

Investigators in Psychology, Neuroscience, Behavioral Biology, and Cognitive Science

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The Behavioral and Brain Sciences (BBS)

an extraordinary journal now in its fourth year, provides a special service called Open Peer Commentary to researchers in any area of psychology, neuroscience, behavioral biology or cognitive science.

Papers judged appropriate for Commentary are circulated to a large number of specialists who provide substantive criticism, interpretation, elaboration, and pertinent complementary and supplementary material from a full cross-disciplinary perspective.

Article and commentaries then appear simultaneously with the author's formal response. This BBS "treatment" provides in print the exciting give and take of an international seminar.

The editor of BBS is calling for papers that offer a clear rationale for Commentary, and also meet high standards of conceptual rigor, empirical grounding, and clarity of style. Contributions may be (1) reports and discussions of empirical research of broader scope and implications than might be reported in a specialty journal; (2) unusually significant theoretical articles that formally model or systematize a body of research; and (3) novel interpretations, syntheses or critiques of existing theoretical work.

Although the BBS Commentary service is primarily devoted to original unpublished manuscripts, at times it will be extended to précis of recent books or previously published articles.

Published quarterly by Cambridge University Press. Editorial correspondence to: Stevan Harnad, Editor, BBS, P.O. Box 777, Princeton, NJ 08540

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Judgment Under Uncertainty

Heuristics and Biases

Daniel Kahneman, Paul Slovic, and Amos Tversky, Editors

In the last ten years, a great deal of research has been devoted to understanding the ways people judge uncertain events. The chapter authors describe various judgmental heuristics and the biases they produce, not only in the laboratory but in important social, medical and political situations as well.

Chapters by: Marc Alpert, Teresa Amabile, Craig A. Anderson, Maya Bar-Hillel, Eugene Borgida, Jean Chapman, Loren J. Chapman, E. I. Chesnick, John Cohen, Rick Crandall, Robyn M. Dawes, David M. Eddy, Ward Edwards, Hillel J. Einhorn, Baruch Fischhoff, Geoffrey T. Fong, Charles F. Gettys, D. Haran, Dennis L. Jennings, Christopher Jopson, Daniel Kahneman, Clinton Kelly III, David H. Krantz, Ellen J. Langer, Sarah Lichtenstein, Richard E. Nisbett, Stuart Oskamp, Cameron R. Peterson, Lawrence D. Phillips, Howard Raiffa, Harvey Reed, Lee Ross, Michael Ross, Fiore Sicoly, Max Singer, Paul Slovic, Shelley E. Taylor, Yaacov Trope, and Amos Tversky.

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William Schiff and Emerson Foulke, Editors

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Alexander H. Leighton

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Charles M. Judd and David A. Kenny

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Klaus R. Scherer and Paul Ekman

A comprehensive introduction to the most important approaches to the measurement and analysis of nonverbal behavior. *Studies in Emotion and Social Interaction 1*

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Paul Ekman, Editor

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Developmental Psychobiology

The Official Journal of the International Society for Developmental Psychobiology

Editors:

R. W. Oppenheim and W. G. Hall
North Carolina Department of Mental Health

Developmental Psychobiology

publishes original research reports that contribute to understanding such behaviorally related developmental processes, particularly papers whose focus is on behavioral development, whether in the embryo, fetus, neonate or juvenile animal. Emphasis is also placed on those neurobiological processes on which this development is based. Approaches cover a broad range, including anatomical, physiological, hormonal, biochemical and pharmacological studies, when the relationship to behavior is clear. Both laboratory and field studies are welcomed, as are investigations in invertebrates, humans, and all other species.

Developmental Psychobiology

emphasizes the thorough report, usually based on several experiments. Review articles and theoretical papers are also published.

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Recent and Forthcoming Articles

Suckling: Developmental indicator of genetic obesity in mice. *L.M. Wilson, S.-S.P. Chang, S.J. Henning, and D.L. Margules*

The ontogeny of play in rats. *J. Panksepp*

EEG developmental stages. *H.T. Epstein*

Wing-flapping develops in chickens made flightless by feather mutations. *R.R. Provine*

Development of infant independence in a captive group of lowland gorillas. *M.P. Hoff, R.D. Nadler, and T.L. Maple*

Maturation and d-amphetamine-induced changes in web building. *C.F. Reed, P.N. Witt, and M.B. Scarboro*

Development of hoarding in the golden hamster: An analysis of the motor patterns and their sequential appearance with age. *A.S. Etienne, E. Emmanuelli, and M. Zinder*

Book Review: The roots of human behavior: An introduction to the psychobiology of early development, by Myron A. Hofer. Reviewed by *T.D. Johnston*

Selective resistance to approach: A precursor to fear responses to an alarm call in gret tit nestlings, *Parus major*. *O.O. Rydén*



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The Behavioral and Brain Sciences

Instructions for Authors and Commentators

The Behavioral and Brain Sciences (BBS) is a unique scientific communication medium, providing the service of Open Peer Commentary for reports of significant current work in psychology, neuroscience, behavioral biology or cognitive science. If a manuscript is judged by BBS referees and editors to be appropriate for Commentary (see Criteria below), it is then circulated to a large number of commentators selected (with the aid of systematic bibliographic searches) from the BBS Associateship* and the worldwide biobehavioral science community, including individuals recommended by the author.

Once the Commentary stage of the process has begun, the author can no longer alter his article, but he can respond formally to all commentaries accepted for publication. The target article, commentaries and author's response then co-appear in BBS. Continuing Commentary and replies can appear in later issues.

Criteria for acceptance To be eligible for publication, a paper should not only meet the standards of a journal such as *Psychological Review* or the *International Review of Neurobiology* in terms of conceptual rigor, empirical grounding, and clarity of style, but it should also offer a **clear rationale for soliciting Commentary**. That rationale should be provided in the author's covering letter, together with a **list of suggested commentators**. The original manuscript plus **eight copies** must be submitted.

A paper for BBS can be (i) the report and discussion of empirical research that the author judges to have broader scope and implications than might be more appropriately reported in a specialty journal; (ii) an unusually significant theoretical article that formally models or systematizes a body of research; or (iii) a novel interpretation, synthesis, or critique of existing experimental or theoretical work. Occasionally, articles dealing with social or philosophical aspects of the behavioral and brain sciences will be considered.

The service of Open Peer Commentary will be primarily devoted to original unpublished manuscripts. However, a recently published book whose contents meet the standards outlined above is also eligible for Commentary if the author submits a comprehensive, article-length precis to be published together with the commentaries and his response. In special cases, Commentary will also be extended to a position paper or an already published article dealing with particularly influential or controversial research. Submission of an article implies that it has not been published or is not being considered for publication elsewhere. Previously published articles appear by invitation only. **The Associateship and professional readership of BBS are encouraged to nominate current topics and authors for Commentary.**

In all the categories described, the decisive consideration for eligibility will be the desirability of Commentary for the submitted material. Controversiality *simpliciter* is not a sufficient criterion for soliciting Commentary; a paper may be controversial simply because it is wrong or weak. Nor is the mere presence of interdisciplinary aspects sufficient; general cybernetic and 'organismic' disquisitions are not appropriate for BBS. Some appropriate rationales for seeking Open Peer Commentary would be that: (1) the material bears in a significant way on some current controversial issues in behavioral and brain sciences; (2) its findings substantively contradict some well-established aspects of current research and theory; (3) it criticizes the findings, practices, or principles of an accepted or influential line of work; (4) it unifies a substantial amount of disparate research; (5) it has important cross-disciplinary ramifications; (6) it introduces an innovative methodology or formalism for consideration by proponents of the established forms; (7) it significantly integrates a body of brain and behavioral data; (8) it places a hitherto dissociated area of research into an evolutionary or ecological perspective; etc.

In order to assure communication with potential commentators (and readers) from other BBS specialty areas, **all technical terminology must be clearly defined or simplified, and specialized concepts must be fully described**. Authors should use numbered section-headings to facilitate cross-reference by commentators.

Note to commentators The purpose of the Open Peer Commentary service is to provide a concentrated constructive interaction between author and commentators on a topic judged to be of broad significance to the biobehavioral science community. Commentators should provide substantive criticism, interpretation, and elaboration as well as any pertinent complementary or supplementary material, such as illustrations; all original data will be refereed in order to assure the archival validity of BBS commentaries. Commentaries and articles should be free of hyperbole and remarks *ad hominem*.

Style and format for articles and commentaries Articles must not exceed 14,000 words (and should ordinarily be considerably shorter); **commentaries should not exceed 1,000 words**. Spelling, capitalization, and punctuation should be consistent within each article and commentary and should follow the style recommended in the latest edition of *A Manual of Style*, The University of Chicago Press. It may be helpful to examine a recent issue of BBS. A title should be given for each article and commentary. An auxiliary short title of 50 or fewer characters should be given for any article whose title exceeds that length. Each commentary must have a distinctive, representative **commentary title**. The contributor's name should be given in the form preferred for publication; the affiliation should include the full institutional address. **Two abstracts**, one of 100 and one of 250 words, should be submitted with every article. The shorter abstract will appear one issue in advance of the article; the longer one will be circulated to potential commentators and will appear with the printed article. A list of 5-10 keywords should precede the text of the article. Tables and figures (i.e. photographs, graphs, charts, or other artwork) should be numbered consecutively in a separate series. Every table and figure should have a title or caption and at least one reference in the text to indicate its appropriate location. Notes, acknowledgments, appendices, and references should be grouped at the end of the article or commentary. Bibliographic citations in the text must include the author's last name and the date of publication and may include page references. Complete bibliographic information for each citation should be included in the list of references. Examples of correct style for bibliographic citations are: Brown (1973); (Brown 1973); (Brown 1973; 1978); (Brown 1973; Jones 1976); (Brown & Jones 1978); (Brown, Jones & Smith 1979) and subsequently, (Brown et al. 1979). References should be typed in alphabetical order in the style of the following examples. **Journal titles should not be abbreviated.**

Kupfermann, I. & Weiss, K. (1978) The command neuron concept. *The Behavioral and Brain Sciences* 1:3-39.

Dunn, J. (1976) How far do early differences in mother-child relations affect later developments? In *Growing points in ethology*, eds P. P. G. Bateson & R. A. Hinde, pp. 1-10. Cambridge University Press.

Bateson, P. P. G. & Hinde, R. A., eds (1976) *Growing points in ethology*. Cambridge University Press.

Preparation of the manuscript The entire manuscript, including notes and references, must be typed double-spaced on 8½ by 11 inch or A4 paper, with margins set to 70 characters per line and 25 lines per page, and should not exceed 50 pages. Pages should be numbered consecutively. It will be necessary to return manuscripts for retyping if they do not conform to this standard.

Each table and figure should be submitted on a separate page, not interspersed with the text. Tables should be typed to conform to BBS style. Figures should be ready for photographic reproduction; they cannot be redrawn by the printer. Charts, graphs, or other artwork should be done in black ink on white paper and should be drawn to occupy a standard area of 8½ by 11 or 8½ by 5½ inches before reduction. Photographs should be glossy black-and-white prints; 8 by 10 inch enlargements are preferred. All labels and details on figures should be clearly printed and large enough to remain legible even after a reduction to half size. It is recommended that labels be done in transfer type of a sans-serif face such as Helvetica.

Authors are requested to submit their original manuscript with **eight copies** for refereeing, and commentators their original plus **two copies**, to: Stevan Harnad, Editor, The Behavioral and Brain Sciences, 20 Nassau St., Suite 240, Princeton, NJ 08540. In case of doubt as to appropriateness for BBS commentary, authors should write to the editor before submitting eight copies.

Editing The publishers reserve the right to edit and proof all articles and commentaries accepted for publication. Authors of articles will be given the opportunity to review the copyedited manuscript and page proofs. Commentators will be asked to review copyediting only when changes have been substantial; commentators will not see proofs. Both authors and commentators should notify the editorial office of all corrections within 48 hours or approval will be assumed.

Authors of target articles receive 50 offprints of the entire treatment, and can purchase additional copies. Commentators will also be given an opportunity to purchase offprints of the entire treatment.

*Individuals interested in serving as BBS Associates are asked to write to the editor.

The Behavioral and Brain Sciences

To appear in Volume 5, Number 3 (1982)

Offprints of the following forthcoming BBS treatments can be purchased in quantity for educational purposes if they are ordered well in advance. For ordering information, please write to Journals Department, Cambridge University Press, 32 East 57 Street, New York, N.Y. 10022

Précis of *The neuropsychology of anxiety: An enquiry into the functions of the septo-hippocampal system*

Jeffrey A. Gray, University of Oxford

A model of the neuropsychology of anxiety is proposed. The model is based upon an analysis of the behavioural effects of the anti-anxiety drugs in animals, and upon evidence concerning their probable mode of action in the brain. According to the model, a central role is played in anxiety by the septo-hippocampal system, the associated Papez circuit, the prefrontal cortex, and the ascending monoaminergic pathways that innervate these structures. It is proposed that these structures discharge the general function of comparing predicted events with actual ones; when there is a discrepancy, they bring behaviour to a halt, seeking alternative modes of action to resolve the discrepancy. This theory is applied to the symptoms and treatment of human anxiety and its relation to depression, as well as to the personality of individuals particularly susceptible to anxiety or depression.

With Commentary from B. Bohus, A. Crider & P. R. Solomon, S. D. Iversen, W. Lyons, N. McNaughton, D. S. Olton, J. Panksepp, K. H. Pribram & D. McGuinness, J. N. P. Rawlins, M. L. Woodruff and others.

The meaning of representation in animal memory

H. L. Roitblat, Columbia University

A representation is a remnant of previous experience that allows that experience to affect later behavior. To characterize a representational system, one must specify its domain, content, code, dynamics, and medium. In this paper representations are described as models of environmental regularities, acting at many levels of behavioral functioning. An attempt is made to answer objections to the use of the concept of representation in explaining animal behavior. A metatheory of representation is proposed, applied to descriptions of animal behavior in three domains, and used to suggest some foundations for a general theory of representation in animal memory. This representational view is an alternative to behaviorism's "correspondence" assumption, subsuming it as a special case.

With Commentary from A. C. Catania, A. C. Danto, F. Dretske, S. H. Hulse, J. Jaynes, R. Lachman & J. L. Lachman, J. C. Marshall, L. Nadel, W. W. Rozeboom, C. P. Shimp, J. E. R. Staddon, H. S. Terrace, W. R. Uttal, and others.

Toward a general psychobiological theory of emotions

Jaak Panksepp, Bowling Green State University

Elucidation of emotional processes in the brain should have far reaching implications for understanding the underlying nature of learning and psychiatric disorders. An attempt is made to relate a taxonomy of basic emotional states in humans to transhypothalamic circuits that generate emotive behaviors in animals. It is proposed that the mammalian brain contains command circuits for the elaboration of at least four basic emotional states—those of expectancy, rage, fear, and panic. These circuits presumably bring physiological, behavioral, and psychological states and processes under common executive influence to generate adaptive responses to major classes of life-challenging circumstances.

With Commentary from M. B. Arnold, J. M. R. Delgado, E. Fonberg, R. G. Heath, C. E. Izard, R. S. Lazarus, W. Lyons, A. Morton, R. Plutchik, H. Ursin, C. H. Vanderwolf & M. A. Goodale, and others.

Among the articles to appear in forthcoming issues of BBS:

- I. Lieblisch & M. A. Arbib, "Multiple representations of space underlying behavior"
- F. A. Masterson & M. Crawford, "The defense motivation system: A theory of avoidance behavior"
- S. Schwartz, "Is there a schizophrenic language?"
- R. B. Stein, "What muscle variable(s) does the nervous system control in normal movements?"
- D. Premack, "The codes of beast and man"
- R. N. Haber, "The impending demise of the icon: A critique of the concept of iconic storage in visual information processing"

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