

85-423/723 Cognitive Development
Spring, 2009
Discussion Questions for *Children's Thinking, 4th Edition*

Note: The debate question for each class session is in italics. (For example, the debate question for Chapter 1 is the first half of question 5.) The rest of the question may give you ideas for the debate question, but the question being debated is in italics.

Chapter 1: Introduction to Children's Thinking

1. What areas fall under the heading of "children's thinking"? Which of these strike you as core areas, and which as more peripheral?
2. What does it mean for a quality to be innate? What are some innate qualities of children? Why have philosophers for the past 2000 years been interested in what qualities of children are innate? What difference does it make?
3. What does it mean to say that a child is in a particular stage? Why do some theorists believe that development occurs in stages whereas others do not?
4. Why are psychologists interested in individual differences in children's thinking? Is the interest primarily for practical reasons, for theoretical ones, or both?
5. *Do infants have intelligence in the same way as older children?* What does it mean for an infant to be intelligent? What does it mean for an older child or adult to be intelligent?
6. Of what use is knowledge of brain development to people interested in children's thinking?
7. What level of Bronfenbrenner's model of context do you think has the greatest impact on children's development?

Chapter 2: Piaget's Theory I

1. Why has Piaget's theory endured so long?
2. How did Piaget's philosophical ideas shape his theory?
3. What does Piaget mean when he says a child is in a particular stage?
4. What evidence indicates that a child is in a particular stage?

5. What are Piaget's proposed change mechanisms of assimilation, accommodation, and equilibration? What are their strengths and weaknesses? *Are the strengths or the weaknesses of these mechanisms greater?*

Chapter 2: Piaget's Theory II

1. *Has the use of new methods provided more support or more evidence against the view that Piaget's theory is a valuable description of cognitive development?*

2. What are the implications of findings of early competence for Piaget's theory?

3. In what senses does children's thinking show qualitative changes and in what senses doesn't it?

4. The regularities in children's thinking at a given age are not as broad as Piaget claimed, but there is some regularity. How can the regularities best be described?

5. How well do Piaget's general characterizations, such as preoperational stage children being described as egocentric, fit children's thinking?

6. What type of theory is needed to improve on Piaget's theory?

Chapter 3: Information Processing Theories I

1. What similarities unite information processing theories? What dissimilarities divide them? *Are the similarities or differences among information processing theories greater?*

2. How does automatization contribute to age related improvements in the amount of material that children can remember? How can it be harmful?

3. How does encoding contribute to age related improvements in the amount of material that children can remember?

4. How are neo-Piagetian theories similar to Piaget's theory, and how do they differ?

5. How do Case's analyses reveal the value of developmental theories for improving educational practice?

6. What are the advantages of combining information processing and psychometric approaches to cognitive development?

Chapter 3: Information Processing Theories II

1. What are the advantages and disadvantages of production system approaches to cognitive development, relative to neo-Piagetian ones?

2. How do connectionist approaches to cognitive development differ from production system ones? How are the two similar? Do you think the similarities are greater or that the dissimilarities are?
3. What are the implications of cognitive variability for Piagetian and information processing approaches to children's thinking? How can the variability be explained within each approach?
4. Is the general analogy to evolution useful for thinking about cognitive development? Why does overlapping waves theory avoid more specific evolutionary analogies, such as explaining cognitive development in terms of the environments in which early humans evolved?
5. *Could the separate information processing theories discussed in this chapter be combined into one grand information processing theory? Would such a synthesis work out well?*

Chapter 4: Sociocultural Theories I

1. *Is Vygotsky's theory useful as an alternative to both Piagetian and information processing theory?*
2. What is the difference between the intermental and the intramental levels of learning? Why are both necessary within Vygotsky's theory? How does learning about abacuses illustrate both levels of learning?
3. How does Vygotsky's account of the development of pointing illustrate his view that development occurs through social interaction?
4. What is the zone of proximal development? Why did Vygotsky emphasize it within his theory, and what does this concept, and the lack of a corresponding concept in Piaget's theory, say about the differences between the two theories?
5. Why does Vygotsky view language as a "cultural tool?" Can you name 10 other cultural tools, other than objects that are usually referred to as tools?
6. Why don't apes sell cookies to each other?
7. What is intersubjectivity, how does it develop, and why is it such an important concept within sociocultural theories?
8. What is social scaffolding? Why is the metaphor of a scaffold a good one? How do adults vary in the scaffolding they provide, and how do these variations influence children's learning?

Chapter 4: Sociocultural Theories II

1. What variables influence the quality of children's collaborative interactions?
2. Given the frequency of collaborative learning in schools, is children's relatively poor scaffolding a serious problem? How might children be helped to scaffold more effectively?
3. What is guided participation? How is it similar and different across different cultures, and why do these similarities and differences occur?
4. How does language influence thought, particularly thinking about spatial relations? Can you think of other concepts where language influences the way in which people think?
5. What is dynamic assessment? What are its advantages and disadvantages? *Would dynamic assessment be a superior alternative to current standardized tests?*
6. Why do you think the fostering communities of learners and jigsaw methods are so effective? What demands do these approaches place on teachers?

Chapter 5: Perceptual Development I

1. What is the logic underlying looking time experiments with infants, such as that of the Spelke (1976) study of intermodal integration? What are the advantages and disadvantages of this approach?
2. Why have philosophers as well as psychologists been interested in infants' perceptual abilities for so long? And what light does the connection between perception and action shine on their questions?
3. Why study anencephalic infants? What do studies of their orienting reflexes tell us?
4. What is the logic underlying the moderate discrepancy hypothesis? *Is the moderate discrepancy hypothesis provide useful insights for improving children's learning?*
5. How has perceptual development research contributed to the diagnosis, and indirectly to the treatment, of visual problems of children?
6. What are the implications of the decline during infancy of ability to distinguish between monkey faces?
7. What does the suddenness of changes in infants' binocular depth perception tell us about the source of the changes?
8. Why is self-generated locomotion associated with avoidance of the visual cliff and with other gains in perceptual development?

Chapter 5: Perceptual Development II

1. What frequencies do infants hear best? To which frequencies do they pay the most attention? Why do you think that the two are different?
2. Do infants perceive sounds categorically? On what evidence is this conclusion based? (Describe the experiment and the logic underlying it.)
3. What does it tell us when infants draw boundaries between sounds at different points in the sound spectrum (VOT) than does the language that they hear around them?
4. Why do infants become less able with age to discriminate sounds from languages other than their own? Why does the change occur at the age that it does?
5. Why do mothers (and others) use motherese in talking with infants and young children? *Do children learn language better because of motherese?*
6. How do we know that culture influences music perception?
7. Why does auditory localization show a U-shaped pattern during infancy?
8. What does it tell us about how the mind works that intersensory integration is present from the first weeks of life?
9. Why are perceptual abilities so strong so early (what function does this serve)?

Chapter 6: Language Development I

1. How do babies choose which words to include (and not include) in their early utterances? What do their choices tell us about their purpose in talking?
2. *If people received as much exposure to other content areas as they do to language, would they show as rapid learning?*
3. Why does early-occurring brain damage have less adverse effects on language development than later-occurring damage?
4. What is the developmental sequence that leads to production of patterned speech? Is "manual babbling" part of the same phenomenon?
5. In what ways do languages accommodate the abilities of toddlers?
6. What do infants' first words tell us about their thinking?
7. Why do babies at first express themselves in holophrases?
8. Which are most common: Underextensions or overextensions? Describe the evidence on which your conclusion is reached. What are the implications of this finding for learning in general?

9. *What is the "language explosion," and what does it tell us about the developing child?*
10. What constraints are present on children's language learning, and how do they help or hinder language development?
11. How does understanding of the social world contribute to language learning?
12. How do children create novel words?

Chapter 6: Language Development II

1. What is grammar? What evidence is there that it is separate from meaning psychologically?
2. What evidence indicates early sensitivity to word order? Why is this sensitivity crucial for learning grammar?
3. What grammatical devices do children master first? Why are these mastered before others?
4. What evidence is there for critical periods in language learning? Why is the evidence more dramatic for people whose native language is Chinese or Japanese than for people whose native language is Spanish or French?
5. *Which of the explanations for grammatical development seems most plausible to you: Basic child grammar, semantic bootstrapping, construction grammar, or connectionist accounts?*
6. How does communication differ from meaning?
7. How does imitation expand children's communication abilities?
8. What does research on gestural development tell us about language development in general?

Chapter 7: Memory Development I

1. Why is it so dangerous to err in either direction in child eyewitness testimony cases?
2. Why is prior knowledge both helpful and harmful in children's eyewitness testimony?
3. *Which stage do you think is responsible for the greatest problems with young children's eyewitness testimony: encoding, storage, or retrieval?*
4. What basic memory abilities are present even in infancy, and what do they allow infants to do?

5. What is infantile amnesia, and why do you think it is universal?
6. What are memory strategies, and how do they contribute to development?
7. What general patterns of development are present across such memory strategies as rehearsal, organization, and selective attention?
8. What are utilization deficiencies? Why do children continue to use strategies that do them little good or no good?

Chapter 7: Memory Development II

1. Why are people interested in metacognition? What difference does it make what children know about their memories? *Is explicit or implicit metacognition more valuable for learning?* Why?
2. What good does it do people to have good self-monitoring skills? Why might younger children be less good at self-monitoring than older ones?
3. High IQ children with little knowledge of soccer learn less about new soccer games they are told about than do low IQ children with more knowledge of soccer. What are the implications of this finding?
4. How does knowledge shape what is remembered, as well as how much is remembered? How can information given after an event shape memory for the event?
5. Why do children form scripts? How do they help children remember events in their lives?
6. What do children's retelling of stories reveal about their understanding of the stories?
7. Describe the interrelations between increasing content knowledge and improvements in basic processes, strategies, and metacognition.
8. Through what mechanisms does content knowledge influence memory?

Chapter 8: Conceptual Development I

1. Why do you think researchers sometimes look at conceptual development in general, and other times at the development of particular concepts?
2. Defining features representations are the oldest approach to conceptual understanding. Why did they develop so early, why have they endured so long, and what is their current status?

3. What are the advantages and disadvantages of probabilistic representations relative to defining features representations? In what ways are the concepts of cue validities, basic-level categories, correlations among features of natural concepts, and prototypes useful for analyzing conceptual development?
4. Theory-based representations are the most recent approach to conceptual development. Why do you think this was the last approach to be proposed? What phenomena were people trying to capture by proposing it? Do infants really have implicit theories of complex phenomena like the activities of physical objects? What does it mean to say that infants have a theory anyway?
5. Carey has proposed that the number of theories develops from an initial two—theories of physics and psychology—to about a dozen. *Is this a useful way of viewing cognitive development?* What evidence would be most useful for evaluating it?

Chapter 8: Conceptual Development II

1. What is the difference between experiential time and logical time, and why does understanding of the one precede understanding of the other in development?
2. How do egocentric, landmark-based, and allocentric senses of space differ?
3. How does self-produced locomotion contribute to a more mature sense of space, both in performance at one time and over the course of development?
4. How do culture and everyday experience influence children's spatial strategies?
5. How does culture influence children's understanding of numbers?
6. What are the implications of whether children understand counting principles before or after they become able to count?
7. Why is it so much easier for children to form the animate/inanimate distinction than the living/nonliving distinction?
8. *Do you think children are predisposed to learn quickly about biology, as they are about language?*

Chapter 9: Social Cognition

1. Why is joint attention particularly important for social cognition?
2. What is social referencing, and why is it important for learning?
3. How does understanding of the self -- physical, perceptual, social, and psychological -- change in the first five years?
4. Why is understanding of intention so basic to people's theory of mind?

5. What is the appearance/reality distinction? How can it be tested, and why is it important within a theory of mind?
6. Describe the basic tasks used to study understanding of false belief and children's behavior on them. What are the main interpretations of the findings, and which do you think is most compelling?
7. *Do 4- to 8-year-olds truly believe in magic, or do they just view it as a form of play or pretending? On what evidence do you base your conclusion?*
8. Why do children develop imaginary companions if they understand they are not real?
9. What are the main explanations for the development of theory of mind, and which strikes you as most persuasive?
10. How do social, moral, and physical rules differ, and what evidence indicates that preschoolers understand the differences among them?
11. What are the main types of understanding that children attain about gender, and how do they learn about them?
12. What are the main milestones in understanding of race? What experiences lead to them? How can racial prejudice be reduced?

Chapter 10: Problem Solving I

1. Why do you think that problem solving is a bigger part of research on children's thinking than of that of adults?
2. *Is the "bricoleur" metaphor a useful characterization of children's problem solving?*
3. How do conflicts among goals influence problem solving, for example in the context of Klahr's research on the dog-cat-mouse problem?
4. What is encoding? Why is it difficult to encode balls falling from flatcars?
5. What are mental models? Why do so many children develop faulty mental models of the earth?
6. What are the main lessons of microgenetic studies? What are the advantages of this approach relative to typical cross sectional and longitudinal approaches?
7. What does it mean for children to have a rule for solving problems, and how can we tell whether a child is using a specific rule (for example on the balance scale)?

8. How did encoding contribute to developmental differences in learning about balance scales? On what other tasks might encoding influence the development of problem solving?
9. What leads to 5-year-olds so often relying on a single dimension to solve problems?

Chapter 10: Problem Solving II

1. Why do children so often fail to plan in situations where planning would help them?
2. When do children rely on the Humean variables (the variables identified by Hume) to draw causal inferences, and when do they rely on understanding of mechanisms?
3. What is an analogy, and why is the ability to draw analogies important within cognitive development?
4. Why is the ability to draw causal inferences crucial for the ability to draw analogies?
5. What led DeLoache to conclude that 2 1/2-year-olds' difficulty in using scale models was a conflict between viewing the scale models as interesting objects in their own right and viewing them as symbols?
6. Children sometimes abandon strategies that are producing correct responses. What are the implications of this phenomenon for cognitive development?
7. *Does it make sense to view children as little scientists, or is the metaphor misleading?*
8. What evidence has led to the conclusion that young children do not understand the difference between inductive and deductive reasoning?

Chapter 11: Development of Academic Skills I

1. What are the implications of children who start school relatively early outperforming peers who start relatively late on math problems but not on number conservation? What are the implications of children who attend first grade learning the same amount regardless of which side of the cutoff they were? Would this information influence your decision of when to start your child in school if their birthday was near the cutoff?
2. Why do 4- to 8-year-olds use such a wide variety of strategies on arithmetic problems?

3. *Are teachers making a mistake when they tell children not to use their fingers to solve arithmetic problems?*
4. How does the analysis of individual differences that comes out of the strategy choice model differ from that which would emerge from standardized tests?
5. How do children with mathematics disabilities differ from other children? Which problem do you think is most central to their difficulty in learning math?
6. Why does it take children so long to understand problems such as $a+b-b=$ __? and $a+b+c=$ __+c?
7. What process leads children to generate the types of bugs that are described in long subtraction, fractions, and algebra?
8. What is representational fluency, and how does it help children learn?

Chapter 11: Development of Academic Skills II

1. What are the basic stages of reading development, and when do they occur?
2. Why is phonemic awareness now thought to be more crucial to learning to read than knowing the names of the letters?
3. Why is it important for children to possess both phonological decoding and retrieval skills?
4. In what ways are choices among strategies for decoding words similar to, and different from, strategy choices in the context of arithmetic?
5. What is the difference between phonological dyslexia and surface dyslexia? Which can be assessed through presentation of pronounceable non-words and which through presentation of exception words? Why would the strategy choice model predict that the two skills should be correlated (as indeed they are)?
6. Why are oral comprehension and reading comprehension correlated positively, but not perfectly?
7. Why does early automaticity of reading predict later reading comprehension?
8. Why is background knowledge a critical determinant of reading comprehension?
9. What do you think is the key factor in producing the effectiveness of reciprocal instruction?
10. Given the several reasons for why writing well is difficult, how would you go about helping children to write better?
11. *Do you think word processing will improve children's writing in the future?*

Chapter 12: Conclusions and Challenges

1. Does it surprise you that discoveries fairly often follow successes using existing approaches? Why do you think this happens? Can you think of any cases where it happened to you?
2. How is the experience-expectant versus experience-dependent distinction an improvement over the traditional maturation versus learning distinction?
3. What are the implications of infants and young children being so cognitively competent in some ways, but so cognitively incompetent in others for theories of cognitive development?
4. Why is causal knowledge so crucial in so many areas of cognitive development?
5. Why do you think we see a mix of anatomical specificity and plasticity in the brain?
6. What are the advantages and disadvantages in thinking about multiple intelligences rather than intelligence as a single general quality? *Is Gardner's seven intelligences approach an improvement or a regression relative to previous approaches to assessing intelligence?*
7. Why do you think that research results on the effects of variations in social support for learning have been so inconsistent?
8. Which areas of cognitive development have yielded the greatest practical implications to date? Which areas do you think are likely to yield the greatest practical implications in the future?