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TRANSITIONS IN CHILDREN'S ROLES AND CAPABILITIES *

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Stage theories and empirical studies have concentrated on a few periods of childhood (*e.g.*, age 5 to 7 years) as important times of transition. On the basis of ethnographic suggestions that the age period 8 to 10 years also involves interesting changes, the authors carried out a search of published empirical studies for findings of transitions in capabilities at 8 to 10 years. An annotated bibliography is provided summarizing the studies found in a 5-year period in three journals. The authors discuss possibilities for characterizing the transition at age 8 to 10, as well as how such a transition meshes with the concept of stage.

In an attempt to identify age-related changes in cultural assumption of children's responsibility or teachability, or the assignment of more mature social, sexual, or cultural roles, Rogoff *et al.* (1975) examined anthropological reports of child-rearing practices. Ages were recorded at which any change began to occur (*e.g.*, the age at which an ethnographer reported that responsibility began to be delegated to a child). Results suggested that the changes found at age 5 to 7 years in Western cultures (White 1965) also appeared in non-Western cultures: 16 of the 27 variables examined showed such a shift. The topics showing an onset of emphasis in the age range 5 to 7 years were: responsibility for child

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and animal care and household chores; assumption that the child is teachable, has common sense and a fixed character, and is responsible for transgressions; inclusion in peer group (especially same-sex) interaction and participation in rule games; sex differentiation in chores and social relationships; manifestation of modesty; and change in mode of punishment.

Shortly after completion of the work for the 1975 paper, two of the authors of that paper (Sellers and Rogoff) carried out fieldwork with Ladino and Indian children in different areas of Guatemala. Independently, they felt that the conclusions of the earlier paper needed qualification. Adults expressed the view that the age range 5 to 7 was important for marking the period in which children *began* to be given responsibility. However, they did not emphasize the 5 to 7 period alone; they seemed to pay as much or more attention to the age range 8 to 10 years. At this time, the adults reported, the children began to be really useful and to be competent enough to take on responsibility without constant supervision (Rogoff 1977, in press). Sellers (1975) reviewed 19 ethnographies of childhood in rural communities of Mexico and Guatemala and concluded that a significant change in childrearing practices occurred

> around the age of ten when they assume responsibilities. Although in earlier years children have been exposed to and participated in household work, at ten there is an abrupt change in the child's role. Competence, independence, and responsibility are required in most of the chores delegated to children of this age (1975 : 31).

It should be noted that there is great variability in children's responsibilities around the world, influenced largely by the economic activities of the adults. The activities of children are determined not only by their own capabilities but also by situational determinants, such as complexity of task requirements, existence of conflicting activities, and adult values and attitudes. The pattern described above may be true of children in communities in which there is little emphasis on formal schooling and relatively great need of children's help in household activities.

Rogoff *et al.*'s (1975) data were coded in such a way as to overlook the appearance of this second "age shift". That is, only information regarding *onset* of responsibilities or changing roles was coded, and information regarding the attainment of competence in those recently received tasks or roles was ignored. Though this is stated in the 1975

paper, the emphasis on the age range 5 to 7 may be misconstrued as indicating that relatively little change is occurring in the 8 to 10 year age range. The intention of the present paper is, therefore, to explore the age period 8 to 10, in an effort to substantiate the ethnographic impressions by documenting psychological changes occurring at age 8 to 10.

Our approach was to conduct a limited search of three journals in which psychological research on childhood is reported. This should be regarded as a preliminary step in exploring the age period 8 to 10 years, to substantiate our impressions that in fact there are interesting changes occurring during this period. We do not consider this paper a test of a hypothesis (that the age period 8 to 10 years is crucial) but rather an illustrated (annotated) argument that this period of childhood warrants investigation.

Before considering the psychological studies which demonstrate transitions at age 8 to 10 years, we discuss our reasons for choosing the psychological literature for our illustrations rather than returning to the ethnographic reports which formed the basis of the Rogoff *et al.* (1975) study.

Ethnographic approaches

We chose not to return to the Human Relations Area Files ethnographic reports used by Rogoff *et al.* (1975) to recode the data for attainment of competence as well as onset of responsibility, because these data do not allow great confidence regarding accuracy of ages reported. Many reports do not include much information on childhood, and those that do often do not report ages for developmental transitions. Reported ages are frequently estimates by the Western ethnographer, since the native population often did not keep track of age. These problems are particularly severe when a fairly subtle phenomenon such as attainment of adult levels of competence in various tasks is being investigated. For these reasons, we decided not to rely on ethnographic data for primary examination of the 8 to 10 year age period.

However, one set of systematic observations is reported here to illustrate our impressions of the change at 8 to 10 in children's everyday roles and responsibilities. Highland Mayan children aged 1 to 14 years were systematically observed in their ordinary afternoon (nonschool)

activities. The sample of 100 children was observed an average of 4 times each, in unobtrusive spot observations randomly distributed over a 2-month period (Rogoff 1978). The observations revealed that girls began doing simple domestic chores (*e.g.*, sweeping, washing, going for water, caring for siblings near home) at about age 6, but not until age 10 did they begin the complex task of weaving cloth. Boys began to do agricultural work (usually in the company of an adult or adolescent) at age 7, but began gathering firewood (usually carrying a heavy load with no adult supervision) at age 9. Girls and boys began playing formal games at age 5 to 6 but ceased at age 9 to 10. Imitative play and play with toys began at age 3 to 4 and dropped off after age 8 to 10. The frequency of having a child companion increased to age 5, then held steady to about age 10, when it began decreasing again. Other ethnographic reports support these observations (Bovet 1974; Childs and Greenfield in press; Kohen-Raz 1971). The observations suggest that by age 10, boys and girls have left behind a period of play combined with supervised apprenticeship in simple chores, and have assumed independent responsibility for some important tasks.

Survey of psychological literature

In contrast to the age period 8 to 10 years, the 5 to 7 period has been extensively documented in the psychological literature as a period in which marked shifts in children's behavior occur. White (1965, 1970) has described many physiological and psychological changes in the behavior of children at this age and has postulated that the changes are due to the ability to inhibit juvenile forms of logic in favor of adult logic. While Piaget gives shifting age norms for the advent of concrete operations, 7 years is a commonly mentioned age (Piaget 1967). Later years are characterized as a period of consolidation. Freud's description of development has probably also contributed to the impression that age 8 to 10 is a relatively uninteresting period. Freud (1949) includes these ages in the latency period, a time of quiescence following resolution of Oedipal conflicts and preceding adolescence.

We do not doubt that major changes in psychological functioning occur in the age range 5 to 7, as well as with puberty. However, we consider it necessary to fill out the picture of development by studying changes occurring during the intervening period of "middle childhood".

The boundaries of this period must be recognized as somewhat arbitrary (*i.e.*, 8 to 10 rather than 9 to 11 years) but they were chosen as complementing White's focus on the period 5 to 7 and as clearly excluding changes associated with the onset of puberty.

To provide substance for our suggestion that age 8 to 10 years warrants greater attention, we sampled investigations in the psychological literature including children of this age to see if transitions appeared for this period as they have for age 5 to 7. In the present paper, we report a preliminary search including papers appearing during a period of five years (1971 to 1975) in three journals (*Child Development, Developmental Psychology, Journal of Experimental Child Psychology*). After defining the criteria which we used to determine age shifts, we will provide an annotated bibliography of the studies we found, along with some suggestions as to the possible nature of the changes observed at 8 to 10.

Our definition of an age shift included several classes of findings. Studies using a single dependent measure or examining one task or ability were included in our survey if at least three age groups spaced about 2 to 3 years apart had been examined, at least one of which was in the 8 to 10 range (*e.g.*, 5, 8 and 11 years; 6, 8 and 10 years). Patterns of findings defined as suggesting an 8 to 10 transition included the following: (1) attainment (*i.e.*, some ability was being acquired up to age 8, 9, or 10, at which point performance leveled off), (2) emergence (*i.e.*, some ability began to be acquired at age 8, 9, or 10), (3) peak or trough (*i.e.*, some phenomenon appeared or peaked at ages 8, 9, or 10, but was absent or less pronounced at younger and older ages). An example of this latter pattern would be hypnotic susceptibility, which has been found to peak at age 10 (Lutz ms.). Studies involving two tasks or conditions were included if they sampled at least two age groups (with one group in the 8 to 10 range), and found an interaction effect which suggested either attainment or emergence of some ability at age 8 to 10. An example of such a study is Barnett and Bryan (1974), in which the altruistic behavior of fifth-grade but not second-grade boys was affected by whether or not they had just played a competitive game, and if they had, whether they had won, tied, or lost.

These criteria excluded studies showing steady developmental change at ages 8 to 10 continuous with change occurring before and after, as well as studies which did not include enough age groups to allow comparison of change at age 8 to 10 with change appearing earlier or later.

Table 1
Studies finding transitions in the age range 8 to 10 years

Cite	Task	Result [a,b,c]
Visual spatial analytic ability		
Lipton and Overton (1971)	Mentally reorganize and identify words presented in scrambled order	Grade 2 < 4 = 6 = 8
Smothergill (1973)	Visual localization of spatial targets after delay	Age 6–7 < 9–10 = adult
Lasky (1974)	Abstraction of prototypical visual pattern	Age 6.4 < 8.6 = 26.5
Use of organization and cues in recall		
Sheingold (1973)	Short-term memory for visual information	
	(1) under simultaneous and 0 second delay	Age 5.9 < 8.6 = 11.9 = 21.9
	(2) under 1000 msec delay	Age 5.9 = 8.6 < 11.9 = 21.9
Frank and Rabinovitch (1974)	Rehearsal strategies in digit recall	Age 8.8 < 10.6 = 12.7
Harris and Burke (1972)	Serial recall of temporally grouped digits	Age 7.5 < 9.6 = 11.6
Ornstein *et al.* (1975)	Size of rehearsal set in free recall of blocked categorizable items	Age 8.3 < 10.6 = 13.9
Kobasigawa and Middleton (1972)	(1) Free recall and organization, with categories pointed out by experimenter	Grade K = 3 < 5
	(2) Free recall with items grouped by category	Grade K < 3 = 5
Moynahan (1973)	Prediction of greater ease of recall of categorizable items than non-categorizable items	Age 7.2 < 9.0 = 10.9
Kobasigawa (1974)	(1) Facilitation of recall when retrieval cues merely made available	Age 6.5 = 8.2 < 11.4
	(2) Facilitation of recall when given directive retrieval cues	Age 6.5 = 8.2 = 11.4 (performance equalized when directive cue provided)
McCarver (1972)	Facilitation of recall when given organization cues	Age 5.8 = 7.0 < 10.1 = adult
Eysenck and Baron (1974)	(1) Recall without cues	Age 5 < 8
	(2) Recall when cues provided	Age 5 = 8
Mowbray and Luria (1973)	(1) Recognition of unlabeled familiar pictures	Age 6.2 < 9.1 = 12.1

Table 1 (continued)

Cite	Task	Result [a,b,c]
	(2) Improvement of recognition when familiar pictures labeled	Age 6.2 > 9.1 = 12.1
	(3) Improvement of recognition when nonsense pictures labeled	Age 6.2 = 9.1 < 12.1
Horvitz and Levin (1972)	Improvement of paired associate learning when given imagery instructions	Grade 3 – no improvement Grade 6 – improvement
Hagen and Kail (1973)	Effect of distraction on serial position recall	Age 7.2 – no effect Age 11.3 – lowered performance
Rogoff *et al.* (1974)	Adjustment of study time to delay before recognition test	Age 4 = 6 < 8
Douglass and Bourne (1971)	Rote vs. stimulus class solutions in dimensional shift problems	Age 6.4–7.4 < 8.4–9.4 = 10.4–11.4 > 12.4–15.4 > 18–30
Understanding of causality		
Siegler and Liebert (1974)	(1) Effect of regularity of events on causal inferences	Age 5.8 < 8.8
	(2) Effect of contiguity of events on causal inferences	Age 5.8 = 8.8
Siegler (1975)	Replication of Siegler and Liebert (1974) findings	
Schultz and Mendelson (1975)	Difficulty in identifying inhibitory as compared to facilitory causes of physical events	Age 3.6 = 7.2 > 10.6
Schultz *et al.* (1975)	Attribution of multiple causes to events	
	(1) Multiple sufficient causes	Age 5 < 9 = 13
	(2) 2 necessary causes or 1 sufficient and 1 inhibitory cause	Age 5 = 9 < 13
Conditional reasoning		
Taplin *et al.* (1974)	Conditional reasoning: ability to deny the consequent with a negative conclusion	Age 9.0 < 11.1 = 13.7 = 15.0 = 17.0
Kodroff and Roberge (1975)	Performance on conditional reasoning problems depending on mode of presentation	
	(1) Verbal	Age 7.2 < 7.9 < 9.1
	(2) Concrete	Age 7.2 < 7.9 = 9.1

Table 1 (continued)

Cite	Task	Result [a,b,c]
Use of organization in hypothesis-testing		
Ault (1973)	Usefulness of ordering stimulus array for production of constraint-seeking questions in 20 Questions game	Age 6.6 = 8.7 > 10.8
Lamal (1971)	Percentage of constraint questions asked in 20 Questions game	Grade 3 < 5 = 7
Denney (1972)	Effectiveness of modeled constraint-seeking based on functional attributes of stimuli for boys' interrogative strategies in 20 Questions game	Age 6 = 8 < 10
Denney (1975)	Necessity of explicit model for eliciting constraint-seeking interrogative strategies in 20 Questions game	Age 6 > 8 = 10
Judgment of intent and motives		
Hebble (1971)	Moral judgments based on intent for stories varying in intentionality and consequences	Age 7 = 8 = 9 < 10 = 11 = 12
Gutkin (1972)	Moral judgments based on intent for stories varying in intentionality and consequences	Grade 1 = 3 < 5
Whiteman *et al.* (1974)	Judgments of intent for stories differing in an act's instrumentality vs. consequences (conformity to Heider's balance model)	Grade 1 < 4 = 6
LaVoie (1974)	Difference in effectiveness of intention and consequence rationales for resistance to deviation	Age 7.2 – rationales equally effective Age 9.1 – transition Age 11.2 – more responsive to intention rationale than consequence rationale
Collins *et al.* (1974)	(1) Recall of motives for TV aggression, rather than just aggressive act or act plus consequences	Grade *K* = 2 < 5 = 8
	(2) Associate actor's immediate and subordinate goals	Grade *K* < 2 < 5 = 8
	(3) Use of motives rather than consequences to evaluate aggression	Grade *K* = 2 < 5 = 8
Collins (1973)	Increase in paper-and-pencil measure of aggression potential following exposure to aggressive TV when intent	Grade 3 showed more aggression with temporal separation

Table 1 (continued)

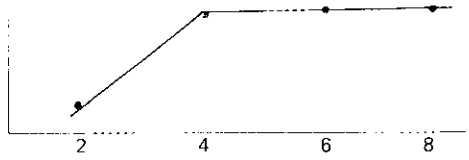
Cite	Task	Result [a,b,c]
	and consequence segments appeared simultaneously with the aggressive act versus when intent and consequence segments separated from aggressive acts by 4-minute commercial	Grades 6 and 10 showed no difference between conditions
Shantz and Voydanoff (1973)	(1) Differentiation of (hypothetical) aggressive response to provocation according to intent (intentional vs. accidental)	Age 6.8 < 8.9 = 12.1
	(2) Differentiation of (hypothetical) aggressive response to provocation according to mode (verbal vs. physical)	Age 6.8 = 8.9 < 12.1
Differentiation of social roles		
Shantz and Pentz (1972)	Differential retaliation against child (sibling or peer) vs. father after verbal provocation	Age 6.7 < 10.8 = 13.8
Barnett and Bryan (1974)	Boys' donating to charity affected by previous participation in a competitive or noncompetitive game; within the competitive condition, effect of outcome (win, lose, tie)	Not present in Grade 2, present in Grade 5
Cohen *et al.* (1973)	Differential effect of age of group members on conformity judgments	Age 9 < 11 = 13
Social and cognitive egocentrism		
Hoy (1974)	(1) Nonegocentric responding on a modified Piagetian landscape task	Age 6 = 8 < 10
	(2) Recognition of correct view harder than reproduction	Age 6 = 8 < 10
Nigl and Fishbein (1974)	Perspective-taking with photographs of a stimulus array	
	(1) Experimenter beside child	Age 4.5 - 5.8 = 6.5–7.8 < 8.5–9.8 = 10.5–11.8
	(2) Experimenter opposite child or at right angles	Age 4.5–5.8 = 6.5–7.8 = 8.5–9.8 < 10.5–11.8
Kurdek and Rodgon (1975)	(1) Appropriate affective perspective-taking	Grade $K < 1 = 2 < 3 = 4 = 5 = 6$
	(2) Perceptual perspective-taking	Grades 3, 4 < 5, 6
	(3) Cognitive perspective-taking	Grade $K = 1 = 2 < 3 = 4 < 5 = 6$

Table 1 (continued)

Cite	Task	Result [a,b,c]
Rubin (1973)	Nonegocentrism on (1) cognitive (private speech) (2) spatial (3) communicative tasks	 Grade $K = 2 < 4 = 6$ Grade $K = 2 < 4 = 6$ Grade $K < 2 < 4 = 6$
Scarlett *et al.* (1971)	Use of nonegocentric and abstract concepts in boys' descriptions of peers	Grade $1 = 3 < 5$
Rubin (1972)	Inverse relation between communicative egocentrism and popularity among peers	Grade $K = 2 > 4 = 6$
Miscellaneous		
Lehman (1972)	Effectiveness of haptic search strategies and extent of improvement with trials	Grade $K = 2 < 4 = 6$
Childers and Wimmer (1971)	Understanding of universality of death	Age $4 < 5 < 6 < 7 < 8 < 9 = 10$
Henshel (1971)	Negative correlation between girls' reported values (honesty scores) and actual cheating in classroom one week later	Grade $4 < 5 = 6 = 7$
Nisan (1974)	Delay of gratification when not shown prizes	Age $5.9 < 7.2 < 8.2 = 9.1$
Gruen *et al.* (1974)	External responding on locus of control measure	Grade $2 > 4 = 6$

[a] To facilitate reading this table, the following example shows how the results can be translated to graphic form.
Result: Grade $2 < 4 = 6 = 8$

Graphic translation:



[b] Results are provided in terms of age if the study gave age information, and in terms of grade if no ages were given.

[c] Not all of the differences presented in the results have been tested for significance by the authors of the studies.

Using these criteria we found the studies cited in table 1 suggesting a transition at age 8 to 10.

Most of the authors of these studies did not comment on the transition at age 8 to 10 appearing in their results. A few stated that their data supported White's suggestion of an important change at age 5 to 7, or claimed confusion as to whether their sample was going through an early onset of formal operations or a late onset of concrete operations. The most notable exception was Nigl and Fishbein (1974: 858) who found a developmental shift at age 9 to 11 in a task emphasizing conceptual understanding of spatial relationships. They cited several other studies showing shifts at this age period, and postulated "economic utilization of limited cognitive abilities as being a key to the understanding of the 9–11 shift."

As can be seen in table 1, the topics which provided the most studies showing transitions in the age range 8–10 years were: visual/spatial analytic ability, use of organization and cues in recall, understanding of causality, conditional reasoning, use of organization in hypothesis-testing, judgment of intent and motives, differentiation of social roles, and decline in social and cognitive egocentrism. A thorough analysis of any one of these areas would far exceed the scope of this paper, since it would require tracing changes occurring previous to and subsequent to the 8 to 10 period in great detail. However, we can provide brief discussions of several of the topics to illustrate how we see the studies fitting together.

One topic identified in table 1 is understanding of causality. In his early work, Piaget characterized the child younger than 7 or 8 years as "pre-causal" and prey to a variety of logical erros. Siegler and Liebert (1974) found that 9-year-olds, but not 6-year-olds, used information about the regularity with which an event was followed by another event as a basis for causal inference. Siegler (1975: 522) replicated this finding and showed that the 6-year-olds' performance seemed to be due to inability to "overcome the distracting influence of incidental contiguous pairings in order to search for and find higher order regularities" [1]. Shultz and Mendelson (1975) used a situation in which children were asked to identify inhibitory as well as facilitatory causes of physi-

[1] This conclusion about selective attention in a hypothesis-testing situation is similar to that reached by one of the studies (Lehman 1972) in our miscellaneous category, using a haptic matching task.

cal events, that is, reasons why physical events might *not* occur as well as conditions favoring their occurrence. Groups of 3–4-year-olds and 6–7-year-olds had greater difficulty with the inhibitory than the facilitatory causes. But 9–11-year-olds found identification of inhibitory and facilitatory effects equally easy. The two tasks are logically equivalent, but the search for inhibitory causes involves focusing on the absence rather than the presence of an effect. This may require greater concentration and attention as well as perhaps a firmer grasp of the underlying logical basis for causal inferences.

A second example of a topic from table 1 is judgment of intent. Piaget (1932) suggested that before the age of 9 or 10, children predominantly use a standard of objective responsibility, judging actions by their consequences rather than by the intentions behind them. Several studies in table 1 extend and confirm this observation (Collins *et al.* 1974; Gutkin 1972; Hebble 1971; LaVoie 1974; Shantz and Voydanoff 1973). More recent treatment of this topic has emphasized that younger children can use information about intent in making judgments about whether acts are intentional or accidental, and in making judgments about ill-intentioned acts (Karniol 1978). Younger children's difficulties in judging the classic Piagetian stories may also be connected to memory factors and to the need to combine information about two dimensions to arrive at a judgment (Lyons-Ruth 1978). While these recent discussions have stressed the competence of young children to use information about intent under suitable conditions, none assert that their performance is the same as that of older children and adults. They differ in memory and reasoning abilities in ways which affect their social judgment, and they also seem to use different evaluative criteria. Several studies in table 1 support the difficulty that children younger than 8 to 10 have in understanding intent and motives and using them in social reasoning (Collins 1973; Collins *et al.* 1974; Whiteman *et al.* 1974). Thus, the suggestion of a shift at age 8 to 10 in social judgment abilities can still be made, although it is clear that we are far from understanding its nature.

A possible confound: schooling

The vast majority of the psychological studies sampled were carried out with Western schooled children. This raises the possibility that the ob-

served age shift in performance may be due to the effects of schooling (or an interaction of schooling with development) and may not be generalizable to nonschooled populations. The ethnographic observations reported earlier in this paper reduce the plausibility of this argument. Cross-cultural studies using schooled and nonschooled populations of different ages also provide a direct test of the importance of schooling for the age shifts found in the literature survey.

Scribner (1974) gave memory tests to West African populations varying in both age and schooling: 6- to 8-year-olds who had never attended school, 6- to 8-year-olds in the first grade, 10- to 14-year-olds who had never attended school, and 10- to 14-year-olds in grades 4–6. In the free recall task, only the older schooled children used taxonomic class structure to organize categorizable material. However, the amount recalled showed independent effects of both age and education, with each older group recalling more than the complementary younger group, and each schooled group recalling more than the complementary nonschooled group.

Kagan *et al.* (1979) gave a battery of memory tests to Guatemalan and U.S. populations ranging from age 6 to 13 years. Even among children who had minimal or no schooling, the greatest improvement in memory performance occurred at age 9–10. The less-schooled children showed the improvement in simpler tasks than the more-schooled (also more Westernized) children, but shifts did appear at age 9–10 with all populations.

The studies controlling for degree of schooling suggest that both age and schooling (or Westernization) affect the nature of performance on memory tests. Taken together with the ethnographic literature discussed at the beginning of this paper, based on naturally occurring role or activity changes rather than on performance on Western tests, the studies suggest that the age changes occurring at 8 to 10 years cannot be reduced to solely educational effects.

Possible themes underlying a transition at age 8–10

How can we characterize the nature of the transition occurring at ages 8 to 10? Our reading of the literature leads us to believe that there may be several themes rather than just one. One important theme seems to involve the ability to perform more complex tasks calling on logical

structures of thought established earlier. Thus, for example, children may begin at age 8 to 10 to be able to change their behavior in response to contextual demands, that is, to be able to hold in mind one set of information (context) while performing with other information.

Some examples of such contextual flexibility can be cited. Gleason (1973) finds that while 6-year-olds are aware of the need to speak differently to babies, younger children, and adults, their code-switching is often inappropriate and inconsistent. By contrast, 8-year-olds code-switch consistently and appropriately in response to context. A second example is Paris and Lindauer's (1977: 47) finding that

> Although 9- and 10-year-old children can spontaneously map relations and draw inferences from the context, younger children must be directed or taught to use the context . . . Context cues permit the individual to amalgamate different sources of information about the same event.

The changes observed at age 8–10 may be conceptualized in terms of an ability to integrate and respond to demands put to children by adults – whether in school, psychological experiments, or chores. The 5- to 7-year-old is able to follow instructions for a task, and no longer needs the intense attentional management necessary with younger children. The 8- to 10-year-old is able, in addition, to read between the lines of the instructions, to integrate the stated task with the adult's hidden agenda, and to structure and coordinate the task himself.

Another theme may involve right hemisphere maturation or specialization at about age 10, which would lead to increased abilities to perform visuospatial tasks efficiently and well. Carey and Diamond (1977) and Leehey (1977) have obtained evidence of a shift at about age 10 on face perception tasks. (Mann *et al.* (1979) have found a similar developmental course in a voice recognition task.) After age 10, the tasks are performed in a configural rather than a featural (Diamond and Carey 1977) mode. Carey and Diamond (1977) suggest tentatively that the right hemisphere becomes committed to some of its visuospatial specializations by age 10, and that hemispheric differentiation of right hemisphere functions may not occur until age 10.

While further consideration of the developmental literature might provide other clues to a characterization of the package of changes occurring at age 8 to 10, the enterprise is difficult because researchers and theorists have not been directly concerned with the problems we are considering. The versions of stage theories popular in developmental

psychology have focused attention on children younger and older and on tasks which show developmental transitions at younger and older ages. At this point, we should clarify what findings of important changes in the 8 to 10 period imply about developmental theory.

The relation of changes at 8–10 to previous and subsequent changes

Some readers may argue that if there are important changes occurring at age 8 to 10, as well as at age 5 to 7, this suggests that development is "continuous" and "quantitative" in nature, rather than stage-like. That is, one might choose any three-year age period and find important reorganizations and discontinuities from preceding ages. We agree with this argument but believe that it is consistent with the concept of stages of development, that the contrast between "continuity" and "discontinuity" is more apparent than real.

Ther are several ways, not mutually exclusive, to think about the 8 to 10 period. One way, based on Inhelder (1962) and Flavell (1971), is as a period of *consolidation* and growing competence. Most U.S. researchers have been interested in studying the emergence or formation of abilities, the *first* rudimentary acquisition of a competence, rather than in the growth of that competence to full evocability, spontaneity, and generalizability. However, the period during which full competence is attained may involve more than simple quantitative change. It seems also to require the integration of previously distinct abilities, and the application of cognitive structures to new, as well as to familiar or well-structured, problem-solving situations. Changes of this type are clearly important, and are of a qualitative as well as quantitative nature.

One implication of such a view is that abilities which originally emerge in the context of one sphere of activity may only gradually come to be applied to another (perhaps more complex) sphere of activity. For example, in the case of social cognition, it can be argued that judgments of relative attractiveness or popularity require concrete operational abilities to seriate and classify. These are originally developed to deal with physical dimensions, such as height or color, but later come to be applied to social dimensions, such as attractiveness or popularity. Some recent evidence for such relationships has been provided

by Cornelius (1978). Assumption of independent responsibility for roles and tasks may require such social-cognitive abilities, as well as some degree of maturity of the cognitive abilities originally emerging in the 5–7 year age range.

A second way of thinking about the 8 to 10 period is as a time of *preparation* for later changes, such as the advent of formal operations and the physical and psychological changes produced by puberty. Fishbein (1976) calls this type of change "preadaptation", but does not specify precisely the nature of such hypothetical preparatory changes.

A third approach to the 8 to 10 period focuses on the possibility that something *unique* occurs during this age range which is not related to previous or subsequent changes. Existing theories of development have guided our attention to particular age ranges and particular lines or strands of development, and may have distracted us from pursuing other developmental threads. Thus, social cognition may be an ability which develops in the 8 to 10 age range for reasons unrelated, or only indirectly related, to prerequisite relationships with concrete operational skills. Here we should note that some developmental theories do include a characterization of middle childhood. Erikson (1950) calls it the stage of industry *vs.* inferiority (a theme not unconnected to our cross-cultural observations concerning assumption of independent responsibility for important tasks). Sullivan (1953) discusses "preadolescence" as a time when deep friendships are possible for the first time and when groups of friends become structured "societies" rather than loose associations of playmates. Kohen-Raz (1971) argues that preadolescence (age 9 to 11 years) is a unique and important stage, and reviews an assortment of interesting studies dealing with this age period. Flavell and Wohlwill (1969: 81) have written:

> We wonder how much the current picture of uneven development owes to our current knowledge or, if you prefer, our current ignorance. It is largely based on Piaget's theory and research which properly and inevitably, have been highly selective with regard to methods used and phenomena studied. We should not be at all surprised to find some future theorist making an excellent case for the simply momentous cognitive changes that take place, say, during the three- to five-year-old span.

This paper has attempted to clarify the emphasis of the 1975 cross-cultural survey of age-related changes in roles and responsibilities of children (Rogoff *et al.* 1975), with an eye to differentiating the events of the period 8 to 10 years from those of age 5 to 7. We hope to have

provided enough substance through the annotated bibliography to suggest that the age range 8 to 10 years involves interesting events which warrant investigation. We offer a challenge to researchers interested in development to explore this overlooked age.

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Des théories sur le développement par stades et des études empiriques se sont surtout intéressées à quelques périodes de l'enfance (not. de 5 à 7 ans) en tant que périodes importantes de transition. Se basant sur des suggestions ethnographiques admettant que la période d'âge comprise entre 8 et 10 ans montre également des changements intéressants, les auteurs ont mené une recherche sur les publications concernant les données sur les capacités des enfants entre 8 et 10 ans. Une bibliographie annotée donne un résumé de l'ensemble des études publiées dans trois Journaux sur une période de 5 ans. Les auteurs discutent ensuite les possibilités de caractériser cette transition qui se produit entre 8 et 10 ans ainsi que la manière dont cette transition est liée au concept de stade.