This chapter begins with an overview of the controversy surrounding the study of children and adults with neurodevelopmental disorders, and how these inform theories of neurocognitive architecture. It weighing the arguments for and against what we might learn from studying individuals who have fundamental biological impairments. It then discusses the example of research on theory of mind in two different disorders — autism and Williams syndrome (WMS) — which has highlighted a number of important aspects of how this core cognitive capacity develops in both normal and atypical populations.

A brief overview and mini-history of the subject of mindreading are presented. Philosophers were the first to worry about the folk understanding of other minds and the distinctive nature of self-knowledge. They advanced the view that “folk psychology” presupposes a naive theory of mind. Empirical evidence about young children’s poor performance on false-belief tasks and about the link between autism and “mindblindness” spurred interest among developmental psychologists and psychopathologists. The central questions for a comprehensive
theory of mindreading are (1) how people mindread others, (2) how they mindread themselves, (3) how they acquire their mindreading abilities, and (4) what is the content of mental-state concepts.

The Modularity Theory
Alvin I. Goldman

in Simulating Minds: The Philosophy, Psychology, and Neuroscience of Mindreading
Published in print: 2006 Published Online: September 2006
Item type: chapter

Modularists claim that folk psychology is mediated by an innate modularized database, the structures of which support inferences concerning representational relations like belief, desire, and pretense. It is doubtful, however, that mindreading really qualifies as modular, specifically, that it satisfies Fodor’s chief criteria of modularity: domain specificity and informational encapsulation. Alan Leslie postulates a core module called the “theory of mind mechanism”, but most of the work in assigning mental states is done by the “selection processor”, which is a non-modular mechanism. Finally, no real evidence is provided that propositional attitudes are ascribed via theoretical inference rather than simulation.

Parent-Offspring Conflict and the Development of Social Understanding *
Daniel J. Povinelli, Christopher G. Prince, and Todd M. Preuss

in The Innate Mind: Structure and Contents
Published in print: 2005 Published Online: January 2007
Item type: chapter

This chapter begins with a brief review of the theory of parent-offspring conflict and considers the role of this conflict in the cognitive development of human infants. It then discusses the evolution of theory of mind — which is taken to have its origins in human evolution — and considers how this human cognitive specialization might have interacted with existing parent-offspring dynamics. How the epigenetic systems of infants might have responded is shown by elaborating upon existing cognitive and behavioural systems, or by canalizing later developing ones earlier into development, in order to recruit higher
degrees of parental investment. The merits of this framework is assessed in the context of the development of behaviours considered by some researchers to be indicative of a certain degree of social understanding, namely, gaze-following, pointing, social smiling, and neonatal imitation. The chapter concludes by showing how this proposal makes several longstanding theoretical and methodological difficulties for the field of cognitive development even more vexing.

Achieving Efficient Learning
Cyril Courtin, Anne-Marie Melot, and Denis Corroyer

in Deaf Cognition: Foundations and Outcomes

Theory of Mind (ToM), originally defined as the ability to consider the human mind as a generator of representations, is a cornerstone in social interactions because it corresponds to developing an awareness of how mental states (beliefs, desires, wishes, etc.) govern the behavior of self and others. This chapter explores relations between ToM and teaching-learning. It begins by discussing these relationships and presenting the state-of-the-art findings about ToM in deaf children. It then discusses how cognitive processes underlying ToM may differ among deaf children, and in deaf children compared to hearing children. The chapter presents ways in which some key aspects of hearing children's ToM might differ from researchers' conceptions about ToM development. This leads to a discussion of learning by deaf students and the need for teachers to be conscious of different learning styles.

Magical Thinking and the Mind
Eugene Subbotsky

in Magic and the Mind: Mechanisms, Functions, and Development of Magical Thinking and Behavior

Chapter 11 (“Magical Thinking and the Mind”) takes a broader look at what place magical thinking occupies in the whole of an individual's mind, particularly in relation to scientific and religious thinking. It argues that the mind consists of two major types of reality: ordinary and
magical. Whereas science is in the realm of ordinary reality, magic and religion are in the realm of magical reality. Various functions of magical reality are discussed, and the concept of existentialization is introduced. Existentialization is the process that separates magical reality from ordinary reality within an individual's mind. Various applications of the concept of existentialization to other domains of cognitive development (such as “theory of mind” and “appearance-reality distinction”) are considered. An overview of the development of existentialization across the lifespan is also given.

**Self-Expression**

Mitchell S. Green

Published in print: 2007 Published Online: January 2008
Item type: book

This book offers a general theory of expressive behavior, including but not limited to such behavior as it occurs in our own species. At the core of the project is the thesis that self-expression is a matter of showing a cognitive, affective, or qualitative state in such a way that the showing is a product of design. Design may be the result of conscious intention, natural selection, artificial selection, or convention. Showing comes in three forms: showing that something is so, showing something in such a way as to make it perceptible, and showing how an object appears or how an experience or affect feels. This elucidation of self-expression as designed showing of something inner sheds light on such issues as the distinction between saying and showing, the nature of speaker meaning, speech acts, the problem of other minds, implicature, the psychology and evolutionary biology of facial expression, idiosyncratic and conventional aspects of expressive behavior, empathy, qualia, and artistic expression, particularly expression in music. The work blends insights from evolutionary game theory, ethology, experimental psychology, neuroscience, pragmatics, and the philosophies of mind and language.

**Minds, Other Minds, and the Minds of Gods**

Todd Tremlin

in Minds and Gods: The Cognitive Foundations of Religion

Published in print: 2006 Published Online: February 2006
Item type: chapter
This chapter examines some evolved mental mechanisms that play key roles in the representation of god concepts. The incorrigible operation of an Agency Detection Device (ADD) and a Theory of Mind Mechanism (ToMM) helps explain why people naturally entertain religious ideas. God concepts are parasitic on mental mechanisms designed for different though functionally related purposes. The study of these and other predispositions of thought also reveal what, from a cognitive perspective, “gods” really are — easily anthropomorphized thinking intentional agents. The real attributes of gods align with the mind’s intuitive knowledge bases and the natural inferences they produce rather than with the abstract, theological attributes taught in religious doctrine. At the same time, the counterintuitive properties of god concepts account for their widespread transmission.

Object-Based Set-Shifting in Preschoolers: Relations to Theory of Mind
Daniela Kloo, Josef Perner, and Thomas Giritzer

in Self- and Social-Regulation: Exploring the Relations Between Social Interaction, Social Understanding, and the Development of Executive Functions
Published in print: 2010 Published Online: May 2010
Publisher: Oxford University Press
DOI: 10.1093/acprof:oso/9780195327694.003.0008
Item type: chapter

This chapter focuses on children's ability to shift between different ways of thinking about an object, which is termed object-based set-shifting. First, we outline crucial developments in social cognition (theory of mind) and executive functions in the preschool years. At around age 4, children master the false belief task and the Dimensional Change Card Sorting (DCCS) task; the latter being a measure of object-based set-shifting. We describe studies showing that these developmental advances are related. And we present evidence suggesting that both executive abilities (inhibitory control) and conceptual abilities (re-description understanding) play a role in the development of object-based set-shifting. Finally, we discuss various theories aiming to explain the general developmental link between theory of mind and executive functions.
Understanding Sympathy and Sympathetic Understanding

Sophie Ratcliffe

in On Sympathy

Published in print: 2008 Published Online: September 2008

This chapter presents an overview of ideas of sympathy and empathy, and their relations with theology, from the late 19th century to the present day. Using The Tempest as a central example, it considers the limits of the cognitive-evaluative object-based view of sympathy that is common in liberal humanist readings of texts, particularly those by Martha Nussbaum. Drawing on the ideas of Stanley Cavell and Noël Carroll, the chapter puts forward alternative models for reading, setting the idea of fictional ‘character’ against that of a fictional ‘creature’.

A Case for the Psychological Reality of Language

Michael Devitt

in Ignorance of Language

Published in print: 2006 Published Online: September 2006

This chapter begins with the popular “Representational Theory of the Mind” (RTM), according to which a thought involves a mental representation. It then follows Fodor in arguing for the controversial “Language-of-Thought Hypothesis” (LOTH), according to which representation is language-like. On the basis of LOTH, it is argued that the syntactic structure of this representation is likely to be similar to that of the sentence that expresses it in the thinker’s language. The tentative proposal is that a language is largely psychologically real in a speaker in that its rules are similar to the structure rules of her thought.

Modularity in Language and Theory of Mind

Michael Siegal and Luca Surian

in The Innate Mind: Volume 2: Culture and Cognition

Published in print: 2007 Published Online: May 2007

This chapter begins with the popular “Representational Theory of the Mind” (RTM), according to which a thought involves a mental representation. It then follows Fodor in arguing for the controversial “Language-of-Thought Hypothesis” (LOTH), according to which representation is language-like. On the basis of LOTH, it is argued that the syntactic structure of this representation is likely to be similar to that of the sentence that expresses it in the thinker’s language. The tentative proposal is that a language is largely psychologically real in a speaker in that its rules are similar to the structure rules of her thought.
This chapter examines evidence on the relationship between language and theory of mind (ToM) reasoning. Despite wide environmental variations in exposure to language, grammar and ToM emerge spontaneously, and are employed effortlessly in typically developing children. However, there appears to be no evidence for the proposition that grammar supports the emergence of ToM, pointing to the independence of language and cognition in this respect. Rather, ToM reasoning seems to be dependent on early exposure to conversations that alert children at a very young age to the possibility that others may hold beliefs that differ from reality. It is in this sense that ToM is independent from grammar. Each can be seen as a product of a modular system that requires for the presence of both a rich innate competence and specific experiences during a critical period.

The Interactive Practice of Mind
Shaun Gallager (ed.)

in How the Body Shapes the Mind

Published in print: 2005 Published Online: February 2006
Publisher: Oxford University Press
DOI: 10.1093/0199271941.003.0010

Intersubjectivity, social cognition, or the problem of other minds — these are terms in different disciplines for the same problem: how does one understand other people — how does one grasp their intentions? Theory of mind approaches to this problem are themselves problematic. This chapter develops a critical approach to theory of mind and points out important problems with “theory theory” and “simulation theory” accounts. It also develops an alternative interactive account based on phenomenology and developmental research on young infants. It suggests intersubjectivity, social cognition, theory of mind, simulation, autism, central coherence, primary intersubjectivity, secondary intersubjectivity, false-belief tests, mirror neurons that this interactive approach can contribute to a more comprehensive account of autism, a condition in which social cognition fails.
Correlations between an understanding of self and other in psychological terms, often referred to as “theory of mind,” and the control of action, often labeled “executive functions,” have been reported and debated. We suggest that claims about such relations rest on a prior assumption that these are two separate, coherent domains and children have stable, measurable abilities in these areas. Examining relevant research, however, indicates variability in a number of ways, suggesting that both social understanding and executive skills are substantiated and develop within the flow of interaction with people and objects. According to our alternative approach to social cognitive development, social understanding develops within social interaction as children learn to talk about situations of shared understanding. We suggest that executive function and social understanding may be interdependent and emerge through the same processes within social interaction.

Hume Variations
Jerry A. Fodor

This book looks to David Hume for help in advancing our understanding of the mind. The book claims his Treatise of Human Nature as the foundational document of cognitive science: it launched the project of constructing an empirical psychology on the basis of a representational theory of mind. Going back to this work after more than 250 years we find that Hume is remarkably perceptive about the components and structure that a theory of mind requires. Careful study of the Treatise helps us to see what's amiss with much 20th-century philosophy of mind, and to get on the right track. Hume says in the Treatise that his main project is to construct a theory of human nature and, in particular, a theory of the mind. This book examines his account of cognition and how it is grounded in his ‘theory of ideas’. It discusses such key topics as the
distinction between ‘simple’ and ‘complex’ ideas, the thesis that an idea is some kind of picture, and the roles that ‘association’ and ‘imagination’ play in cognitive processes. It argues that the theory of ideas, as Hume develops it, is both historically and ideologically continuous with the representational theory of mind as it is now widely endorsed by cognitive scientists. This view of Hume is explicitly opposed to recent discussions by critics who hold that the theory of ideas is the Achilles heel of his philosophy and that he would surely have abandoned it if only he had read Wittgenstein carefully.

Underpinning Collaborative Learning

Emma Flynn

in Self- and Social-Regulation: Exploring the Relations Between Social Interaction, Social Understanding, and the Development of Executive Functions

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Item type: chapter

This chapter investigates the development of, and relations between, children's collaborative abilities and other cognitive skills, most notably mental state understanding and executive functioning. The first half of the chapter presents a review of the development of children's collaborative skills, from early interactions in infancy to peer tutoring in school-age children. The empirical and theoretical evidence of a link between changes in young children's collaborative abilities and their cognitive skills are discussed. The second half of the chapter presents a study that directly investigates the relations between children's peer tutoring and their second-order theory of mind, planning, referential communication and recall skills; showing a direct link between second-order mental state understanding and peer tutoring competence. The chapter concludes by focusing on the multidimensional, bi-directional nature of the relations between collaborative learning and the development of other important cognitive skills.

The Prehistoric Roots of the Modern Mind

Todd Tremlin

in Minds and Gods: The Cognitive Foundations of Religion

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Item type: chapter

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This chapter explains why the process of human evolution is crucial to understanding the structures and functions of the modern human mind. Tracing hominid development up to the appearance of Homo sapiens, the chapter explores some of the selective pressures faced in our ancestral past, and the cognitive adaptations that gave rise to human intelligence. It shows how the ultimate success of Homo sapiens was the result of mental mechanisms (e.g., theory of mind, social intelligence, and language) that fitted humans to the “cognitive niche” — an adaptive space characterized by the gathering and strategic use of information — and that remain the hallmarks of human thought and behavior today.

How are Cognitions Possible?
Robert Hanna

in Kant and the Foundations of Analytic Philosophy

This chapter argues that the key explanatory notion in Immanuel Kant's general cognitive semantics is his epigenetic or generative/productive theory of the mind, according to which object-directed representations — including intuitions, concepts, schemata of the imagination, and, most centrally, judgements — are created by the rule-guided application of our innate capacities for spontaneous synthesis to raw sensory intake under the original synthetic unity of apperception. This chapter explores the precise conditions under which all cognitive meaning creation is possible. Broadly speaking, these conditions split into two types: formal or logical conditions and material conditions, or conditions specially relevant to the objective validity. The topic of objective validity leads directly to a discussion of what is clearly the explanatory foundation of all objective mental representations or meanings for Kant: transcendental idealism.

The Frontal Lobes and Self-Awareness
DONALD T. STUSS, R. SHAYNA ROSENBAUM, SARAH MALCOLM, WILLIAM CHRISTIANA, and JULIAN PAUL KEENAN

in The Lost Self: Pathologies of the Brain and Identity
This chapter summarizes a hierarchical framework proposed by Stuss, Picton, and Alexander (2001) that suggests different levels of awareness of self to account for variations in attributions of awareness to different brain regions. It also challenges current thinking on the relationship between theory of mind, autobiographical memory, and the frontal lobes. A reformulation of the hierarchical framework of self-awareness is presented.

Marvelous Minds
Michael Siegal

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Item type: book

Children have a spontaneous interest in the world around them, whether the workings of the earth, sun, and stars; the nature of number, time, and space; or the functioning of the body. Yet what is there in their minds that is the key to their knowledge? This book examines what children can and do know, based on extensive studies from a range of different cultures. Topics include ‘theory of mind’ – the knowledge that others may have beliefs which differ from one's own and from reality – astronomy and geography, food, health and hygiene, processes of life and death, number and arithmetic, as well as autism and brain research on language and attention. Since what children say and do may not really reflect the depth of their knowledge of the world around them, our goal should be to discover new methods to accurately test children's knowledge, instead of trying to understand the range of failing answers they might give on the many tests that have been devised to determine what they know. Contrary to earlier studies, it is now established that in many areas considerable knowledge is within the grasp of young children, with benefits for their later development. For example, although certain number concepts – in particular, fractions, proportions, and infinity – can be difficult to grasp, children generally do not need to undergo a fundamental change in their thinking and reasoning to master these. What the author of this book proposes is that children often display a capacity for understanding that we simply overlook.