

PART IV. COGNITION AND PERCEPTION IN CROSS-CULTURAL
RESEARCH

DEVELOPMENTAL THEORIES APPLIED TO
CROSS-CULTURAL COGNITIVE RESEARCH*

Michael Cole and Sylvia Scribner

*Laboratory of Comparative Human Cognition
Rockefeller University
New York, New York 10021*

Almost from the outset, psychologists engaged in cross-cultural research seemed to realize that their work posed methodological problems different from, and probably in addition to, those that faced their colleagues in other branches of their science. It has been generally understood that it is one thing to observe a difference in behavior across cultural groups and quite another to interpret it.

This realization is reflected in the continuous concern of cross-cultural psychologists with problems of methodology, dating from Rivers¹⁹ and Titchener²² to contemporary investigators such as Campbell,³ Berry,¹ Goodnow,¹² Glick,¹¹ and others. We, too, have been concerned with questions of method and the special difficulties of inference from observation to psychological process that are endemic to the cross-cultural enterprise. Some of our work has been concerned with the problems of specifying the culturally determined independent variables that relate to the dependent variables we study (Cole, Gay, Glick and Sharp⁵). Following the lead of Campbell and many others, we have sought to use the opportunities offered by different cultural settings to deconfound theoretically promising causal factors that are ordinarily "packaged" in modern, technological societies (Whiting²⁶). This work has engaged us in a companion issue that has been of great concern to us: what significance can we attach to our dependent variables? Here we enter the perennial debate between anthropologists and psychologists as to the proper methods for studying cognitive behavior, a debate that has centered around deciding what inferences about psychological processes of individuals are warranted on the basis of experimental and naturalistic observations (c.f. Cole and Scribner⁷ and Scribner.²¹)

Like most anthropologists, we are committed to the view that observations of intelligent behavior in everyday life are an important source of information about culture and cognitive processes. But we also believe experiments to be important and probably necessary tools for disentangling the complex relationships among culturally determined experiences and specific intellectual skills. To use Scribner's²¹ term, this position requires us to "situate" the psychological experiment as one of many contexts in which to sample behavior. This approach to "behavior-in-context" leads us to question the generality of inferences from experiments that are not corroborated by nonexperimental data. At the same

* Support for the preparation of this paper was provided by the Carnegie Corporation and the Ford Foundation.

time, it leads us to attempt a more precise characterization of the cognitive demands of nonexperimental situations.⁷

The distinctions that we have in mind can be briefly illustrated by our research on free recall. In several of these studies (see reference 6 for a summary) our concern was with specifying population characteristics correlated with performance differences in multi-trial free recall of categorizable nouns. Age, educational status, and exposure to a modern cash economy were some of the variables found to be associated with improved recall performance in some of these studies. But finding such differences held no magic key to explaining them in terms of the variations in memory processes that underlay the performances we were observing. To approach an explanation at that level required a program of experimentation during which aspects of the task were systematically varied – the items to be recalled, the contexts in which the items were presented, the incentives for good performance, and others. Even when much of that work was done, we were left with the question of how we could generalize from performance in our experiments to memory tasks that our subjects faced daily, but that we were not observing. This question was particularly pertinent in the case of memory, because the lore of anthropology had led us to expect fine performance in our experimental task, but such outcomes were rare and restricted to special task formats.

In this entire line of work, our range of inference and interpretation was restricted to generalizations about one particular set of skills – memory skills. We were not attempting to make inferences about intellectual performance or cognitive status *in general*. When cross-cultural research attempts such global assessment within the framework of some general developmental theory, a host of new conceptual and methodological problems are superimposed on those we encountered. The enterprise is broadened. The investigator not only has the task of interpreting the relationship between particular performances and the operations accounting for them, but of characterizing those operations according to some hypothesized developmental sequence. An entirely new chain of inference is involved in moving from an analysis of performance to an assessment of what that performance represents in developmental terms.

It is our impression that cross-cultural cognitive research would profit from a better understanding of the conditions under which it is legitimate to draw developmental conclusions on the basis of differences in cognitive performance. As our contribution towards this goal, we would like to examine the requirements that developmental theories themselves prescribe for making inferences about “developmental status,” and consider whether these have been satisfied in cross-cultural research.

At the risk of inviting misunderstanding through oversimplification, we will try to characterize the main features of the two developmental theories that have been applied most widely in cross-cultural research: the theories of Piaget and those of Witkin. Setting aside for the moment the radically different approaches they take to cognition, we believe they share certain common characteristics:

1. Both theories characterize development in terms of an orderly progression in the organization of systems composing the individual's psychological structure. They postulate, so to speak, “one developmental process,” in terms of which psychological changes occurring from infancy to adulthood are to be understood.

2. This developmental progression is conceived as characterizing the person as a whole – the individual's entire intellectual and social functioning. Within

both theories, therefore, it is possible to speak of a "level of development" that a given individual has attained (although it is acknowledged that individuals may not always operate at the highest level they have attained). These levels of development are generally ordered with reference to age.

3. Within this conceptual framework, tasks in various domains of performance are often used in the manner of diagnostic instruments to assess where the person stands in the developmental sequence.

Although this line of theorizing has been dominant for some time, it has encountered increasingly strong challenges in recent years. Without taking sides, we would like to suggest that some of the debates that appear in the cross-cultural literature are similar to (and we would argue, might be formally identical to) debates that are currently emerging around the proper interpretation of age-related differences in performance on various cognitive tasks investigated within *one* culture. Controversies surrounding the general set of propositions characterized as Piagetian theory can serve as a case in point.

Investigators have found, in a whole host of instances, that changes in performance related to modifications in experimental procedures^{2,10,15,23} and contexts²⁰ suggest a characterization of young children's competence different from that originally proposed by Piaget. The thrust of this work is to make problematic the interpretation of performance on tasks that have been widely assumed to be diagnostic of developmental level. Neither *presence* of a particular performance nor *absence* of that performance is clearly interpretable with respect to a child's development level—a general point clearly stated by Werner²⁵ nearly 40 years ago. Although we still find differences that are generally correlated with age, evidence of variability related to task modifications suggests a line of theorizing about development that emphasizes not only basic competencies but the operational skills that children acquire and employ in different ways, depending upon specific features of the task and situation. This point of view is exemplified in the seminal paper by Flavell and Wohlwill,⁹ which distinguishes between formal and functional subcomponents in the developing competence of the child, and in the current work of Pascual-Leone¹⁷ and Case.⁴

The import of this line of work is that characterization of a person's developmental status on the basis of experimental performance is debatable even when the research is entirely intracultural.

Nonetheless, the problems raised by this evidence do not have to be interpreted as fundamentally damaging to Piaget's theoretical position. Although it is possible to find variability on almost every Piagetian task and it is also possible to provide alternative interpretations of performance on any single task, the general theory is bolstered in the face of local difficulties by the enormous range of correlated phenomena that it accounts for. Essentially, it is the interweaving of evidence from performance in many different domains of children's activities that gives credence to Piaget's interpretation of performance in localized contexts. Piaget himself is quite explicit on this point:

We have just described the cognitive aspects of the developmental process which connect the structure of the initial sensori-motor level with those of the level of concrete operations . . . The affective and social development of the child follows the same general process, since the affective, social and cognitive aspects of behavior are in fact inseparable.¹⁸ (p. 114)

His general point is illustrated in Goodnow's particularly lucid discussion of cross-cultural Piagetian research, in which she emphasizes that the transfer of the

same underlying operations across the range of tasks that presumably require them is the necessary condition for making judgments about the child's developmental level (reference 12, pp. 443f).

The importance of this general point of "domain consistency" to the support of general developmental theory is also made explicit by Witkin and Berry:²⁷

Progress toward greater differentiation during development involves the organism as a whole, rather than proceeding discretely in separate domains. Hence, a tendency toward more differentiated or less differentiated functioning in one domain should 'go with' a similar tendency in other domains, making for self-consistency. (p. 6)

What happens when this debate is moved to the cross-cultural arena? All the specifications of the theory that apply *intraculturally* should also apply *interculturally*, respecting the added methodological difficulties of cross-cultural research that we talked about in our introduction.

Does the cross-cultural research evidence meet the criteria of adequacy that the theories themselves prescribe for *intracultural* validation? When we examine the evidence from this perspective, we are led to conclude that in spite of the many sound developmental studies that have been carried out, neither Piaget's nor Witkin's theories has ever actually been tested in cross-cultural research. Since so much has been written on culture and cognitive development, and the impression seems so widespread that developmental theories have been tested extensively, we must take some space to justify this conclusion.

We are led to this position not because of methodological problems with individual studies but because it is our reading of the literature that: 1. there has not been a single nonwestern culture in which investigators have made the wide range of observations necessary to demonstrate that behaviors across tasks and domains go together in the way required by the theory; and 2. in the few instances where more than one task and one domain have been investigated simultaneously, the evidence is ambiguous, if not negative, with respect to such consistency.

We will try to support this position by an examination of cross-cultural research on Witkin's theory of psychological differentiation. We select Witkin rather than Piaget because Witkin and Berry²⁷ have stated the theory and its testing requirements so clearly, and have reviewed the research evidence so thoroughly that we can best illustrate our position with respect to this work.

As we have already stated, Witkin and Berry²⁷ (p. 5) characterize psychological development in terms of a "differentiation theory," which maintains that "the typical progression in psychological development is from less to more differentiation." More differentiation implies greater specialization and separation of individual functions; perception is differentiated from feeling, thinking from action. It implies as well "specificity in the manner of functioning *within* an area." While differentiation thus proceeds in many psychological subsystems, Witkin and Berry maintain that it is an organismic, and not a subsystem, process. Research requirements are relatively clear. It is necessary to find precise and valid indicators of differentiation appropriate to the various psychological domains; to demonstrate that these indicators are highly inter-related *within* any one domain; and then to demonstrate that they are highly interrelated *across* domains.

The first issue, and a critical one, concerns the "indicators" of psychological differentiation. Witkin and Berry review these with heavy emphasis on the perceptual domain. The most widely used perceptual tests have been the rod

and frame test, the embedded figures test, and the body adjustment test. Consistency in the degree of "differentiation" measured by these tests, at least by adolescence, has been widely reported for studies in the United States. Once we move beyond the perceptual domain, both the question of indicators and the problem of consistency become much more problematic. Witkin and Berry conclude that self-consistency has been demonstrated within the United States in such additional domains as cognition, body concept, and the nature of the self. There are two problems here. To begin with, it is not clear that the indicators in these hypothetically separate domains are separate in the way claimed. The tests in the cognitive domain that correlate with perceptual tests consist mainly of such tasks as block design, picture completion, and the like, for which we can assume heavy perceptual involvement. Similarly, the indicator of a developed body concept is often some form of a draw-a-man test in which perceptual skills related to pictorial representation clearly must play a part. (This problem has been discussed by Vernon.²⁴)

If we go further afield to indicators of differentiation in the social sphere, the problem is somewhat different. To take an example: Witkin and Berry²⁷ (p. 9) tell us that reliance on external sources of information for self-definition is a good indicator of lack of differentiation in the social domain; field-dependent people (as measured in the perceptual domain) are more sensitive to the social content of their surrounding. But in the social domain, who is to say what is figure and what is embedding context? If problem solution depends upon the adequacy of manipulating other people it may not be adequate to treat others as "context," distinguished from the "self" as figure. The central problem in these important extensions of the differentiation notion is the difficulty of assessing the adequacy of the metaphors that suggest the connection between social and physical events.

None of these problems is inherently insurmountable, and we do not intend to denigrate the serious efforts that have been made to come to grips with these issues in the work of Witkin and many others. We only want to suggest that real problems exist *intraculturally* in establishing the main tenets discussed so far.

When we move from the intracultural to the intercultural arena, even the problematic canvas that we have been discussing is not adequately represented. With only a few exceptions, research is centered squarely in the perceptual domain and even here some significant problems are evident in the uneven levels of differentiation or field independence that have been found in some studies between sensory modalities. We can do no better than to quote Witkin and Berry's careful summary evaluation of their review of cross-cultural research on self-consistency:

... we find that many studies have investigated and found evidence of self-consistency within the perceptual domain and between the perceptual and body-concept domains. Relatively little has yet been done in non-Western settings to extend the study of self-consistency, as a function of level of differentiation, to the domains of separate identity and defenses. The few studies on record hardly provide substantial evidence of the self-consistency to be expected from differentiation theory and from results of many Western studies on record.²⁷ (pp. 29-30)

When the authors turn, however, to a consideration of studies testing hypotheses about the role of ecological-cultural factors and socialization practices in differentiation, they no longer confine their theorizing to the limited domains to which their test batteries apply. Rather, they revert to the use of the

general concept of over-all psychological differentiation, and come to conclusions about the developmental status of the individuals studied. Not only individuals within cultures but entire populations and ways of life are assessed in terms of the global characteristic of field independence or dependence. For example, the authors speak of social arrangements in different types of society that "influence development toward greater or more limited differentiation (p. 57)" and reach the conclusion that agricultural and hunting-and-gathering societies foster different modes of functioning, which can be characterized in terms of the unitary psychological dimension of "field dependence."

It is our contention that this kind of speculation cannot be warranted in the absence of prior demonstrations of domain consistency.

The status of cross-cultural Piagetian research is not dissimilar. While there have been extensive studies covering a small set of tasks (c.f. Dasen⁸) there have been none meeting Piaget's own requirements for the range of observations, tasks and spheres of activity necessary to support generalizations about developmental levels. Again, important inconsistencies within psychological domains crop up in the cross-cultural literature, such as those reported recently by Otaala,¹⁶ Heron and Dowel,¹³ and Holos.¹⁴

We believe, although we cannot document the statement here, that the same problems exist for other general developmental formulations as well. Although it is unpalatable, we have been led to conclude that we simply cannot assess the general significance of a great deal of cross-cultural research that is nominally in the developmental mode. The problem is that deprived of the consistencies in performance across tasks, psychological functions, and behavioral domains which carry the interpretive power of the theory, we do not know how to generalize beyond the performances reported in individual studies. When the studies do not hang together in the theoretically prescribed way, each individual study is of very limited value in serving either as a test of the general theory or as a measure of the developmental status of people in different cultures. This is not to say that such studies can be of no theoretical or practical interest in and of themselves. If they are designed to discover variations in performance associated with features of the task (nature of the material used or response mode analyzed, for example) or with the specialized experiences of different groups (occupation, schooling and the like) such studies can move us toward a more precise characterization of both the independent and dependent variables related to performance in cognitive investigations.

Nor do we mean to imply that researchers must abandon the effort to generate and test general developmental hypotheses cross-culturally. Several strategies are available.

One is to follow the path so clearly outlined by Witkin and Berry.²⁷ This involves investigation of the systems or structures defined by the theory in many areas of cognitive activity and many domains of behavior. The great value of the research inspired by Witkin is that it does demonstrate culture-cognition relations, even if the generality of the results is in dispute.

With respect to this approach, we would like to suggest that an extremely useful course to follow might be the involvement of anthropologists in helping to gather data from behavioral situations which are typically inaccessible to psychologists. We have in mind here not only getting anthropological advice on making psychological test instruments culture-sensitive, but in obtaining observational data of the sort that psychologists usually eschew.

While recognizing the legitimacy of this course, we find ourselves uncomfortable with its central thesis: that people can be characterized in terms of a single

(or even a small set) of processes that organize their thinking in all aspects of their lives.

It seems at least an interesting possibility that the consistency observed in Euro-American studies of development is in fact a characteristic of the cultures studied rather than a universal characteristic. If so, a cross-cultural strategy based on the assumption of consistency in performance among various cognitive operations and in various behavioral domains may be going at the task of identifying culture-cognition relations in exactly the wrong way. If cognitive performance is often and importantly specific to a given domain, we ought to be *looking* for variability and its cultural sources rather than explaining it away when we find it. Paradoxically, we may find that, just as the pursuit of consistency has made an important contribution in exposing unexpected variability, the search for variation may lead us to consider the uniformities of cognitive development from a fresh perspective.

In either event, if we are correct in our analysis, there should be an explicit admission on the part of cross-cultural psychologists that their data are silent with respect to the developmental status of various Third World peoples. The ascription of childlike status to adults is too serious a conclusion to rest upon the evidence at hand.

REFERENCES

1. BERRY, J. W. 1969. On cross-cultural comparability. *Intern. J. Psychol.* 4: 119–128.
2. BRYANT, P. 1974. Perception and understanding in young children. Basic Books. New York.
3. CAMPBELL, D. T. 1961. The mutual methodological relevance of anthropology and psychology. *In Psychological Anthropology*. F. L. K. Hsu, (Ed.) Dorsey Press. Homewood, Ill. pp. 333–352.
4. CASE, R. 1974. Structures and strictures: some functional limitations on the course of cognitive growth. *Cognitive Psychol.* 6: 544–573.
5. COLE, M., J. GAY, J. GLICK, & D. SHARP, Eds. 1971. *The Cultural Context of Learning and Thinking*. Basic Books. New York, N.Y.
6. COLE, M. & S. SCRIBNER. 1974. *Culture and Thought*. Wiley. New York.
7. COLE, M. & S. SCRIBNER. Theorizing about socialization of cognition. *Ethos* 3: 250–268.
8. DASEN, P. R. 1974. The influence of ecology, culture and European contact on cognitive development in Australian aborigines. *In Culture and Cognition*. J. W. Barry & P. R. Dasen, Eds. Methuen. London. pp. 381–408.
9. FLAVELL, J. H. & J. F. WOHLWILL. 1969. Formal and functional aspects of cognitive development. *In Studies in Cognitive Development*. D. Elkind and J. H. Flavell, Eds. Oxford University Press. New York, N.Y.
10. GELMAN, R. 1972. The nature and development of number concepts. *In Advances in Child Development and Behavior*, Vol. 7. H. W. Reese, Ed. Academic Press. New York.
11. GLICK, J. 1974. Cognitive development in cross-cultural perspective. *In Review of Child Development Research*, Vol. 4. J. Horowitz, Ed. Russell Sage. New York.
12. GOODNOW, J. J. 1969. Problems in research on culture and thought. *In Studies in cognitive development*. D. Eckind & J. H. Flavell, Eds. Oxford University Press. New York.
13. HERON, A. & W. DOWEL. 1974. The questionable unity of the concrete operations stage. *Intern. J. Psychol.* 9: 1–10.
14. HOLOS, M. 1975. Logical operations and role-taking abilities in two cultures: Norway and Hungary. *Child Develop.* 46: 638–649.

15. MARASTSOS, M. 1973. Nonegocentric communication abilities in preschool children. *Child Develop.* 44: 697–700.
16. OTAALA, B. 1973. The development of operational thinking in primary school children: An examination of some aspects of Piaget's theory among the Iteso children of Uganda. Teachers College Press. New York.
17. PASCUAL-LEONE, J. 1975. A view of cognition from a formalist's perspective. *In* Current Issues in Developmental Psychology. K. Riegel, Ed. S. Kazgu, Basil. New York.
18. PIAGET, J. & B. INHELDER. 1969. The psychology of the child. Basic Books. New York.
19. RIVERS, W. H. R. 1901. Introduction and vision. *In* Reports of the Cambridge anthropological expedition to the Torres Straits. Vol. II, Pt. 1. A. C. Haddon, Ed. The University Press. Cambridge, England.
20. SHATZ, M. & R. GELMAN. 1973. The development of communication skills: modifications in the speech of young children as a function of the listener. *Monographs of the Society for Research in Child Development* 38: 1–38.
21. SCRIBNER, S. 1975. Situating the experiment in cross-cultural research. *In* The Developing Individual in a Changing World. Vol. I. K. F. Riegel & A. Meacham, Eds. Aldine. Chicago, Ill.
22. TITCHENER, E. B. 1916. On ethnological tests of sensation and perception. *Proc. Am. Phil. Soc.* 55: 204–236.
23. TURIEL, E. 1974. Conflict and transition in adolescent moral development. *Child Develop.* 45: 14–29.
24. VERNON, P. E. 1969. Intelligence and cultural environment. Methuen & Co. London.
25. WERNER, H. 1937. Process and achievement – a basic problem of education and development psychology. *Harvard Educational Review* 1937, 7: 353–360.
26. WHITING, B. 1973. Comparative studies of social and cognitive development. Paper delivered at the biennial meetings of the international society for the study of behavioral development. Ann. Arbor, 1973.
27. WITKIN, H. A. & J. W. BERRY. 1975. Psychological differentiation in cross-cultural perspective. *J. Cross-cultural Psychol.* 6: 4–87.