

Contents

Preface xi

Acknowledgments xvii

1 Mindreading in Animals: Its Importance and History 1

1.1. Why the Question of Animal Mindreading Matters 3

1.2. A Brief History of the Animal Mindreading Debate 7

1.3. Conclusion 18

2 The Logical Problem in Animal Mindreading Research 21

2.1. Mindreading in Animal Social Cognition Research: The Issues 21

2.2. The Logical Problem 25

2.3. Current Protocols to Test for Cognitive State Attribution in Animals 32

2.4. Hare and Colleagues' Competitive Paradigm Experiment 32

2.5. A Complementary Behavior-Reading Hypothesis: Direct Line of Gaze 34

2.6. Are Complementary Behavior-Reading Hypotheses Necessarily Ad Hoc? 38

2.7. The Issue of Simplicity 42

2.8. Knowledge/Ignorance Attribution in Primates 49

2.9. Those Amazing Scrub Jays 54

2.10. Remarks on Goal-Directed/Intentional-Action Attribution in Animals 61

2.11. Conclusion 66

3 Solving the Logical Problem for Perceptual State Attribution 67

3.1. The Case against Animal Mindreading of Any Kind 67

3.2. A General Framework for Solving the Logical Problem 76

3.3. The Appearance-Reality Mindreading (ARM) Theory 83

3.4. How Animals Might Attribute States of Perceptual Appearing 88

3.5. Experimental Protocols That Can Solve the Logical Problem 96

3.6. Visual Perspective Taking with Chimpanzees using Transparent Colored Barriers 96

3.7. Visual Perspective Taking with Chimpanzees using Size-Distorting Barriers 101

3.8. Visual Perspective Taking with Ravens using Deceptive Amodal Completion Stimuli 106

- 3.9. Visual Perspective Taking with Chimpanzees using Deceptive Amodal Completion Stimuli 116
- 3.10. Visual Perspective Taking with Dogs using Deceptive Amodal Completion Stimuli 121
- 3.11. Conclusion 129

4 Solving the Logical Problem for Belief Attribution 131

- 4.1. Davidson's Argument against Belief Attribution in Animals 131
- 4.2. Bermúdez's Argument against Belief Attribution in Animals 138
- 4.3. The Empirical Studies 144
- 4.4. From Perceptual Appearing Attribution to Belief Attribution 157
- 4.5. A Simple Appearance-Reality Screening Test 164
- 4.6. Revisability Belief-Attribution Protocol No. 1 170
- 4.7. Revisability Belief-Attribution Protocol No. 2 176
- 4.8. Representation of Abstract Relations by Primates 184
- 4.9. Abstract Belief-Attribution Protocol 186
- 4.10. Conclusion 193

5 Epilogue 195

Notes 197

References 219

Index 243