HD FS 631 Learning & Cognitive Development In Children

Fall 2002

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COURSE DESCRIPTION:
Theory and research emphasizing constructivist, Vygotskian, and information processing approaches to cognitive development. Concept, memory, and problem-solving development. Sources of individual differences in cognitive functioning of children and adolescents.

PERFORMANCE OUTCOMES:
In oral and written form, to:
1. compare, contrast, and evaluate the utility of current theories of the development of cognition and learning in children; to draw implications for research and professional practice.
2. present, analyze, synthesize, and critique current research evidence on the development of cognition and learning in children; to draw implications for theory-building, research, and professional practice.
3. prepare, critique, revise, present, and discuss a manuscript for a current research study on learning and cognitive development in children.

TEXTS
Required:

Course Websites:
http://www.public.iastate.edu/~shegland/homepage.html
http://www.fcs.iastate.edu/classweb/default.htm

GRADING CRITERIA:

<table>
<thead>
<tr>
<th>Points</th>
<th>Assignment</th>
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<tr>
<td>10</td>
<td>I: Essay Response</td>
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<td>30</td>
<td>II: Article presentation</td>
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<tr>
<td>10</td>
<td>Research Topic</td>
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<tr>
<td>100</td>
<td>Examination I</td>
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<tr>
<td>165</td>
<td>III: Manuscript submission to JLCD</td>
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<td>20</td>
<td>IV: Peer Review of Manuscripts Due</td>
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<td>10</td>
<td>III: Revised manuscript to JLCD due</td>
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<td>25</td>
<td>III: Presentation and Handout</td>
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<tr>
<td>25</td>
<td>Class participation during discussions</td>
</tr>
<tr>
<td>100</td>
<td>Examination II (not comprehensive)</td>
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<td>480</td>
<td>TOTAL</td>
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Please address any special needs or special accommodations with me at the beginning of the semester or as soon as you become aware of your needs. Those seeking accommodations based on disabilities should obtain a Student Academic Accommodation Request (SAAR) form from the Disability Resources (DR) office (515-294-6624). DR is located in 1076 Students Services Building.
<table>
<thead>
<tr>
<th>Date</th>
<th>Presenter</th>
<th>Topic and Assignment</th>
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</table>
| 9-9    | Hegland   | **Research reports:**  
change: The effect of organizing the input. *Cognitive Development, 16,*  
737-759.  
**Review:** Biology and Cognition  
Bjorklund, ch. 1, Introduction (pp. 1-21)  
Bjorklund, ch. 2, Biological Bases of Cognitive Dev’t (pp. 22-56)  

| 9-16   |           | **Research reports:**  
information processing in infancy: Cardiac vagal tone and habituation.  
*Child Development, 71,* 274-287.  
**Review:** Vygotsky Theory & Research:  
Bjorklund, ch. 4: The Social Construction of Mind (pp. 57-72)  

| 9-23   |           | **Research reports:** Vygotsky  
difficulty, self-regulation, and psychological prediction. *Cognitive  
Development, 16,* 889-906.  
**Review:** Piaget:  
Bjorklund, ch. 4: Piaget’s Theory and the neo-Piagetians (pp. 73-116)  

| 9-30   |           | **Research reports:** Piaget  
systems account of the A-not-B error: The influence of prior experience  
on the spatial memory abilities of two-year-olds. *Child Development, 72,*  
1327-1346.  
**Review:** Information Processing Approaches:  
Bjorklund, ch. 5: Information-Processing Approaches (pp. 117-157)  

| 10-7   |           | **Research reports:** Information Processing Theories  
Greenhoot, A. F. (2000). Remembering and understanding: The effects of  
changes in underlying knowledge on children’s recollections. *Child  
Development, 71,* 1309-1328.  
**Review:** Representation  
Bjorklund, ch. 7: Representation (pp. 193-232)  

| 10-14  | Due: Paper topic | **Research reports:** Representation  
Callaghan, T. C. & Rankin, M. P. (2002) Emergence of graphic symbol  
functioning and the question of domain specificity: A longitudinal training  
DeLoache, J. S. (2000). Dual representation and young children’s use of  
**Review:** Memory  
Bjorklund, ch. 8 Memory Development (pp. 329-274)  

| 10-21  |           | **Research reports:** Memory  
in six- and seven-year-old children. *Journal of Educational Psychology,*  
92, 377-390.  
Templeton, L. M. & Wilcox, S. A. A tale of two representations: The  
misinformation effect and children’s developing theory of mind. *Child  
Development, 71,* 402-416.  
Brief (3 min.) summaries of each student’s topic, including related theory and  
research  
**Review:** Problem Solving  
Bjorklund, ch. 10 Problem Solving & Reasoning (pp. 311-333)  

| 10-28  |           | **Exam I**  

**WEEKS, TOPICS, AND ASSIGNMENTS**
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<th>Date</th>
<th>Topic</th>
<th>Details</th>
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<tr>
<td>12-16</td>
<td>Exam II</td>
<td>CLASS FORMAT</td>
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EXAMS WILL CONSIST OF THREE PARTS:
1. Concepts: 10 terms (requiring a definition and an example) (50 points) [N.B.: The ten terms will be selected from lists of terms brought by students and me to the class period immediately prior to the exam.]
2. Linking theory to research (choice of two essay questions) (25 points)
3. Linking theory and research to current issues (choice of two essay questions) (25 points)

ASSIGNMENT I: ESSAY RESPONSE
All exams will be recorded under the last five digits of your social security number. Your answers to essay questions will be evaluated on the basis of organization (i.e., introduction and conclusion), logical arguments, clarity, and appropriate citations of theory and research (e.g., 3-5 citations appropriately linked
to your arguments). In your answers, the introduction should state your position and briefly introduce your major arguments in support of that position. Each of your arguments should be linked to appropriate theory and research. Theory and research citations should include sufficient information to explain their relevance to your arguments. Length and quantity of citations are not relevant. The conclusion should review and close your arguments; however, the conclusion should neither introduce new topics nor a "preachy" moral. If the conclusion sounds like it needs an "Amen," it does not provide an acceptable scholarly conclusion to your reasoning.

After reading the first assignment in Bjorklund for next week, select one of the following questions and write a one page response, identified only by the middle digits of your ISU ID number:

1. What develops in cognitive development?
2. Does cognitive development proceed in stages?
3. What causes changes in cognitive development?

Be careful to answer these questions in your words, not those of Bjorklund. Some students have little or no experience writing this type of essay answer. Therefore, below is an example of an acceptable answer written by a graduate student to the question, "Does human language have special properties that are unique to humans?" Note the organization, research and theory citations to support points, the logic, and the limited conclusion:

Human language has special properties that are unique to humans. Although many animal species demonstrate evidence of communication, the communication systems of most animals do not meet Brown's criteria of productivity (recombining words in new utterances) or displacement (decontextualized language). However, the studies reviewed in Berko Gleason (1989) provide evidence that primates can express some representative, or semantic, language. For example, Premack (1980) demonstrated that chimps are capable of using symbols to represent words, both in response to "what is...?" and to indicate wants.

Berko Gleason (1989) summarized the results of four studies with primates, covering the time period of 1930 to the present. Initially researchers (e.g., Kellogg and Kellogg, 1933; Hayes, 1951) attempted to raise chimpanzees as children and to teach them speech. This proved frustrating (probably to the chimps as well as to the researchers), as it appears that chimpanzees do not have the biological structure necessary to form words.

Later researchers (e.g., Gardner & Gardner, 1969; Terrace, 1980) tried to teach chimpanzees to use sign language (ASL) to communicate. This was more successful than the earlier attempts; the chimps acquired the typical initial vocabulary learned by young children. Furthermore, the chimps learned to combine words into two or three word utterances. Most of the responses, however, appeared to be in response to cues provided by the humans involved. Furthermore, none of the chimps mastered appropriate word order or conversation turn-taking, essential features of human communication that are demonstrated by very young children. At present some animal research interest is centered on the pygmy chimp, which is thought to be a more intelligent species than those used in earlier research. Future studies may demonstrate that these pygmy chimps can master more aspects of human language than earlier species.

In summary, animal studies to date have found some species capable of communication; however, this communication refers only to the here-and-now, is limited to few words, symbols, gestures, or sounds, and is representative of very concrete items and basic needs. No evidence of conversation turn-taking, displacement, or productivity has been shown. Therefore, current evidence supports the conclusion that language that involves productivity and displacement is a uniquely human capability.
ASSIGNMENT II: ARTICLE PRESENTATION & DISCUSSION

Objectives:
1. To abstract relevant information from a research article.
2. To critically analyze a research study in order to compare/contrast the results with those of other studies.

Author Assignment:
Present a 15-minute summary of each of your two your selected research articles as if you were the author. Lead a 15 minute discussion on the findings, implications, and limitations of the study. In deciding what to present, review pp. 11-22 and pp. 339 to 340 in the APA Publication Manual. You should plan on presenting the highlights of the article, including the purpose of the study, description of the participants, methodology, problems and major findings, conclusions or recommendations. Begin by planning equal time for each component (i.e., introduction, method, results, and discussion); however the actual time devoted to each highlight will vary according to your assessment of the relative importance of each area to the paper. Do not plan to read your paper verbatim from the text; this always results in a dull paper that exceeds the time limits. The most common mistake that students make is devoting too much time to the introduction and method sections; when they receive the “two-minute warning”, they gasp in realization that they only have 2 minutes to “cover” the results and discussion. In a recent AERA conference, inexperienced extemporaneous speakers were advised to prepare a “reading text” of approximately 5 to 7 typed pages of outline.

During the first hour of each class period, we will discuss the assigned research articles. Each week, one student will present one of the assigned research articles as the author would, that is, as if the study were his/her own original research. Each presentation will require no more than 15 minutes. Presentation time should be equally divided among justification, method, results, and discussion. Come prepared to discuss the articles in light of the criteria identified in the APA Publication Manual, pp. 21-22. The presentations will generally focus on answering the following questions:

1. **Justification for the study:**
   a) Why was this study needed?
   b) What is the theoretical or empirical need for this study?

2. **Method (participants, instruments, procedure)**
   a) Why is the method appropriate for answering the research questions?

3. **Results**
   a) What results, using what statistical analyses, were found for each hypothesis?

4. **Discussion:**
   a) What theoretical or empirical conclusion(s) did the author(s) draw from the results?
   b) What are the limitations to the study and how will you correct them in future studies?
   c) What implications do you draw for theory-building, future research, and applications for parents, home visitors, and teachers?

Each presentation will be evaluated on a 15 point basis for clarity, logic, coherence, and conciseness. Authors may wish to use overhead transparencies to aid their presentation. Following each presentation, all class members will function as discussants would at a research conference. That is, class members will serve as “scientific gatekeepers”, reviewing the scientific merit of the study, and helping the presenting scientist improve the quality of his or her work. Class members will also contribute to a discussion of the application of the research for theory building and applications.

Generally, during the last half of class, I will lecture and we will discuss the Bjorklund chapter. Using the theories and research studies assigned, come to each class prepared to discuss the research and theoretical evidence bases for responses to following questions:

1. What changes in learning and cognitive development in children?
2. What causes changes in learning and cognitive development in children?
3. What individual differences exist in cognitive development in children?
4. What are the educational and parenting implications of this research and theory?

**Audience Role**

No later than 9 PM on the Monday night before class, post a comment/question related to two of the following aspects of each study assigned for that class period.

1. The importance of the problem
2. The theoretical/empirical justification for the study
3. Methodology
4. Data analysis and interpretation
These postings will count towards the “class participation” part of the course grade, and will give the author helpful insights as to your perspectives.

**ASSIGNMENT III: JCLD MANUSCRIPT, REVISED, & ORAL PRESENTATION**

Each student will both submit an article to the HD FS 631 “Journal of Learning and Cognitive Development in Children” and serve on the editorial board of this class journal. Each student will submit a manuscript, which will be blind reviewed by two other students in the class and the instructor. Each student will then submit a revised manuscript and provide a brief overview of the study to the class.

N.B.: Review the APA statement on plagiarism (pp. 349-350) before writing this assignment

**A. Purpose**

Write a 20-30-page research manuscript in APA style, that is,

1. Briefly review (i.e., summarize, integrate, compare, and contrast) current theory, research, and methodology related to a specific problem in learning and cognitive development in children.
2. Explain why additional work is needed: what gaps exist in the research and/or between research and current practice?
3. Design a research study, that is,
   a. Formulate a problem (hypothesis) that can be empirically tested and to predict the outcome of that test.
   b. Design a research method to test your hypotheses.

**B. Introduction** (read APA Manual, pp. 11-12)

1. Review the theoretical or empirical background and significance of the problem or area.
   a. Distinguish between theoretical arguments (e.g., Smith suggests, argues, defines), research findings (e.g., Smith reported, found, demonstrated; Results of, In a study by Brown), and review summaries (In a review of, Smith reviewed).
   b. Identify current controversies, contradictory findings or theoretical predictions, or gaps in the current research that your study will attempt to resolve. Identify possible explanations for these controversies (i.e., differing operational definitions, populations, methodologies)
2. Review the research methodologies used in this area.
   a. Describe the method(s) (e.g., interviews, observations, experimental, quasi-experimental) typically used in this area. Do the different methods used produce different results? Are certain confounding variables consistently controlled for?
   b. Describe why you believe the particular method in this study will avoid confounding variables, resolve the controversy, or fill the gap in current understanding.
3. Identify two to three research questions you will answer in your study. The questions should logically follow from your review; the answers should fill the gaps or resolve the controversies that you have identified. Every variable specified in the questions should have been addressed in your review.

**C. Method** (read APA Manual, pp. 12-14)

1. **Participants** Include any descriptive characteristics (i.e., number, age, sex, I.Q., source [e.g., child care centers, public school, low-income, Head Start]) that another researcher would need in order to replicate your study.
2. **Materials** (instruments, tests, toys, etc.) to be used in your study. Provide a clear explanation of the relation between the independent and dependent variables (or predictor and outcome variables) and the materials used to measure each. Provide sufficient detail to permit replication. Report reliability and validity of tests or scoring procedures.
3. **Procedure** Give a precise description of the procedures administered to each subject, each experimental group, and each control group. Again, provide sufficient detail to permit replication.

**D. Results** (read APA Manual, pp. 15-18)

1. For each research question, report the results of your statistical analyses, including descriptive information (e.g., M, SD, N), the statistical test, degrees of freedom, and significance level.

**E. Discussion** (read APA Manual, pp. 18-19)

1. For each research question, report whether your findings support or fail to support your prediction
2. For each research question, compare your findings with prior research (cited in introduction)
3. Discuss the scientific and practical significance of your study, including
   a. Limitations of the present study, and suggestions for improvement in future research
b. Suggestions for follow-up studies.

F. References (read APA Manual, pp. 20)
1. Follow APA style format; note:
   a. differences between journal and book (chapter) entries.
   b. spacing, capitalization, punctuation, ampersand (&), & names (do not include first names!).
2. Include a minimum of five research articles in learning or cognitive development, preferably published in refereed journals within the past 10 years. This does NOT include ERIC documents, which have not received a peer review, review articles, theoretical articles, or application articles. If you have difficulty finding this number, consider changing your topic and/or see me.
3. Use a minimum number of 10 to 15 primary references (i.e., review, theoretical, and research articles, books, or chapters; no textbooks or popular magazines) in order to review the area adequately. However, your grade depends on the analysis, not the number, of references.

G. Grading criteria

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<th>TOTAL POINTS: 200</th>
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<tbody>
<tr>
<td>1. Introduction</td>
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<tr>
<td>a. Summary, integration, and comparison of relevant research and theory in learning/cognitive development (30 points)</td>
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<tr>
<td>b. Summary, integration, and comparison of methodologies in learning or cognitive development (20 points)</td>
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<td>c. Defense of hypothesis (10 points)</td>
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<td>2. Methodology</td>
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<td>a. Participant selection: Appropriate (based on introduction) and complete (15 points)</td>
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<td>b. Materials or instruments: Appropriate and complete (15 points)</td>
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<td>c. Procedure: Appropriate and complete (15 points)</td>
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<tr>
<td>3. Results</td>
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<td>a. For each variable, report descriptive statistics (i.e., m, s.d.) for each instrument (5 points)</td>
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<td>b. For each research question, report the statistics and describe results of the (fictional)statistical analyses used to test the hypothesis (5 points)</td>
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<tr>
<td>4. Discussion</td>
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<tr>
<td>a. For each research question, conclude whether your (fictional)findings support or fail to confirm your prediction (hypothesis) (10 points)</td>
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<tr>
<td>b. Discuss the scientific implications of your study for theory building and future research (10 points)</td>
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<tr>
<td>5. References</td>
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<tr>
<td>a. APA style (5 points)</td>
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<tr>
<td>b. 5 refereed research articles in learning/cognitive development (5 points)</td>
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<td>4. General</td>
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<td>Mechanics (spelling, grammar, punctuation) and communication (logic, organization)</td>
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H. Revisions (specific changes, responding to reviews, to improve communication) 10

I. Presentation
1. 1-2 page handout outlining presentation (include 3-5 most important references)
2. Present a 10-15 minute outline to the class (15 points).
   Criteria: Clarity, logic, coherence, conciseness.
3. Lead a 5-10 minute class discussion on your presentation (5 points).
   Criteria:
   Active listening, including
   - Recognition of validity in other's statements,
   - Clarification of other perspective
   Professional responses, including
   - Intellectual openness (e.g., lack of defensiveness)
   - Responses related to question,
   - Logical responses based on knowledge of theory and research literature,
   - Recognition of alternative perspectives.
You must bring two copies of to class on November 18; the paper should only be identified by the central four digits of your ISU ID number. Two of your peers will submit reviews, also only identified by the last five digits of their ISU ID numbers, no later than December 2. You will have one week to incorporate the suggestions from your reviews, and post your final article on the web by December 9, when you will present your study to the class. You must also make changes in your manuscript in response to your reviews; these should be explained in a cover letter to the “editor” (instructor), which is appended to the manuscript.

ASSIGNMENT IV: REVIEWS OF TWO EMPIRICAL MANUSCRIPTS

In order to improve scientific communication, each student will review two manuscripts for peers. These reviews will be anonymous; only the instructor will know who reviews which manuscript. You should review this manuscript as if you were reviewing for a research journal for your colleagues. As a reviewer, you need to serve in two roles. First, as a scientific gatekeeper, you want to disseminate only studies with true scientific merit. That is, the manuscript, according to one journal editor (J. Levin) should have coherence, credibility (believability of findings), and creditability (worth, and value to the field). Secondly, your role is to assist the author to improve his/her work. You will have access to the manuscript on the from November 18 through December 2, at which time you should bring your reviews to class, where they will be given to the authors. The author will use your feedback to resubmit the manuscript by December 9.

In a one to two page summary, identify the strengths and needs in each component. Be constructive; identify both strengths and needs. Your comments should be consistent with your rating above; that is, if you evaluate the component as “needs some revisions,” your comments on that component should show a balance between the number of identified strengths and needs.

The review format for you to use follows; create a similar template for your two reviews

Reviewer ID:________________________

JOURNAL OF LEARNING AND COGNITIVE DEVELOPMENT MANUSCRIPT REVIEW FORM

MS Title____________________________________  Author ID:_________________

Rating Scale

<table>
<thead>
<tr>
<th>Component</th>
<th>Ready for publication</th>
<th>Needs some revisions</th>
<th>Needs major revisions</th>
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<tr>
<td>Introduction: Importance of Problem</td>
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<td>Introduction: Theoretical/empirical justification</td>
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<td>Methodology</td>
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<td>Results and Discussion: Data Analysis and Interpretation</td>
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<td>Writing Quality</td>
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