

# 2009-2010 Curriculum Development Grant Application

Name Brad Sheese Year of tenure-track appointment 2007

Type of Grant Sought:

Individual

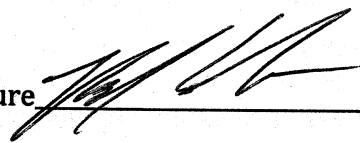
Group - please list additional member(s)

Course(s): Psychology 352 - Advanced Child Development

Please complete the following checklist by placing a check mark against each item to ensure that your application is complete. Incomplete applications will be returned to the applicant without further consideration.

- 1. Narrative (Not to exceed 3 pages, single space, Times Roman 12 point)
- 2. CD Budget Page
- 3. CD Grant Supervisor's Form

If your proposal is funded, would you be willing for the Malton Center to use it as an exemplary submission in the online *Handbook*?  Yes  No

Signature  Date 3/11/10

**Psychology 352: Advanced Child Development**  
**Brad E. Sheese, Ph. D.**

The goal of this seminar course is to engage students in critically examining contemporary scientific research on child development with a particular emphasis on understanding the interaction of biological and environmental influences on the developing child. Students will read, discuss, and critique theoretical perspectives and research findings that inform our current understanding child development. Students will also develop an expertise in an area of child development by proposing an original empirical research project. Throughout the term, students will be guided through developing a research question, conducting a literature review, giving a 10-minute oral presentation of their proposal, writing a proposal prospectus, and, finally, writing the proposal itself.

**Content**

The first part of the course will focus on developing a basic understanding of genetics, genetic methods, and the application (and mis-application) of genetics for understanding behavior. We will start at the genetic level, address definitions of genes, the function of genes, and methodologies employed in molecular genetics to link specific genes to nervous system functions. We will read recent critiques of the so-call "risky gene" approach employed in psychology and psychiatry. We will then contrast the molecular genetic approach with the behavioral genetic approach, which compares identical and fraternal twins to estimate the heritability of behavioral phenotypes in human populations. We will critically examine the methods, findings, and common critiques of behavioral genetics research with a particular emphasis on understanding the equal environments assumption. We will end the first section of the course by considering animal research using genetic "knock-in" and "knock-out" methodologies to study behavior.

In the second section of the course we address broader theoretical perspectives with the goal of understanding the current status of the nature/nurture controversy. We will start by examining Nativism and Empiricism as philosophical traditions and drawing connections to contemporary research efforts. We will then consider theoretical and empirical findings consistent with Interactionist (gene X environment) perspectives on child development. We will discuss limitations of Interactionist approaches and methodologies including problems associated with lack of random assignment to either genes or environments. We will then explore epigenetic approaches. We will start with the foundations of epigenetic theories stemming from developmental embryology. We will contrast these theories with Interactionist approaches and discuss contemporary epigenetics as a methodology (distinct from the theory) for understanding complex developmental processes. We will end this section of the course by discussing the strengths and limitations of adopting systems-theory approaches to understanding psychological development.

The third section of the course will consider genetic and environmental influences on the course of fetal development. We will discuss nervous system development including neurogenesis, synaptogenesis, apoptosis, and synaptic pruning. We will consider the organization of brain structure and the long-term impact of variations in brain structure on psychological functioning.

We will consider teratogenic influences on fetal development in detail, including viral and infectious influences, toxins, pharmaceutical influences, stress, and nutrition.

In the final section of the course we will consider evidence for genetic and environmental influences on brain development and psychological functioning during childhood. We will concentrate on understanding the development of perceptual and motor systems, memory, emotional systems, attention, and executive systems. Quality of parenting and educational experiences will be evaluated as potential protective factors.

### Readings

The emphasis of the course will be on reading two to three primary source articles (theoretical or empirical journal articles) for each class. Class activities and discussion will focus on understanding, critiquing, and placing each of these readings in context. A major focus of my work on this course over the summer will be identifying journal articles that are appropriately challenging but also comprehensible for students at IWU.

Articles will be supplemented by course texts selected to fill in the gaps between what the students may already know and the information found in the articles. I have yet to identify appropriate texts. I intend to consider adopting two or three texts. To date, I have identified the following as potential candidates: *The Nature X Nurture Debate* by Ceci, *Brain Development and Cognition* by Johnson, Munakata, and Gilmore, *Genes and Behavior* by Rutter, *Neuroscience of Cognitive Development* by Nelson, *Nature via Nurture* by Ridley.

### **Teaching approach**

This course will be a discussion-based seminar. Students will be encouraged to engage and critique course material through a series of class based discussions. Discussion formats will vary to some degree based on specifics of the content. Regardless of format, students will be responsible for learning through active engagement with the course material both in and out of class. Students will be required to prepare short-summaries of each reading prior to class and to bring two to three questions for class discussion. Small groups of students will be assigned to lead discussions on sub-topics. I will supplement discussions with brief lectures and videos to provide additional context. Small assessments in each class will provide students with on-going feedback about the quality of their engagement with the course and the course material.

Students will write a proposal for an original empirical study. This research proposal will allow students to concentrate intensively on a topic of their choosing. It will also provide an opportunity for students to engage the scientific literature in a creative and critical way. Students must propose projects that show a clear potential for contributing to the existing literature. This requires students to gain an understanding of what is currently known and to consider the limitations of current research. I will guide students through every step of the process throughout the course. We will work on literature review skills, presentation skills, critiquing skills, and scientific writing skills.

### **Assignments**

For each class, students will be asked to read two to three theoretical or empirical research articles, to write brief summaries of each article, and to provide questions for class discussion. Students will also be asked to lead class discussion on sub-topics in small groups.

A major focus of the students' effort during the term will be producing an original research proposal. This proposal will be 10 to 15 pages in length and will propose an empirical research study that will contribute the scientific literature on child development. Students will be asked to develop two research ideas early in the semester. These ideas will be presented to the class and discussed. Based on class discussion and my feedback, students will select one of their research ideas to elaborate into a full-length proposal. Students will then be instructed on how to conduct a literature review and will be required to present a 10 minute talk describing three empirical research studies, their hypothesis (and how it builds on the studies they described), and their proposed method. The class will provide immediate feedback on presentations and I will provide written feedback. Ten weeks into the semester students will be required to provide a written one page prospectus describing their study. A week later they will provide a two page outline of their final proposal. A week after that, students will hand in an initial draft of their literature review. At each stage students will receive comments from peers during in-class peer review sessions and I will also provide written feedback. The completed proposal paper and all drafts will be due the final week of class.

### **How the grant will assist development of the course**

I am requesting a summer stipend for the development of this course. I intend to teach the course on a recurring basis (every other year alternating with my Music Neuroscience class) and I would like to devote a substantial portion of my summer to planning the course so it goes as smoothly as possible. This kind of advance child development class is not commonly offered at the undergraduate level at most institutions, so there are no suitable pre-packaged course materials available. I intend to read broadly to identify appropriate journal articles and texts suitable for the class. I also plan to refine the research proposal paper guidelines to insure that students are provided with clear and concrete goals and opportunities to receive feedback on their progress throughout the semester.

I am also requesting money to purchase books for evaluation as course texts and to purchase films that may be relevant to the class.

### Curriculum Development Grant Budget

1. Estimated expenses (make sure to include a description of each of the expenses in the 2-3 page narrative). If you are requesting books or videos, please provide titles and approximate costs.

<b>Item</b>	<b>Amount</b>	
<u>Nature X Nurture</u>	<u>30</u>	
<u>Brain Dev &amp; Cognition</u>	<u>40</u>	
<u>Genes &amp; Behavior</u>	<u>15</u>	
<u>Neuroscience of Cog Dev.</u>	<u>30</u>	
<u>Nature via Nurture</u>	<u>10</u>	
<u>Films</u>	<u>30</u>	
<hr/>		
Total		<u>155</u>

2. Stipend requested (see above text for specific requirements):

<b>Name</b>	<b>Amount</b>	
<u>Brad Sheese</u>	<u>1845</u>	
<hr/>	<hr/>	
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Total		<u>1845</u>

3. Total amount requested:

2000

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March 22, 2010

To: Faculty Development Committee  
From: Joe Williams, Chair of Psychology  
RE: Curriculum Development Proposal from Professor Brad Sheese

J.W.

This is a chair's letter in support of Brad's application for a curriculum development grant. I am strongly in support of this proposal because I believe that it fits well within the Psychology Department's current efforts to structure upper division courses for our students.

This is Brad's third year at IWU, and this proposal reflects his attempts to develop an upper division course that will be a regular component of our curriculum and will be taught every other year. We anticipate offering this course as a special topic seminar for a few years, after which we will initiate a proposal to turn Advanced Child Development into a regular course.

Brad's course will fit well as an upper division advanced course that will parallel other advanced courses in the department and as such expand our offerings of more application oriented classes. Each faculty member is expected to regularly teach one such upper division course that builds upon prerequisite skills and course work. This curriculum grant will enable Brad to develop such a course.

The proposed course will also address the department emphasis on expanding writing competencies of students by providing a 300 level course that requires an empirical research proposal. This course will build upon the required department writing intensive course, research methods, that is taken by psychology majors during their sophomore year.

There is likely to be considerable student interest in a course on advanced child development. In past years, faculty have offered course on related topics that have been well received.