

**Theory of mind and Intentionality**  
Spring 2007: Th 2:10-4

**Psychology 3381; Barnard College**  
Milbank 410

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### Course description

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". This ability to predict the behavior of others by reference to their mental states is so fundamental to normal human interaction that most people do not even pause to consider that they possess it. The concept of "theory of mind" was introduced by researchers studying the behavior of chimpanzees, but it is humans who are the quintessential theorists of mind. Adult humans readily attribute mental states--particularly belief, desire, and knowledge--to other humans. At the core of a theory of mind is the attribution of *intentionality* to others' actions.

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 begin by examining the concepts of mind and intention, as formulated in common-sense and philosophical accounts. For the greatest part of the class, we will examine experiments and evaluate evidence from psychological research. We will address the methods of investigation into minds, and the development, neurological substrate, and evolution of these meta-cognitive states. When and how do humans acquire an ability to explain others' behavior by recourse to their minds? Is one's theory of mind formed through social interaction, or do humans have an innate capacity to extrapolate from their own mind to the mind of others? Are there identifiable neurological mechanisms responsible for theory of mind ability? By the end of this seminar we will be able to produce a coherent conceptual description of theory of mind and intentionality. Finally, we will ask whether most human behavior actually indicates that we do have such a theory.

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### Readings

The readings will consist of recent journal papers and book chapters, including two or more chapters from each of the following three books:

- Baron-Cohen, S., Tager-Flusberg, J., & Cohen, D. J. (Eds.). (1993). *Understanding other minds: Perspectives from developmental cognitive neuroscience*. Oxford: Oxford University Press. (UOM)
- Carruthers, P., & Smith, P. K. (Eds.). (1996). *Theories of theories of mind*. Cambridge: Cambridge University Press. (TTM)
- Whiten, A. (Ed.). (1991). *Natural theories of mind: Evolution, development and simulation of everyday mindreading*. Oxford: Basil Blackwell. (NTM)

While it might be nice to have these books, they are expensive and I do not recommend that you buy them for the class unless you come across a good cheap copy. A course pack with most of the required book chapters is available at the Village Copier (Broadway at 112th) after the second week of class; all other papers and chapters are retrievable on-line or will be handed out in class.

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## Requirements

- Attendance is expected at every class session.
- This class is a seminar, and will mostly consist of discussion. One of the requirements of the class is simply that you read the assignments, come ready to discuss them, and participate. I will not be grading you on the quality of your insights in class so much as on your willingness to reflect on the topics at hand.
- Assignments are to be completed on time. Late assignments will not be accepted.
- All of your work should be entirely your own. I encourage you to work together to review each others' project proposals or to practice presentations. In the end, every word you write should be yours exclusively.

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## Assignments and grading

- Marginalia writ large: For each week's readings, you will pose 2 questions: noting a shortcoming, a problematic interpretation, a point that needs clarifying or expanding, etc. These might be formalizations of your marginalia. You must email these questions to me by Tuesday at 5 pm. I will cull and forward them to a randomly chosen student each week; she will prepare a preliminary response to 2 of them to (informally) present and discuss in that Thursday's class.

These questions and your response--combined with regular class participation--will be 25% of your final grade.

- Class presentation: Each student will choose one week to select and read one outside (unassigned) paper or chapter, related to the topics of that week. You will then present the theories or results from this reading to the class. The reading can be gathered from the references sections of the assigned readings, and should be reviewed with me at least *one week* before your class.

25% of final grade

- Final project: The final paper for this class will give each student the chance either to consider what the future course of research into theory of mind might be, or to extrapolate on the research we have reviewed. This can take 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. The paper should be 15-20 pages, double-spaced.

Class size permitting, in the final week of class each student will give a ten-minute presentation of her proposal in the form of a brief explanation of the methods and motivation of a research proposal--or a short review of the outside topic discussed in the paper--, and fielding questions from the class.

50% of final grade (paper, 40%; presentation, 10%)

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**Schedule** (subject to minor additions, deletions, or rearrangements):

Note: Starred (\*) readings are optional

**January 18:**

Introduction

**January 25:**

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. (NTM)

**February 1:**

Theories of "theory of mind"

Carruthers, P. (1996). Simulation and self-knowledge: a defence of the theory-theory. (TTM)

Gordon, R. M. (1996). 'Radical' simulationism. (TTM)

**February 8:**

Intentionality in the explanation of the behavior of oneself and others

Barresi, J. & Moore, C. (1996). Intentional relations and social understanding. *Behavioral and Brain Sciences*, 19, 107-122. (and select commentaries 122-154)

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.

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.

\*O'Shaughnessy, B. (1997). Trying (as the mental 'pineal gland'). In A. R. Mele (Ed.), *The philosophy of action* (pp. 53-74). New York: Oxford University Press.

### **February 15 & February 22:**

How do humans develop a theory of mind? When and how does an infant parse actions as intentional? Is this rooted in an attribution of animacy to objects?

Baldwin, D. A., & Moses, L. J. (1994). Early understanding of referential intent and focus of attention: Evidence from language and emotion. In C. Lewis & P. Mitchell (Eds.), *Children's early understanding of mind: Origins and development* (pp. 133-156). Hove, UK: Lawrence Erlbaum Associates.

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.

\*Moses, L. J. (2001). Some thoughts on ascribing complex intentional concepts to young children. In B. F. Malle, L. J. Moses, & D. A. Baldwin (Eds.), *Intentions and intentionality: Foundations of social cognition* (pp.69-83). Cambridge, MA: MIT Press.

Poulin-Dubois, D., & Shultz, T. R. (1988). The development of the understanding of human behavior: From agency to intentionality. In J. W. Astington, P. L. Harris, & D. L. Olson (Eds.), *Developing theories of mind* (pp. 109-125). Cambridge: Cambridge University Press.

### **March 1:**

What nonverbal behaviors *demonstrate* theory of mind?

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.

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.

### **March 8:**

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. (NTM)

\*Charman, T., et al. (2000). Testing joint attention, imitation, and play as infancy precursors to language and theory of mind. *Cognitive Development* 15, 481-498.

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

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.

**March 15:**

No classes

**March 22:**

The role of social play in the development of an understanding of mind

Bekoff, M., & Allen, C. (1998). Intentional communication and social play: How and why animals negotiate and agree to play. In M. Bekoff & J. Byers (Eds.), *Animal play: Evolutionary, comparative, and ecological perspectives* (pp. 97-114). Cambridge: Cambridge University Press.

Lillard, A. S. (1993). Pretend play skills and the child's theory of mind. *Child Development*, 64, 348-371.

**March 29:**

Autism and theory of mind

Carruthers, P. (1996). Autism as mind-blindness: An elaboration and partial defence. (ITM)

Leslie, A. M. (1991). Theory of mind impairment in autism. (NTM)

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

**April 5:**

**Project outline due**

**April 5:**

Neural bases for theory of mind and autism

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.

Stone, V. E. (1993). The role of the frontal lobes and the amygdala in theory of mind. (UOM)

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

**April 12 & April 19:**

Is there any evidence that non-human animals view others' behavior as intentional? Do they have a theory of mind? Would there be any selective pressure to evolve an understanding of others' minds?

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.

Gómez, J. C., Sarriá, E., & Tamarit, J. (1993). The comparative study of early communication and theories of mind: Ontogeny, phylogeny, and pathology. (UOM)

\*Heyes, C. M. (1998). Theory of mind in nonhuman primates. *Behavioral and Brain Sciences*, 21, 101-134.

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

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.

**April 26:**

**Final project due**

Student presentations and final comments