

# Contents

**Part I Introduction**

**1 Spatial Cognition: Key to STEM Success ..... 3**  
Myint Swe Khine

**Part II Measurement and Development of Spatial Ability**

**2 Validity of Spatial Ability Tests for Selection into STEM  
(Science, Technology, Engineering, and Math) Career Fields:  
The Example of Military Aviation ..... 11**  
James F. Johnson, Laura G. Barron, Mark R. Rose,  
and Thomas R. Carretta

**3 Spatial Ability: Measurement and Development ..... 35**  
Rita Nagy-Kondor

**4 Measuring Spatial Visualization: Test Development Study ..... 59**  
Nazan Sezen Yüksel

**5 Various Spatial Skills, Gender Differences, and Trainability  
and Transferability of Spatial Skills ..... 85**  
Lu Wang

**Part III Research and Practices in Spatial Ability**

**6 What Innovations Have We Already Lost?: The Importance  
of Identifying and Developing Spatial Talent ..... 109**  
Jonathan Wai and Harrison J. Kell

**7 Empowering Visuo-spatial Abilities Among Italian Primary  
School Children: From Theory to Practice ..... 125**  
Maria Chiara Fastame

<b>8</b>	<b>The Improvement of Spatial Ability and its Relation to Spatial Training</b> .....	143
	Yi-Ling Cheng	
<b>9</b>	<b>A Spatial-Semiotic Framework in the Context of Information and Communication Technologies (ICTs)</b> .....	173
	Melih Turgut	
<b>10</b>	<b>Gender Differences in Spatial Ability: Implications for STEM Education and Approaches to Reducing the Gender Gap for Parents and Educators</b> .....	195
	David Reilly, David L. Neumann, and Glenda Andrews	
<b>11</b>	<b>Ranking and Predicting Results for Different Training Activities to Develop Spatial Abilities</b> .....	225
	Jorge Martín-Gutiérrez and M. Montserrat Acosta González	
<b>12</b>	<b>How Does Space Interact with Numbers?</b> .....	241
	Virginie Crollen and Marie-Pascale Noël	

Visual-spatial Ability in STEM Education

Transforming Research into Practice

Khine, M.S. (Ed.)

2017, VI, 263 p. 72 illus., Hardcover

ISBN: 978-3-319-44384-3