knowledge report on tropical forest ecosystems published last year. It is clear that the work by Bormann, Likens, and co-workers in a temperate hardwood forest in New Hampshire is highly relevant to understanding the dynamics of the rather more complex forests of the humid tropics.

In the eighth and final chapter some examples are given of how the Hubbard Brook Ecosystem Study can contribute some answers about environmental impacts and appropriate forms of forest management, as well as help to formulate questions on such issues more precisely. We must await the fleshing out of these suggestive principles in the next volume of the Hubbard Brook series.

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Decoding Nonverbal Behavior

Sensitivity to Nonverbal Communication. The PONS Test. ROBERT ROSENTHAL, JUDITH A. HALL, M. ROBIN DIMATTEO, PETER L. ROGERS, and DANE ARCHER. Johns Hopkins University Press, Baltimore, 1979. xxiv, 408 pp. $20.

Although scientific interest in nonverbal communication dates back a century to Charles Darwin, recent proliferation of research on the topic covers a mere two decades. That brief period has yielded a voluminous and often disorderly body of knowledge. This state of affairs results in part from the wide range of behavior that nonverbal communication encompasses, including how people sound, move, gesture, and touch, how they approach and look at each other, and even how they dress, adorn, and equip themselves. Anthropologists, sociologists, linguists, and psychologists have been among the many who study these topics. It is perhaps not surprising then that this diversity of domain and range of researchers have produced more questions than answers about the nature of nonverbal communication. This book presents the results of seven years of research by a team of social psychologists who have developed a "film test" of nonverbal sensitivity. Their work too produces more questions than answers.

The research grew out of Rosenthal's previous studies of the effects on performance of expectations held by experimenters and teachers, work which suggested that these effects are mediated by nonverbal communication. The investigators believed that being able to measure individual differences in the ability to encode and decode nonverbal behavior would provide some answers concerning the way in which peoples' expectations influence behavior. The Profile of Nonverbal Sensitivity (PONS test) was designed to measure such decoding ability, and the first third of the volume is devoted to a careful description of the development and structure of the test.

The PONS test is a 45-minute film in which a young woman is shown encoding 20 different emotional situations. Each emotional situation is shown 11 different times in 2-minute segments that isolate one of three visual channels (face, body, entire figure) or two auditory channels edited to be content-free or six combinations of these visual and auditory channels. The 20 emotional situations represent positive-negative and dominant-submissive dimensions of behavior. Each of the 220 segments is followed by a pause long enough for the viewer to pick one of two alternative descriptions of what the encoder is doing. The isolation of channels makes it possible not only to describe encoders as more or less accurate but also to derive a "profile" of different decoding abilities.

The first six chapters provide detailed descriptions of the construction of the PONS test and of seven shorter versions of the test that were developed for specific studies. Results are presented bearing on the internal consistency of the PONS (which is high) and the stability of the scores over time (which is modest). The researchers describe the reliability of the test as "reaching the level obtained by standardized group-administered tests of intelligence" (p. 362), a finding likely to satisfy some potential users and to dismay others. The limitations of using a single encoder and posed emotional expressions are recognized, albeit minimized, by the authors. No rationale is offered for the selection of positive-negative and dominant-submissive dimensions of emotion, although the structure of the test with regard to these dimensions is carefully described. Validation is difficult when developing a test of something for which no other good measure exists. The authors show considerable care and statistical sophistication in establishing that the pattern of results presented in the volume constitutes evidence of construct validity for the PONS test.

The test has been given to more than 7000 people in over 200 groups in the United States and other, mainly English-speaking, countries. The last two-thirds of the book presents findings relating the nonverbal sensitivity of these decoders to their gender, age, culture, cognitive ability, personality attributes, various psychological and physical impairments, and occupation. A chapter is devoted to the original question whether nonverbal sensitivity is a mediator of expectancy effects; regrettably few relationships were found and the question remains unanswered. Considering this body of data as findings that validate the PONS test, the results are informative. As findings that add to a fundamental understanding of nonverbal communication, they fall short. This failing arises from the notably atheoretical approach taken to the development of the test and to the selection of samples on which the results are based. The absence of guiding conceptualizations occasionally draws the authors close to the logical fallacy of assuming that identical patterns of correlations reflect identical underlying psychological processes. The determinedly empirical approach presented in the volume makes the interpretation of findings difficult for both the authors and the reader.

In general, the researchers have been thorough and careful in the statistical extraction of relationships from their diverse data. Particularly helpful is their consistent reporting of effect sizes in addition to statistical significance. This provides the reader with useful information on what relationships are large enough to warrant further investigation. In sum, the book provides a complete account of a measure of decoding ability and is a gold mine of suggestive hypotheses that others might pursue. In so doing, they would be well advised to seek answers to the questions raised by the findings in this program of research.

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Developmental Genetics

Genetic Mosaics and Cell Differentiation. W. J. GEHRING, Ed. Springer-Verlag, New York, 1978. xii, 316 pp., illus. $39. Results and Problems in Cell Differentiation, vol. 9.

Genetic mosaics are individuals made of cells of more than one genotype. They have been utilized most extensively in *Drosophila* and the mouse for developmental studies. This volume of ten papers on the subject of genetic mosaics does not have any strong common