Northwestern University, Spring Term, 2008

Psychology 462: Cognitive Development
Wednesdays, 10-1; Swift 231

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Office Hours: Monday 9:30 to 11:00 and by appointment

Focus, Goals, and Description of the Course. This class provides a graduate-level course in cognitive development. We focus on two related issues: theories of cognitive development, and development in core domains (e.g., language, space, time, and social cognition). Our focus will be primarily on the development of children's thinking, although we will also occasionally discuss cognitive development in other periods of the lifespan (e.g., aging).

The course is appropriate for graduate students in psychology, education, communications, linguistics, and related fields. Advanced undergraduate students may also take the course, with permission of the instructor.

Readings. The readings are handbook chapters and research articles. There is no textbook required, although two undergraduate textbooks will be put on reserve in the main library for those wishing to read more background information.
All readings that were available electronically have been placed online at our CourseInfo (Blackboard) site:courses.northwestern.edu. The remaining readings (those that were available only in print) have been assembled into a coursepack that can be purchased at Quartet Copies. The coursepack should be available by the first day of class, but you can wait and avoid long lines, as there are no readings from the coursepack until April 21.

Evaluations and Assignments: Evaluations will be based on participation and written assignments. The specific criteria are as follows:

1) **Class Participation (30% of final grade).** This consists of the following:

a) *Preparation and Contribution to Class Discussion*. Students are expected to read all articles before each class and to contribute actively to the discussion. Students should be able to address the discussion questions that will be submitted by the discussion leaders 24 hours before each class.

b) *Discussion Questions*. Each student must enter at least two discussion questions into the Blackboard Bulletin Board Discussion List. The questions must be entered at least 18 hours before the scheduled class time. All students must read all questions and be prepared to answer them in class.

c) *Serving as Discussion Leader*. Students will be assigned to groups to lead

discussions. Depending on class size, all students will serve as discussion leaders either once or twice.

The discussions should augment, but not repeat, the readings. For example, students may discuss related research or educational implications of the readings assigned for that week. The schedule for discussion leaders will be discussed in class and may be determined through a combination of student interest, needs, and random assignment. The schedule will be distributed a few days after the first class meeting. All groups must meet with the professor before the assigned class, to plan the discussion. Discussion leaders should thoroughly prepare by reading the article and (perhaps) other background readings as necessary.

d) *Presentation of Final Project*. Each student will give a short presentation of his or her final project on the final class meeting date (June 6).

2) Midterm Evaluation (20% of final grade; due May 7): Three or four questions will be distributed on April 30. You are to answer these questions by class time on May 4. Each answer should take about 3 or 4 pages (double-spaced), making the total length of the midterm about 10 to 12 pages total.

3) Final Project (50% of final grade, due by June 12; one-page proposal due May 14). Students must complete a final paper, which may be either in the form of a grant proposal or a systematic and synthetic review of a body of literature. The final paper should be about 20 pages, double-spaced, excluding references. The final paper should present a comprehensive, synthetic account of a specific issue in cognitive development. If the paper is a grant proposal, it should also present a detailed account of how you will answer the question or set of questions. Students may work in pairs, but each member of the pair will receive the same grade. Students should submit a one-page prospectus of how they will fulfill this requirement no later than May 14.

Submission of Assignments

All written assignments should be submitted electronically as an email attachment to the following email address:

uttalteaching@gmail.com

The subject of the email should begin with your last name, followed by Psych 462, followed by the assignment name. Here are some examples:

Smith, Psych 462, Midterm
Jones, Psych, 462, Proposal for Final Paper
Roberts, Psych 462, Final Paper

Please do not use uttalteaching@gmail.com for any other purpose; if you want to send email to me, use duttal@northwestern.edu.

Schedule of Classes and Reading Assignments

* indicates that the reading is in the coursepack; all other readings are online

April 2: Perspectives on Cognitive Development

(Karmiloff-Smith, 1998)
(Smith & Thelen, 2003)
(Spelke, 1998)
(Smith, 1999)
(Spelke & Kinzler, 2007)

APRIL 9: Neural Foundations of Cognitive Development (Guest Presentation by Mark Jung-Beeman)

(Beeman & Chiarello, 1998)
(Bunge, Dudukovic, Thomason, Vaidya, & Gabrieli, 2002)
(Cohen et al., 2002)
(Hespos, Ferry, Cannistraci, Gore, & Park) (in press)
(Spelke, 2002)

April 16: No Class

April 23: Piaget and Vygotsky

(Ginsburg & Opper, 1979)*
(Rowe & Wertsch, 2002)*
(Shayer, 2003)
(L. Smith, 2002) *

April 30: Executive Control, Representation, Problem Solving, Analogy and Symbolic Development

(Midterm will be distributed at the end of class, due the following week; covers material from April 2 through April 30)

(Carlson, Davis, & Leach, 2005)
(DeLoache, 2004)
(Loewenstein & Gentner, 2005)
(Goswami, 2002) *
(Zelazo & Müller, 2002) *

May 7: Social Development; Theory of mind

(Brune & Woodward, 2007)
(Gergely, 2002)*
(Onishi & Baillargeon, 2005)
(Perner & Ruffman, 2005)
(Wellman, 2002)*

May 14: Memory Development
(Guest presentation by Catherine Haden)
(Submit Proposal for Final Project)

(Bauer, 2003)*
(Howe, Cicchetti, Toth, & Cerrito, 2004)
(Ornstein, Haden, & Hedrick, 2004)
(Roberts & Powell, 2007)

May 21: Categories, Concepts and Conceptual Development

(Gelman, 1999)*
(Keil, 1999)*
(Quinn, 2002)*
(Saxe, 1999)*
Waxman, 2002)*

May 28: Number, Time, and Space

(Bryant & Nunez, 2002)*
(Dehaene, Izard, Pica, & Spelke, 2006)
(Friedman, 2000)
(Mix, 2002)
(Uttal, Fisher, & Taylor, 2006)
(additional readings to be added based on class discussion)

June 6: Student Presentations

Present your final project; length should be about 12 minutes; more details in class

References (Reading List)

Beeman, M. J., & Chiarello, C. (1998). Complementary right- and left-hemisphere language comprehension. *Current Directions in Psychological Science*, 7(1), 2-8.

Brune, C. W., & Woodward, A. L. (2007). Social cognition and social responsiveness in 10-month-old infants. *Journal of Cognition and Development*, 8(2), 133.

Bryant, P., & Nunez, T. (2002). Children's Understanding of Mathematics. In U. Goswami (Ed.), *Blackwell handbook of childhood cognitive development* (pp. 412-440). Malden, MA: Blackwell.

Bunge, S. A., Dudukovic, N. M., Thomason, M. E., Vaidya, C. J., & Gabrieli, J. D. E. (2002). Immature frontal lobe contributions to cognitive control in children: Evidence from fMRI. *Neuron*, 33(2), 301-311.

Carlson, S., Davis, A., & Leach, J. (2005). Less is more: Executive function and symbolic representation in preschool children. *Psychological Science*, 16(8), 609-616.

Cohen, L., Lehéricy, S., Chochon, F., Lemer, C., Rivaud, S., & Dehaene, S. (2002). Language-specific tuning of visual cortex? Functional properties of the Visual Word Form Area. *Brain*, 125(5), 1054-1069.

Dehaene, S., Izard, V., Pica, P., & Spelke, E. (2006). Core knowledge of geometry in an Amazonian indigene group. *Science*, 311, 381-384.

DeLoache, J. S. (2004). Becoming symbol-minded. *Trends in Cognitive Sciences*, 8(2), 66-70.

Friedman, W. J. (2000). The development of children's knowledge of the times of future events. *Child Development*, 71(4), 913-932.

Gelman, S. (1999). A reconsideration of concepts: On the compatibility of psychological essentialism and context sensitivity. In E. Scholnick, K. Nelson, S. Gelman, & P. Miller (Eds.), *Conceptual Development: Piaget's Legacy* (pp. 79-102). Mahwah, NJ: Erlbaum.

Gergely, G. (2002). The development of understanding self and agency. In U. Goswami (Ed.), *Blackwell handbook of childhood cognitive development* (pp. 26-46). Malden, MA: Blackwell.

Ginsburg, H., & Opper, S. (1979). *Piaget's theory of intellectual development*. . Englewood Cliffs, NJ: Prentice-Hall.

Goswami, U. (2002). Inductive and deductive reasoning. In U. Goswami (Ed.), *Blackwell Handbook of Childhood Cognitive Development* (pp. 282-302). Malden, MA: Blackwell.

Gottlieb, G. (2000). Environmental and Behavioral Influences on Gene Activity. *Current Directions in Psychological Science*, 9(3), 93-97.

Hespos, S., Ferry, A., Cannistraci, C., Gore, J., & Park, S. Using optical imaging to investigate functional cortical activity in human infants. In A. Rowe (Ed.), *Imaging the brain with optical methods*. New York: Springer.

Howe, M., Cicchetti, D., Toth, S., & Cerrito, B. (2004). True and false memories in maltreated children. *Child Development*, 75(5), 1402-1417.

Karmiloff-Smith, A. (1998). Development itself is the key to understanding developmental disorders. *Trends in Cognitive Sciences*, 2(10), 389-398.

Keil, F. (1999). Explanatory Understanding in Conceptual Development. In E. Scholnick, K. Nelson, S. Gelman, & P. Miller (Eds.), *Conceptual Development: Piaget's Legacy* (pp. 103-130). Mahwah, NJ: Erlbaum.

Loewenstein, J., & Gentner, D. (2005). Relational language and the development of relational mapping. *Cognitive Psychology*, 50(4), 315-353.

Mix, K. S. (2002). The construction of number concepts. *Cognitive Development*, 17(3-4), 1345-1363.

Munakata, Y. (2001). Graded representations in behavioral dissociations. *Trends in Cognitive Sciences*, 5(7), 309-315.

Onishi, K. H., & Baillargeon, R. (2005). Do 15-Month-old infants understand false beliefs? *Science*, 308(5719), 255-258.

Ornstein, P. A., Haden, C. A., & Hedrick, A. M. (2004). Learning to remember: Social-communicative exchanges and the development of children's memory skills. *Developmental Review*, 24(4), 374-395.

Perner, J., & Ruffman, T. (2005). Infants' insight into the mind: How deep? *Science*, 308(5719), 214-216.

Quinn, P. (2002). Early categorization: A new synthesis. In U. Goswami (Ed.), *Blackwell handbook of childhood cognitive development* (pp. 84-101). Malden, MA: Blackwell.

Roberts, K., & Powell, M. (2007). The roles of prior experience and the timing of misinformation presentation on young children's event memories. *Child Development*, 78(4), 1137-1152.

Rowe, S., & Wertsch, J. (2002). Vygotsky's model of cognitive development. In U. Goswami (Ed.), *Blackwell handbook of childhood cognitive development* (pp. 538-554). Malden, MA: Blackwell.

Saxe, G. (1999). Sources of concepts: A cultural-developmental perspective. In E. Scholnick, K. Nelson, S. Gelman, & P. Miller (Eds.), *Conceptual Development: Piaget's Legacy* (pp. 253-268). Mahwah, NJ: Erlbaum.

Shayer, M. (2003). Not just Piaget; not just Vygotsky, and certainly not Vygotsky as alternative to Piaget. *Learning and Instruction*, 13(5), 465-485.

Smith, L. B. (1999). Do infants possess innate knowledge structures? The con side. *Developmental Science*, 2(2), 133-144.

Smith, L. B., & Thelen, E. (2003). Development as a dynamic system. *Trends in Cognitive Sciences*, 7(8), 343-348.

Smith, L. (2002). Piaget's model. In U. Goswami (Ed.), *Blackwell handbook of childhood cognitive development* (pp. 515-537). Malden, MA: Blackwell.

Spelke, E. S. (1998). Nativism, empiricism, and the origins of knowledge. *Infant Behavior and Development*, 21(2), 181-200.

Spelke, E. S. (2002). Developmental neuroimaging: a developmental psychologist looks ahead. *Developmental Science*, 5(3), 392-396.

Spelke, E. S., & Kinzler, K. D. (2007). Core knowledge. *Developmental Science*, 10(1), 89-96.

Uttal, D. H., Fisher, J. A., & Taylor, H. A. (2006). Words and maps: childrens integration of spatial information acquired from different sources. *Developmental Science*, 9, 221-235.

Waxman, S. (2002). Early word-learning and conceptual development: Everything had a name, and each name gave birth to a new thought. In U. Goswami (Ed.), *Blackwell handbook of childhood cognitive development* (pp. 102-126). Malden, MA: Blackwell Publishing.

Wellman, H. M. (2002). Understanding the psychological world: Developing a theory of mind. In U. Goswami (Ed.), *Blackwell handbook of childhood cognitive development* (pp. 167-187). Malden, MA: Blackwell.

Zelazo, P., & Müller, U. (2002). Executive function in typical and atypical development. In U. Goswami (Ed.), *Blackwell handbook of childhood cognitive development* (pp. 445-469). Malden, MA: Blackwell.