# منابع

#### مقدمه

- Sue Johnston-Wilder, Janine Brindley, and Philip Dent, A Survey of Mathematics Anxiety and Mathematical Resilience Among Existing Apprentices (London: Gatsby Charitable Foundation, 2014).
- Sara Draznin, "Math Anxiety in Fundamentals of Algebra Students," The Eagle Feather, Honors College, Univ. of North Texas, January 1, 1970, http://eaglefeather.honors.unt.edu/2008/article/179#.W-idJS2ZNMM; N. Betz, "Prevalence, Distribution, and Correlates of Math Anxiety in College Students," Journal of Counseling Psychology 25/5 (1978): 441–48.
- 3. C. B. Young, S. S. Wu, and V. Menon, "The Neurodevelopmental Basis of Math Anxiety," Psychological Science 23/5 (2012): 492–501.
- 4. Daniel Coyle, The Talent Code: Greatness Isn't Born. It's Grown. Here's How. (New York: Bantam, 2009).
- 5. Michael Merzenich, Soft-Wired: How the New Science of Brain Plasticity Can Change Your Life (San Francisco: Parnassus, 2013).
- 6. Merzenich, Soft-Wired.
- 7. Anders Ericsson and Robert Pool, Peak: Secrets from the New Science of Expertise (New York: Houghton Mifflin Harcourt, 2016).
- 8. Ericsson and Pool, Peak, 21.
- 9. Carol S. Dweck, Mindset: The New Psychology of Success (New York: Ballantine, 2006).
- Carol S. Dweck, "Is Math a Gift? Beliefs That Put Females at Risk," in Stephen J. Ceci and Wendy M. Williams, eds., Why Aren't More Women in Science? Top Researchers Debate the Evidence (Washington, DC: American Psychological Association, 2006).
- 11. D. S. Yeager et al., "Breaking the Cycle of Mistrust: Wise Interventions to Provide Critical Feedback Across the Racial Divide," Journal of Experimental Psychology: General 143/2 (2014): 804.

### فصل اول

- 1. Michael Merzenich, Soft-Wired: How the New Science of Brain Plasticity Can Change Your Life (San Francisco: Parnassus, 2013), 2.
- 2. Norman Doidge, The Brain That Changes Itself (New York: Penguin, 2007).
- 3. Doidge, The Brain That Changes Itself, 55.
- E. Maguire, K. Woollett, and H. Spiers, "London Taxi Drivers and Bus Drivers: A Structural MRI and Neuropsychological Analysis," Hippocampus 16/12 (2006): 1091–101.
- K. Woollett and E. A. Maguire, "Acquiring 'The Knowledge' of London's Layout Drives Structural Brain Changes," Current Biology 21/24 (2011): 2109–14.
- Elise McPherson et al., "Rasmussen's Syndrome and Hemispherectomy: Girl Living with Half Her Brain," Neuroscience Fundamentals, http://www.whatsonxiamen.com/news11183.html.
- 7. Doidge, The Brain That Changes Itself, xix.
- 8. Doidge, The Brain That Changes Itself, xx.
- 9. A. Dixon, editorial, FORUM 44/1 (2002): 1.
- Sarah D. Sparks, "Are Classroom Reading Groups the Best Way to Teach Reading? Maybe Not," Education Week, August 26, 2018, http://www.edweek.org/ew/articles/2018/08/29/are-classroom-reading-groups-the-best-way.html.
- 11. Sparks, "Are Classroom Reading Groups the Best Way to Teach Reading? Maybe Not."
- 12. Jo Boaler, Mathematical Mindsets: Unleashing Students' Potential Through Creative Math, Inspiring Messages and Innovative Teaching (San Francisco: Jossey-Bass, 2016).
- 13. Jo Boaler et al., "How One City Got Math Right," The Hechinger Report, October 2018, https://hechingerreport.org/opinion-how-one-city-got-math-right/.
- 14. Lois Letchford, Reversed: A Memoir (Irvine, CA: Acorn, 2018).
- 15. Doidge, The Brain That Changes Itself, 34.
- 16. K. Lewis and D. Lynn, "Against the Odds: Insights from a Statistician with Dyscalculia," Education Sciences 8/2 (2018): 63.

- 17. T. luculano et al., "Cognitive Tutoring Induces Widespread Neuroplasticity and Remediates Brain Function in Children with Mathematical Learning Disabilities," Nature Communications 6 (2015): 8453, https://doi.org/10.1038/ncomms9453.
- Sarah-Jane Leslie, et al., "Expectations of Brilliance Underlie Gender Distributions Across Academic Disciplines," Science 347/6219 (2015): 262–65.
- Seth Stephens-Davidowitz, "Google, Tell Me: Is My Son a Genius?" New York Times, January 18, 2014, https://www.nytimes.com/2014/01/19/opinion/sunday/google-tellme-is-my-son-a-genius.html.
- 20. D. Storage et al., "The Frequency of 'Brilliant' and 'Genius' in Teaching Evaluations Predicts the Representation of Women and African Americans Across Fields," PLoS ONE 11/3 (2016): e0150194, https://doi.org/10.1371/journal.pone.0150194.
- 21. Piper Harron, "Welcome to Office Hours," The Liberated Mathematician, 2015, http://www.theliberatedmathematician.com.
- 22. Eugenia Sapir, "Maryam Mirzakhani as Thesis Advisor," Notices of the AMS 65/10 (November 2018): 1229–30.
- 23. At the time of this writing, the film, which can be seen at http://www.youcubed.org/rethinking-giftedness-film, has had 62,000 views.
- 24. Daniel Coyle, The Talent Code: Greatness Isn't Born. It's Grown. Here's How. (New York: Bantam, 2009), 178.
- 25. Anders Ericsson and Robert Pool, Peak: Secrets from the New Science of Expertise (New York: Houghton Mifflin Harcourt, 2016).

# فصل دوم

- J. S. Moser et al., "Mind Your Errors: Evidence for a Neural Mechanism Linking Growth Mind-set to Adaptive Posterror Adjustments," Psychological Science 22/12 (2011): 1484–89.
- 2. Daniel Coyle, The Talent Code: Greatness Isn't Born. It's Grown. Here's How. (New York: Bantam, 2009).
- 3. J. A. Mangels, et al., "Why Do Beliefs About Intelligence Influence Learning Success? A Social Cognitive Neuroscience Model," Social

- Cognitive and Affective Neuroscience 1/2 (2006): 75–86, http://academic.oup.com/scan/article/1/2/75/2362769.
- 4. Moser et al., "Mind Your Errors."
- 5. Coyle, The Talent Code, 2–3.
- 6. Coyle, The Talent Code, 3–4.
- 7. Coyle, The Talent Code, 5.
- 8. Moser et al., "Mind Your Errors."
- 9. Anders Ericsson and Robert Pool, Peak: Secrets from the New Science of Expertise (New York: Houghton Mifflin Harcourt, 2016), 75.
- James W. Stigler and James Hiebert, The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom (New York: Free Press, 1999).
- 11. Elizabeth Ligon Bjork and Robert Bjork, "Making Things Hard on Yourself, but in a Good Way: Creating Desirable Difficulties to Enhance Learning," in Morton Ann Gernsbacher and James R. Pomeratz, eds., Psychology and the Real World (New York: Worth, 2009), 55–64, https://bjorklab.psych.ucla.edu/wp-content/uploads/sites/13/2016/04/EBjork-RBjork-2011.pdf.
- 12. J. Boaler, K. Dance, and E. Woodbury, "From Performance to Learning: Assessing to Encourage Growth Mindsets," youcubed, 2018, tinyurl.com/A4Lyoucubed.
- 13. Coyle, The Talent Code, 5.

# فصل سوم

- O. H. Zahrt and A. J. Crum, "Perceived Physical Activity and Mortality: Evidence from Three Nationally Representative U.S. Samples," Health Psychology 36/11 (2017): 1017–25, http://dx.doi.org/10.1037/hea0000531.
- 2. B. R. Levy et al., "Longevity Increased by Positive Self-Perceptions of Aging," Journal of Personality and Social Psychology 83/2 (2002): 261–70, https://doi.org/10.1037/0022-3514.83.2.261.
- 3. B. R. Levy et al., "Age Stereotypes Held Earlier in Life Predict Cardiovascular Events in Later Life," Psychological Science 20/3 (2009): 296–98, https://doi.org/10.1111/j.1467-9280.2009.02298.x.
- 4. Levy et al., "Age Stereotypes Held Earlier in Life."

- 5. A. J. Crum and E. J. Langer, "Mind-Set Matters: Exercise and the Placebo Effect," Psychological Science 18/2 (2007): 165–71, https://doi.org/10.1111/j.1467-9280.2007.01867.x.
- 6. V. K. Ranganathan et al., "From Mental Power to Muscle Power—Gaining Strength by Using the Mind," Neuropsychologia 42/7 (2004): 944–56.
- 7. N. F. Bernardi et al., "Mental Practice Promotes Motor Anticipation: Evidence from Skilled Music Performance," Frontiers in Human Neuroscience 7 (2013): 451, https://doi.org/10.3389/fnhum.2013.00451.
- 8. K. M. Davidson-Kelly, "Mental Imagery Rehearsal Strategies for Expert Pianists," Edinburgh Research Archive, November 26, 2014, https://www.era.lib.ed.ac.uk/handle/1842/14215.
- D. S. Yeager, K. H. Trzesniewski, and C. S. Dweck, "An Implicit Theories of Personality Intervention Reduces Adolescent Aggression in Response to Victimization and Exclusion," Child Development 84/3 (2013): 970–88.
- P. B. Carr, C. S. Dweck, and K. Pauker, "Prejudiced Behavior Without Prejudice? Beliefs About the Malleability of Prejudice Affect Interracial Interactions," Journal of Personality and Social Psychology 103/3 (2012): 452.
- L. S. Blackwell, K. H. Trzesniewski, and C. S. Dweck, "Implicit Theories of Intelligence Predict Achievement Across an Adolescent Transition: A Longitudinal Study and an Intervention," Child Development 78/1 (2007): 246–63.
- J. S. Moser et al., "Mind Your Errors: Evidence for a Neural Mechanism Linking Growth Mind-set to Adaptive Posterror Adjustments," Psychological Science 22/12 (2011): 1484–89.
- 13. E. A. Gunderson et al., "Parent Praise to 1- to 3-Year-Olds Predicts Children's Motivational Frameworks 5 Years Later," Child Development 84/5 (2013): 1526–41.
- Carol S. Dweck, "The Secret to Raising Smart Kids," Scientific American Mind 18/6 (2007): 36–43, https://doi.org/10.1038/scientificamericanmind 1207-36.
- 15. Carol S. Dweck, "Is Math a Gift? Beliefs That Put Females at Risk," in Stephen J. Ceci and Wendy M. Williams, eds., Why Aren't More Women

- in Science? Top Researchers Debate the Evidence (Washington, DC: American Psychological Association, 2006).
- 16. Blackwell, Trzesniewski, and Dweck, "Implicit Theories of Intelligence Predict Achievement."
- 17. Angela Duckworth, Grit: The Power of Passion and Perseverance (New York: Scribner, 2016).
- J. Boaler, K. Dance, and E. Woodbury, "From Performance to Learning: Assessing to Encourage Growth Mindsets," youcubed, 2018, tinyurl.com/A4Lyoucubed.
- 19. H. Y. Lee et al., "An Entity Theory of Intelligence Predicts Higher Cortisol Levels When High School Grades Are Declining," Child Development, July 10, 2018, https://doi.org/10.1111/cdev.13116.
- 20. Anders Ericsson and Robert Pool, Peak: Secrets from the New Science of Expertise (New York: Houghton Mifflin Harcourt, 2016).
- 21. Carol S. Dweck, Mindset: The New Psychology of Success (New York: Ballantine, 2006), 257.
- 22. Christine Gross-Loh, "How Praise Became a Consolation Prize," The Atlantic, December 16, 2016.

# فصل چهارم

- 1. Alfie Kohn, "The 'Mindset' Mindset," Alfie Kohn, June 8, 2018, http://www.alfiekohn.org/article/mindset/.
- 2. V. Menon, "Salience Network," in Arthur W. Toga, ed., Brain Mapping: An Encyclopedic Reference, vol. 2 (London: Academic, 2015), 597–611.
- 3. J. Park and E. M. Brannon, "Training the Approximate Number System Improves Math Proficiency," Psychological Science 24/10 (2013): 2013–19, https://doi.org/10.1177/0956797613482944.
- 4. I. Berteletti and J. R. Booth, "Perceiving Fingers in Single-Digit Arithmetic Problems," Frontiers in Psychology 6 (2015): 226, https://doi.org/10.3389/fpsyg.2015.00226.
- M. Penner-Wilger and M. L. Anderson, "The Relation Between Finger Gnosis and Mathematical Ability: Why Redeployment of Neural Circuits Best Explains the Finding," Frontiers in Psychology 4 (2013): 877, https://doi.org/10.3389/fpsyg.2013.00877.

- 6. M. Penner-Wilger et al., "Subitizing, Finger Gnosis, and the Representation of Number," Proceedings of the 31st Annual Cognitive Science Society 31 (2009): 520–25.
- 7. S. Beilock, How the Body Knows Its Mind: The Surprising Power of the Physical Environment to Influence How You Think and Feel (New York: Simon and Schuster, 2015).
- 8. Anders Ericsson and Robert Pool, Peak: Secrets from the New Science of Expertise (New York: Houghton Mifflin Harcourt, 2016).
- A. Sakakibara, "A Longitudinal Study of the Process of Acquiring Absolute Pitch: A Practical Report of Training with the 'Chord Identification Method," Psychology of Music 42/1 (2014): 86–111, https://doi.org/10.1177/0305735612463948.
- Thomas G. West, Thinking Like Einstein: Returning to Our Visual Roots with the Emerging Revolution in Computer Information Visualization (New York: Prometheus Books, 2004).
- 11. Claudia Kalb, "What Makes a Genius?" National Geographic, May 2017.
- 12. Kalb, "What Makes a Genius?"
- 13. M. A. Ferguson, J. S. Anderson, and R. N. Spreng, "Fluid and Flexible Minds: Intelligence Reflects Synchrony in the Brain's Intrinsic Network Architecture," Network Neuroscience 1/2 (2017): 192–207.
- 14. M. Galloway, J. Conner, and D. Pope, "Nonacademic Effects of Homework in Privileged, High-Performing High Schools," Journal of Experimental Education 81/4 (2013): 490–510.
- M. E. Libertus, L. Feigenson, and J. Halberda, "Preschool Acuity of the Approximate Number System Correlates with School Math Ability," Developmental Science 14/6 (2011): 1292–1300.
- R. Anderson, J. Boaler, and J. Dieckmann, "Achieving Elusive Teacher Change Through Challenging Myths About Learning: A Blended Approach," Education Sciences 8/3 (2018): 98.
- 17. Anderson, Boaler, and Dieckmann, "Achieving Elusive Teacher Change."
- 18. J. Boaler, K. Dance, and E. Woodbury, "From Performance to Learning: Assessing to Encourage Growth Mindsets," youcubed, 2018, tinyurl.com/A4Lyoucubed.

### فصل ينجم

- 1. Claudia Kalb, "What Makes a Genius?" National Geographic, May 2017.
- 2. Sian Beilock, Choke: What the Secrets of the Brain Reveal About Getting It Right When You Have To (New York: Simon and Schuster, 2010).
- 3. A paper that gives advice on different ways to teach math facts conceptually and well—without fear or anxiety—is Jo Boaler, Cathy Williams, and Amanda Confer, "Fluency Without Fear: Research Evidence on the Best Ways to Learn Math Facts," youcubed, January 28, 2015, https://www.youcubed.org/evidence/fluency-without-fear.
- 4. E. A. Maloney et al., "Intergenerational Effects of Parents' Math Anxiety on Children's Math Achievement and Anxiety," Psychological Science 26/9 (2015): 1480–88, https://doi.org/10.1177/0956797615592630.
- 5. S. L. Beilock et al., "Female Teachers' Math Anxiety Affects Girls' Math Achievement," Proceedings of the National Academy of Sciences 107/5 (2010): 1860–63.
- 6. Laurent Schwartz, A Mathematician Grappling with His Century (Basel: Birkhäuser, 2001).
- 7. Kenza Bryan, "Trailblazing Maths Genius Who Was First Woman to Win Fields Medal Dies Aged 40," Independent, July 15, 2017, https://www.independent.co.uk/news/world/maryam-mirzakhanifields-medal-mathematics-dies-forty-iran-rouhani-a7842971.html.
- 8. Schwartz, A Mathematician Grappling with His Century, 30–31.
- 9. Norman Doidge, The Brain That Changes Itself (New York: Penguin, 2007), 199.
- 10. Doidge, The Brain That Changes Itself, 199.
- 11. K. Supekar et al., "Neural Predictors of Individual Differences in Response to Math Tutoring in Primary-Grade School Children," PNAS 110/20 (2013): 8230–35.
- 12. E. M. Gray and D. O. Tall, "Duality, Ambiguity, and Flexibility: A 'Proceptual' View of Simple Arithmetic," Journal for Research in Mathematics Education 25/2 (1994): 116–40.
- 13. W. P. Thurston, "Mathematical Education," Notices of the American Mathematical Society 37 (1990): 844–50.
- 14. Gray and Tall, "Duality, Ambiguity, and Flexibility."

- Jo Boaler and Pablo Zoida, "Why Math Education in the U.S. Doesn't Add Up," Scientific American, November 1, 2016, https://www.scientificamerican.com/article/why-math-education-inthe-u-s-doesn-t-add-up.
- 16. Adam Grant, Originals: How Non-Conformists Move the World (New York: Penguin, 2016).
- 17. Grant, Originals, 9-10.

#### فصل ششم

- 1. U. Treisman, "Studying Students Studying Calculus: A Look at the Lives of Minority Mathematics Students in College," College Mathematics Journal 23/5 (1992): 362–72 (368).
- 2. Treisman, "Studying Students Studying Calculus," 368.
- Organisation for Economic Co-operation and Development, The ABC of Gender Equality in Education: Aptitude, Behaviour, Confidence (Paris: PISA, OECD Publishing, 2015), https://www.oecd.org/pisa/keyfindings/pisa-2012-results-gender-eng.pdf.
- 4. OECD, The ABC of Gender Equality in Education.
- M. I. Núñez-Peña, M. Suárez-Pellicioni, and R. Bono, "Gender Differences in Test Anxiety and Their Impact on Higher Education Students' Academic Achievement," Procedia - Social and Behavioral Sciences 228 (2016): 154–60.
- 6. Organisation for Economic Co-operation and Development, PISA 2015 Results (Volume V): Collaborative Problem Solving (Paris: PISA, OECD Publishing, 2017), https://doi.org/10.1787/9789264285521-en.
- 7. J. Decety et al., "The Neural Bases of Cooperation and Competition: An fMRI Investigation," Neuroimage 23/2 (2004): 744–51.
- 8. V. Goertzel et al., Cradles of Eminence: Childhoods of More than 700 Famous Men and Women (Gifted Psychology Press: 2004), 133–55.
- Meg Jay, "The Secrets of Resilience," Wall Street Journal, November 10, 2017, https://www.wsj.com/articles/the-secrets-of-resilience-1510329202.

- 10. Jo Boaler, "Open and Closed Mathematics: Student Experiences and Understandings," Journal for Research in Mathematics Education 29/1 (1998): 41–62.
- Jo Boaler, Experiencing School Mathematics: Traditional and Reform Approaches to Teaching and Their Impact on Student Learning (New York: Routledge, 2002).
- J. Boaler and S. Selling, "Psychological Imprisonment or Intellectual Freedom? A Longitudinal Study of Contrasting School Mathematics Approaches and Their Impact on Adults' Lives," Journal of Research in Mathematics Education 48/1 (2017): 78–105.
- J. Boaler and M. Staples, "Creating Mathematical Futures Through an Equitable Teaching Approach: The Case of Railside School," Teachers' College Record 110/3 (2008): 608–45.
- 14. Jo Boaler, "When Academic Disagreement Becomes Harassment and Persecution," October 2012, http://web.stanford.edu/~joboaler.
- 15. Shane Feldman, "Pain to Purpose: How Freshman Year Changed My Life," https://www.youtube.com/watch?v=BpMq7Q54cwl.
- 16. Jo Boaler, "Promoting 'Relational Equity' and High Mathematics Achievement Through an Innovative Mixed Ability Approach," British Educational Research Journal 34/2 (2008): 167–94.
- 17. John J. Cogan and Ray Derricott, Citizenship for the 21st Century: An International Perspective on Education (London: Kogan Page, 1988), 29; Gita Steiner-Khamsi, Judith Torney-Purta, and John Schwille, eds., New Paradigms and Recurring Paradoxes in Education for Citizenship: An International Comparison (Bingley, UK: Emerald Group, 2002).
- 18. Boaler and Staples, "Creating Mathematical Futures."
- Jenny Morrill and Paula Youmell, Weaving Healing Wisdom (Lexingford, 2017).

#### نتبجهگيري

- 1. Etienne Wenger, Communities of Practice: Learning, Meaning, and Identity (Cambridge: Cambridge Univ. Press, 1999).
- 2. Angela Duckworth, Grit: The Power of Passion and Perseverance (New York: Scribner, 2016).
- 3. Nicole M. Joseph, personal communication, 2019.

- 4. Henry Fraser, The Little Big Things (London: Seven Dials, 2018).
- 5. Fraser, The Little Big Things, 158–59.
- R. A. Emmons and M. E. McCullough, "Counting Blessings Versus Burdens: An Experimental Investigation of Gratitude and Subjective Well-Being in Daily Life," Journal of Personality and Social Psychology 84/2 (2003): 377.
- 7. Shawn Achor, The Happiness Advantage: The Seven Principles of Positive Psychology That Fuel Success and Performance at Work (Random House, 2011).
- 8. Anders Ericsson and Robert Pool, Peak: Secrets from the New Science of Expertise (New York: Houghton Mifflin Harcourt, 2016).
- 9. C. Hertzog and D. R. Touron, "Age Differences in Memory Retrieval Shift: Governed by Feeling-of-Knowing?" Psychology and Aging 26/3 (2011).
- D. R. Touron and C. Hertzog, "Age Differences in Strategic Behavior During a Computation-Based Skill Acquisition Task," Psychology and Aging 24/3 (2009): 574.
- 11. F. Sofi et al., "Physical Activity and Risk of Cognitive Decline: A Meta-Analysis of Prospective Studies," Journal of Internal Medicine 269/1 (2011): 107–17.
- 12. D. C. Park et al., "The Impact of Sustained Engagement on Cognitive Function in Older Adults: The Synapse Project," Psychological Science 25/1 (2013): 103–12.
- Martin Samuels, "In Defense of Mistakes," The Health Care Blog, October
   2015, http://thehealthcareblog.com/blog/2015/10/07/in-defense-of-mistakes/.
- 14. Erica Klarreich, "How to Cut Cake Fairly and Finally Eat It Too," Quanta Magazine, October 6, 2016, https://www.quantamagazine.org/new-algorithm-solves-cake-cutting-problem-20161006/#.
- 15. Adam Grant, Originals: How Non-Conformists Move the World.
- 16. J. Boaler, K. Dance, and E. Woodbury, "From Performance to Learning: Assessing to Encourage Growth Mindsets," youcubed, 2018, https://bhi61nm2cr3mkdgk1dtaov18-wpengine.netdna-ssl.com/wp-content/uploads/2018/04/Assessent-paper-final-4.23.18.pdf.
- 17. Achor, The Happiness Advantage, 62–63.

  N. Achor, The Happiness Advantage, 62–63.