

Preliminary course information

Psychology G4240

Theory of Mind and Intentionality **Spring 2010**

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I. Bulletin description

PSYC G4240. Theory of mind and intentionality (seminar)
4 points. A. Horowitz. Wednesdays 2:10-4, Room 405 Schermerhorn Hall

Prerequisites: At least two psychology courses and instructor's permission

Survey and critical analysis of the developmental and neurological research on theory of mind--the attribution of mental states like belief, desire, and knowledge to others--in humans and non-human animals. Emphasis will be on the role of intentionality, the stages of acquisition, the neurological and genetic bases, and seen deficits in theory of mind.

II. A full description of the content of the course

Many of the most interesting and complex characteristics of human behavior--the use of language, the development of culture, self-awareness, and the ability to pretend--have been linked to one fascinating ability: having a "theory of mind". In this seminar we will conduct a rigorous survey of the range of psychological studies of theory of mind and intentional behavior in humans, and, to a lesser extent, in non-human animals. We will approach the study of theory of mind in six ways, beginning with (1) an examination of the concepts of mind and intention, as formulated by psychologists and philosophers. For the remainder of the class, we will review and evaluate evidence from psychological and neuropsychological research, including (2) the first theory-of-mind experiments, including the "false-belief" test; (3) experiments addressing the developmental steps and precursors to theory of mind; (4) experiments designed to test non-verbal (especially non-human) subjects; (5) the neurological correlates of theory of mind; and (6) the link between autism and theory of mind. Throughout, we will attend to the concepts ostensibly and actually tested and the experimental designs used.

III. The rationale for giving the course

This seminar on theory of mind provides a context from which to examine important elements of the scientific study of behavior: the refinement of the concept to be studied; the importance of good experimental design; and the applicability of neural research to behavioral science.

Approaches from the fields of developmental psychology, comparative cognition, neuroscience, and abnormal psychology are brought to bear on our topic, and thus make PSYC G4240 suitable for advanced undergraduates and Psychology majors, for Post-baccalaureate Psychology students, and for graduate students in Psychology.

It will fulfill the following degree requirements:

- For graduate students in Psychology, PSYC G4240 will apply toward the “two seriously graded seminars” requirement.
- For the Psychology major or concentration in the College and for the Psychology Post-bac, PSYC G4240 will satisfy the Group I (Perception and Cognition) requirement.
- For the Neuroscience & Behavior joint major, G4240 will satisfy the 5th Psychology requirement of a Department-approved "advanced psychology seminar."
- For the Psychology Postbac certificate, PSYC G4220 will fulfill the advanced seminar requirement.
- For the science requirements of the College and General Studies, G4240 will satisfy one term of the requirement, provided that students have taken the prerequisite courses and have obtained the permission of the instructor.
- For the Barnard Psychology major, PSYC G4240 could be used to fulfill the senior seminar requirement.

IV. The reading list and weekly syllabus

January 20: Introduction

January 27: Considerations of mind

Descartes, R. (1641). Second meditation. Reprinted in D. M. Rosenthal (Ed.), *The Nature of mind* (pp. 21-25). New York: Oxford University Press.

Malcolm, N. (1958). Knowledge of other minds. Reprinted in D. M. Rosenthal (Ed.), *The Nature of mind* (pp. 92-97). New York: Oxford University Press.

Russell, B. (1948). Analogy. Reprinted in D. M. Rosenthal (Ed.), *The Nature of mind* (pp. 89-91). New York: Oxford University Press.

Whiten, A., & Perner, J. (1991). Fundamental issues in the multidisciplinary study of mindreading. In A. Whiten, Ed. *Natural theories of mind: Evolution, development and simulation of everyday mindreading*. Oxford: Basil Blackwell.

February 3: Theories of "theory of mind"

Carruthers, P. (1996). Simulation and self-knowledge: a defence of the theory-theory. In P. Carruthers & P. K. Smith, Eds. *Theories of theories of mind*. Cambridge: Cambridge University Press.

Gordon, R. M. (1996). 'Radical' simulationism. In P. Carruthers & P. K. Smith, Eds. *Theories of theories of mind*. Cambridge: Cambridge University Press.

Saxe, R. (2005). Against simulation: the argument from error. *Trends in Cognitive Sciences*, 9, 174-179.

February 10: Intentionality in the explanation of the behavior of oneself and others

Bruner, J. S. (1981). Intention in the structure of action and interaction. In L. P. Lipsitt & C. K. Rovee-Collier (Eds.), *Advances in infancy research. Vol. 1* (pp. 41-56). Norwood, NJ: Ablex Publishing Corporation.

Dennett, D. C. (1987). Intentional systems in cognitive ethology: The Panglossian paradigm defended. *The Brain and Behavioral Sciences*, 6, 343-390.

Frankfurt, H. G. (1997). The problem of action. In A. R. Mele (Ed.), *The philosophy of action* (pp. 42-52). New York: Oxford University Press.

Leavens, D. A., Russell, J. R., & Hopkins, W. D. (2005) Intentionality as measured in the persistence and elaboration of communication by chimpanzees (*Pan troglodytes*). *Child Development*, 76, 291-306.

February 17: Classic ToM studies

Premack, D., & Woodruff, G. (1978). Does the chimpanzee have a theory of mind? *Behavioral and Brain Sciences*, 4, 15-26 (and select commentaries).

Wimmer, H., & Perner, J. (1983). Beliefs about beliefs: Representation and constraining function of wrong beliefs in young children's understanding of deception. *Cognition*, 13, 103-128.

Call, J., & Tomasello, M. (2008) Does the chimpanzee have a theory of mind? 30 years later. *Trends in Cognitive Sciences*, 12, 187-192.

February 24 & March 3: When and how does an infant parse actions as intentional?

Gergely, G., Nadasdy, Z., Csibra, G., & Biro, S. (1995). Taking the intentional stance at 12 months of age. *Cognition*, 56, 165-193.

Meltzoff, A. (1995). Understanding the intentions of others: Re-enactment of intended acts by 18-month-old children. *Developmental Psychology*, 31, 838-850.

Peterson, C. C., Wellman, H. M., & Liu D. (2005.) Steps in theory-of-mind development for children with deafness or autism. *Child Development*, 76, 502-517.

Wellman, H. M., Lopez-Duran, S., LaBounty, J., & Hamilton, B. (2008). Infant attention to intentional action predicts preschool theory of mind. *Developmental Psychology*, 44, 618-623.

March 10: Nonverbal and nonhuman ToM studies

Call, J., & Tomasello, M. (1998). Distinguishing intentional from accidental actions in orangutans (*Pongo pygmaeus*), chimpanzees (*Pan troglodytes*), and human children (*Homo sapiens*). *Journal of Comparative Psychology*, 112, 192-206.

Flombaum, J. I., & Santos, L. R. (2005). Rhesus monkeys attribute perceptions to others. *Current Biology*, 15, 447-452.

Hare, B., Call, J., & Tomasello, M. (2001). Do chimpanzees know what conspecifics know? *Animal Behaviour*, 61, 139-151.

Povinelli, D. J., Nelson, K. E., & Boysen, S. T. (1990). Inferences about guessing and knowing by chimpanzees (*Pan troglodytes*). *Journal of Comparative Psychology*, 104, 203-210.

March 17: No classes

March 24: Do ToM/intention studies demonstrate what they intend?

Gagliardi, J. L., et al. (1995). Seeing and knowing: Knowledge attribution versus stimulus control in adult humans (*Homo sapiens*). *Journal of Comparative Psychology*, 109, 107-114.

Horowitz, A. (2003). Do humans ape? or Do apes human? Imitation and intention in humans and other animals. *Journal of Comparative Psychology*, 17, 325-336.

Meltzoff, A. N. (2002). Imitation as a mechanism of social cognition: Origins of empathy, theory of mind, and the representation of action. In U. Goswami (Ed.), *Handbook of childhood cognitive development* (pp. 6-25). Oxford: Blackwell Publishers.

March 31: Precursory behaviors to a theory of mind ability and attribution of intention

Baron-Cohen, S. (1991). Precursors to a theory of mind: Understanding attention in others. In A. Whiten, Ed. *Natural theories of mind: Evolution, development and simulation of everyday mindreading*. Oxford: Basil Blackwell.

Emery, N. J. (2000). The eyes have it: The neuroethology, function and evolution of social gaze. *Neuroscience and Biobehavioral Reviews*, 24, 581-594.

April 7: Project outline due

April 7 & April 14: A neural basis for theory of mind?

Agnew, Z. K., Bhakooa, K. K., & Puria, B. K. (2007). The human mirror system: A motor resonance theory of mind-reading. *Brain Research Reviews*, 54, 286-293.

Gallese, V., & Goldman, A. (1998). Mirror neurons and the simulation theory of mind-reading. *Trends in Cognitive Science*, 2(12), 493-501.

Iacoboni, M., et al. (2005). Grasping the intentions of others with one's own mirror neuron system. *PLoS Biology*, 3(3), 529-535.

Rilling, J. K., et al. (2004). The neural correlates of theory of mind within interpersonal interactions. *NeuroImage*, 22, 1694-1703.

Vogeley, K., et al. (2001). Mind reading: Neural mechanisms of theory of mind and self-perspective. *NeuroImage*, 14, 170-181.

April 21: Autism and theory of mind

Colle, L., Baron-Cohen, S., & Hill, J. (2007). Do children with autism have a theory of mind? A non-verbal test of autism vs. specific language impairment. *Journal of Autism and Developmental Disorders*, 37, 716-723.

Leslie, A. M. (1991). Theory of mind impairment in autism. In A. Whiten, Ed. *Natural theories of mind: Evolution, development and simulation of everyday mindreading*. Oxford: Basil Blackwell.

Sacks, O. (1995). *An anthropologist on Mars* (pp. 244-296). New York: Alfred A. Knopf.

April 28: Other approaches to studying mind; ramifications of research into theory of mind

Horowitz, A. (2009). Attention to attention in domestic dog (*Canis familiaris*) dyadic play. *Animal Cognition*, 12, 107-118.

Leslie, A. M., Knobe, J., & Cohen, A. (2006) Acting intentionally and the side-effect effect: Theory of mind and moral judgment. *Psychological Science*, 17, 421-427.

Ristau, C. (1991). Aspects of the cognitive ethology of an injury-feigning bird, the piping plovers. In C. A. Ristau (Ed.), *Cognitive ethology: The minds of other animals. Essays in honor of Donald R. Griffin*. (pp. 91-126). Hillsdale, New Jersey: Lawrence Erlbaum.

May 5: Final project due

May 5: Final comments

V. Course requirements

Each week, every student will submit discussion questions based on the assigned readings. Two students will take the role of discussion leader and recorder. The leader will present a summary and short critique of the readings, as well as presenting a review of one outside (unassigned) paper or chapter related to the topics of that week. In addition, the leader will use the submitted questions to guide a discussion among the seminar members. The recorder will take notes of the class to be posted on Courseworks, available for review by all students.

Participation and weekly discussion papers: 20% of final grade
Class presentation and recording roles: 40% of final grade

Every student will complete an independent paper of 20 pages taking the form of a) a proposal of an original empirical study of theory of mind; or b) a paper connecting theory of mind or intentionality to other topics, such as the development of morality, a sense of self, etc. In either event, this final paper should extrapolate from the research reviewed over the semester to propose a new model of research or to consider the ramifications of the research on other areas of psychology or other fields such as law or philosophy.

Final project: 40% of final grade