International Society for the Study of Behavioural Development

Sociocultural Perspectives on Cognitive Development

Introduction

Joan G. Miller
Department of Psychology, New School University
New York, NY, USA
E-mail: millerj@newschool.edu

and

Xinyin Chen
Department of Psychology, University of Western Ontario
London, Ontario, Canada
E-mail: xchen@uwo.ca

This Special Section brings together, under the label of 'sociocultural perspectives,' work with intellectual roots in the theory of Vygotsky. While this work has developed in distinctive ways and is known by somewhat contrasting theoretical labels, it shares a monistic view of culture and cognition. Rather than treating cognition as a purely internal psychological activity that can be understood independently from sociocultural and historical processes, approaches within this broad and somewhat eclectic tradition assume that cognitive processes depend fundamentally on and cannot be meaningfully understood independently of such influences.

The essays in this Special Section provide an overview of some of the key theoretical insights that inform sociocultural work, including its recognition of the centrality of culture in mediating psychological experience, its emphasis on the need for genetic and historical analyses of cognitive development, and its attention to cognition as it is embedded in culturally organized everyday activities. Discussion focuses on new ways to conceptualize variation in mediation and learning processes as well as to understand the fit between developmentally based motivational orientations and sociocultural activities. Consideration is also given to the existence of qualitatively variable modes of organizing attention and learning that emerge from children's participation in practices within their communities and to work which suggests that mastery of procedures and not merely knowledge of signs may play an essential role in the internalization of psychological tools. In terms of implications for educational practice, consideration is given to issues in the design of school environments to promote learning in the zone of proximal development, and to the processes by which schools privilege certain types of educational achievement over others.

The authors and commentators represented in this Special Section have contributed to the theoretically rich and generative nature of sociocultural work. As their essays make clear, work in this tradition is not only enhancing current knowledge of sociocultural variation in cognitive processes and in patterns of developmental change, but also contributing new understandings of the process of cognitive development that are enriching basic developmental theory.

Cultural-Historical Activity Theory in the Family of Socio-Cultural Approaches

Michael Cole
Laboratory of Comparative Human Cognition,
University of California San Diego,
San Diego, California, USA
E-mail: mcole@weber.ucsd.edu

I preface my remarks with a brief comment on terminology. The reader will note that I do not use the term, "socio-cultural" to refer to my approach to the study of culture in human development. Rather, I have settled on the notion of "cultural-historical activity theory" an amalgam of terms proposed by Lev Vygotsky, Alexander Luria, A.N. Leontiev and their students (Leontiev, 1981; Luria, 1928; Vygotsky, 1978). Initially they referred to their approach as "instrumental" or "cultural-historical" psychology to highlight the centrality of mediation of action through tools as the cornerstone of "the cultural habit of behavior." Later, Leontiev elaborated on the importance of activity as a central starting point for psychological analysis. In the 1980's, scholars unhappy about the extent to which the (then) Soviet ideas were tainted by the equation of history with progress, settled on the idea of socio-cultural studies as a way of marking both their rejection of Marxist historicism and their desire to emphasize the interpenetration of the social and cultural in human life. As will become clear below, I believe that the terminological advantages of such a shift carry with

them the danger of losing one's focus on genetic (developmental) analysis and a commitment to grounding one's analysis in everyday activity.

However, my own use of ideas inspired by Soviet cultural-historical, activity theorists should not be interpreted as wholesale and uncritical acceptance of all of their ideas. For example, I do not equate history and progress. Rather, for many years I have advocated the idea that whether a particular form of behavior is evaluated as more or less developed depends critically upon the context in which it occurs and that all societies display great heterogeneity in the complexity and sophistication depending upon the cultural circumstances in question. In place of the German notion of *Kultur* as the finest achievements of human kind, I have adopted the idea of cultures as the collective problem solving toolkits of individual social groups in response to their historical and ecological circumstances. In this regard, I have been greatly influenced by the tradition of Anglo-American ethnographic research and theory, a discipline that has no precise equivalent in the Russian tradition.

I first became interested in the role of culture in human development as a result of my own, more or less fortuitous, introduction to cross-cultural developmental research. Given the task of discovering why rural Liberian children seemed to experience extraordinary difficulty with mathematics in school, my colleague John Gay and I made the commonsense assumption that we needed to start out by finding out how the system of ideas we think of as mathematics arises in children's everyday activities and the intellectual tools they had evolved to deal with problems requiring the use of mathematics (Gay & Cole, 1966). This work produced examples of performance on psychological tests modeled after the everyday (mathematical) practices of unschooled Liberian rice farmers where the rice farmers outperformed Yale undergraduates.

For several years this work proceeded in a more or less a-theoretical manner. My major preoccupation was with the methodological problems of drawing conclusions about the development of psychological processes based on methods from experimental, developmental psychology. Repeated demonstrations that modifications of instructions, materials, and procedures produced major shifts in the behavior of non-literate West African peoples led me to an emphasis on the role of cultural context in development and a profound mistrust in the social-ecological validity of the psychological diagnostic procedures routinely used in the United States and other industrialized countries as instruments for the study of general processes of psychological development. Aside from its negative value as an antidote to overzealous conclusions about the under-developed minds of non-literate peoples, a positive generalization to come from this work was that a good many of the developmental changes that psychologists had been attributing to maturation were, in fact, the consequences of schooling, a social institution of relatively recent historical origin. But even this conclusion was marred by doubts that the observed developmental impact of schooling might be simply a narrow "practice effect" because the structure of experimental psychological tasks and the structure of school-based tasks have a common origin and structure.

It is in this context that, after many years of uncomprehending familiarity with their work, that I began to take seriously the theoretical position of the Russian cultural-historical activity theorists. Their view of the centrality of culture to all, specifically human, psychological processes was based on three interlocking assumptions.

1. *The centrality of mediation.* Specifically human psychological processes arose in the course of phylogeny with a new form of behavior in which humans modified material objects as a means of regulating their interactions with each other and the world. As a consequence, "instead of applying directly its natural function to the solution of a particular task, the child puts between the function and the task a certain auxiliary means.... by the medium of which the child manages to perform the task" (Luria, 1928, p. 495).
2. *Genetic (historical) analysis.* Vygotsky was prone to quote Pavel Blonsky to the effect that "To understand behavior, one must understand the history of behavior." This injunction was applied at several different time scales: the history of the species (phylogeny), the history of the cultural resources of the social group (culture), the history of individuals (ontogeny), and the moment to moment history of interactions that constitute living behavior (microgenesis). In effect, human development is the emergent outcome of interactions occurring simultaneously at all these time scales and levels of analysis. Vygotsky emphasized the age period when children begin to master their native language as a crucial time when phylogeny and cultural-history merge in human development but his followers also carried out studies of blind-deaf children placed in homes by despairing parents, adult peasants undergoing rapid changes in their modes of life, and brain damaged adults who had lost the ability to read.
3. *Grounding in cultural organized activity.* From a cultural-historical perspective, the natural laboratory for the study of the role of culture in human development is in the everyday activities of people. This point was made explicitly by Alexei Leontiev (1981, p. 11): " . . . human psychology is concerned with the activity of concrete individuals, which takes place either in a collective—that is, jointly with other people—or in a situation in which the subject deals directly with the surrounding world of objects—for example, at the potter's wheel or the writer's desk... With all its varied forms, the human individual's activity is a system in the system of social relations. It does not exist without these relations. The specific form in which it exists is determined by the forms and means of material and mental social interaction."

These ideas were by no means unique to Russian psychology. Similar ideas can be seen in the writings of many early 20th European and American scholars. For example, John Dewey not only emphasized the centrality of tool mediated action as central to human cognition, but wrote that ... we live from birth to death in a world of persons and things that is in large measure what it is because of what has been done and transmitted from previous human activities. When this fact is ignored, experience is treated as if it were something which goes on exclusively inside an individual's body and mind. It ought not to be necessary to say that experience does not occur in a vacuum. There are sources outside an individual which give rise to experience (Dewey, 1938/1963, p. 39). (For more extensive examples, see Cole, 1996, Valsiner, 1998).

Culture, according to this perspective, can be understood as the entire pool of artifacts accumulated by the social group

in the course of its historical experience. In the aggregate, the accumulated artifacts of a group, culture, is then seen as the species-specific **medium** of human development. It is "history in the present." The capacity to develop within that medium and to arrange for its reproduction in succeeding generations is *the* distinctive characteristic of our species.

This set of assumptions directly entails two additional principles. The first is the "general law of cultural development" (an idea articulated by Janet). As Vygotsky phrased it, "Any function in children's cultural development appears twice or on two planes. First it appears on the social plane and then on the psychological plane. First it appears between people as an interpsychological category ... and then within the individual child as an intrapsychological category." (Vygotsky, 1981, p. 163). The second is the idea of a zone of proximal development, the gap between what children can accomplish on their own and what they can accomplish in collaboration with a more competent other or in play.

"the idea of a zone of proximal development"

Many research programs have developed different aspects of this overall approach to human development.

The impact of rapid cultural change on cognitive development was first studied in the 1930's by Alexander Luria (1976) who reported on the basis of a variety of evidence (tests of perception, categorization, syllogistic reasoning) that a shift from traditional pastoralism to participation in collectivized farming and schooling induced a shift in people's reasoning from one grounded in functional relations related to specific contexts of activity to one in which people were more likely to reason from the verbal premises of problems. This work can be criticized on methodological grounds (Cole, 1996) and Luria's conclusions now appear to be over-generalized, but the idea of studying the impact of rapid cultural change on cognitive development has flourished in recent years.

For example, King Beach and his colleagues investigated rapid changes in mathematical reasoning among Nepalese villagers, who began to engage in commerce mediated by an alien monetary system and methods of exchange, when a road was built between their isolated village and an urban commercial center (Beach, 1995). Beach showed how perfectly functional indigenous methods of calculation could be replaced by methods learned in school that actually led to a decrement in performance in the conditions of exchange present in Nepal at the time. Geoffrey Saxe and his colleagues have documented changes in mathematical notation systems and practices associated with the introduction of monetary trade into a previously remote area of New Guinea (Saxe & Esmonde, in press). Patricia Greenfield (2004) has documented a variety of changes among peasants living in remote areas of Chiapis, Mexico, in which patterns of mother-child interaction focused on weaving, as well as the complexity of the woven products, changed in association with changed exposure to modern textiles and involvement in the money economy associated with increased contact with modern sectors of the Mexican economy.

Research focused on variations in modes of culturally organized activity inspired by cultural-historical psychology have included Scribner and Cole's (1981) work showing the central role of the organization of activities in shaping the cognitive consequences of literacy, Gaskin's (2000) work on cultural variations in play activity that challenges Eurocentric notions about the role of play in cognitive development, and Rogoff's work on intense observation as an important mechanism of learning in Guatemalan peasant communities (Rogoff, 2003).

A great deal of within-culture work has been conducted on the dynamics of learning and development in pre-school and school contexts focused both on the mastery of new mediational means, such as writing systems, new modes of organizing the social organization of instructional activity (Gallego, Cole, & LCHC, 2002; Hedegaard, 1996; Paley, 1981; Rogoff, 2003), as well as new ways of organizing developmental changes in work processes among adults (Engeström, Engeström, & Suntio, 2002).

A complaint often voiced with respect to Vygotsky's formulation of the intertwining of natural (phylogenetic) and cultural (historical) lines of development is that the natural line has gone unexamined (despite the fact that Luria carried out the earliest extensive studies comparing the cognitive development of monozygotic and fraternal twins in the psychological literature, see Luria, 1977). Certainly phylogenetic comparisons involving culture and cognition have increased in popularity in recent years. For example, Michael Tomasello (1999) has brought the study of chimpanzee cognitive development into dialogue with studies of the cognitive precursors and cognitive consequences of acquiring language and culture during infancy. Interestingly, the most compelling evidence of the cognitive and cultural potentials of chimpanzees and bonobos are realized when these animals are enculturated by human beings instead of growing to maturity in the wild, suggesting the existence of an inter-species zone of proximal development. In a different sphere, Giyoo Hatano and Kayako Inagaki (2002) have proposed that phylogenetically constrained "skeletal principles" must be combined with culturally organized participation of young children in appropriate practices as the necessary and sufficient conditions for human concept development.

Of particular interest to me has been research that uses cultural-historical theory to motivate the design of development-enhancing environments for development (Engeström, et al., 2002; Nicoloplou & Cole, 1993). This work, termed "formative experimentation" by Vygotsky and his students, has become fashionable in the United States under the rubric of "design experimentation." My work has sought to design "idiocultures" that embody my theoretical assumptions so that they serve as zones of proximal development for children who struggle in school. Engeström and his colleagues have created "developmental change laboratories" that directly embody the principle, articulated by Luria above, in which working groups are assisted to create tools to solve the difficulties facing them at their jobs. When such research is effectively conducted, it permits the study of how different levels of genetic analysis can be applied and analyzed for the participants in a single system of activity. Such analyses can illuminate the mutual interactions among levels within an activity system that account for the dynamics of development at each level – a basic principle of cultural-historical activity theory that has been much discussed, but rarely implemented.

I hope it is clear from this brief summary that cultural-historical activity theory is a broad, interdisciplinary

A glimpse of the variety of activities in a 5thDimension idioculture: the child in the foreground is engaged in a science project, the child at the far end is engaging a computer problem solving game and the child in the middle is examining a board with other children's art work, considering what to engage in next.

enterprise. Because it takes cultural mediation to be a universal feature of human life, it may or may not involve research in different cultures. In this respect, it may involve cross-cultural research, research in a particular cultural setting that provides the opportunity to highlight process of cultural mediation, or in one's own culture. Like the broad range of approaches referred to as "socio-cultural" it views mediation to be a double-sided process in which mediation of action through and with other people (often referred to as modes of participation) and mediation of action focused on mastery of the physical world are always part of a single, dual-directional system of cultural mediation. Moreover, rather than viewing human beings as creatures who have freed themselves from phylogenetic history, it assumes an ongoing dialectic of change in which nature and nurture, phylogeny and culture, are inextricably linked.

References

Beach, K. (1995). Activity as a mediator of sociocultural change and individual development: The case of school-work transition in Nepal (pp. 285-302). *Mind, Culture, and Activity, 2* (4)..

Cole, M. (1996). *Cultural psychology*. Cambridge, MA, US: Harvard University Press.

Dewey, J. (1938/1963). *Education and experience*. New York: Macmillan.

Engeström, Y.E., Engeström, R. & Suntio, A. (2002). Can a school community learn to master its own future? An activity-theoretical study of expansive learning among middle school teachers (pp. 211-224). In G. Wells & G. Claxton (Eds). *Learning for life in the 21st century: Sociocultural perspectives on the future of education*. Malden, MA, US: Blackwell Publishers.

Gallego, M. A., Cole, M., & LCHC (2001). Classroom culture and cultures in the classroom (pp. 951-997), In V. Richardson (Ed.), *The handbook of research on teaching*. Washington, DC., American Educational Research Association.

Gaskins, S. (2000). Children's daily activities in a Mayan village: A culturally grounded description. *Cross-Cultural Research, 34* (4), 375-89

Gay, J. & Cole, M. (1966). *The new mathematics and an old culture*. New York: Holt, Rinehart & Winston.

Greenfield, P.M. *Weaving generations together: Evolving creativity in the Maya of Chiapis*. Santa Fe, NM: School of American Research.

Hatano, G. & Inagaki, K. (2002). Domain-specific constraints of conceptual development. In W.W. Hartup and R.K. Silbereisen (Eds). *Growing points in developmental science: An introduction* (pp. 123-142). New York, NY: Psychology Press.

Hedegaard, M. (1996). How instruction influences children's concepts of evolution. *Mind, Culture, and Activity, 3*(1), 11-24.

Leontiev, A.N. (1981). The problem of activity in psychology. In J.V. Wertsch (Ed.). *The concept of activity in Soviet psychology*: Armonk, NY: M.E. Sharpe.

Luria, A.R. (1928) The problem of the cultural development of the child. *Journal of Genetic Psychology, 35*, 493-506.

Luria. A. R. (1976). *Cognitive development*. Cambridge, MA: Harvard University Press.

Luria, A.R. (1977). *The making of mind*. Cambridge, MA: Harvard University Press.

Nicolopoulou, A., & Cole, M. (1993). Generation and transmission of shared knowledge in the cultural of collaborative learning: The Fifth Dimension, its play-world, and its institutional contexts. In E.A. Forman, N. Minnick, & C.A. Stone (Eds.) *Contexts for learning: Sociocultural dynamics in children's development*. New York: Oxford University Press.

Paley, V.G. (1981) *Wally's stories*. Cambridge, Mass.: Harvard University Press.

Rogoff, B. (2003). *The cultural nature of human development*. New York, Oxford University Press.

Saxe, G. B., & Esmonde, I. (in press). Cognition in flux: The Case of 'fu' in the social history of Oksapmin mathematics. *Mind, Culture, and Activity*.

Scribner, S., & Cole, M. (1981). *The psychology of literacy*. Cambridge, MA: Harvard University Press.

Tomasello, M. (1999). *The cultural origins of human cognition*. Cambridge, MA, Harvard University Press.

Valsiner, J. (1998). *The guided mind : A sociogenetic approach to personality*. Cambridge, MA: Harvard University Press

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Vygotsky, L.S. (1981). The genesis of higher psychological functions. In J.V. Wertsch (Ed.), *The concept of activity in Soviet psychology* (pp. 144-188). Armonk, NY: M.E. Sharpe.

Psychological Tools, Internalization, and Mediation: The Neo-Vygotskian Elaboration of Vygotsky's Notions

Yuriy V. Karpov
Graduate School of Education and Psychology,
Touro College
New York, NY, USA
E-mail: ykarpov@touro.edu

The notions of psychological tools, internalization, and mediation are cornerstones of both Vygotsky's *socio-cultural*