

# COGNITIVE STYLE AND EARLY EDUCATION

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Edited by  
Olivia N. Saracho

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OLIVIA N. SARACHO

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# **Cognitive Style and Early Education**

*Edited by*

**OLIVIA N. SARACHO**

*University of Maryland, USA*

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## Introduction to the Series

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Increasingly in the last 10 to 15 years the published literature within the field of care education has become more specialised and focussed: an inevitable consequence of the information explosion and the wider scope of theoretical and practical knowledge being required of students in both the traditional and developing areas of professional training. Students within initial and post-initial training evidently need to have ready access to specialised theoretical and pedagogical resources relevant to the context of their future professional involvements which also develop special aspects of an area of study in a critically evaluative way.

In the study of education and pedagogy, the analytical and experimental approaches of psychology, philosophy, sociology, social anthropology, etc., have provided insights into teaching and learning, into schooling and education. Historically these disciplines have focussed their attention on relatively homogeneous populations. Increased worldwide mobility has created a need for a more pluralistic approach to education — particularly in Western countries — and a more broadly based concern for educational issues related in particular contexts. Hence, further literature has developed in recent years which is concerned with the pedagogical and curricular issues raised, for example, in connection with the “urban school”, minority ethnic groups, disadvantaged and handicapped groups, and children who live apart from their families.

What is frequently missing from discipline-oriented studies is a real appreciation of context beyond the “general”. What is often not present in the contextual study is an interdisciplinary analysis of the issue that provides a framework for practice.

The present series — “Special Aspects of Education” — is intended to bridge the gap between the problems of practice, as perceived in a variety of contexts, and theory, as derived from a variety of disciplines. Books accepted or commissioned for inclusion in the series will manifestly be expected to acknowledge the interdisciplinary nature of the issues and problems in the field of education and care and, addressing themselves to particular contexts, to provide a conceptual framework for identifying and meeting special educational needs.

Roy Evans



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## Preface

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Cognitive style is a psychological construct, which has been of concern to psychologists and educators for more than five decades and it continues to be the focus of research by psychologists working in the interface between cognition and personality. This interest has resulted from a number of factors. One has been a concern for improving the academic performance of low-income children who have experienced lower rates of success in school than their middle-class counterparts. Another has been the interest that has developed in the area of cognitive development in young children. This is evidenced by the continued interest in the work of Jean Piaget and other scholars concerned with theories of cognitive development and with educational programs to enhance this development that might be generated within particular theories. A third factor has been the recent interest in teachers' thought processes as the basis for understanding teachers' actions in classrooms and the consequences of these actions on children's learning.

There are different dimensions of cognitive styles such as field-dependence-independence, reflection-impulsivity, locus of control, scanning, leveling-sharpening and many others. Sufficient evidence has been provided to show that individuals differ in the characteristics described by these dimensions. These differences are considerably stable over periods of time related to differences in measured abilities and personality characteristics.

Research evidence show that various cognitive styles can affect intellectual and academic achievements. The increase in cognitive-style research must be conceptually integrated within the field of early childhood education. A perusal of the field currently indicates that enough research work has been conducted related to cognitive style and there are enough active researchers in early childhood education and development studying the development of cognitive style in the early years to provide a compendium of research and theory that can be of significance to early childhood researchers and practitioners alike.

This issue acquaints interested readers with the important findings emerging from contemporary research on cognitive styles in young children. I have been personally involved for more than a decade in research related to cognitive style in young children, including those of preschool age. The contributors who wrote papers for this issue are also scholars presently involved in conducting research or writing about young children's cognitive styles. These authors' familiarity and identification with the area of cognitive style is deep. They have research experience with the field, and/or have been involved in theoretical analysis. Thus, they provide information which

in part can compensate for the lack of direct research involved with this age group under scrutiny in this volume.

This volume has a multidisciplinary orientation, with contributions from psychologists and educators. It is addressed to psychologists, educators and other researchers and professionals including teachers and pediatricians engaged in planning, studying, teaching and caring for young children. The volume consists of 12 papers, each has been written with a particular perspective in the area of cognitive style and children's functioning.

This volume would not have been written without the special encouragement, love and support I have received from my parents, Pablo J. and Francisca S. Villarreal, my brother Saul M. Villarreal, my sister Lydia González and my teacher and mentor, Bernard Spodek.

Olivia N. Saracho

*University of Maryland*

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## Introduction

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Over the past decades there has been an increasing interest in cognition within the field of early education. It continues to be the focus of researchers working in the interface between cognition and personality. These are individual differences in styles of perceiving, remembering, thinking and judging, which, if not directly reflective of the personality, are at least intimately associated with various noncognitive dimensions of personality. Research evidence suggests that various cognitive styles strongly affect intellectual and academic achievement. This book explores important findings emerging from contemporary research on cognitive style in young children and its implications for classroom practice.

This volume serves several functions. It provides an overview of cognitive styles research in terms of historical perspectives, theoretical underpinnings, and measurement approaches. It also summarizes important findings emerging from contemporary research on young children concerning cognitive styles and cultural diversity, information-processing, creativity and reading. In addition, it draws implications for future research and classroom practice.

This volume is primarily addressed to professionals making critical decisions about the education of young children, leaders of early childhood programs, and students in early childhood education and child development. It should also be of interest and value to educational practitioners and to scholars in the areas of psychology, interpersonal relations, psychological anthropology and education.

The chapter authors are all involved in research and writing about young children's cognitive styles. They represent diverse disciplinary and philosophical orientations and address educational implications within their particular areas of research.

Nathan Kogan and Carolyn Saarni, in their chapter "Cognitive Styles in Children: Some evolving trends," trace the historical roots of the cognitive-style construct from its origins in psychology through the research which has taken place over the past 40 years. The trends identified have been restricted to those 19 cognitive style dimensions which Messick delineated more than a decade ago, with emphasis on those few which continue to generate research activity. The shift away from viewing cognitive style as an enduring trait-like construct to viewing it as highly susceptible to task and situational influences becomes evident in this review.

In her chapter, "Limitations of Applying Cognitive Styles to Early Childhood Education," Stephanie Shipman describes limitations in the current conceptualizations and operationalisms of cognitive styles and how these limitations constrain their use in early childhood education. Although cognitive styles represent important

understandings of *how* learners respond to materials and communications, Shipman believes that our understanding is insufficient to justify certain educational decisions. Her remarks are not meant to discourage instructional application of knowledge of cognitive style, but to encourage research to overcome those limitations and to point out some cautions to consider.

While the field of early childhood education has given much lip service to individual differences, program evaluations often rely on group trends. What we know about how children differ in ways that affect how they learn and what they learn is obliterated by evaluations that rely on such group outcomes. A characteristic of individual differences in which researchers and educators have become interested is cognitive style, including the field-dependence-independence (FDI) dimension. My chapter, "Cognitive Style and the Evaluation of Young Children's Educational Programs," provides descriptions and procedures of formal and informal techniques to evaluate young children's cognitive style in order to individualize instruction.

The developments in learning and memory research over the last decade or so have had at least two important implications concerned with field-dependence-independence. First, the nearly total domination of the area by a cognitive viewpoint has provided a theoretical and methodological perspective for studying field-dependence. Second, the area of individual differences has become a respected area of inquiry, offering a potential for furthering our understanding of the nature of cognition. In their chapter, "An Information Processing View of Field Dependence-Independence," J. Kent Davis and Kathryn Cochran adopt a restricted approach to the diverse issues associated with field-dependence. The first section of their chapter summarizes relevant theory of field-dependence. The second section, concerned with learning and memory research conducted since 1976, focuses on the information processing stages of attention and encoding in short-term and working memories, and storage and retrieval processes of long-term memory. Their third section considers developmental issues and implications of the information processing analysis of field-dependence. Finally, the authors suggest future directions that research might take to further the field's understanding of the information processing characteristics of field-dependence-independence.

Reading is a complex, multifaceted process involving the integration of a variety of cognitive, perceptual and linguistic factors. Investigations into the nature of reading failure have described the role that individual differences may play. In their chapter, "The Importance of Cognitive Style in Children's Acquisition of Reading Skill," Beth Davey and Deborah Menke explore how cognitive style factors might be important to reading acquisition during the initial phase. Davey and Menke integrate relevant research findings concerning cognitive style (FDI) and relate them to current conceptions of learning to read. They suggest directions for continued investigation of individual differences in the acquisition of reading skills, highlighting components undergirding beginning reading and relevant features of FDI. Finally, they propose future research directions based upon emerging theories of beginning reading.

Researchers have not only been interested in the relationship between play and divergent thinking, but in whether play — particularly pretend play — might

facilitate divergent thinking. Researchers have found that free play is superior to imitative play in promoting ideational fluency. Philip M. Clark, Penelope S. Griffing, and Lynn G. Johnson, in their chapter “Symbolic Play and Ideational Fluency as Aspects of the Evolving Divergent Cognitive Style in Young Children,” review correlational and experimental studies that have found relationships between pretend play and ideational fluency among preschool and kindergarten-age children. The authors present their own study in which symbolic or pretend play was found to be related to ideational fluency at preschool and to measures of flexibility, originality, and intelligence later. In addition, they provide findings supporting the notion that there is a cluster of characteristics associated with pretend play in early childhood, at least for boys, that can be characterized as a divergent cognitive style. They also suggest that this style manifests itself in different ways at different times in young children’s lives and present several possible ways of explaining this phenomenon.

Cognitive style has been variously defined as organization of cognitive controls, field dependence-independence, impulsivity-reflectivity, and analytical, relational, and categorical attitudes. Studies typically employ structured representational tasks to predict the individual’s way of organizing and processing information in other contexts. Irrespective of cognitive style construct, the assumption is that cognitive style denotes a stability of approach to cognitive type-tasks. A more accurate conceptualization of the development of young children’s cognitive performance may be provided by identifying the range of strategies children employ with cognitive tasks, then following up on these to note whether these behaviors are transformed into stylistic responses. Such an approach would facilitate the study of both qualitative and quantitative changes in children’s functioning. In their chapter “The Development of Cognitive Organization in Young Children: an exploratory study,” K. Ann Renninger and Irving E. Sigel identify strategies or processes children employ in organizing an array of non-representational items, where these items are organized and interpreted as the children wish. Practical and research implications are also discussed.

Over the past decade, researchers have shown increasing interest in cognitive style as a way to understand the teachers’ influence on student learning. Field-dependent (FD) teachers have been shown to rely on small group instructional techniques and extensive use of classroom discussions in which the opportunity for directing and structuring the activity is controlled by the children themselves. In addition, FD teachers use questions that are more factual, usually requiring brief, technical responses. Field-independent (FI) teachers prefer to structure their classrooms quite differently, showing stronger preference for the use of large group instructional techniques such as whole group instruction, lectures and direct teaching. These teachers are also likely to ask more questions at a higher conceptual level. In “The Influence of Cognitive Style on the Teaching Practices of Elementary Teachers,” Marc Mahlios provides support for the study and use of various cognitive style constructs in understanding how they influence teaching and the implications this influence holds for teacher-student interaction in the classroom as well as aspects of student learning. Future directions for educators and researchers are also provided.



Children's learning behaviors often reflect a cognitive style. Since no single teaching approach will suit the learning approach of every child, learning characteristics should be carefully considered. In the chapter "A Bicognitive-Multicultural Model for Pluralistic Education," Manuel Ramírez describes the ways that learning styles have been examined and how differences in learning styles might develop. He also presents specific educational implications resulting from this work.

In the United States alone, there are some two to four million students for whom the schooling language, English, is not a native language. In the last decade, efforts in bilingual education have focused on this population of students. Kris D. Gutierrez and Eugene E. García, in their chapter, "Academic Literacy in Linguistic Minority Children," provide an analysis of the educational condition of linguistic minority populations in the United States, address the importance of enhancing the educational circumstance of this population of students, and focus on a socio-cultural view of this circumstance with particular attention to recently developed theoretical constructs that link language, culture and schooling. Their discussion incorporates recent research on "effective" early childhood instructional practices for these students. The authors concentrate on the link between language, reading and writing as important academic domains.

Perception is the underlying process of cognition. Because of the variations in the cultures from which individuals emanate, it is inappropriate to assume that all individuals "see" the same event, idea or object in the same way. Perception has a cultural base and this difference also produces a variation in the individual processes used to acquire knowledge. In "The Influence of Perceptual Development on Cognitive Style: cross ethnic comparisons," Barbara J. Shade examines the development of perception within the Afro-American and Native American cultures. It is hypothesized that cultural differences in perception of symbolic and figural information is the underlying foundation of the cultural differences in cognitive style.

Cognitive psychologists have challenged researchers interested in cognitive skills of young children to differentiate between the gifted and those not-selected-as-gifted. Using IQ scores, cognitive style indicators, parents questionnaires, and teachers ratings, it has been concluded that the measure of reflection-impulsivity might be considered as an alternative for an IQ test. It was also concluded that field independence might be more developed in children with higher IQ scores, leading gifted children to attain field independence at an earlier age than is usual.

In Connie Steele's chapter "Cognitive Style and the Gifted Young Child," data is used to differentiate between the functioning of gifted and those not-selected-as-gifted preschool children — with particular attention to the children's cognitive style and how it relates to other cognitive elements. Suggestions are provided to initiate relevant curricula for preschool classrooms where these children are located.

In many classrooms, the need to respond to the range of individual differences is met by setting different expectations for children's academic learning. More often, however, all children are expected to learn the same things in the same ways, with some children expected to learn more than others or allowed to take more time to learn what is expected of all. In the final chapter of this volume, "Reflecting Individual Differences in Young Children: Cognitive style and early education,"

Bernard Spodek addresses the issue of how to respond to individual differences in educational settings. He suggests that knowledge of cognitive style can be used to match learning tasks to individual children to develop cognitive flexibility, thus creating curriculum flexibility. He concludes that cognitive style seems to be a valid construct at this time and that educators should use knowledge of children's and teachers' cognitive style to improve the quality of young children's education. We need to continue increasing our awareness of individual differences in the children and teachers in our schools, as we strive to improve educational opportunities for all children.



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# **Section I**

## **Background Information**



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# CHAPTER 1

## Cognitive styles in children: some evolving trends<sup>1</sup>

NATHAN KOGAN

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and

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### INTRODUCTION

An exhaustive review of the 40-year post-World War II history of cognitive styles would require a rather lengthy book to do adequate justice to the topic. To attempt such a review within the space limitations of a chapter would be a foolhardy venture unless a high degree of selectivity could be exercised. In this regard, the historical trends in the field have made our assignment easier, for of the 19 styles delineated by Messick (1976) more than a decade ago, only a few continue to generate research activity. Naturally, these few styles will receive primary emphasis in the present chapter. The reduction in the sheer number of styles under active exploration does not in itself solve the selectivity problem, however, for the reason that those particular cognitive styles can lay claim to hundreds, if not thousands, of published and unpublished studies. Fortunately, the past decade has witnessed numerous scholarly efforts to provide integrated reviews of this abundant literature, and these in fact offer more in-depth treatments of the cognitive-style domain than it is possible to offer in a single chapter. References to such reviews will be provided throughout this essay to permit the interested reader to gain access to the large corpus of empirical work that can be classified under the cognitive-style rubric.

#### *Classification of Cognitive Styles*

Kogan (1973) has distinguished three classes of cognitive styles which may be conceived as points on a continuum, ranging from those primarily determined by ability to those primarily determined by strategic preference. The classification of cognitive styles into these three categories rests on the assessment procedure as well as the conceptualization of the construct.

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<sup>1</sup>The present chapter represents a revised and updated version of a chapter entitled “Kognitive Stile” originally published in German. The latter appeared in G. Steiner (ed.), *Piaget und die Folgen*, Vol. 7 (pp. 445–465) in a 15-volume collection entitled *Die Psychologie des 20. Jahrhunderts*, Zurich: Kindler Verlag, 1978. We would like to thank Donna Palumbo for her assistance in the preparation of this chapter.

Type I cognitive styles emphasize accuracy of performance and are therefore heavily dependent upon the *ability* to do well on the criterial tasks. Illustrative of Type I cognitive styles is the field independence-dependence construct initially formulated and exhaustively studied by Witkin and his associates (Witkin *et al.*, 1954; Witkin *et al.*, 1962). Field independence reflects relatively accurate performance, field dependence relatively inaccurate performance on a set of criterial spatial tasks. To use the term *style* for Type I constructs may be less than appropriate, since style connotes a consistency of behavioral preference or orientation rather than the presence or absence of specific aptitudes. The issue is a complicated one, however, and Kogan (1988) has, in fact, argued the case for a “fuzzy boundary” between styles and abilities. Where Type I styles are concerned, the style-ability distinction may have more to do with the theoretical traditions from which each derive than with concrete operational measures.

Type II cognitive styles are characterized by an implicit or explicit evaluation dimension (e.g., complexity-simplicity). While accuracy of performance is not relevant to the assessment tasks of Type II cognitive styles, superiority is attributed to certain levels or types of performance. An example of a Type II cognitive style is the conceptualization construct proposed by Kagan, Moss, and Sigel (1963). They have developed a tripartite system for distinguishing classification rationales: analytic-descriptive, categorical-inferential, and relational-thematic. The last of these is considered less desirable and less mature relative to the first two, thus indicating a value judgment in performance assessment.

Type III cognitive styles may be viewed as most deserving of the term “style.” Neither accuracy of performance nor value judgment are relevant in the assessment. Pettigrew’s (1958) breadth of categorization task is illustrative of value-free, preference-oriented Type III cognitive styles. While the initial conceptualization and measurement of Type III cognitive styles emphasized their value-free character, later research with them has sometimes turned up correlates that associate the cognitive style with either an ability dimension or with increasing maturity. Thus Type III cognitive styles may move into the Type II category as a consequence of the accumulation of relevant research evidence.

### ***Development Factors in Cognitive Styles***

A fundamental issue in the cognitive-style domain has concerned the long-term stability of such constructs (Kogan 1982; 1983). Investigators have also inquired how far into early childhood and infancy one can project cognitive styles without changing their psychological meaning (Kogan, 1976a). Longitudinal studies are best suited to problems concerning continuity, but considerable difficulty arises in conducting such research due to the frequent necessity of modifying the cognitive-style assessment task for administration to young children. Task modification may result in a fundamental change in the construct in question, hence raising serious problems of construct validity. If there are shifts with age in magnitude and/or direction of relationships between a particular cognitive style and other psychological dimensions, considerable discontinuity in the meaning of the cognitive-style construct in question is indicated.

Another developmental aspect of cognitive style concerns their relationship to differential ability. Type I cognitive styles, closest to being determined by ability, may represent a capacity that has to be acquired by the young child. Some Type II and III cognitive styles may also reflect capacity differences in young children.

Finally, the developmental psychologist must analyze his/her data separately by sex, for cognitive style patterns are often different for the two sexes. Correlational evidence indicates that pre-school females are one-half to a full year ahead of pre-school boys in the emergence of certain cognitive styles in a stable form. Examination of mean differences also tends to favor pre-school females on particular cognitive styles. There appear to be few, if any, stylistic dimensions on which males exceed females in the pre-school period. Kogan (1976a) has systematically reviewed much of this evidence.

Recently, investigators have begun to forge a link to mainstream cognitive-developmental theory (Piagetian and neo-Piagetian) by relating cognitive-style variables to developmental milestones (e.g., the attainment of conservation, the decline of spatial egocentrism, and the onset of formal operations). Such work has recently been reviewed by Brodzinsky (1985) and Kogan (1983; 1985), and a recent volume edited by Globerson and Zelniker (1988) is likely to stimulate further research on the articulation between cognitive style and cognitive-developmental processes.

The cognitive styles discussed in the present chapter are field dependence-independence, reflection-impulsivity, conceptualization style, breadth of categorization, and metaphoric sensitivity. The foregoing list is by no means exhaustive. However these dimensions have been the object of systematic and recent research effort. Cognitive complexity-simplicity and the cluster of cognitive controls (scanning, levelling-sharpening, constricted-flexible control, and tolerance for unrealistic experiences), though of theoretical importance, no longer appear to play a center-stage role in contemporary cognitive-style research. Accordingly, the treatment of those constructs in the present chapter is primarily descriptive and quite brief. The review is organized so as to consider the conceptualization and assessment procedures of each cognitive style, to discuss some of the more significant developmentally-oriented research relevant to the style in question, and to conclude with some critical comments.

## FIELD DEPENDENCE-INDEPENDENCE

### *Conceptualization and Measurement*

This stylistic dimension refers to a mode of perceiving part-whole relations. In field-dependent perception there is relative inability to perceive parts of a field as separable from the whole. In contrast, perception that is field independent is characterized by analysis of the field into discrete parts. In the former mode of perception, the person has difficulty in disembedding parts from their context; in the latter mode, the individual can do this readily. The dimension is bipolar, and it can be presumed that people distribute themselves along this bipolar continuum in a manner consistent with the normal curve.



Witkin and his associates (1954; 1962) have developed three laboratory tasks to assess this mode of perception; all three have a strong spatial component. They are the rod-and-frame task, the embedded-figures task, and the body-adjustment task. The last one has rarely been used outside of Witkin's laboratory, as it entails tilting both a room and a chair, with the subject's task being the adjustment of the chair to the true vertical. The rod-and-frame task consists of the subject viewing a luminous square frame as he or she sits in a completely darkened room. Within the frame, pivoted at its center, is a luminous rod which can be tilted in either direction, as can the frame. The task for the subject is to adjust the rod to the true vertical position, disregarding the tilt of the frame as much as possible in his/her judgment. The degree to which one is accurate in estimating the true vertical over several trials is the measure of relative field dependence or independence. A portable rod-and-frame apparatus developed by Oltman (1968) has generally been used in research with children. The items of the embedded-figures task require the subject to identify simple geometric figures which have been embedded in complex designs. The measure of field dependence is the average length of time the subject requires to find the simple figures. Children's versions of the embedded figures task are available (Witkin *et al.*, 1971; Coates, 1972). In all of the field dependence-independence tasks, the more *accurate* the person's judgment, the more field independent he or she is presumed to be.

Performance on the field-independence tasks has been assumed by Witkin to be grounded in a single basic process of development: psychological differentiation. Witkin's psychological differentiation is a growth process of "successively more complex reintegrations of the system" (1962, p. 11) within the psychological make-up of the individual. Complexity of integration is not operationally defined by Witkin, although he contends that complexity is essentially a function of the level of differentiation. It is no simple matter to comprehend what Witkin precisely means by psychological differentiation. Perhaps it is best understood intuitively as articulation of experience.

Any discussion of the present topic cannot ignore the dramatic conceptual transformations that took place between field-dependence theory as outlined in the book by Witkin *et al.* (1962) and its transformation in the Witkin and Goodenough (1981) volume published almost 20 years later. The earlier work was strongly value-laden: field independents possessed a multitude of virtues, field dependents could lay claim to virtually none. In the later view, a bipolar position was advanced in which field independents are endowed with restructuring skills (primarily spatial in character) and field dependents are distinguished by a diversity of interpersonal sensitivities. Almost equal in importance to the foregoing theoretical shift is the recognition that the embedded-figures and rod-and-frame tasks may be assessing distinctive (though related) processes. Thus, embedded-figures performance is considered to fall within a restructuring cluster, whereas rod-and-frame performance is viewed as a measure of perception of the upright. The separation of these two components of field dependence obviously argues against the practice of combining them in a composite, when relating field dependence-independence to other kinds of assessments.