Teaching Statement

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Teaching is one of the most rewarding aspects of my career. My primary goals in teaching are to inform and excite students about the process and content of scientific discoveries in psychology. Student evaluations suggest that I have been effective in achieving these goals. My mean course rating is 4.74 on a 5 point scale, my mean instructor rating is 4.91, and students reliably comment on my enthusiasm and the clarity of my presentations of complex material. I have also received the University of Denver Mortar Board's "Top Professor" Award. I enjoy teaching immensely, both in the formal classroom environment, and as an advisor to postdoctoral researchers, graduate students, and undergraduates in my research lab. I will discuss each of these teaching capacities in turn.

I teach relatively broad survey courses and more specialized seminars. The more broad courses include **Introduction to Cognitive Neuroscience** (undergraduate), and **Cognitive Development** (graduate). I would also be qualified and happy to teach courses at the undergraduate level on **Developmental Cognitive Neuroscience**, and **Cognitive Development**. The more specialized seminars include **Brain Development and Cognition** (advanced undergraduate), **Introduction to Neural Networks** (graduate and advanced undergraduate), and **Advanced Topics in Cognitive Development** (graduate). I am also interested in teaching other advanced courses (e.g., on **Brain Development and Public Policy**, and **Modularity**), but have not yet had the opportunity to do so.

I have learned a great deal about teaching based on the courses I have taught. I have been fortunate to work on the textbooks associated with several of these courses, to run drafts by students, and to incorporate their extensive feedback to improve both the final textbooks and my teaching of the material. For example, Randall O'Reilly and I co-authored a neural networks textbook, entitled *Computational Explorations in Cognitive Neuroscience: Understanding the Mind by Simulating the Brain.* Many of my students experienced difficulty with the mathematical concepts in the textbook drafts. I worked on incorporating various analogies and refreshers on calculus into the course, until students had sufficient mastery to understand the mathematical basis for the learning algorithms used in the simulations. I also revamped the order in which I taught the material (so that the more concrete biological concepts were introduced before the more abstract mathematical concepts). We reorganized the book in this same way (and included the refreshers and analogies), so that the student feedback served to improve the text and the effectiveness of my teaching. I also benefited from student feedback in co-editing a reader with Mark Johnson and Rick Gilmore, entitled *Brain Development and Cognition: A Reader* (second edition). I used student feedback to help select final readings and to craft editor's comments to clarify points in the readings and to draw links across readings. And, the most salient feedback from students in this seminar provided part of the impetus for my current textbook project. Specifically, most of the students expressed the wish to have first taken a broad introductory course on developmental cognitive neuroscience (with an associated textbook), before reading the original research articles in our reader. I am currently working on a comprehensive introductory textbook on this topic, with co-authors Adele Diamond and BJ Casey. I look forward to again working with students in this process, to improve both my teaching of this material and the resulting textbook. I have also used student feedback to provide comprehensive reviews of other textbooks (e.g., Banich's *Neuropsychology*), for incorporation into subsequent editions. In all of these cases, students' comments have been invaluable; I think that my interest in and careful attention to them has played a large role in the effectiveness of my teaching.

In my research lab, I have had the opportunity to teach postdoctoral researchers, graduate students, and undergraduates. We meet as a group twice weekly, with one meeting for scientific discussion and the other meeting for pragmatic aspects of the lab. I also have individual weekly meetings with the postdoctoral researchers and graduate students, and with undergraduates who have honed in on their research interests based on their experience in my lab. The pragmatic discussions cover a variety of practical aspects of conducting research, such as the submission of grant applications. All of the postdoctoral researchers and graduate students in my lab have worked on external grant applications with me, and many of the undergraduates have written internal grant applications for university funding of lab projects.

In scientific discussions with members of my lab, I place special emphasis on teaching the importance of three factors in research: 1) the use of converging methods, 2) attention to questions of mechanism, and 3) the balanced consideration of competing perspectives. Converging methods are of course essential for science in general, and I believe that they are particularly relevant for cognitive neuroscience (given the plethora of available techniques) and development (given the fierce controversies about how to best interpret the behavior of infants and children). Students in my lab thus receive training in a range of behavioral techniques (including looking-time, reaching, verbal, and navigation measures) as well as in neural network modeling, and they learn how to build on findings from other areas in developmental cognitive neuroscience. Questions of mechanism are similarly relevant for science in general, and again I believe that they are particularly key for cognitive neuroscience (given the basic question of how the brain provides the mechanism for the mind) and development (given the fundamental question of what mechanisms govern the incredible changes observed during the first years of life). Students in my lab thus receive training in a variety of ways to think about underlying mechanisms, at the neural, computational, and psychological levels. Finally, I believe that a great deal can be learned by trying to adopt a balanced perspective that considers multiple competing approaches; I feel that I personally benefited tremendously from working closely with a number of people with very different perspectives on development (e.g., Jay McClelland for my graduate work, and Liz Spelke for my postdoctoral work). I try to convey the importance of this kind of balance to my students in several ways, such as by moderating discussions to include a variety of perspectives in the field, sharing critiques of my work from alternative approaches (where even if I may not favor the approaches, I value the critiques and can build constructively on them), and by recruiting people with different perspectives to participate in my research group.