

## The Science of Human Intelligence

In this revised and updated edition of Earl Hunt's classic textbook, *Human Intelligence*, two research experts explain how key scientific studies have revealed exciting information about what intelligence is, where it comes from, why there are individual differences, and what the prospects are for enhancing it. The topics are chosen based on the weight of evidence, so readers can evaluate what ideas and theories the data support. These topics include IQ testing, mental processes, brain imaging, genetics, population differences, sex, aging, and likely prospects for enhancing intelligence based on current scientific evidence. Readers will confront ethical issues raised by research data and learn how scientists pursue answers to basic and socially relevant questions about why intelligence is important in everyday life. Many of the answers will be surprising and stimulate readers to think constructively about their own views.

Richard J. Haier is Professor Emeritus at the University of California, Irvine, USA. He pioneered neuroimaging studies of intelligence, created *The Intelligent Brain* (The Great Courses), served as president of the International Society for Intelligence Research, and is editor in chief of *Intelligence*. He received the Lifetime Achievement Award from the International Society for Intelligence Research (2020), coedited *The Cambridge Handbook of Intelligence and Cognitive Neuroscience* (2021), and authored *The Neuroscience of Intelligence* (2017). Dr. Haier has done podcasts with Jordan Peterson, Scott Barry Kaufman, and Lex Fridman. His personal website is [www.richardhaier.com](http://www.richardhaier.com).

Roberto Colom is Professor of Differential Psychology at Universidad Autónoma de Madrid, Spain. He has authored or edited twenty books and published 174 peer-reviewed articles. He has a wide network of scientific collaborations around the globe, and he is a member of the International Society for Intelligence Research. He was among the top five researchers in the latest bibliometric analysis of articles published in the journal *Intelligence*. For further information, visit <https://sites.google.com/site/colomresearch/Home>.

Earl Hunt was Professor Emeritus at the University of Washington, USA, where he was a faculty member since 1966. He also taught at Yale University; the University of California, Los Angeles; and the University of Sydney, Australia. His other books include *Concept Learning* (1962), *Experiments in Induction* (1966), *Artificial Intelligence* (1975), *Will We Be Smart Enough?* (1995), *Thoughts on Thought* (2002), *The Mathematics of Behavior* (2007), and *Human Intelligence* (2011). He received the International Society for Intelligence Research's Lifetime Achievement Award for his contributions to the study of intelligence.

Cambridge University Press & Assessment  
978-1-108-47715-4 — The Science of Human Intelligence  
Richard J. Haier , Roberto Colom , Earl Hunt  
Frontmatter  
[More Information](#)

---

# The Science of Human Intelligence



Second Edition

**RICHARD J. HAIER**

*University of California, Irvine*

**ROBERTO COLOM**

*Universidad Autónoma de Madrid*

**EARL HUNT**

*University of Washington*



**CAMBRIDGE**  
UNIVERSITY PRESS

Cambridge University Press & Assessment  
 978-1-108-47715-4 — The Science of Human Intelligence  
 Richard J. Haier, Roberto Colom, Earl Hunt  
 Frontmatter  
[More Information](#)



Shaftesbury Road, Cambridge CB2 8EA, United Kingdom  
 One Liberty Plaza, 20th Floor, New York, NY 10006, USA  
 477 Williamstown Road, Port Melbourne, VIC 3207, Australia  
 314-321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre, New Delhi – 110025, India  
 103 Penang Road, #05-06/07, Visioncrest Commercial, Singapore 238467

Cambridge University Press is part of Cambridge University Press & Assessment, a department of the University of Cambridge.

We share the University's mission to contribute to society through the pursuit of education, learning and research at the highest international levels of excellence.

[www.cambridge.org](http://www.cambridge.org)

Information on this title: [www.cambridge.org/highereducation/isbn/9781108477154](http://www.cambridge.org/highereducation/isbn/9781108477154)

DOI: 10.1017/9781108569576

© Richard J. Haier, Roberto Colom, and Earl Hunt 2024

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press & Assessment.

First published 2011

Fourth printing 2019

Second edition 2024

*A catalogue record for this publication is available from the British Library.*

*Library of Congress Cataloging-in-Publication Data*

Names: Haier, Richard J., author. | Colom, Roberto, 1964- author. | Hunt, Earl B., author.

Title: The science of human intelligence / Richard J. Haier, University of California, Irvine, Roberto Colom, Universidad Autónoma de Madrid, Earl Hunt, University of Washington.

Description: Second edition. | Cambridge, United Kingdom ; New York, NY : Cambridge University Press, [2024] | Earlier edition authored by the late Earl B. Hunt as: Human intelligence, published in 2011. | Includes bibliographical references and index.

Identifiers: LCCN 2023006713 (print) | LCCN 2023006714 (ebook) | ISBN 9781108477154 (hardback) | ISBN 9781108701969 (paperback) | ISBN 9781108569576 (epub)

Subjects: LCSH: Intellect.

Classification: LCC BF431 .H257 2011 (print) | LCC BF431 (ebook) | DDC 153.9-dc23/eng/20230415

LC record available at <https://lcn.loc.gov/2023006713>

LC ebook record available at <https://lcn.loc.gov/2023006714>

ISBN 978-1-108-47715-4 Hardback

ISBN 978-1-108-70196-9 Paperback

Additional resources for this publication at [www.cambridge.org/haier](http://www.cambridge.org/haier)

Cambridge University Press & Assessment has no responsibility for the persistence or accuracy of URLs for external or third-party internet websites referred to in this publication and does not guarantee that any content on such websites is, or will remain, accurate or appropriate.

# Dedication

---

To the memory of our friend Earl (Buz) Hunt, who championed clear thinking and incisive but constructive skepticism about intelligence research

Cambridge University Press & Assessment  
978-1-108-47715-4 — The Science of Human Intelligence  
Richard J. Haier , Roberto Colom , Earl Hunt  
Frontmatter  
[More Information](#)

---

# Contents

---

<i>Preface</i>	<i>page</i> xiii
<i>Acknowledgments</i>	xvii
<b>1 A Brief Voyage to the Past</b>	<b>1</b>
1.1 Introduction: We Are Not All Equally Intelligent	1
1.1.1 Spain, Sixteenth Century	2
1.1.2 England and France, Nineteenth and Twentieth Centuries	3
1.2 Testing for Intelligence	4
1.2.1 Testing before Psychological Science	4
1.2.2 Alfred Binet Invents Modern Intelligence Testing	4
1.2.3 The Intelligence Quotient (IQ)	5
1.2.4 The Stanford–Binet and Wechsler Tests	8
1.2.5 Group Testing	9
1.3 Do the Tests Work?	11
1.3.1 Tests' Accuracy	11
1.3.2 A Few Statistics	12
1.3.3 Objections to Testing for Intelligence	13
1.4 Debunking Myths before Moving Forward	15
1.5 Summary	20
1.6 Questions for Discussion	21
<b>2 Basic Concepts</b>	<b>23</b>
2.1 Introduction: A Framework for Understanding Intelligence	23
2.1.1 Manifest and Latent Variables	23
2.1.2 Causes of Intelligence	24
2.1.3 Measurement of Intelligence	26
2.1.4 Uses of Intelligence	27

2.1.5	Products of Intelligence	27
2.1.6	Cause and Effect in Intelligence Research	28
2.1.7	Reaction Ranges and the Challenge Hypothesis	29
2.1.8	Intelligence Is Part of a System	31
2.2	Scientific Theories	33
2.2.1	Choosing between Competing Theories	34
2.2.2	Systems Thinking Complicates the Issue	36
2.2.3	Intelligence as a Construct in Social Systems	38
2.2.4	Reductionism	38
2.2.5	Psychometrics	40
2.2.6	Information Processing	41
2.2.7	Biology	42
2.3	Do We Need All This?	43
2.4	Summary	44
2.5	Questions for Discussion	45
3	Psychometric Models of Intelligence	47
3.1	Introduction: . . . And Then There Were Tests	48
3.2	Sampling Intelligence	49
3.2.1	Language	49
3.2.2	Visuospatial Reasoning	49
3.2.3	Mathematical Reasoning	50
3.2.4	Deductive and Inductive Reasoning	51
3.2.5	Aptitude and Achievement Tests	52
3.3	Test Design and Test Use	53
3.3.1	Item Selection and Evaluation	53
3.3.2	The Distribution of Test Scores	54
3.3.3	Item Response Theory (IRT): Beyond Raw Scores	55
3.3.4	The Importance of Norming	56
3.4	Intelligence Measurement: Summary	57
3.5	Psychometric Models in Brief	57
3.5.1	Essence of Psychometric Models	57
3.5.2	Factor Analysis	58
3.5.3	Exploratory Factor Analysis (EFA)	58
3.5.4	Confirmatory Factor Analysis (CFA)	62
3.5.5	Limits of Factor Analysis	63
3.6	To <i>g</i> or Not to <i>g</i>	65
3.6.1	General Intelligence ( <i>g</i> )	65
3.6.2	The Positive Manifold and <i>g</i>	66
3.6.3	The Nature of <i>g</i>	66
3.6.4	Reservations about <i>g</i>	68
3.6.5	Spearman versus Thurstone	70
3.7	The Cattell–Horn–Carroll (CHC) Model	71
3.7.1	Extensions and Applications of the Three-Stratum Model	73
3.7.2	What Is a Natural Kind of Ability: <i>g</i> , <i>Gf</i> , or <i>Gc</i> ?	76
3.8	The <i>g</i> -VPR Model	78
3.8.1	Psychometric Evidence for the <i>g</i> -VPR Model	79
3.8.2	Logical Arguments for the <i>g</i> -VPR Model	80
3.9	Summary	81
3.10	Questions for Discussion	82



## CONTENTS

ix

<b>4</b>	<b>Cognitive Models of Intelligence and Information Processing</b>	<b>84</b>
4.1	Introduction	84
4.2	Cognitive Psychology	85
4.3	Mental Processing Speed	89
4.3.1	Experimental Paradigms	92
4.3.2	Experimental Results for Processing Speed and Intelligence	95
4.4	Working Memory Capacity	97
4.4.1	The Measurement of Working Memory Capacity	101
4.4.2	The Relation between Working Memory and Intelligence	101
4.5	Verbal Comprehension and Intelligence	105
4.5.1	Low-Level Linguistic Skills	106
4.5.2	Higher-Order Comprehension	108
4.6	Visuospatial Ability and Intelligence	110
4.6.1	Imagery	111
4.6.2	Spatial Orientation	111
4.6.3	Visuospatial Ability and Information Processing	113
4.7	Process Overlap Theory: Connecting Psychometric, Cognitive, and Biological Models of Intelligence	115
4.8	Summary	117
4.9	Questions for Discussion	117
<b>5</b>	<b>Intelligence and the Brain</b>	<b>122</b>
5.1	Introduction	122
5.2	Are Bigger Brains Smarter?	129
5.3	Where in the Brain Is Intelligence?	130
5.3.1	The P-FIT Model of Distributed Networks	131
5.3.2	Patterns of Brain Connectivity	139
5.3.3	Predicting Intelligence from Brain Connectivity	141
5.4	Brain Efficiency	143
5.5	Linking Intelligence, Brain Connectivity, and Neurons	149
5.6	Summary	150
5.7	Questions for Discussion	152
<b>6</b>	<b>The Genetic Basis of Intelligence</b>	<b>157</b>
6.1	Introduction	157
6.2	Evolution and Genes	158
6.3	Behavioral Genetics	159
6.3.1	Heritability	160
6.3.2	Adoption Studies	161
6.3.3	Twin Studies	165
6.3.4	Heritability of Information Processing	169
6.3.5	Heritability of Academic Skills	171
6.3.6	Are Findings from Behavioral Genetics Convincing?	174
6.4	DNA and Molecular Genetics	176
6.4.1	Genetic Basis of Intelligence Variation	177
6.4.2	Hunting Genes for Intelligence	177
6.4.3	Cooperation, GWAS, and Polygenic Scores to Predict Intelligence	179
6.4.4	Genes to Neurons to Brains to Intelligence	185
6.5	Concluding Thoughts	186
6.6	Summary	187
6.7	Questions for Discussion	188

7	Experience and Intelligence	192
7.1	Introduction	192
7.2	Experience and the Physical World	196
7.2.1	Prenatal and Infant Experiences	197
7.2.2	Direct Insults to the Brain	199
7.2.3	Atmospheric Lead	200
7.2.4	Nutrition	202
7.2.5	Alcohol	205
7.3	Experience and the Social World	206
7.3.1	Socioeconomic Status (SES)	207
7.3.2	Adoption	207
7.3.3	The Home: Parenting	212
7.3.4	The Home: Resources	213
7.3.5	Early Interventions in At-Risk Populations	214
7.3.6	A Value Judgment	218
7.4	Experience, Formal Education, and Intelligence	220
7.4.1	Does Education Contribute to Intelligence?	220
7.4.2	How Much Does Education Improve Intelligence?	223
7.5	Summary	224
7.6	Questions for Discussion	224
8	Intelligence and Everyday Life	229
8.1	Introduction	229
8.2	Investigating Intelligence and Success in Life	230
8.2.1	The Conceptual Criterion Problem	230
8.2.2	Three Statistical Problems	231
8.2.3	The Research Design Problem	235
8.2.4	Are These Problems Fatal?	237
8.3	Intelligence and Academic Achievement	238
8.3.1	Intelligence in Grades K–12	239
8.3.2	Intelligence and Selection in Higher Education	241
8.4	Intelligence in the Workplace	243
8.4.1	Studies of Military Enlisted Performance	247
8.4.2	Studies of the Civilian Workplace	249
8.4.3	General Intelligence and Specific Jobs	252
8.5	Health, Personal/Social Adjustment, and “Emotional Intelligence”	255
8.6	Conclusion	261
8.7	Summary	262
8.8	Questions for Discussion	263
9	Introduction to the Scientific Study of Population Differences	266
9.1	Introduction	266
9.2	The Issues Involved	267
9.2.1	Motivation	267
9.2.2	Recruitment and Attrition Effects	269
9.2.3	Establishing Causation	270
9.3	Statistics and Measurement	271
9.3.1	The Size of Population Differences	271
9.3.2	Using the Same Standardized Test for Measuring Different Populations	273
9.3.3	Comparing Groups Using Test Batteries	274

## CONTENTS

xi

9.4	What to Conclude?	276
9.5	Summary	276
9.6	Questions for Discussion	280
<b>10</b>	<b>Sex Differences and Intelligence</b>	<b>283</b>
10.1	Introduction: Why Sex Matters	283
10.2	Psychometric Studies of Intelligence Differences	285
10.2.1	Evidence from Test Batteries	285
10.2.2	Evidence from Individual Tests	287
10.2.3	The Importance of Variance	289
10.3	Sex Differences in Cognitive Abilities	294
10.3.1	Sex Differences in Cognitive Traits and Education	298
10.3.2	Boys and Girls in the K–12 System	299
10.3.3	College and University Undergraduate Education	301
10.3.4	Postgraduate Education and Career Development	304
10.4	Possible Origins of Cognitive Sex Differences	307
10.4.1	Social/Cultural Influence and Interests	307
10.4.2	Two Views of Evolution	310
10.4.3	Are There Male and Female Brains?	311
10.5	Conclusions	315
10.6	Summary	316
10.7	Questions for Discussion	316
<b>11</b>	<b>Intelligence and Aging</b>	<b>322</b>
11.1	Introduction	322
11.2	How Do We Study the Relationship between Intelligence and Aging?	325
11.3	Psychometrics	329
11.4	Information Processing	335
11.4.1	Processing Speed	335
11.4.2	Working Memory	337
11.5	Biology	341
11.6	Healthy Aging	348
11.7	Summary	349
11.8	Questions for Discussion	350
<b>12</b>	<b>Intelligence in the World</b>	<b>354</b>
12.1	Introduction	354
12.2	The Intelligence of Nations	359
12.3	Methodological Issues	361
12.4	Opening Pandora's Box	364
12.5	Cognitive Capitalism	366
12.6	What Makes Nations Intelligent?	370
12.7	Summary	372
12.8	Questions for Discussion	373
<b>13</b>	<b>Enhancing Intelligence</b>	<b>375</b>
13.1	Introduction	375
13.1.1	Sources of Confusion	376
13.1.2	Does Compensatory or Early Childhood Education Boost Intelligence?	378
13.2	Evidence of Malleability from the Environment	379
13.2.1	Secondary Education Effects for Individuals	379
13.2.2	The Flynn Effect for Generations	379

13.3 What Does Not Work (So Far) from Laboratory Studies	381
13.3.1 Memory Training	381
13.3.2 Computer Games	383
13.4 What Might Work from Biology	385
13.4.1 Embryo Selection	385
13.4.2 Genetic Engineering	387
13.4.3 Drugs and an IQ Pill	388
13.5 Summary and Conclusion	390
13.6 Questions for Discussion	390
<b>Epilogue: A Final Word</b>	394
E.1 Ten Key Points	394
E.2 A Final Challenge for You	395
<i>Index</i>	397

## Preface

---

This book is the second edition to the classic textbook *Human Intelligence* (2011), written by our friend Earl (Buz) Hunt (1933–2016). Hunt’s book provided a balanced and comprehensive presentation of the scientific evidence about human intelligence. We wrote this book to do the same with updated research data, but with this warning: we have our own points of view elaborated after seventy-five years of combined research experience between us, so this book is not blandly neutral on every issue. Not surprisingly, we do not agree about every point or the emphasis it should receive. Our disagreements mirror the field. The astute reader may even detect a bit of tension in passages that are written as compromises of our different views. We often channeled Buz as the tiebreaker.

Intelligence is a controversial subject for many reasons. This book presents empirical data that address complex ideas and the issues surrounding them. Many findings might be surprising and contrary to what you may have heard or what you believe. Misunderstandings and mistaken ideas abound, especially in the popular media,

about what intelligence is, where it comes from, its importance in everyday life, and the meaning of average differences among populations. This book is intended to inoculate you against erroneous information and to enable you to think and converse about complex topics with facts.

The weight of evidence is a key concept at the core of this book. Questions about intelligence do not have simple answers. No one study is definitive, and it takes many years to sort out inconsistent research results to establish a weight of evidence. Intelligence research has many mysteries, twists, and turns, and, most importantly, know it or not, it is highly relevant to your life.

Our job is to inform you with clear explanations of the best evidence. New data are coming rapidly, especially from neuroscience and genetic studies. Each chapter intends to promote critical thinking about what science already knows and what remains to be learned. There are hundreds of recent good studies we could have chosen to include. We want you to see the forest through the trees, the so-called big picture, so we have focused on some of the best,

informative, and interesting research. We often will quote researchers directly when they interpret their findings to give you a feel for how research is communicated by the people who do it. For the same reason, we often reproduce the exact figures and tables of results from the original sources.

With this in mind, Chapter 1, “A Brief Voyage to the Past,” presents historic milestones relevant for understanding the present state of research and preparing for future findings. Common misunderstandings about intelligence are debunked, including opinions that intelligence cannot be defined or measured for scientific research, that intelligence tests do not measure anything important for everyday life, or that intelligence is based exclusively on early environmental and social experiences. These views are not supported by compelling evidence, as we will see.

Chapter 2, “Basic Concepts,” discusses the role of models and hypothesis testing and sets out major questions about intelligence. The need for quantitative assessments is underscored for answering questions at distinguishable but interrelated levels of analysis: psychological traits, cognitive processes, and biology (e.g., the brain, genomes, influences of experiences).

Chapter 3, “Psychometric Models of Intelligence,” covers testing intelligence at the behavioral level, what test scores mean, and what they do not mean. The available evidence supports the conclusions that (1) standardized intelligence tests are among the most reliable and valid psychological assessment tools, (2) people can be reliably ordered on these test scores, and (3) the analysis of these scores supports the view that human cognitive abilities are organized in a pyramid-like structure with a prominent general factor of intelligence (*g*) common to all tests of mental abilities and that some mental abilities require more *g* than others.

Chapter 4, “Cognitive Models of Intelligence and Information Processing,” focuses on the dynamics of intelligence within the brain. Perception, attention, learning, and memory have been studied as elements of intelligence. Can intelligence be explained

by individual differences in attention and memory ability? Or is intelligence the factor that integrates all these elements into something psychologically meaningful that is more than the sum of its parts? We present evidence that favors explanations somewhere between psychometric and biology-based models by showing how individuals apply their information processing abilities.

Chapter 5, “Intelligence and the Brain,” focuses on a neuroscience approach. Neuroimaging technologies have taken intelligence research deep into the brain. Structural and functional features of the cortex, specific neural circuits throughout the brain, and characteristics of neurons are related to intelligence differences among individuals as assessed by standardized tests. Using patterns of connectivity among brain areas (the connectome), we can now identify brain “fingerprints” that predict intelligence test scores. This is one of the most exciting areas of progress, but further advances are coming quickly, and they are tasty food for hungry minds.

Chapter 6, “The Genetic Basis of Intelligence,” presents overwhelming evidence that genetic variation is related to intelligence differences. Classic behavioral genetics research (based on twin, adoption, and family studies) is now taken to another level with DNA assessment. Polygenic scores can predict intelligence differences among individuals to some degree. This opens a new and exciting field that seeks to understand the molecular biology of specific brain systems related to intelligence. These findings have the science fiction-like potential to evolve into learning how to change brain systems to enhance intelligence. Chapter 13 is fully devoted to the enhancement of intelligence.

Chapter 7, “Experience and Intelligence,” examines the impact of nongenetic environmental factors on intelligence. We know genes have substantial influence, but we also know that they are clearly insufficient for explaining all manifestations of intelligence. Furthermore, the same environmental feature may have a differential impact on each person’s unique genome and connectome.

Understanding how complex interactions among genetic and environmental factors contribute to intelligence differences is one of the most challenging topics in all science.

Chapter 8, “Intelligence and Everyday Life,” explains why intelligence matters to you. Intelligence is critical for understanding numerous consequential social outcomes, such as academic achievement, occupational status and success, physical and mental health, longevity, creativity, eminence, income, socioeconomic status, and accident-proneness, just to name some of them. We challenge you to find any other psychological trait showing such a large set of social correlates. We explain here how the integrative nature of intelligence might help account for this wide network of findings.

Chapter 9, “Introduction to the Scientific Study of Population Differences,” is intended to provide a context for some of the most complex findings in intelligence research that indicate average test score differences among some populations. We detail these findings in Chapter 10 (sex differences), Chapter 11 (age differences), and Chapter 12 (intelligence in the world). Here we present key points to keep in mind when considering population data. As a preview, here are three of them: (1) making sweeping assertions about population differences must be regarded with skepticism; (2) it is critical to distinguish scientific findings and political recommendations; and (3) when population differences are observed, it may be unclear if they can be attributed to intelligence or to other personal and social/cultural variables.

Chapter 10, “Sex Differences and Intelligence,” deals with our current understanding of average cognitive ability differences between men and women. There is a large research literature and compelling evidence that men and women do not differ on general intelligence (*g*), but there are average differences in some specific mental abilities. We address structural and functional brain differences and whether these differences could account for men/women disparities across vocations and professions. An important issue is to what, if any, extent

these findings might inform social/educational policies.

Chapter 11, “Intelligence and Aging,” addresses the stability of intelligence as people age. There are longitudinal studies showing that intelligence is the most stable psychological trait, but this does not mean there are no changes across the life span. Different aspects of intelligence age differently, and the effects of age are variable among individuals. Research is trying to discover how genes and environmental factors influence aging effects on intelligence. Since we all age, this research has especially personal meaning.

Chapter 12, “Intelligence in the World,” discusses average intelligence similarities and differences among countries, continents, and ancestry. Devoting a chapter to this complex and delicate subject is necessary because there is much popular discussion and argument about it, especially on social media. Intelligence research is also relevant to what economists call human capital. The role of intelligence for economic development and well-being is an emerging area of interest. Therefore, we discuss competing interpretations of the available data. We acknowledge that we do not yet have a solid weight of evidence about why differences exist, but the issues are important, and we think skipping them would be irresponsible.

Chapter 13, “Enhancing Intelligence,” addresses the most far-reaching and ultimate topic in all of intelligence research: how can we improve general cognitive ability? There is evidence of a generational increase in average IQ scores (Flynn effect) and of a small average increase related to education. However, there have been many claims of large increases for individuals resulting from early childhood education, computer gaming, memory training, stimulation of the brain, and a host of others. So far, none of them produce replicated or lasting effects. We think advances in neuroscience and genetic research may provide a rational basis for enhancing intelligence through neurobiology, brain development, and perhaps gene expression.

We see a glimmer of what might be possible and the thought-provoking questions that will arise.

The epilogue, “A Final Word,” summarizes ten key findings about intelligence that are strongly supported by currently available research evidence. There also is a challenge to think about what the future holds for understanding intelligence beyond test scores.

Let us begin this book with the words of Douglas K. Detterman, a longtime intelligence researcher:

Intelligence is the most important thing of all to understand, more important than the origin of the universe, more important than climate change, more

important than curing cancer, more important than anything else. That is because human intelligence is our major adaptive function and only by optimizing it will we be able to save ourselves and other living things from ultimate destruction.

(Detterman, 2016, p. v)

We strongly agree, and, perhaps by the time you finish reading, you will agree too.

## Reference

- Detterman, D. K. 2016. Was intelligence necessary? *Intelligence*, 55, v–viii.



## Acknowledgments

---

This project has a long history, but it has come to fruition with the help of David Repetto and Rowan Groat at Cambridge University Press. We thank all the reviewers who offered a range of comments and suggestions. Many of our colleagues around the world read all or some of the chapters of this book. We thank James Lee, Natalia Goriounova, Anna-Lena

Schubert, Kirsten Hilger, Matt Euler, and Sophie von Stumm for their feedback. We also thank all the people who contributed figures (listed in the main text). Of course, even with their input, any mistakes belong exclusively to us. Finally, we thank the Hunt family – they have never wavered in their support of this project.

Cambridge University Press & Assessment  
978-1-108-47715-4 — The Science of Human Intelligence  
Richard J. Haier , Roberto Colom , Earl Hunt  
Frontmatter  
[More Information](#)

---