Models of Categorization
Psychology 351 : Seminar in Cognitive Psychology
Fall 1999

Thomas Palmeri
507 Wilson Hall
343-7900 (office)
228-2382 (home)
thomas.j.palmeri@vanderbilt.edu
http://www.vanderbilt.edu/AnS/psychology/cogsci/palmeri/home.html.
office hours: Tu/Th 11-12 (or by appointment)

Course Overview
The primary aim of this course is to provide a survey of some contemporary formal models of categorization. A secondary aim is to introduce techniques of mathematical and computational modeling in psychological theorizing. The structure of the course will be a combination of lecture and discussion.

Course Requirement
◊ 20-30 minute presentation of an empirical or theoretical papers (‘s) 20%
◊ 15-20 page paper on a topic of your choosing 50%
◊ 30 minute presentation of your paper 10%
◊ Class participation 20%

Course Readings
◊ Copies of articles and book chapters will be available in a folder in the Psychology mailroom. Other readings are available from me (‘s).

Schedule of Topics
◊ Week 1 : Overview, Classical View, and Prototype Models

◊ Week 2 : Representation and Similarity

◊ Week 3 : More on Similarity
◊ **Week 4 : Introduction to Exemplar models**

◊ **Weeks 5 : The Generalized Context Model**

◊ **Week 6 : Categorization, Recognition Memory, and Automaticity**

◊ **Week 7 : Rational Model of Categorization**

◊ **Weeks 8 and 9 : Connectionist Models of Categorization**

◊ **Week 10 : General Recognition Theory**
Week 11: Rule-based Models

Week 12: Interaction Between Perception and Conception

Week 13: “Theory” Theories of Categorization

Weeks 14-15: Wrap-up and Presentation of Projects

Note on the paper/project:
This paper should be on an original research topic that bears (at least loosely) on some theory (or theories) of similarity, categorization, concept formation, and related areas. Possibilities for projects include: applying one or more of the theories to account for data from some set of experimental phenomena; discussing how the various theories can (or cannot) be applied to issues in development, aging, or dementia; developing a new theory of similarity, categorization, or concept formation (or extending an existing theory in some way); elaborating upon one of the areas we discussed in class, with an emphasis on a critical evaluation of what has been done and what unanswered questions remain to be solved; design a set of experiments to contrast predictions of various models. I’d be especially interested in seeing how some of the ideas we discuss in class might be applied to your own area of research. I am generally very flexible with the topics of such paper. However, please okay all paper topics with me first. These papers should be submitted by the final week of class.
Additional references for your reading pleasure

◊ Classical View

◊ Prototype Models

◊ Multidimensional Scaling

◊ Clustering

◊ Exemplar Models and the Context Theory of Categorization


◊ **Generalized Context Model**


◊ **Automaticity**


◊ **Rational Model**


◊ **General Recognition Theory**


◊ **Connectionist Models**


◊ **Rule-based Models**


Role of Background and Causal Knowledge in Categorization


