

# Seminar in Psychology: Cognitive Development (PSY 480.02)

## Spring 2008, Mondays and Wednesdays 9-10:15 am, DeGarmo 48

*Welcome to our seminar!*

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### Course Objectives and Overview

The focus of this seminar is the examination of developmental change across several major areas of cognitive functioning during infancy and childhood. The seminar is divided into five major sections. The first section will outline theoretical perspectives on cognitive development. The second section will explore the development of perceptual abilities and attention. The third and fourth sections will examine the development of language and memory. The final section will describe several aspects of children's conceptual development and offer conclusions about the nature of development. The goals of this seminar are (1) to understand the processes by which cognitive development occurs during infancy and childhood and the factors that influence developmental change and (2) to articulate, critique, and defend theoretical and empirical positions concerning the nature of cognitive development. These objectives will be assessed through participation in and leadership of class discussions and completion of a written research proposal.

For each topic, part of class time will be devoted to presentation of background information, and part will be devoted to discussion of readings. Because active participation is crucial to the success of the seminar, it is imperative that everyone completes the assigned readings in preparation for discussion. It is also critical that everyone is an active participant in our discussions during class. As described below, we will take turns providing background details and leading discussions during class time.

### Required Readings

Siegler, R. S., & Alibali, M. W. (2005). *Children's Thinking* (4th ed.). Upper Saddle River, NJ: Prentice Hall.

Text readings are listed by chapter in the syllabus. (available at campus bookstores)

Assigned readings listed in the syllabus (available electronically)

### Course Requirements

This seminar seeks to foster preparedness, participation, and professionalism. Toward that end, grades will be based on the following requirements:

1. **Class participation.** You are expected to read the required readings for each session and to attend and contribute to class through questions and discussions. Everyone must bring the assigned readings to class to facilitate careful discussion. In addition, everyone must pose questions, make observations, and provide insights regarding the readings and their implications. Please be prepared to share your thoughts, as well as to respond to those made by colleagues, during class time. Regular participation is essential for our learning together as a community of scholars. Participation also will include writing a 2-page reflection paper, due during finals week. Class participation will be worth 25% of the course grade.
2. **Discussion leadership.** You will be responsible for leading the discussion during four class meetings (three times with a partner and once by yourself). Each discussion leadership day will be worth 10% of your course grade. The particular topics and readings discussed will be those listed in the syllabus, but you will be expected to have additional expertise in the area (i.e., have read additional articles) that will enable you to lead the discussion in a thoughtful manner. You will provide 4-5 discussion questions based on the assigned readings and an annotated bibliography that summarizes 3-4 additional articles on the topic. Each annotation should include the complete reference (in APA style) and one paragraph summarizing the article. In addition to clarifying the main ideas, your discussion questions should help us analyze, synthesize, evaluate, and interpret the topics addressed in the readings. The annotated bibliography and discussion questions must be posted in WebCT at least 24 hours *before* the class period during which they will be

discussed. Everyone is responsible for reading the article summaries and discussion questions before class to be prepared for our discussion. You must come see me (in person) at least 7 days before your discussion day so that we can discuss your plans. Please bring preliminary reading ideas and discussion topics to that meeting.

3. **Research proposal.** You will write a research proposal on an aspect of cognitive development during infancy and childhood. Research proposals should focus on theoretical and empirical issues addressed in this course. The NRSA-style grant proposal will be worth 30% of the course grade. This proposal should be 10-12 double-spaced pages in length and should include a brief literature review (i.e., background and significance) outlining the problems and issues in the area (persuasively asserting that your project will fill an important “gap”), a method section outlining 1 or 2 specific experiment(s) that would logically follow from the issues and problems reviewed, and a brief description of the analysis plan, predicted results, and conclusions resulting from your proposal. You will be expected to turn in a brief summary of your proposal (2 pages, typed with double spacing), outlining theoretical background and experiment details, by Wed. of the 8<sup>th</sup> week of the semester. This summary will be worth 5% of your course grade. In addition, you will meet with me individually (in person) by the end of the 10<sup>th</sup> week to discuss your plans for your proposal. I am happy to meet with you during your writing and editing process to discuss ideas and make sure you are on the right track with the project. These meetings must happen at least one week before the due date. The research proposal is due by the last Wed. of class.

## **Policies**

*Late Assignments.* Late assignments will be graded down in accordance with the degree of lateness (unless there is a university-mandated and officially documented excuse). You will lose 10% of the possible points for each hour the discussion questions and annotated bibliography are late and each day the summary or research proposal is late.

*Academic Integrity: Plagiarism and Cheating.* Please consult the *Code of Student Conduct* for details regarding University academic integrity policies. Unless otherwise specified in the syllabus, assignments in this course should be completed by you alone and should represent your best effort. Plagiarism and cheating in any form will not be tolerated and may result in disciplinary action and failure of this course.

*Students with Disabilities.* Any student in need of special accommodation should contact 438-5853 (voice), 438-8620 (TDD).

## **Schedule of Topics and Required Readings**

### *Theories and Approaches to Cognitive Development*

#### **Week 1**

Monday, January 14 Introduction and Organization

Siegler & Alibali Chap. 1 (pp. 1-25)

Wednesday, January 16 Piagetian Theory

Siegler & Alibali Chap. 2 (pp. 26-64)

Piaget, J. (1970). Piaget's theory. In P. H. Mussen (Ed.), *Carmichael's Manual of Child Psychology*, 3<sup>rd</sup> ed., Vol. 1 (pp. 703-732). New York: Wiley.

#### **Week 2**

Monday, January 21 No Class—Martin Luther King, Jr. Day

Wednesday, January 23 Piagetian Theory, cont.

Piaget, J. (1941/1997). *The child's conception of number*. New York: Routledge. (Chap. 1 & 2, pp. 3-38)

### **Week 3**

Monday, January 28

Information Processing Approach

Siegler & Alibali Chap. 3 (pp. 65-106)

Siegler, R. S. (2000). The rebirth of children's learning. *Child Development*, 71, 26-35.

Wednesday, January 30

Information Processing Approach, cont.

Munakata, Y. (2006). Information processing approaches to development. In D. Kuhn & R. Siegler (Eds.), *Handbook of Child Psychology, Vol. 2: Cognition, Perception, and Language* (pp. 426-463). New York: Wiley.

Siegler, R. S. (1996). *Emerging minds: The process of change in children's thinking* (pp. 177-217). New York: Oxford University Press.

### **Week 4**

Monday, February 4

Core Knowledge Approach

Spelke, E. S., & Newport, E. L. (1998). Nativism, empiricism, and the development of knowledge. In W. Damon & R. M. Lerner (Eds.), *Handbook of Child Psychology, Vol. 1: Theoretical models of human development* (pp. 275-340). New York: Wiley.

Spelke, E. S. (2000). Core knowledge. *American Psychologist*, 55, 1233-1243.

Wednesday, February 6

The Nativism-Empiricism Debate

Baillargeon, R., & Graber, M. (1987). Where's the rabbit? 5.5-month-old infants' representation of the height of a hidden object. *Cognitive Development*, 2, 375-392.

Baillargeon, R., & DeVos, J. (1991). Object permanence in young infants: Further evidence. *Child Development*, 62, 1227-1246.

Bogartz, R. S., Shinsky, J. L., & Speaker, C. J. (1997). Interpreting infant looking: The event set x event set design. *Developmental Psychology*, 33, 408-422.

### **Week 5**

Monday, February 11

Dynamic Systems Theory

Thelen, E. & Smith, L. B. (2006). Dynamic systems theories. In W. Damon & R. M. Lerner (Eds.), *Handbook of Child Psychology, Vol. 1: Theoretical models of human development* (pp. 258-312). New York: Wiley.

Wednesday, February 13

Dynamic Approaches to Development

Oyama, S. (2000). *The ontogeny of information: Developmental systems and evolution* (pp. 28-41). Durham, NC: Duke University Press.

Elman, J. L., Bates, E. A., Johnson, M. H., Karmiloff-Smith, A., Parisi, D., & Plunkett, K. (1997). Rethinking innateness: A connectionist perspective on development. Cambridge, MA: MIT Press. Chapter 1: New perspectives on development (pp. 1-46).

## Week 6

### Monday, February 18

#### Developmental Cognitive Neuroscience

Nelson, C. A., III, Thomas, K. M., & deHaan, M. (2006). Neural bases of cognitive development. In D. Kuhn & R. Siegler (Eds.), *Handbook of Child Psychology: Vol. 2. Cognition, Perception, and Language* (pp. 3-57). New York: Wiley.

### Wednesday, February 20

#### Neural and Behavioral Plasticity

deHaan, M., & Johnson, M. H. (2003). Mechanisms and theories of brain development. In M. de Haan & M. H. Johnson (Eds.), *The cognitive neuroscience of development* (pp. 1-18). London: Psychology Press.

Black, J. E., Jones, T. A., Nelson, C. A., & Greenough, W. T. (1998). Neuronal plasticity and the developing brain. In N. E. Alessi, J. T. Coyle, S. I. Harrison, & S. Eth (Eds.), *Handbook of child and adolescent psychiatry: Vol. 6. Basic psychiatric science and treatment* (pp. 31-53). New York: Wiley.

Gottlieb, G. (2000). Environmental and behavioral influences on gene activity. *Current Directions in Psychological Science*, 9, 93-97.

## ***Perceptual Development and Attention***

### Week 7

### Monday, February 25

#### Vision

Siegler & Alibali Chap. 5 (pp. 141-164)

Courage, M. L., Reynolds, G. D., & Richards, J. E. (2006). Infants' attention to patterned stimuli: Developmental change from 3 to 12 months of age. *Child Development*, 77, 680-695.

Kirkham, N. Z., Richardson, D. C., Slemmer, J. A., & Johnson, S. P. (2007). Location, location, location: Development of spatiotemporal sequence learning in infancy. *Child Development*, 78, 1559-1571.

Johnson, S. P., Bremner, J. G., Slater, A., Mason, U., Foster, K., & Cheshire, A. (2003). Infants' perception of object trajectories. *Child Development*, 74, 94-108.

Kelly, D. J., Quinn, P. C., Slater, A. M., Lee, K., Gibson, A., Smith, M., Ge, L., & Pascalis, O. (2005). Three-month-olds, but not newborns, prefer own-race faces. *Developmental Science*, 8, F31-F36.

### Wednesday, February 27

#### Audition

Siegler & Alibali Chap. 5 (pp. 164-176)

Polka, L., & Werker, J. F. (1994). Developmental changes in perception of nonnative vowel contrasts. *Journal of Experimental Psychology: Human Perception and Performance*, 20, 421-435.

Fennell, C. T., Byers-Heinlein, K., & Werker, J. F. (2007). Using speech sounds to guide word learning: The case of bilingual infants. *Child Development*, 78, 1510-1525.

Mandel, D. R., Jusczyk, P. W., & Pisoni, D. B. (1995). Infants' recognition of the sound patterns in their own names. *Psychological Science*, 6, 314-317.

Kuhl, P. K. (1991). Human adults and human infants show a "perceptual magnet effect" for the prototypes of speech categories, monkeys do not. *Perception & Psychophysics*, 50, 93-107.

## **Week 8**

Monday, March 3

Perception/Action

Siegler & Alibali Chap. 6 (pp. 176-182)

Eppler, M. A., Adolph, K. E., & Weiner, T. (1996). The developmental relationship between infant's exploration and action on slanted surfaces. *Infant Behavior & Development, 19*, 259-264.

Needham, A., Barrett, T., & Peterman, K. (2002). A pick-me-up for infants' exploratory skills: Early simulated experiences reaching for objects using 'sticky mittens' enhances young infants' object exploration skills. *Infant Behavior and Development, 25*, 279-295.

Plumert, J. M. (1995). Relations between children's overestimation of their physical abilities and accident proneness. *Developmental Psychology, 31*, 866-876.

Plumert, J. M., Kearney, J. K., & Cremer, J. F. (2004). Children's perception of gap affordances: Bicycling across traffic-filled intersections in an immersive virtual environment. *Child Development, 75*, 1243-1253.

Plumert, J. M., Kearney, J. K., & Cremer, J. F. (2007). Children's road crossing: A window into perceptual-motor development. *Current Directions in Psychological Science, 16*, 255-258.

Wednesday, March 5

Attention

Colombo, J. (2002). Infant attention grows up: The emergence of a developmental cognitive neuroscience perspective. *Current Directions in Psychological Science, 11*, 196-199.

Colombo, J. (2004). Visual attention in infancy: Process and product in early cognitive development. In M. Posner (Ed.), *Attention* (pp. 329-341). New York: Guilford Press.

Kannass, K. N., Oakes, L. M., & Shaddy, D. J. (2006). A longitudinal investigation of the development of attention and distractibility. *Journal of Cognition and Development, 7*, 381-409.

Ruff, H. A., & Capozzoli, M. C. (2003). Development of attention and distractibility in the first 4 years of life. *Developmental Psychology, 39*, 877-890.

Sigman, M., Cohen, S. E., & Beckwith, L. (1997). Why does infant attention predict adolescent intelligence? *Infant Behavior and Development, 20*, 133-140.

**Summary of Proposal due by class time today**

## **Week 9**

No Class—Spring Break

## ***Language Development***

### **Week 10**

Monday, March 17

Statistical Learning

Siegler & Alibali Chap. 6 (pp. 183-195)

Saffran, J. R. (2003). Statistical language learning: Mechanisms and constraints. *Current Directions in Psychological Science, 12*, 110-114.

Gomez, R. L., & Gerkin, L. (1999). Artificial grammar learning by 1-year-olds leads to specific and abstract knowledge. *Cognition, 70*, 109-135.

Thiessen, E. D., Hill, E., & Saffran, J. R. (2005). Infant-directed speech facilitates word segmentation. *Infancy, 7*, 53-71.

Newman, R., Ratner, N. B., Jusczyk, A. M., Jusczyk, P., & Dow, K. A. (2006). Infants' early ability to segment the conversational speech signal predicts later language development: A retrospective analysis. *Developmental Psychology, 42*, 643-655.

Wednesday, March 19

Word Learning

Siegler & Alibali Chap. 6 (pp. 195-208)

Waxman, S.R., & Lidz, J. L. (2006). Early word learning. In D. Kuhn & R. Siegler (Eds.), *Handbook of child psychology: Volume 2, Cognition, perception, and language* (6<sup>th</sup> ed., pp. 299-335). Hoboken, NJ: Wiley.

Smith, L. B., Jones, S. S., Landau, B., Gershkoff-Stowe, L., & Samuelson, L. (2002). Object naming provides on-the-job training for attention. *Psychological Science, 13*, 13-19.

Booth, A. E., & Waxman, S. R. (2002). Word learning is “smart:” Evidence that conceptual information affects preschoolers’ extension of novel words. *Cognition, 84*, B11-B22.

Smith, L. B., Jones, S. S., Yoshida, H., & Colunga, E. (2003). Whose DAM account? Attentional learning explains Booth and Waxman. *Cognition, 87*, 209-213.

**Meetings regarding proposal completed by the end of the week**

**Week 11**

Monday, March 24

Language Development

Siegler & Alibali Chap. 6 (pp. 208-225)

Akhtar, N. Carpenter, M., & Tomasello, M. (1996). The role of discourse novelty in early word learning. *Child Development, 67*, 635-645.

Samuelson, L. K., & Smith, L. B. (1998). Memory and attention make smart word learning: An alternative account of Akhtar, Carpenter, and Tomasello. *Child Development, 69*, 94-104.

Brandone, A. C., Pence, K. L., Golinkoff, R. M., & Hirsh-Pasek, K. (2007). Actions speak louder than words: Young children differentially weight perceptual, social, and linguistic cues to learn verbs. *Child Development, 78*, 1322-1342.

***Memory Development***

Wednesday, March 26

Memory Development in Infancy

Siegler & Alibali Chap. 7 (pp. 226-246)

Rovee-Collier, C., & Barr, R. (2004). Infant learning and memory. In G. Bremner & A. Fogel (Eds.), *Blackwell handbook of infant development* (pp. 139-168). Malden, MA: Blackwell.

Oakes, L. M., Ross-Sheehy, S., & Luck, S. J., (2006). Rapid development of feature binding in visual short-term memory. *Psychological Science, 17*, 781-787.

**Week 12**

Monday, March 31

Narrative/Event Memory

Bauer, P. J. (2006). *Remembering the times of our lives: Memory in infancy and beyond*. Mahwah, NJ: Erlbaum (Chapter 4, Declarative Memory in the First Years of Life, pp. 87-120)

Fivush, R., Haden, C. A., & Reese, E. (2006). Elaborating on elaborations: Role of maternal reminiscing style in cognitive and social emotional development. *Child Development, 77*, 1568-1588.

Reese, E., & Newcombe, R. (2007). Training mothers in elaborative reminiscing enhances children’s autobiographical memory and narrative. *Child Development, 78*, 1153-1170.

Wednesday, April 2

Memory Development in Childhood

Siegler & Alibali Chap. 7 (pp. 246-267)

Pressley, M., & Hilden, K. (2006). Cognitive strategies. In D. Kuhn & R. Siegler (Eds.), *Handbook of child psychology: Volume 2, Cognition, perception, and language* (6<sup>th</sup> ed., pp. 511-556). Hoboken, NJ: Wiley.

Friedman, W. J. (2007). The development of temporal metamemory. *Child Development, 78*, 1472-1491.

### **Week 13**

Monday, April 7

Memory Development in Childhood, cont.

Ornstein, P. A., Baker-Ward, L., & Naus, M. J. (1988). The development of mnemonic skill. In F. E. Weinert & M. Perlmutter (Eds.), *Memory development: Universal changes and individual differences* (pp. 31-50). Hillsdale, NJ: Erlbaum.

Schwenck, C., Bjorklund, D. F., & Schneider, W. (2007). Factors influencing the incidence of utilization deficiencies and other patterns of recall/strategy-use relations in a strategic memory task. *Child Development, 78*, 1771-1787.

Lehmann, M., & Hasselhorn, M. (2007). Variable memory strategy use in children's adaptive intratask learning behavior: Developmental changes and working memory influences on free recall. *Child Development, 78*, 1068-1082.

### ***Conceptual Development***

Wednesday, April 9

Conceptual Understanding

Siegler & Alibali Chap. 8 (pp. 268-286, 297-304)

Waxman, S. R., & Braun, I. E. (2005). Consistent (but not variable) names as invitations to form object categories: New evidence from 12-month-old infants. *Cognition, 95*, B59-B68.

Carey, S. (2000). The origin of concepts. *Journal of Cognition and Development, 1*, 37-41.

### **Week 14**

Monday, April 14

Categorization Processes

Oakes, L. M., & Madole, K. L. (2003). Principles of developmental change in infants' category formation. In D. H. Rakison & L. M. Oakes (Eds.), *Early category and concept development: Making sense of the blooming, buzzing confusion* (pp. 132-158). New York: Oxford University Press.

Quinn, P. C. (2004). Is the asymmetry in young infants' categorization of humans versus nonhuman animals based on head, body, or global gestalt information? *Psychonomic Bulletin & Review, 11*, 92-97.

Rakison, D. H. (2005). The perceptual to conceptual shift in infancy and early childhood: A surface or deep distinction? In L. Gershkoff-Stowe & D. H. Rakison (Eds.), *Building object categories in developmental time* (pp. 131-158). Hillsdale, NJ: Erlbaum.

Wednesday, April 16

Spatial Understanding

Siegler & Alibali Chap. 8 (pp. 286-292)

Newcombe, N., & Huttenlocher, J. (2000). *Making space: The development of spatial representation and reasoning*. Cambridge, MA: The MIT Press. (Ch. 2, pp. 13-38).

Uttal, D. H., Sandstrom, L. B., & Newcombe, N. S. (2006). One hidden object, two spatial codes: Young children's use of relational and vector coding. *Journal of Cognition and Development, 7*, 503-525.

Hund, A. M., & Foster, E. K. (in press). Understanding developmental changes in the stability and flexibility of spatial categories based on object relatedness. *Developmental Psychology*.

## Week 15

Monday, April 21

Numerical Understanding

Siegler & Alibali Chap. 6 (pp. 292-297)

Wynn, K. (1992). Addition and subtraction by human infants. *Nature*, 358, 749-750.

Mix, K. S., Huttenlocher, J., & Levine, S. C. (2002). Multiple cues for quantification in infancy. Is number one of them? *Psychological Bulletin*, 128, 278-294.

Gelman, R., Meck, E., & Merkins, S. (1986). Young children's numerical competence. *Cognitive Development*, 1, 1-29.

Klibanoff, R. S., Levine, S. C., Huttenlocher, J., & Vasilyeva, M. (2006). Preschool children's mathematical knowledge: The effect of teacher "math talk." *Developmental Psychology*, 42, 59-69.

Wednesday, April 23

Problem Solving and Symbolic Understanding

Siegler & Alibali Chap. 10 (pp. 341-380)

Alibali, M. W. (1999). How children change their minds: Strategy change can be gradual or abrupt. *Developmental Psychology*, 35, 127-145.

DeLoache, J. S., & Sharon, T. (2005). Symbols and similarity: You can get too much of a good thing. *Journal of Cognition and Development*, 6, 33-49.

Eskritt, M., & Lee, K. (2002). "Remember where you last saw that card": Children's production of external symbols as a memory aid. *Developmental Psychology*, 38, 254-266.

## Week 16

Monday, April 28

Theory of Mind

Siegler & Alibali Chap. 9 (pp. 305-331)

Adrian, J. E., Clemente, R. A., & Villanueva, L. (2007). Mother's use of cognitive state verbs in picture-book reading and the development of children's understanding of mind: A longitudinal study. *Child Development*, 78, 1052-1067.

Slade, L., & Ruffman, T. (2005). How language does (and does not) relate to theory of mind: A longitudinal study of syntax, semantics, working memory and false belief. *British Journal of Developmental Psychology*, 23, 117-141.

Wednesday, April 30

Conclusions

Siegler & Alibali Chap. 12 (pp. 422-456)

**Research Proposal due by class time today**

## Week 17

Thursday, May 8, 7:50 am

Roundtable Discussion of Research Proposals and Course Themes

**Reflection Paper due**

**Thanks for a great semester! Enjoy the summer and the rest of your life journey...**