

Cultural Research has Transformed Our Ideas of Cognitive Development

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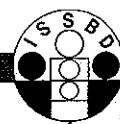
Over the past 30 years, cultural research has transformed research and ideas of cognitive development. Early on, it drew attention to the role of context and questioned the assumptions of generality of individuals' cognitive processes that were widely held at the time. Then cultural researchers developed a family of theoretical approaches that included social, cultural, and historical aspects of cognition and development. As a result, cultural research has been broadening the idea of cognition to include processes of communication. We examine these developments, and illustrate the potential for treating communication as a key aspect of cognitive development using cultural research that relates processes of attention and learning with the organization of people's involvement in shared endeavors.

The Role of Context and Assumptions of General Cognitive Processes

In 1974 when Michael Cole and Sylvia Scribner published their influential book on *Culture and Thought*, it was still widely assumed that cognition took place solely within the individual head, such that a few tests would be able to "measure" an individual's cognitive development in general. There was little attention to the contributions of contexts in which people were thinking. This assumption of generality of cognitive processes was common in many approaches to cognitive development. For example, although Piaget recognized that tests of cognitive stages did not show stage transitions occurring all at once, his solution to the problem — calling it horizontal décalage, and referring to varying 'friction' of the tasks — was only a rudimentary nod in the direction of context.

The work of a number of cultural researchers called the assumption of general cognitive processing into question. The work of Bronfenbrenner, Cole, Goodnow, Greenfield, Lave, Price-Williams, Rogoff, Saxe, Scribner, and Serpell, among others, directed the field's attention to the importance of understanding contexts of thinking (see Rogoff & Chavajay, 1995, for an account of historical changes in research on culture and cognition). Cultural researchers reported that people who performed abominably on tests of memory or logic more than held their own in remembering and using logic in many everyday settings.

Such findings, and work by allied researchers who paid increased attention to variation across settings, led to the realization that thinking depends on features of the context,



not just on the mental activity of brains. Cultural researchers' efforts to understand the contextual aspects of thinking led to very fruitful theoretical advances in how cognition was understood, spurred especially by the 1978 translation of Vygotsky's work in the volume *Mind in Society* (edited by Cole, John-Steiner, Scribner, and Soubberman).

SocioCultural/Historical Theorizing

In the search for ways to understand cognitive development in context, Vygotsky's ideas offered ways to think about individual minds within social, cultural, and historical processes. In the ensuing decades, a very healthy scholarly tradition has developed around the resulting ideas — referred to as sociocultural theory or cultural/historical theory (or other combinations of social/cultural/historical, which we will treat as equivalent for present purposes).

One crucial idea of sociocultural/historical theory is that — given that cognitive development depends greatly on social engagement with other people — cognition can no longer be thought of simply in terms of the mental faculties that preceded this theory: memory, attention, perception, plans, logic, and so on. These processes are clearly not separate from each other nor do they occur in isolation from their use. Therefore it makes sense to investigate how people remember, attend, perceive, plan, reason, and so on, in ways that serve people's functioning in the world. These processes are closely tied with social goals and with individuals learning to function as participants in cultural communities, which means that social engagement and communication are a key aspect of cognitive development.

“development depends greatly on social engagement”

Communication as a Cognitive Process

Many studies of cognitive development that examine social interaction limit its role to serving as a 'treatment' that people are subjected to, with the 'outcomes' of this treatment examined in posttests that seek changes in a mental faculty. Rogoff (1998, 2003) critiqued this "social influence" approach on the grounds that understanding cognitive development requires attention to how people's thinking occurs *as they participate* in socially, culturally, and historically shaped events. In particular, the testing session itself — long treated as a probe of mental processes unfettered by social and contextual aspects — became the subject of analysis as a social/cultural/historical event.

Largely for reasons of tradition, developmental researchers still persist in dividing the field into separate subfields of social development and cognitive development, even with the recognition that this is an arbitrary distinction. Indeed, the prominent journals *Social Development* and *Cognitive Development* have each at various times attempted to smudge the dividing line, inviting articles that bridge social and cognitive development.

Communication is a key problem solving situation in which people attempt to make sense of others' communicative efforts and to address their own goals by communicating with others on whom they depend in multiple ways. Coordinating ideas and actions together involves perceiving and attending to companions' contributions and other ongoing events; reasoning about and taking the perspective of others; remembering the course of events at hand (including conversational moves); and

planning one's own contributions while predicting their effects on others and on shared activities. These activities are clearly both cognitive and social. In our concluding section, we discuss a line of investigation that illustrates research questions that arise in the study of communication as a cognitive process.

Cultural Research Relating Attention Management, Organization of Involvement in Shared Endeavors, and Learning

As an example of the research topics that open up when communication is itself regarded as a cognitive (and social) process worthy of investigation, we refer to our investigations that delve into the cultural nature of how people learn and how they manage their attention. The research relates the processes of learning and attention management to cultural traditions organizing children's participation in community activities.

A recent *Annual Review* article distinguishes two (of many) cultural traditions for organizing learning (Rogoff, Paradise, Mejia Arauz, Correa-Chávez, & Angelillo, 2003; see also Jordan, 1993). The defining features of these traditions involve how communication is organized in the prototypes of both intent participation and assembly-line instruction.

In *intent participation*, children and others learn through their observation and contributions to shared activities of importance in their community. Children are not segregated from mature activities of their community, but rather have access to observe and to begin to pitch in to important activities as they become ready. The more expert people involved in the activity collaborate with the children (or other newcomers) and may or may not provide pointers in the process of the shared endeavor. Communication focuses on accomplishing the activity at hand; if there are explanations they are tied to the ongoing activity. A great deal of the responsibility for learning is handled by the initiative of the learners, who figure out the principles and skills with keen attention to surrounding events as well as their own efforts to help or to emulate the activities in play, supported but not necessarily organized by the more expert participants. Learners are generally motivated to learn by the importance of being able to contribute to valued community activities.

Another cultural tradition for learning was called *assembly-line instruction* by Rogoff et al. (2003). Here, communication focuses on instruction independent of contributions to ongoing mature activities of the community. Children (and other learners) in this tradition are segregated from mature community activities, in a specialized setting designed for instruction. The responsibility for learning is largely held by experts who unilaterally manage the learners, subdivide their tasks, and do not collaborate with the learners in productive activity. Communication (and learning) are organized as lessons, often with learners having little idea of how particular steps in a process relate to overall goals of the activity. Specialized formats of communication are common, such as experts asking questions to which they already know the answers, as a way of quizzing learners' knowledge or encouraging compliance with the lesson. Explanations generally occur out of the context of productive activity, with much of the communicative work relying on

talk separate from action and ongoing shared referents. A major feature of assembly-line instruction is testing the receipt of information delivered by experts, both as a way of motivating learners' compliance with task demands and as a way of sorting and certifying learners for further instruction and eventual roles.

The inspiration for articulating the tradition of learning through intent participation came from ethnographic research in Indigenous communities of North and Central America. Assembly-line instruction provides a prototype for organization of children's learning opportunities in many — but not all — school settings (for discussion of schooling organized in ways that resemble intent participation, see Rogoff, Goodman Turkanis, & Bartlett, 2001). Interaction based on the assembly-line instruction tradition can also often be seen in the homes of toddlers and children in families where extensive schooling has been prevalent for several generations

These two traditions for organizing learning (along with others) clearly involve differing ways of managing attention, along with other traditionally cognitive as well as communicative processes. To investigate these processes, the work of our research team has focused on the patterns of attention and communication frequent in communities of Indigenous North and Central American heritage and European heritage highly schooled communities.

In brief outlines, what we are finding is that the attentional and learning processes of children from families with little schooling in Indigenous-heritage communities are quite distinct from those of children from European-heritage families with extensive schooling. Children of Indigenous heritage whose mothers have little schooling were more likely to observe a paper-folding demonstration without pressing for further information (Mejia Arauz, Rogoff, & Paradise, in press; see also Gaskins, 1999; Paradise, 1994). They were more likely to attend keenly to several ongoing events, such as skillfully operating a novel object or folding an Origami figure, at the same time as they studiously attended to other events such as the activities of adults or peers (Chavajay & Rogoff, 1999; Correa-Chávez, Rogoff, & Mejia Arauz, in press; Rogoff, Mistry, Göncü, & Mosier, 1993). In contrast, European-American children whose mothers had

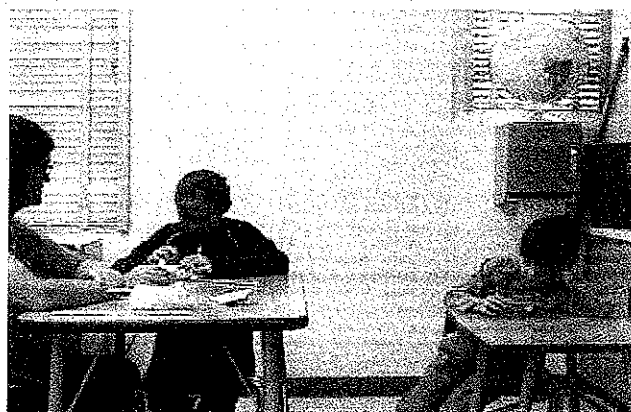
extensive school experience were likely to pay attention to ongoing events one-at-a-time, either by alternating their attention rapidly or in some cases appearing unaware of ongoing events in which they were otherwise interested.

The attentional processes involved in keen observation and simultaneous attention may well be related to the findings that Indigenous-heritage children whose mothers had little schooling more frequently collaborated with others in multi-directional engagement in groups (Chavajay & Rogoff, 2002; Mejia-Arauz, Rogoff, Najafi, & Dexter, submitted). In contrast, European-heritage children whose mothers had extensive schooling more often engaged with just one other person or alone, even in the presence of a group, and their mothers often directed their involvement by dividing groups of four into two-person teams or singletons. The connections between keen observation, broad attention, and collaboration in groups may not be accidental; indeed, we think they together are part of the learning tradition of intent participation.

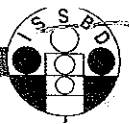
Specialized formats of communication, connected with lessons, were relatively frequent in European-heritage families with extensive schooling, but rare in Indigenous-heritage families with little schooling. For example, while helping their toddlers operate novel objects, middle-class US caregivers often engaged their toddlers in language lessons and school-like quizzes about properties of objects, but these were uncommon in a Guatemalan Maya community (Rogoff, Mistry, Göncü & Mosier, 1993; see also Dixon, Levine, Richman, & Brazelton, 1984). A focus on the communicative practices common to each cultural community helps show how the forms of attention management and learning may be related to the communicative traditions in which the children and their families routinely engage.

Our purpose in this article has been to draw attention to the rich research possibilities available if the investigation of cognitive development begins to focus more explicitly on processes of communication. Cultural research has suggested that research should go beyond a limited attention to social interaction as a treatment that might result in cognitive outcomes. Based on the cultural research of recent decades, we argue that communication is not just a means to achieve cognitive development. Communication is a process that

“research team has focused on the patterns of attention and communication”



Children from Indigenous heritage backgrounds may be more likely to attend to events that are not directed to them, as with this Guatemalan Mayan boy who attentively looks on as his older sister is shown how to build a toy mouse, although he has been told that he will build a different toy in a few minutes and given a distracter toy. In contrast, this European-American girl does not observe her sister's instruction in how to build the toy mouse and appears bored as she waits for her turn to make a different toy (Correa-Chávez & Rogoff, in preparation). Please note these images have been supplied from video.



warrants close study in the investigation of cognitive development.

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