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Author

Walsh, Roger N

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Comment

ON THE NECESSITY FOR A SHIFT IN EMPHASIS FROM MEANS-ORIENTED TO PROBLEM-ORIENTED RESEARCH IN DEVELOPMENTAL PSYCHOBIOLOGY

Kuhn (1962) has introduced the notion that science functions under the control of paradigms. A paradigm is a belief about the way things are, a theory or formulation of broad scope that tends to guide thinking and research. Any paradigm, just like any scientific theory, is always subject to continuous testing, but not infrequently the very success of a good paradigm leads to subtle psychological changes in the scientists who operate within it. That is, the paradigm assumes the property of a belief and it becomes the "natural" and "sensible" way to think about problems in its field. Thus, whereas paradigms serve very useful and necessary synthetic and guiding functions, they can also act as intellectual blinders (Tart, 1976; pp. 18-19).

One such paradigm, or belief, is in the overwhelming primacy of technique and methodology in evaluation of any scientific work. I do not mean to say that technique and methodology are unimportant but, rather, to reiterate the oft-stated but little heeded problem that these can be stressed to the detriment of considering the importance of the question being asked (means-centering versus problem-centering; Maslow, 1970). A methodologically sound experiment, no matter how trivial, is rarely criticized (cf. Cantril, 1950; Einstein & Infeld, 1938; Maslow, 1970; Nietzsche, 1937; Van Doren, 1936).

These criticisms and concerns certainly hold true for much of developmental psychobiology. Many of the published papers add little of significance. Rather, they

Reprint requests should be sent to Dr. Roger N. Walsh, Department of Psychiatry and Human Behavior, Medical Science 1, University of California at Irvine, Irvine, California 92717, U.S.A.

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look at a limited number of variables and conditions in ways which allow little integration with other studies and with results which may even "limit the validity of their findings to their own unique laboratory situations" (Henderson, 1970). Little synthesis is attempted and little concern with broader questions is acknowledged. This lack of integration and generalizability, together with insufficient concern for the subtle but long-term interactional influences of variations in rearing procedures, maintenance routines, experimental procedures, and such (Meier, 1968), have led to countless failures of replication, controversies, inadequate conceptualizations, and extremely little in the way of solid general principles within developmental psychobiology (Levine & Weiner, 1976; Meier, 1968; Walsh & Cummins, 1976).

Certain tools and analyses are now available, which if widely applied could effect a transition from a largely means-centered to a means and problem-centered approach. For example, the use of a small number of independent and dependent variables of undemonstrated reliability and validity has led to situations in which the literatures on areas such as early malnutrition (see Levine & Weiner, 1976) and the open field test (see Walsh & Cummins, 1976) are in danger of suffocating under the weight of their own inconsistencies. However, factorial analysis of behavior in the open field test reveals a number of invariant underlying constructs which can be demonstrated to hold across a wide variety of treatment and genetic conditions (Royce, 1977). Multivariate multifactorial studies, such as the open field analyses of Royce, though necessarily more complex and time-consuming than the more customary but less significant univariate unifactorial experiments, appear essential for the demonstration of stable generalizable effects and for transcendence of the numerous controversies in which many areas of behavioral developmental psychobiology find themselves. Interestingly enough, application of such multivariate approaches also allows the possibility of transcending the means-centering versus problem-centering dichotomy in that they afford designs and analyses adequate for tackling very worthwhile problems.

To produce a transition in emphasis from a largely means-centered to a means and problem-centered science will require a shift in emphasis at all levels from researchers to journal editors and reviewers. The difficulties of such a transition are not to be underestimated. It requires much more courage to decline an article because of its insignificance than because of some more concrete criterion such as experimental design. However, to fail to make this transition is to continue a practice which is relatively indiscriminately reinforcing for scientific significance and thus perpetuates current difficulties.

References

- Cantril, H. (1950). An inquiry concerning the characteristics of man. *J. Abnormal Soc. Psychol.*, 45: 491-501.
- Einstein, A., and Infeld, L. (1938). *The Evolution of Physics*. New York: Simon and Schuster.
- Henderson, N.D. (1969). Prior treatment effects on open field emotionality: The need for representative design. *Ann. N.Y. Acad. Sci.*, 159: 860-868.
- Henderson, N.D. (1970). Genetic influences on the behavior of mice can be obscured by laboratory rearing. *J. Comp. Physiol. Psychol.*, 72: 505-511.
- Kuhn, T. (1962). *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.

- Levine, S., and Weiner, S. (1976). Malnutrition and early environmental experiences: Possible interactive effects on later behavior. In R. Walsh and W. T. Greenough (eds.), *Environments as Therapy for Brain Dysfunction*. New York: Plenum Press. Pp. 51-70.
- Maslow, A. H. (1970). *Motivation and Personality*. (2nd Edition.) New York: Harper and Row.
- Meier, G. W. (1968). The half told tale of the half replication. *Dev. Psychobiol.*, 1: 77-78.
- Nietzsche, F. (1937). *Thus Spake Zarathustra*. New York: Modern Library. P. 117.
- Royce, J. R. (1977). On the construct validity of open field measures. *Psychol. Bull.*, 84: 1098-1106.
- Tart, C. (ed.) (1976). *Transpersonal Psychologies*. New York: Harper and Row.
- Van Doren, C. (1936). *Three Worlds*. New York: Harper and Row. P. 107.
- Walsh, R. N., and Cummins, R. A. (1976). The open field test: A critical review. *Psychol. Bull.*, 83: 482-504.

Roger N. Walsh

Department of Psychiatry and Human Behavior
 Medical Science 1
 University of California at Irvine
 Irvine, California 92717