Contents

Introduction ix
Evelyne CLÉMENT

Chapter 1. Measures of Flexibility 1
Célia MAINTENANT and Gaëlle BODI

1.1. Introduction. 1
1.2. Why measure flexibility?. 1
1.2.1. Cognitive flexibility in everyday life 1
1.2.2. Associated pathologies. 3
1.3. How can we measure flexibility? 3
1.3.1. The different types of assessment 4
1.3.2. Which measure for which flexibility? 13
1.4. Conclusion 16
1.5. References 16

Chapter 2. Development of Cognitive Flexibility 23
Agnès BLAYE

2.1. Introduction. 23
2.2. Main study paradigms and some developmental points of reference 25
2.3. How can we account for perseveration behaviors in the preschool years?. 29
2.4. Beyond perseveration. 32

2.5. Flexibility: a question of goal management 35
2.5.1. Goal maintenance 35
2.5.2. The processing of goal cues 36
2.5.3. Toward an optimal sequencing of the information gathering process: from reactive to proactive control. 38
2.5.4. Metacognition and processing of goal cues. 41
2.6. From imposed flexibility to self-regulated flexibility 41
2.7. Conclusion 43
2.8. References 44

Chapter 3. Metacognition and Flexibility: What are the Theoretical Links and What Links have been Observed?. 53
Valérie PENNEQUIN

3.1. Introduction. 53
3.2. Metacognition 54
3.3. Executive functions 58
3.4. The common features between metacognition and executive functions 60
3.4.1. Conceptual common features 60
3.4.2. Empirical results on the links between metacognition and executive functions 63
3.4.3. The links between flexibility and metacognition 64
3.5. Conclusion 68
3.6. References 70

Chapter 4. Critical Thinking and Flexibility 77
Calliste SCHEIBLING-SÈVE, Elena PASQUINELLI and Emmanuel SANDER

4.1. Introduction. 77
4.2. Characterizing critical thinking to foster its development 78
4.2.1. Philosophical approaches 78
4.2.2. Psychological approaches 80
4.2.3. Forms of critical thinking education 83
4.3. The critical mind, a flexible mind? 87
4.3.1. The cognitive building blocks of critical thinking 88
4.3.2. Changing the perspective 90
4.3.3. The role of metacognition 91
4.3.4. Barriers to flexibility: the role of intuitive conceptions and inappropriate categorizations 93

4.4. Developing critical thinking skills through multiple categorization . . . 97
4.4.1. Multiple categorization . . . 97
4.4.2. Operationalization through research in a school context . . . 100
4.5. Conclusion . . . 103
4.6. References . . . 105

Chapter 5. Successful Solution Discovery and Cognitive Flexibility . . . 113
Evelyne CLÉMENT

5.1. Introduction . . . 113
5.2. Cognitive flexibility in problem solving . . . 114
5.2.1. What is defined as a problem? . . . 114
5.2.2. Familiar knowledge about the world, problem solving and transfer . . . 115
5.2.3. Strategic flexibility, representational flexibility and solution discovery . . . 121
5.3. Flexibility, creativity and academic performance . . . 126
5.3.1. Flexibility and creativity: what links? . . . 127
5.3.2. Cognitive flexibility and academic performance . . . 129
5.3.3. Creativity and academic performance . . . 131
5.4. Conclusion . . . 134
5.5. References . . . 135

Chapter 6. Transfer of Learning and Flexibility in Childhood . . . 143
Jérôme CLERC and Laureen JOSSERON

6.1. Introduction . . . 143
6.1.1. The child who transfers: a little history . . . 144
6.1.2. Surface, structure, context . . . 144
6.2. Transfer of learning: a developmental overview . . . 147
6.2.1. The transfer of perceptual properties . . . 148
6.2.2. Transfer by imitation . . . 148
6.2.3. Solution transfer by analogy . . . 149
6.2.4. The transfer of cognitive strategies . . . 150
6.3. Transfer and flexibility . . . 152
6.3.1. Transfer and conceptual flexibility . . . 152
6.3.2. Transfer and attentional flexibility . . . 155
6.4. Conclusion . . . 161
6.5. References . . . 163

Chapter 7. Cognitive Flexibility and Analogy 175
Lucas RAYNAL

7.1. Introduction. 175
7.2. The role of prior knowledge in analogy 176
7.2.1. Analogy: encoding, retrieval and mapping 176
7.2.2. Prior knowledge and encoding 178
7.2.3. Prior knowledge and analogical retrieval 181
7.2.4. Prior knowledge and mapping 184
7.3. Cognitive flexibility as a key process in analogy-making. 188
7.3.1. The abstract recoding process. 188
7.3.2. Abstract recoding and the implementation of challenging analogies 190
7.3.3. Comparison to promote flexibility and analogy 193
7.4. Conclusion 195
7.5. References 196

Chapter 8. Context, Content Effects and Flexibility 203
Hippolyte GROS and Katarina GVOZDIC

8.1. Introduction. 203
8.2. Context, concepts and flexibility 205
8.2.1. The categorical ambiguity of concepts 205
8.2.2. The role of prior knowledge. 207
8.3. Representing situations and tasks 209
8.3.1. Problem solving in the service of the study of reasoning. 209
8.3.2. The notion of problem representation 210
8.3.3. Content effects as mediators of flexibility? 214
8.3.4. Robust influences 216
8.4. Semantic recoding and cognitive flexibility. 219
8.4.1. Semantic recoding, a lever for flexibility in school? 219
8.4.2. New perspectives to explore 222
8.5. Conclusion 224
8.6. References 226

List of Authors 233

Index 235