

# Contents

Acknowledgments vii

Contributors ix

## **1 Action Science Emerging: Introduction and Leitmotifs 1**

Arvid Herwig, Miriam Beisert, and Wolfgang Prinz

## **I Control and Learning 35**

### **2 Tool Use in Action: The Mastery of Complex Visuomotor Transformations 37**

Herbert Heuer and Sandra Sülzenbrück

### **3 Implicit and Explicit Processes in Motor Learning 63**

Jordan A. Taylor and Richard B. Ivry

### **4 Cognitive Foundations of Action Planning and Control 89**

David A. Rosenbaum

### **5 Ideomotor Action Control: On the Perceptual Grounding of Voluntary Actions and Agents 113**

Bernhard Hommel

## **II Ecological Approaches 137**

### **6 Ecological Perspective on Perception-Action: What Kind of Science Does It Entail? 139**

Michael T. Turvey

### **7 Perception Viewed as a Phenotypic Expression 171**

Dennis R. Proffitt and Sally A. Linkenauger

<b>III Neurocognitive Mechanisms</b>	<b>199</b>
<b>8 Understanding Action from the Inside</b>	<b>201</b>
Giacomo Rizzolatti and Corrado Sinigaglia	
<b>9 Beyond Serial Stages for Attentional Selection: The Critical Role of Action</b>	<b>229</b>
Glyn W. Humphreys	
<b>IV Development</b>	<b>253</b>
<b>10 Action in Infancy: A Foundation for Cognitive Development</b>	<b>255</b>
Claes von Hofsten	
<b>11 Developmental Perspectives on Action Science: Lessons from Infant Imitation and Cognitive Neuroscience</b>	<b>281</b>
Andrew N. Meltzoff, Rebecca A. Williamson, and Peter J. Marshall	
<b>V Social Actions</b>	<b>307</b>
<b>12 Imitation: Associative and Context Dependent</b>	<b>309</b>
Cecilia Heyes	
<b>13 Joint Action: From Perception-Action Links to Shared Representations</b>	<b>333</b>
Janeen D. Loehr, Natalie Sebanz, and Günther Knoblich	
<b>VI Cognition and Volition</b>	<b>357</b>
<b>14 Premotor or Ideomotor: How Does the Experience of Action Come About?</b>	<b>359</b>
Valerian Chambon and Patrick Haggard	
<b>15 Grounding the Human Conceptual System in Perception, Action, and Internal States</b>	<b>381</b>
Markus Kiefer and Lawrence W. Barsalou	
<b>16 Volition in Action: Intentions, Control Dilemmas, and the Dynamic Regulation of Cognitive Control</b>	<b>409</b>
Thomas Goschke	
<b>Index</b>	<b>435</b>