that inhibits unjustifiable behavioral investments and provides socially acceptable justifications for behaviors that are expressed. Consistent with the basic tripartite model in psychodynamic theory, the model suggests that the SCS can be thought of as existing between nonverbal, biopsychological drives and defenses on the one hand and a socio-linguistic system that dictates what actions are justifiable and what actions are not on the other.

The second postulate of the JH is that the evolution of language created a new and unique adaptive problem for our hominid ancestors, namely the problem of justification.

The essence of the problem of justification is that humans became the first animal in evolutionary history that had to justify why they did what they did. This problem arose because the evolution of language allowed other humans much more direct access to one's thought processes. Effectively justifying one's actions is obviously crucial now, and because humans have always been intensely social creatures, there is every reason to believe that it was an essential problem to solve in our ancestral past (see Barkow, 1992). The first two postulates respectively provide an ontogenetic and phylogenetic functional account of the SCS. The third postulate of the JH is that it provides the basic framework for a unified theory of culture because the concept of large-scale justification systems providing the rules and patterns for acceptable behaviors is consonant with modern conceptions of culture (e.g., Cronk, 1999) and social constructivist viewpoints.

In accordance with modern conceptions of the self that cut across basic and applied domains (Wolfe, 2003), the JH defines self-consciousness as the reflective awareness of one's own behavior, thoughts, and feelings. Continuing with the emphasis on integration, the model of the SCS as a justification filter is highly consistent with other naturalized approaches to the self-system (Robins, Norem, & Cheek, 1999; Sedikides & Skowronski 1997). It is also consistent with the social cognitive perspective, which considers human beliefs about behavior as an emergent level of complexity imbedded in a reciprocal cycle of determination (Bandura, 1989). Because of its functional conception, the JH makes predictions about the basic design features of the SCS. I have described how the JH predicted that the SCS should effectively function in a manner akin to a defense attorney and presented data from neuropsychology, social, cognitive, and developmental psychology that supported this conclusion (Henriques, 2003).

The combination of BIT and the JH allows for effective bridges to be built between animal behaviorism and human cognitive science, both philosophically and theoretically. For example, the combination of BIT and the JH suggests that human mental architecture should be thought of as consisting of two broad domains: (a) a nonverbal, perceptual-motivational-affective, parallel information-processing, behavioral guidance system, and (b) a verbal, logical-analytic, sequential information processing, justification system. Importantly, this two-domain system of human mental processes is consistent with work in consciousness (e.g., Ornstein, 1972), psychodynamic theory (e.g., Epstein, 1994), neuropsychology (e.g., Kolb & Wishaw, 1990), cognitive psychology (e.g., Kaufman, 1990), and philosophy of mind (e.g., Aristotle). In fact, so fundamental is this general conception of two broad human mental domains that it has been proposed as the basis of a "central dogma" for human psychology (Cook, 1989).

One of the unique elements of the JH is that it readily allows for bridges to be built between individual level analyses and sociocultural perspectives (see Eidelson & Eidelson, 2003). Crosscultural psychologists, social constructivists, and postmodern thinkers frequently lament the fact that most individual-level human psychological analyses fail to incorporate the fact that persons exist as part of a meta-level social system (e.g., Sarason, 1989). The JH is integrative here because concept of justification seamlessly incorporates major insights from the social constructionist perspective. Social constructionists and postmodernists clearly anchor their ideas to the notion that all human activities take place within, and cannot be divorced from, cultural justification systems (e.g., Gergen, 2001). As such, the framework of the JH allows both individual-level analyses and societal-level analyses to be carried out with the same basic language and theoretical framework. Because the JH exists at the intersection of bottom-up approaches and top-down approaches to human behavior, it is useful to specify exactly where human psychology exists in the matrix of scientific disciplines depicted by the ToK System.

Human Psychology as a Hybrid Discipline Between Psychology and the Social Sciences

Given this discussion and the overarching goal of developing a precise definition of psychology, the following question arises: If psychological formalism is one of the four fundamental sciences, what kind of discipline is human psychology? Because humans are animals, psychological formalism provides the appropriate framework to view human behavior from a bottom-up perspective. However, it is further argued that the behavior of human objects is qualitatively different from other animals because human behavior is imbedded in a meta-level societal context. Thus to be complete, human psychology must effectively allow for the top-down sociocultural perspective as well. According to the ToK System and alluded to earlier in the context of the discussion of meta-levels, the human individual is seen as the fundamental unit of analysis in the social sciences. Many share this conception. For example, Baumeister and Tice (1996) recently proposed a very similar formulation, although their focus was on personality. The point here in reference to the question raised is that human psychology should be thought of as existing at the base of the social sciences and should be thought of as a hybrid between psychological formalism and the social sciences.

Because some may find the notion that human psychology is a hybrid discipline unappealing, it is useful to point out that there are other hybrid disciplines that have quite impressive track records. Molecular genetics, for example, is a hybrid between chemistry and biology and has seen some of the most impressive scientific accomplishments of any discipline in the past 60 years. Similarly, neuroscience is a hybrid between biology and psychology, and it has also been witness to explosive growth and numerous revolutionary discoveries in recent decades. As with my proposed conception of human psychology, both of these disciplines adopt an object-level perspective (molecular and cellular, respectively) on phenomena that simultaneously exist as part of meta-level system processes (life and mind, respectively).

The construct of human psychology and the brief articulation of the JH allows for the reexamination of the lack of correspondence between psychological formalism and the focal interests of the APA. From this new vantage point, it becomes clear that the APA is primarily an organization of human psychology, rather than psychological formalism. In other words, according to this analysis the APA should technically be renamed the American Human Psychological Association. This insight offers readily available explanations as to why so many individuals in the basic psychological sciences (e.g., behavior analysis, cognitive science, biological psychology) have expressed serious objections that their interests have not been well served by the APA and have changed affiliations to organizations such as the Society of Neuroscience, the Psychonomic Society, the American Psychological Society, and the Association for Behavior Analysis.

To summarize, the continuity-discontinuity issue between humans and other animals is a central, but unresolved issue in psychology. The argument set forth here makes the human-animal dimension explicit, and the combination of BIT and the JH, within the ToK System, provide the overarching perspective that clarifies how humans can be viewed as being both continuous with other animals (i.e., via the lens of BIT) and distinct from other animals (i.e., via the JH) at both individual and societal levels of analysis. The formulation also specifies how psychology exists in relationship to the other sciences and offers ready explanations as to why the APA has sometimes struggled to develop a clear identity.

Conclusion

I began this article with core existential questions facing the field. Is psychology a coherent scientific discipline and can its existence be effectively defined? I have attempted to

answer both questions with an unqualified and resounding “yes.” By utilizing the ToK System to view the field from a unique vantage point, I have constructed a vision of psychological science that consists of two broad domains that together make up the whole of psychology. The joint proposals of psychological formalism and human psychology clarify both how the proper subject matter of psychology can be rightfully thought of as stretching from the simplest animal behaviors all the way to human consciousness and why previous attempts to define psychology as a single dimension have failed. It is my hope that an effective definition of psychology will allow us to rise above the almost ubiquitous tendency to define ideas against one another and instead develop a much more harmonious conception of our field. With such an understanding, we may finally be able to see the forest through the trees.

References

- Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist*, 44, 1175–1184.
- Barkow, J.H. (1992). Beneath new culture is old psychology: Gossip and social stratification. In J. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture* (pp. 627–638). New York: Oxford University Press.
- Baumeister, R.F., & Tice, D.M. (1996). Rethinking and reclaiming the interdisciplinary role of personality psychology: The science of human nature should be the center of the social sciences and humanities. *Journal of Research in Personality*, 30, 363–373.
- Benjamin, L.T., Bryant, W.H.M., Campbell, C., Luttrell, J., & Holtz, C. (1997). Between psoriasis and ptarmigan: American encyclopedia portrayals of psychology, 1880–1940. *Review of General Psychology*, 1, 5–18.
- Bernstein, N. (1967). *The coordination and regulation of movements*. London: Pergamon.
- Bevan, W. (1991). Contemporary psychology: A tour inside the onion. *American Psychologist*, 46, 475–483.
- Blumberg, M.S., & Wasserman, E.A. (1996). Animals have minds? *American Psychologist*, 51, 59–60.
- Brown, D.E. (1991). *Human universals*. New York: McGraw-Hill.
- Bunge, M. (1990). What kind of discipline is psychology: Autonomous or dependent, humanistic or scientific, biological or sociological? *New Ideas in Psychology*, 8, 121–137.
- Cook, N.D. (1989). Toward a central dogma for psychology. *New Ideas in Psychology*, 7, 1–18.
- Cronk, L. (1999). *That complex whole: Culture and the evolution of human behavior*. Boulder, CO: Westview Press.
- Crook, J.H. (1980). *The evolution of human consciousness*. New York: Oxford University Press.
- Daly, M., & Wilson, M.I. (1999). Human evolutionary psychology and animal behavior. *Animal Behavior*, 57, 509–519.
- Day, W.F., Jr., & Leigland, S. (1992). *Radical behaviorism: Willard Day on psychology and philosophy*. Reno, NV: Context Press.
- Deacon, T. (1997). *The symbolic species*. New York: Norton.
- Dess, N.K., & Chapman, C.D. (1998). “Humans and animals”? On saying what we mean. *Psychological Science*, 9, 156–157.
- Domjan, M., & Purdy, J.E. (1995). Animal research in psychology: More than meets the eye of the general psychology student. *American Psychologist*, 50, 496–503.
- Eidelson, R.J., & Eidelson, J.I. (2003). Dangerous ideas: Five beliefs that propel groups toward conflict. *American Psychologist*, 58, 182–192.
- Epstein, S. (1994). Integration of the cognitive and the psychodynamic unconscious. *American Psychologist*, 49, 709–724.

- Foa, E.B., & Kozak, M.J. (1997). Beyond the efficacy ceiling? Cognitive behavior therapy in search of theory. *Behavior Therapy*, 28, 601–612.
- Gallup, G.G., Jr. (1970). Chimpanzees: Self-recognition. *Science*, 167, 86–87.
- Gergen, K. (2001). Psychological science in a postmodern context. *American Psychologist*, 56, 803–813.
- Haggbloom, S.J., Warnick, R., Warnick, J.E., Jones, V.K., Yarbrough, G.L., Russell, T.M., Borecky, C.M., et al. (2002). The 100 most eminent psychologists of the 20th century. *Review of General Psychology*, 6, 139–152.
- Hawking, S. (1998). *A brief history of time* (2nd ed.). New York: Bantam Books.
- Hebb, D.O. (1955). Drives and the C.N.S. (conceptual nervous system). *Psychological Review*, 62, 243–254.
- Henriques, G.R. (2003). The tree of knowledge system and the theoretical unification of psychology. *Review of General Psychology*, 7, 150–182.
- Henriques, G.R., & Sternberg, R.J. (in press.) Unified Professional Psychology. *Journal of Clinical Psychology*.
- Hishinuma, E.S. (1998). Pre-unified separatism and rapprochement between behaviorism and cognitive psychology: The case of the reinforcer. *Theoretical and Philosophical Psychology*, 18, 1–15.
- Kaufman, A. (1990). *Assessing adolescent and adult intelligence*. Boston: Allyn & Bacon.
- Kaye, J. (1996). Animal minds and evolution. *American Psychologist*, 51, 56–57.
- Kimble, G.A. (1994). A frame of reference for psychology. *American Psychologist*, 49, 510–519.
- Koch, S. (1993). “Psychology” or “the psychological studies?” *American Psychologist*, 48, 902–904.
- Kolb, B., & Whishaw, I.Q. (1990). *Fundamentals of human neuropsychology* (3rd ed.). San Francisco: W.H. Freeman.
- Leahey, T.H. (1992). *A history of psychology: Main currents in psychological thought*. Englewood Cliffs, NJ: Prentice Hall.
- Matarazzo, J.D. (1987). There is only one psychology, no specialties, but many applications. *American Psychologist*, 42, 893–903.
- Maynard-Smith, J., & Szathmari, E. (1999). *The origins of life: From the birth of life to the origin of language*. Oxford, England: Oxford University Press.
- Mayr, E., & Provine, W.B. (1998). *The evolutionary synthesis: Perspectives on the unification of biology*. Cambridge, MA: Harvard University Press.
- Nelson, T.O. (1996). Consciousness and metacognition. *American Psychologist*, 51, 102–116.
- Ornstein, R.E. (1972). *The psychology of consciousness*. San Francisco, CA: W.H. Freeman.
- Reber, A.S. (1995). *Dictionary of Psychology* (2nd ed.). New York: Penguin.
- Rilling, M. (1996). The mystery of vanished citations: James McConnell’s forgotten 1960s quest for planarian learning, a biochemical engraving, and celebrity. *American Psychologist*, 51, 589–598.
- Robins, R.W., Norem, J.K., & Cheek, J.M. (1999). Naturalizing the self. In L.A. Pervin & O.P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 443–477). New York: The Guilford Press.
- Rumbaugh, D.M. (2003). A perspective of human and chimpanzee cognition. *Contemporary Psychology*, 48, 5–8.
- Sarason, S.B. (1989). The lack of an overarching conception in psychology. *Journal of Mind & Behavior*, 10, 263–279.
- Savage-Rumbaugh, E.S., & Lewin, R. (1994). *Kanzi: The ape at the brink of the human mind*. New York: Wiley.
- Sedikides, C., & Skowronski, J.J. (1997). The symbolic self in evolutionary context. *Personality and Social Psychology Review*, 1, 80–102.
- Skinner, B.F. (1990). Can psychology be a science of mind? *American Psychologist*, 45, 1206–1210.

- Smolin, L. (2001). *Three roads to quantum gravity*. New York: Basic Books.
- Staats, A.W. (1999). Uniting psychology requires new infrastructure, theory, method, and a research agenda. *Review of General Psychology*, 3, 3–13.
- Thelen, E. (1995). Motor development: A new synthesis. *American Psychologist*, 50, 79–95.
- Tolman, E.C. (1978). The determiners of behavior at a choice point. In E.R. Hilgard (Ed.), *American psychology in historical perspective* (pp. 337–370). Washington, DC: American Psychological Association. (Original work published 1938).
- Tomasello, M. (1999). *The cultural origins of human cognition*. Cambridge, MA: Harvard University Press.
- Uttal, W.R. (2000). *The war between mentalism and behaviorism: On the accessibility of mental processes*. Mahwah, NJ: Erlbaum.
- Watson, J.B. (1913). Psychology as the behaviourist views it. *Psychological Review*, 20, 158–177.
- Webster's Encyclopedic Unabridged Dictionary of the English Language. (1994). New York: Gramercy Books.
- Wolfe, B.E. (2003). Knowing the self: Building a bridge from basic research to clinical practice. *Journal of Psychotherapy Integration*, 13, 83–95.
- Wrangham, R.W., & McGrew, W.C. (1994). *Chimpanzee cultures*. Cambridge, MA: Harvard University Press.
- Yanchar, S.C., & Slife, B.D. (1997). Pursuing unity in a fragmented psychology: Problems and prospects. *Review of General Psychology*, 1, 235–255.