Seminar in Individual Differences in Children's Thinking, Spring, 2003
DEP 6932

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Meeting time and place: 9:00-11:50 AM, Biomedical Center 106

OBJECTIVES: To acquaint students with concepts, theories, and empirical findings related to individual differences in children's (and adults') intellectual performance. Students will be expected to integrate the findings from a variety of research areas and attain a general understanding of issues relating to the nature, origins, and stability of individual differences in children's cognition. Students will write two review papers (15-20 pages) and will propose a manageable experiment concerned with individual differences in children's thinking. Students will also be responsible for summarizing research reports to the class and for organizing and presenting at least one major topic.

Evaluation:	Review papers - - - - - - - - - - - - - - -	50%
	Proposed Experiment - - - - - - - - - -	15%
	Class Participation - - - - - - - - - - - -	10%
	Final Exam - - - - - - - - - - - - - - - - -	25%

Tentative Course Schedule:

First review paper due - - - - - - - - - - - - - - - - -	March 5, 2003
Second review paper and proposal due - - - - -	April 23, 2003
Final Exam -	April 30, 2003

Text

Bjorklund, D. F. (2000). *Children's thinking: Developmental function and individual differences* (third edition). Belmont, CA: Wadsworth.

TENTATIVE COURSE OUTLINE

I. Individual Differences in Intelligence

Bjorklund (2000), Chapter 13, pp. 402-412.

Ceci, S. J. (1996). *On intelligence: A bio-ecological treatise on intellectual development* (expanded edition). Cambridge, MA: Harvard University Press. Chapters 1 & 2.

Sternberg, R. J. (1997). The concept of intelligence and its role in lifelong learning and success. *American Psychologist, 52*, 1030-1037.

Jensen, A. R. (1993). Why is reaction time correlated with psychometric *g*? *Current Directions in Psychological Science, 2,* 53-56.

Schneider, W., Perner, J., Bullock, M., Stefanek, J., & Ziegler, A. (1999). Development of intelligence and thinking. In F. E. Weinert & W. Schneider (Ed.), *The Munich Longitudinal Study on the Genesis of Individual Competencies (LOGIC)* (pp. 9-28). Cambridge: Cambridge University Press.

Bjorklund, D. F. (1999). What individual differences can teach us about developmental function, and vice versa. In F. E. Weinert & W. Schneider (Ed.), *The Munich Longitudinal Study on the Genesis of Individual Competencies (LOGIC)* (pp. 29-37). Cambridge: Cambridge University Press.

II. Gene-Environment Interactions and Human Intelligence

Bjorklund (2000), Chapter 2, pp. 28-37; Chapter 14, pp. 441-452.

Scarr, S. (1993). Biological and cultural diversity: The legacy of Darwin for development. *Child Development, 64***,** 1333-1353.

Plomin, R, & Petrill, S. A. (1997). Genetics and intelligence: What's new? *Intelligence, 24*, 53-77.

Petrill, S. A., Saudino, K., Cherny, S. S., Emde, R. N., Fulker, D. W., Hewitt, J. K., & Plomin, R. (1998). Exploring the genetic and environmental etiology of high general cognitive ability in fourteen- to thirty-six-month-old twins. *Child Development, 69*, 68-74.

Plomin, R., Fulker, D. W., Corley, R., & DeFries, J. C. (1997). Nature, nurture, and cognitive development from 1 to 6 years: A parent-offspring adoption study. *Psychological Science, 8*, 442-447.

Segal, N. (2000). Virtual twins: New findings on within-family environmental influences on intelligence. *Journal of Educational Psychology, 92*, 442-448.

Rowe, D. C., Jacobson, K. C., & van der Oord, E. J. C. G. (1999). Genetic and environmental influences on vocabulary IQ: Parental education level as a moderator. *Child Development, 70*, 1151-1162.

Duncan, J., Seitz, R. J., Kolodny, J., Bor, D., Herzog, H., Ahmed, A., Newell, F. N., & Emslie, H. (2000). A neural basis for general intelligence. *Science, 289*, 457-460.

Bjorklund, D. F., & Pellegrini, A. D. (2002). *The origins of human nature: Evolutionary developmental psychology*. Washington, DC: American Psychological Association, pp. 71-85 ("Evolutionary Developmental Psychology, Behavioral Genetics, and Individual Differences").

III. Intelligence, Aptitude, and Performance

Bjorklund (2000), Chapter 13, pp. 413-421.

Ceci, S. J. (1996). *On intelligence: A bio-ecological treatise on intellectual development.* Cambridge, MA: Harvard University Press. Chapter 3.

Bjorklund, D. F., & Schneider, W. (1996). The interaction of knowledge, aptitudes, and strategies in children's memory performance. In H. W. Reese (Ed.), *Advances in child development and behavior* (pp. 59-89), Vol. 25. San Diego: Academic Press.

Frye, A., & Hale, S. (2000). Relationships among processing speed, working memory and fluid intelligence in children. *Biological Psychology, 54*, 1-34.

Miller, L. T., & Vernon, P. A. (1996). Intelligence, reaction time, and working memory in 4- to 6-year-old children. *Intelligence, 22*, 155-190.

Harnishfeger, K. K., & Bjorklund, D. F. (1994). Individual differences in inhibition: Implications for children's cognitive development. *Learning and Individual Differences, 6*, 331-355.

IV. Cognitive Development in Social Context

Bjorklund (2000), Chapter 3; Chapter 12, pp. 394-399.

Tudge, J., Putnam, S., & Valsiner, J. (1996). Culture and cognition in developmental perspective. In R. B. Cairns, G. H. Elder, Jr., & E. J. Costello (Eds.), *Developmental Science* (pp. 190-222). New York: Cambridge University Press.

Ceci, S. J. (1991). How much does schooling influence general intelligence and its cognitive components? A reassessment of the evidence. *Developmental Psychology, 27*, 703-722.

Morrison, F. J., Griffith, E. M., & Frazier, J. A. (1996). Schooling and the 5–7 shift: A natural experiment. In A. Sameroff & M. M. Haith (Eds.), *Reason and responsibility: The passage through childhood*. Chicago: University of Chicago Press.

Schneider, W., Knopf, M., & Stefanek, J. (in press). The development of verbal memory in childhood and adolescence: Findings from the Munich Longitudinal Study. *Journal of Educational Psychology*.

Miller, K. F., Smith, C. M., Zhu, J., & Zhang, H. (1995). Preschool origins of cross-national differences in mathematical competence. *Psychological Science, 6*, 56-60.

V. Experience and Intelligence

Parenting Effects on Children's Intelligence

Bjorklund (2000), Chapter 14, pp. 438-441; 452-466.

Landry, S. H., Smith, K. E., Miller-Loncar, C. L., & Swank, P. R. (1997). Predicting cognitive-language and social growth curves from early maternal behaviors in children at varying degrees of biological risk. *Developmental Psychology, 33*, 1040-1053.

O'Connor, T. G., Rutter, M., Beckett, C., Keaveney, L., & Kreppner, J. M., and the English and Romanian Adoptees Study Team. (2000). *Child Development, 71*, 376-390.

Maintenance and Modifiability of Intellectual Functioning

Campbell, F. A., Ramey, C. T., Pungello, E., Sparling, J., & Miller-Johnson, S. (2002). Early childhood education: Young adult outcomes from the Abecedarian project. *Applied Developmental Science, 6*, 42-57.

Reynolds, A. J., Mavrogenes, N. A., Bezuczko, N., & Hagemann, M. (1996). Cognitive and family-support mediators of preschool effectiveness: A confirmatory analysis. *Child Development, 67*, 1119-1140.

VI. Alternative Theories of Intelligence

Bjorklund, (2000) Chapter 13, pp. 421-436.

Sternberg, R. J., Ferrari, M., & Clinkenbeard, P. (1996). Identification, instruction, and assessment of gifted children: A construct validation of a triarchic model. *Gifted Child Quarterly, 40*, 129-137.

Sternberg, R. J., Torff, B., & Grigorenko, E. L. (1999). Teaching triachically improves school achievement. *Journal of Educational Psychology, 90*, 374-384.

Gardner, H. (1999). Are there additional intelligences? The case for naturalist, spiritual, and existential intelligences. In J. Kane (Ed.), *Education, information and transformation*. Engelwood Cliffs, NJ: Prentice-Hall.

Ceci, S. J. (1993). Contextual trends in intellectual development. *Developmental Review, 13*, 403-435.

VII. Stability of Intelligence over Development

Bjorklund (2000), Chapter 14, pp. 466-476.

McCall, R. B., & Carriger, M. S. (1993). A meta-analysis of infant habituation and recognition memory performance as predictors of later IQ. *Child Development, 64*, 57-79.

Doughterty, T. M., & Haith, M. M. (1997). Infant expectations and reaction time as predictors of childhood speed of processing and IQ. *Developmental Psychology, 33*, 146-155.

VIII. Reading and Math Disabilities

Bjorklund (2000), Chapter 12, pp. 365-375; 377-390.

Schneider, W., Küspert, P., Roth, E., & Visé, M. (1997). Short- and long-term effects of training phonological awareness in kindergarten: Evidence from two German studies. *Journal of Experimental Child Psychology, 66*, 311-340.

Mutter, V., Hulme, C., Snowling, M., & Taylor, S. (1997). Segmentation, not rhyming, predicts early progress in learning to read. *Journal of Experimental Child Psychology, 65*, 370-396.

Whitehurst, G. J., & Lonigan, C. J. (1998). Child development and emergent literacy. *Child Development, 69*, 848–872.

Paulesu, E., Démonet, J.-F., Fazio, F., McCrory, E., Chanoine, V., Brunswick, N., Cappa, S. F., Cossu, G., Habib, M., Frith, C. D., & Frith. U. (2001). Dyslexia: Cultural diversity and biological unity. *Science, 291* (16 March), 2165-2167.

Geary, D. C. (1993). Mathematical disabilities: Cognitive, neuropsychological, and genetic components. *Psychological Bulletin, 114*, 345-362.

Geary, D. C. (1996). International differences in mathematical achievement: Their nature, causes, and consequences. *Current Directions in Psychological Science, 5*, 133-137.

IX. Sex Differences in Verbal and Spatial/Mathematical Skills

Bjorklund (2000), Chapter 12, pp. 375-377; 390-394; Chapter 6, pp. 184-191.

Casey, M. B. (1996). Understanding individual differences in spatial ability within females: A nature/nurture interactionist framework. *Developmental Review, 16*, 241-260.

Benbow, C.P., Lubinski, D., Shea, D. L., & Eftekhari-Sanjani, H. (2000). Sex differences in mathematical reasoning ability at age 13: Their status 20 years later. *Psychological Science, 11*, 474-480.

Levine, S. C., Huttenlocher, J., Taylor, A., & Langrock, A. (1999). Early sex differences in spatial skills. *Developmental Psychology, 35*, 940-949.

Geary, D. C. (1996). Sexual selection and sex differences in mathematical abilities. *Behavioral and Brain Sciences, 19*, 229-284.