## Contents

	Preface p		
	Ack	nowledgments	xvii
1	Wha	t We Know About Intelligence From the Weight of Studies	1
	Lear	rning Objectives	1
	Intro	oduction	1
	1.1	What is Intelligence? Do You Know It When You See It?	2
	1.2	Defining Intelligence for Empirical Research	4
	1.3	The Structure of Mental Abilities and the g-Factor	5
	1.4	Alternative Models	9
	1.5	Focus on the g-Factor	10
	1.6	Measuring Intelligence and IQ	11
	1.7	Some Other Intelligence Tests	15
	1.8	Myth: Intelligence Tests are Biased or Meaningless	17
	1.9	The Key Problem for "Measuring" Intelligence	18
		Four Kinds of Predictive Validity for Intelligence Tests	19
	1.11	Why Do Myths About Intelligence Definitions and	
		Measurement Persist?	33
	Chapter 1 Summary		35
	Review Questions		35
	Furt	her Reading	36
2	Natu	ire More than Nurture: The Impact of Genetics on Intelligenc	<b>e</b> 37
	Learning Objectives		38
	Introduction		
	2.1	The Evolving View of Genetics	40
	2.2	Early Failures to Boost IQ	42
	2.3	"Fraud" Fails to Stop Genetic Progress	46
	2.4	Quantitative Genetic Findings also Support a Role for	
		Environmental Factors	50
	2.5	Molecular Genetics and the Hunt for Intelligence Genes	56
	2.6	Seven Recent Noteworthy Studies of Molecular Genetic	
		Progress	61
	Chapter 2 Summary		66
	Review Questions		66
	Further Reading		67

3	Peeking Inside the Living Brain: Neuroimaging Is a				
	Game-changer for Intelligence Research				
	Learning Objectives				
	Introduction				
	3.1	The First PET Studies	69		
	3.2	Brain Efficiency	73		
	3.3	Not All Brains Work in the Same Way	76		
	3.4	What the Early PET Studies Revealed and What			
		They Did Not	79		
	3.5	The First MRI Studies	81		
	3.6	Basic Structural MRI Findings	84		
	3.7	Improved MRI Analyses Yield Consistent and			
		Inconsistent Results	85		
	3.8	Imaging White Matter Tracts with Two Methods	90		
	3.9	Functional MRI (fMRI)	91		
	3.10	The Parieto-frontal Integration Theory (PFIT)	92		
	3.11	Einstein's Brain	95		
	Chapter 3 Summary		96		
	Review Questions				
	Furt	her Reading	97		
4	50 Shades of Gray Matter: A Brain Image of Intelligence				
	is Worth a Thousand Words				
	Learning Objectives		98		
		oduction	98		
	4.1	Brain Networks and Intelligence	100		
		Functional Brain Efficiency – is Seeing Believing?	110		
	4.3	Predicting IQ From Brain Images	118		
	4.4	Are "Intelligence" and "Reasoning" Synonyms?	124		
	4.5	Common Genes for Brain Structure and Intelligence	126		
	4.6	Brain Imaging and Molecular Genetics	132		
	Chapter 4 Summary		135		
	Review Questions		136		
	Further Reading		136		
5	The Holy Grail: Can Neuroscience Boost Intelligence?				
	Learning Objectives				
	Introduction		137		
	5.1	Case 1: Mozart and the Brain	139		
	5.2	Case 2: You Must Remember This, and This, and This	143		

Index

	5.3	Case 3: Can Computer Games for Children Raise IQ?	150			
	5.4	Where are the IQ Pills?	155			
	5.5	Magnetic Fields, Electric Shocks, and Cold Lasers Target				
		Brain Processes	158			
	5.6	The Missing Weight of Evidence for Enhancement	162			
	Cha	pter 5 Summary	164			
	Review Questions		165			
	Fur	her Reading	165			
6	As Neuroscience Advances, What's Next for					
	Intelligence Research?		166			
	Learning Objectives		166			
	Introduction		167			
	6.1	From Psychometric Testing to Chronometric Testing	168			
	6.2	Cognitive Neuroscience of Memory and Super-Memory	171			
	6.3	Bridging Human and Animal Research with New Tools				
		Neuron by Neuron	175			
	6.4	Bridging Human and Machine Intelligence Circuit				
		by Circuit	179			
	6.5	Consciousness and Creativity	183			
	6.6	Neuro-poverty and Neuro-Social–Economic Status				
		(SES): Implications for Public Policy Based on the				
		Neuroscience of Intelligence	192			
	6.7	Final Thoughts	200			
	Chapter 6 Summary		202			
	Further Reading		202			
	Glo	ssary	204			
	References		210			

The color plate section can be found between pp. 142 and 143.

243