

EDHD 721
Cognitive Development and Learning: An Introduction
Fall 2019
Mondays 10:00 – 12:45
1107 Benjamin Building

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COURSE DESCRIPTION

The aim of this course is to present the major theories, issues, and areas of research in cognitive development. An emphasis will be made on the application of these concepts to education, learning, and academic skills development. The course will begin with discussions of theoretical frameworks for studying cognitive development, including constructivist, sociocultural, and information processing theories. The second part of the course will focus on specific areas of cognitive development, including memory and problem-solving. The final part of the course will cover the development of academic skills, such as scientific reasoning, reading, and mathematics, as well as issues related to learning inside and outside of the classroom.

COURSE GOALS

By the end of this course, students should be able to

- Understand theoretical perspectives in cognitive development, including their strengths and weaknesses.
- Recognize the importance of the interaction between children and their environment, and how children's thinking and learning change with age and experience.
- Develop the ability to critically evaluate scientific research and interpret research findings.
- Appreciate that scientific research in cognitive development has implications for applied issues relating to education and public policy.

COURSE REQUIREMENTS

Course Structure and Readings: This is a graduate seminar with a mixture of lecture and discussion. Students are strongly encouraged to make comments, ask questions, and raise issues for discussion during the entire class period. The readings for this course consist of book chapters and journal articles related to each weekly topic. The readings are available through ELMS (Canvas), <https://elms.umd.edu>. Please let the instructor know if you have trouble accessing any of the readings.

Class Participation: This is a seminar course. Therefore, the entire class is responsible for reading the assigned materials closely and thoughtfully *before* each weekly meeting. Everyone should come to class prepared to ask questions, raise issues, and contribute to the discussion. The success of this course, in a large part, relies upon each student's class participation. If you are unable to attend a class, please inform the instructor as soon as possible.

Discussion Questions and Assignments: To help facilitate class discussion, each student not leading class discussion should write two questions on the week's readings. The questions should be thought provoking and identify issues or concerns that could be covered in the class discussion. The questions could also attempt to integrate material from other readings from the class, topics from other courses, or from specific research interests. The questions should be posted on ELMS 24 hours before class (at the latest). Students may also be asked to complete a brief activity/assignment related to the week's reading to further facilitate discussion, which also will be posted on ELMS or brought to class. These assignments will be announced during class and/or posted on ELMS.

Leading Class Discussion/Class Presentation: Every student will be responsible for assisting the instructor facilitate the class discussion for one week during the semester. During the first class, students will choose a topic and will be responsible for developing an in-depth knowledge of the week's readings. For each discussion, students *may* first spend about 5 minutes summarizing the major points of the readings, and then facilitate discussion by generating topics and questions for the class.

Each student also will give a presentation related to a week's topic and readings they week they lead the class discussion. Students will choose one empirical article for their presentation, discuss the central themes of the paper, critique the accompanying reading, and lead an active group discussion. Students can choose the format of the presentation, and may include supporting materials, such as handouts or Powerpoint slides. Presentations should be 10-15 minutes in length. All students should inform the instructor on the paper they have chosen for their presentation at least one week before the class. Students are encouraged to provide a copy of the article they will be presenting to the instructor and/or set a meeting with the instructor 1-2 weeks before their class to discuss their presentations. At least 24 hours before class, students should post their article on ELMS, although other students are not required to read it. Presenters should bring a handout of the presentation to the instructor the day of their presentation.

Midterm Exam: Students will be given a take-home exam and will have one week to complete it. The exam will consist of 2-3 essay questions. The midterm will be distributed October 7th.

Final Paper and Final Paper Presentation: As a final paper, students will write either a review of the literature in a specific area of cognitive development or a proposal of a research study that examines a question related to cognitive development. Each student is required to submit a 1-2 paragraph description of their paper, along with a list of at least three references in advance. Students will also submit an outline of their paper to a peer in the class, who will provide feedback during class the following week. Students are also required to give a presentation on their final paper. All presentations will be approximately 15 minutes long.

GRADE SUMMARY

Class participation and leading class discussion 15%

Midterm take home essay 25%

Discussion questions and assignments 15%

Presentation 10%

Final paper and presentation 35%

ELMS (CANVAS)

We will be using the University's ELMS, <https://elms.umd.edu>. The syllabus, announcements, additional readings, and assignments will be posted on ELMS. Readings may change throughout the semester and changes will be posted on ELMS as well. Students can login to the website using their University ID and Password. Please let me know if you have trouble accessing the course website.

CAMPUS POLICIES

It is our shared responsibility to know and abide by the University of Maryland's policies that relate to all courses, which include topics like:

- Academic integrity
- Student and instructor conduct
- Accessibility and accommodations
- Attendance and excused absences
- Grades and appeals
- Copyright and intellectual property

Please visit <https://gradschool.umd.edu/course-related-policies> for the Office of Undergraduate Studies' full list of campus-wide policies and follow up with me if you have questions.

CLASS POLICIES

Academic integrity: The University of Maryland, College Park has a student-administered Honor Code and Honor Pledge. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://www.studenthonorcouncil.umd.edu/whatis.html>. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. The code prohibits students from cheating, fabrication, facilitating academic dishonesty, and plagiarism. Instances of this include submitting someone else's work as your own, submitting your own work completed for another class without permission, or failing to properly cite information other than your own (found in journals, books, online, or otherwise). Any form of academic dishonesty will not be tolerated, and any sign of academic dishonesty will be reported to the appropriate University officials.

Special needs: If you have a registered disability that will require accommodation, please see the instructor so necessary arrangements can be made. If you have a disability and have not yet registered with the University, please contact Disability Support Services in the Shoemaker Building (301.314.7682, or 301.405.7683 TTD) as soon as possible.

Religious observances: The University of Maryland policy on religious observances states that students not be penalized in any way for participation in religious observances. Students shall be allowed, whenever possible, to make up academic assignments that are missed due to such absences. However, the must contact the instructor **before** the absence with a written notification of the projected absence, and arrangements will be made for make-up work or examinations.

Course evaluations: As a member of our academic community, students have a number of important responsibilities. One of these responsibilities is to submit course evaluations each term through CourseEvalUM in order to help faculty and administrators improve teaching and learning at Maryland. All information submitted to CourseEvalUM is confidential. Campus will notify you when CourseEvalUM is open for you to complete your evaluations for fall semester courses.

Please go directly to the website (www.courseevalum.umd.edu) to complete your evaluations. By completing all of your evaluations each semester, you will have the privilege of accessing online, at Testudo, the evaluation reports for the thousands of courses for which 70% or more students submitted their evaluations.

Missed single class due to illness: Once during a semester, a student's self-authored note will be accepted as an excuse for missing a minor scheduled grading event in a single class session if the note documents the date of the illness, acknowledgement from the student that information provided in the note is correct, and a statement that the student understands that providing false information is a violation of the Code of Student Conduct. Students are expected to attempt to inform the instructor of the illness prior to the date of the missed class.

Major scheduled grading events: Major Scheduled Grading Events (MSGGE) are indicated on the syllabus in bold. The conditions for accepting a self-signed note do not apply to these events. Written, signed documentation by a health care professional, or other professional in the case of non-medical reasons (see below) of a University-approved excuse for the student's absence must be supplied. This documentation must include verification of treatment dates and the time period for which the student was unable to meet course requirements. Providers should not include diagnostic information. Without this documentation, opportunities to make up missed assignments or assessments will not be provided.

Non-consecutive, medically necessitated absences from multiple class sessions: Students who throughout the semester miss multiple, non-consecutive class sessions due to medical problems must provide written documentation from a health care professional that their attendance on those days was prohibited for medical reasons.

Non-medical excused absences: According to University policy, non-medical excused absences for missed assignments or assessments may include illness of a dependent, religious observance, involvement in University activities at the request of University officials, or circumstances that are beyond the control of the student. Students asking for excused absence for any of those reasons must also supply appropriate written documentation of the cause and make every attempt to inform the instructor prior to the date of the missed class.

Note: Readings may change or be added during the semester. Changes will be announced in class or by email.

OPTIONAL TEXTBOOK

Bjorklund, D.F. (2017). *Children's thinking: Cognitive Development and Individual Differences, 6th edition*. Belmont, CA: Prentice

CLASS SCHEDULE

August 26: Course Overview and Introduction to Cognitive Development

September 3: Labor Day

Theoretical Perspectives

September 9: Piaget's Theory

Piaget, J. (1983). Piaget's theory. In P.H. Mussen (Ed.), *Handbook of child psychology* (Vol. 1, pp. 103-118). New York: Wiley.

Carey, S., Zaitchik, D., & Bascandziev, I. (2015). Theories of development: In dialog with Jean Piaget. *Developmental Review*, 38, 36-54.

Optional:

Lourenço, O., & Machado, A. (1996). In defense of Piaget's theory: A reply to 10 common criticisms. *Psychological review*, 103(1), 143.

September 16: Vygotsky and Sociocultural Approach

Vygotsky, L. S. (1978). *Mind in society*. Cambridge, MA: Harvard University Press. (Chapters 1-4).

Lourenço, O. (2012). Piaget and Vygotsky: Many resemblances, and a crucial difference. *New Ideas in Psychology*, 30, 281-295.

Fawcett, L. M., & Garton, A. F. (2005). The effect of peer collaboration on children's problem-solving ability. *British Journal of Educational Psychology*, 75(2), 157-169.

September 23: Core Knowledge Approach

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

Feigenson, L., Dehaene, S., & Spelke, E. (2004). Core systems of number. *Trends in Cognitive Sciences*, 8(7), 307-314.

McCrink, K., & Wynn, K. (2004). Large-number addition and subtraction by 9-month-old infants. *Psychological Science*, 15, 776-781.

Pica, P., Lemer, C., Izard, V., & Dehaene, S. (2004). Exact and approximate arithmetic in an Amazonian indigene group. *Science*, 306, 499-503.

September 30 : Information-Processing Approaches to Development

Miller, P. (2011). Information-processing theory. *Theories of Developmental Psychology*. New York, NY: Worth Publishers.

Case, R. (1993). Theories of learning and theories of development. *Educational Psychologist*, 28(3), 219-233.

Siegler, R.S. (2000). The rebirth of children's learning. *Child Development*, 71(1), 26-35.

Specific Areas in Cognitive Development

October 7: Perceptual Development

- Bornstein, M. H., Arterberry, M. E., & Mash, C. (2011). Perceptual development. In M. Bornstein & M. E. Lamb (Eds.) *Cognitive Development: An Advanced Textbook* (pp. 319-368). New York, NY: Psychology Press.
- Kelly, D. J., Quinn, P. C., Slater, A. M., Lee, K., Ge, L., & Pascalis, O. (2007). The other-race effect develops during infancy: Evidence of perceptual narrowing. *Psychological Science*, 18(12), 1084-1089.
- Pascalis, O., et al., (2005). Plasticity of face processing in infancy. *Proceedings of the National Academy of Sciences of the United States of America*, 102, 5297-5300.

October 14: Language Development I: Early language acquisition

- MacWhinney, B. Language development. In M. Bornstein & M. E. Lamb (Eds.) *Cognitive Development: An Advanced Textbook* (pp. 405-440). New York, NY: Psychology Press.
- Kuhl, P. K. (2004). Early language acquisition: Cracking the speech code. *Nature Reviews Neuroscience*, 5,
- 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(5), 1510-1525.

October 21: Language Development II: Vocabulary development

- Hoff, E. (2006). How social contexts support and shape language development. *Developmental Review*, 26, 55-88.
- Rowe, M. L. (2008). Child-directed speech: Relation to socioeconomic status, knowledge of child development, and child vocabulary skill. *Journal of Child Language*, 35, 185-205.
- Senechal, M. & LeFevre, J. (2002). Parental involvement in the development of children's reading skill: A five-year longitudinal study. *Child Development*, 73, 445-460.

Optional:

- Golinkoff, R. M., Hoff, E., Rowe, M. L., Tamis-LeMonda, C. S., & Hirsh-Pasek, K. (2018). Language matters: Denying the existence of the 30-million-word gap has serious consequences. *Child Development*, 1-8.

October 28: Memory Development

- Schneider, W. (2010). Memory development in childhood. In U. Goswami (Ed.), *The Wiley-Blackwell Handbook of Childhood Cognitive Development*, 2nd edition (pp. 347-376). Malden, MA: Blackwell Publishing.
- Grammer, J., Coffman, J. L., & Ornstein, P. (2013). The effect of teachers' memory-relevant language on children's strategy use and knowledge. *Child Development*, 84, 1989-2002.
- Boland, M. A., Haden, C. A., & Ornstein, P. A. (2003). Boosting children's memory by training mothers in the use of an elaborative conversational style as an event unfolds. *Journal of Cognition and Development*, 4, 39-65.

November 4: Executive Functions

- Diamond, A. (2013). Executive functions. *Annual review of psychology*, 64, 135-168.
- Jaeggi, S.M., Buschkuhl, M., Jonides, J., & Shah, P. (2011). Short- and long-term benefits of cognitive training. *Proceedings of the National Academy of Sciences of the United States of America*, 108(25), 10081-10086.
- Diamond, A., & Lee, K. (2011). Interventions shown to aid executive function development in children 4-12 years old. *Science* 333, 959–964. doi: 10.1126/science.1204529

Optional:

- Shipstead, Z., Redick, T. S., & Engle, R. W. (2012). Is working memory training effective? *Psychological Bulletin*, 138(4), 628-654.

November 11: Mathematical Development I: Early number concepts

- Siegler, R. S., & Braithwaite, D. W. (2017). *Numerical development*. *Annual Review of Psychology*, 68, 187-213. doi: 10.1146/annurev-psych-010416-044101
- Scalise, N., Daubert, N. A., & Ramani, G. B. (2017). Narrowing the early mathematics gap: A play-based intervention to promote Head Start preschoolers' number skills. *Journal of Numerical Cognition*, 3(3), 559-581.
- Chu, F. W., Rouder, J., & Geary, D. C. (2018). Children's early understanding of number predicts their later problem-solving sophistication in addition. *Journal of Experimental Child Psychology*, 169, 73-92.

Optional:

- Watts, T. W., Duncan, G. J., Siegler, R. S., & Davis-Kean, P. E. (2014). What's past is prologue: Relations between early mathematics knowledge and high school achievement. *Educational Researcher*, 43(7), 352-360.

November 18: Mathematics Development II: Role of experience

- Mix, K. S., Smith, L. B., Stockton, J. D. & Barterian, J. A. (2016). Grounding the symbols for place value: Do concrete models help? *Journal of Cognition and Development*, 18(1), 129-151.
- Prather, R. & Alibali, M. (2011). Children's acquisition of arithmetic principles. *Cognition and Development*, 12(3), 332-354.
- Ramirez, G., Chang, H., Maloney, E. A., Levine, S. C., & Beilock, S. L. (2016). On the relationship between math anxiety and math achievement in early elementary school: the role of problem solving strategies. *Journal of Experimental Child Psychology*, 141, 83-100.

Optional:

- Levine, S. C., Suriyakham, L. W., Rowe, M. L., Huttenlocher, J., & Gunderson, E. A. (2010). What counts in the development of young children's number knowledge? *Developmental Psychology*, 46(5), 1309.

November 25: Learning in the Classroom

Kirschner, P.A. & van Merriënboer, J.J.G. (2013) Do learners really know best? Urban legends in education, *Educational Psychologist*, 48(3), 169-183,
doi:10.1080/00461520.2013.804395

Nancekivell, S. E., Shah, P., & Gelman, S. A. (2019, May 30). Maybe they're born with it, or maybe it's experience: Toward a deeper understanding of the learning style myth. *Journal of Educational Psychology*. Advance online publication.
<http://dx.doi.org/10.1037/edu0000366>

December 2: Conclusions and Presentations**December 9: Presentations**