Motivational Constructs: Warm Blanket or Patchwork Quilt?

Donald W. Pfaff (Ed.)
The Physiological Mechanisms of Motivation
New York: Springer-Verlag New York, 1982. 496 pp. $32.50

Donald W. Pfaff is professor of neurobiology and behavior at Rockefeller University. He is author of Estrogens and Brain Function. Elaine M. Hull is associate professor in the Department of Psychology at the State University of New York at Buffalo. She is author of the study guide to accompany J. W. Kalat's Biological Psychology.

Scientists studying brain mechanisms may become so engrossed in the details of their work that they do not take time to pursue global concepts. The objective of this book is to place some detailed physiological information in the perspective of motivational constructs. The book grew out of a course at Rockefeller University and is more successful than most edited volumes in interweaving a set of common themes and concepts throughout the book. Some of the chapters are masterpieces, characterized by prodigious amounts of information, coherent organization, and provocative insights. Others are merely informative. An attempt at segregating chapters into "highly recommended" and "less useful" categories, however, resulted in most of them falling into the former category. Those that did not are probably worth reading anyway. Not all of the interpretations are compelling, and more than once conflicting data came to mind. Furthermore, most of the data presented here have been published previously. The book's contribution is its incorporation of diverse data into a common framework so that both constructs and mechanisms can be compared.

The central question of the book is, of course, What is motivation? It is Epstein's chapter that gives the most rigorous (and refreshing) answer. In comparing instinct and motivation, Epstein notes several similarities between the two constructs. Both use innate patterns for reaction and action, as well as acquired components. Both are organized sequentially into appetitive and consummatory phases. Both are drive induced and (may) contribute to homeostasis. The conjunction of three other characteristics, however, is appropriate only to motivation: (a) The behavior can be individuated rather than being uniform within a species; (b) it is anticipatory of goals; and (c) it is accompanied by the expression of affect. These characteristics can occur singly in simpler behavior; it is the clustering of the three that differentiates motivated behavior. Pfaff's introductory chapter, which purports to provide definitions and distinctions among motivational concepts, refers to a single criterion for labeling motivation: a change in behavior in the face of a constant stimulus situation. According to Epstein, however, such a criterion is appropriate to both motivation and instinct. Also, it would seem to apply to situations involving learning, habituation, and sensitization. One point that Pfaff's chapter does make successfully is the heuristic value of the concept of motivation. The alternative is a large and unwieldy set of detailed descriptions of behavioral sequences, including perhaps further descriptions of the physiological mechanisms underlying them.

One of the points recurrent throughout the book is that what appears superficially to be a unitary construct is in fact a conglomeration of many mechanisms. In Pfaff's words, "While at the behavioral level the concept of motivation is a 'warm blanket' (unitary and comforting), the physiological analysis of the impacts of motivational signals on the central nervous system remind one of a 'patchwork quilt'" (p. 20). Examples include Eppestein's double depletion hypothesis of thirst, according to which intracellular and extracellular fluid compartments provide stimuli that can separately induce drinking and other regulatory mechanisms for maintaining fluid and electrolyte balance. The intra- and extracellular systems have their separate brain mechanisms, which are discussed in some detail. Similarly, Norgren and Grill emphasize the separation of food-getting behavior, which depends on the limbic forebrain, from the relatively reflexive acceptance or rejection of food placed in the mouth, controlled by the brain stem. Their emphasis on structures above and below the diencephalon is striking in that the field of ingestion has been dominated by work on the hypothalamus. The reader is left, however, with a specific hunger for a separate chapter integrating the extensive findings concerning hypothalamic influence on food intake.

Of special interest is Satinoff's discussion of the interrelation of sexual and thermal regulatory behavior. Not only are there numerous autonomic and behavioral mechanisms that manage the gain or loss of heat, but some of the motor patterns used for thermal regulation are also part of sexual behavior. "[A] response that proves accidentally to be useful for purposes other than those for which it originally evolved may come to be taken over by the nervous system for those other purposes" (p. 244). The female rat's lordosis response is also used in urination, defecation, and parturition (Komisaruk, 1978), and carrying objects, licking, and building nests are components not only
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The importance of affective elements in motivated behavior is emphasized not only in discussions of the ingestive, reproductive, and thermoregulatory behavior patterns themselves but also in a section of the book on approach versus avoidance. Here we find theoretical discussions of opponent motivational mechanisms, the behavioral situations in which these can be observed, and the physiological mechanisms that appear to mediate them (Solomon; Halperin and Pfaff; and Stellar). Some of the recurrent questions that are addressed are the following: (a) Is there a final common pathway for reward and/or for aversiveness shared by diverse motivated behavior? (b) Are the various measures of a presumed single construct in fact highly correlated (Miller)? and (c) What is the relation between “pure” discriminative aspects and affective aspects of sensory processing (Mayer and Price)?

In summary, this book should serve as a provocative stimulus for discussion in a graduate seminar or as an interesting reading for the individual with some physiological background. Some chapters are accessible even to those readers who are less sophisticated in physiology. In a sense the book serves the same kind of heuristic function that motivational constructs themselves perform: summarizing data and facilitating testable hypotheses.

Reference


Childhood Temperament Research Reaches Its Adolescence

Ciba Foundation Review by

Temperamental Differences in Infants and Young Children: Ciba Foundation Symposium 89
$35.00 (£22.50)

The Ciba Foundation is an international scientific and educational charity based in London that was established in 1947 to promote international cooperation in medical, biological, and chemical research. H. Hill Goldsmith is assistant professor in the Department of Psychology at the University of Texas at Austin. He is coauthor with J. Campos of the chapter “Toward a Theory of Infant Temperament” in R. Emde and R. Harmon’s The Development of Attachment and Affiliative Systems.

Activity, impulsivity, attention span, distractibility, emotionality, intensity, irritability, persistence, reactivity, soothability, and timidity—these, among others, are the elements of “temperament,” one of the topics that has most recently captured the imagination of interdisciplinary researchers who are concerned with developmental processes. Although the concept has ancient roots and had other pre-1960s proponents such as Gesell and Diamond, most of the current flurry of interest may be traced to the studies by Alexander Thomas and Stella Chess, principals at the symposium that yielded the book under review. It seems that temperament research is on the upswing because the construct has been implicated (by persuasive argument if not always by rigorous empirical findings) in such important applied areas as caregiver–infant social interaction, childhood behavioral disorders, and early educational adjustment. The 18 contributions to this 1981 Ciba Foundation symposium afford us a glimpse at the state of developmental research on temperament; some of the contributors attempt to clarify the role of temperament in the aforementioned applied areas, and the rest of them ask, “Just what is temperament, anyway?”

The issue of definition is a prime source of dispute. My nominee for the best definition offered is that by Bell and Waldrop, who deem that temperament is “behavior involving regulation of arousal, and its expression through qualities of emotion, that shows cross-time and situational predictability” (p. 206). Note that predictability of behavior, not rigid consistency, is postulated. Stevenson and Graham hold that temperament “represents the part of personality that tends to be manifested in infancy, and which is assumed to have a moderately high degree of stability and to be largely genetically determined” (p. 37), a definition reminiscent of that by Buss and Plomin (1975). It is, however, Thomas andChess’s definition of temperament as behavioral style that enjoys the widest
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557