



Book The Owner's Manual for the Brain

Everyday Applications from Mind-Brain Research

Pierce J. Howard
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Recommendation

Do you use your head? Do you think before you act? Do you really know how to ponder things? Pierce J. Howard does. As the director of research at a cognitive science center, he has developed a truly practical, well-organized book about the brain, complete with information on how to think more effectively. He details, in a fascinating, comprehensive fashion, the latest knowledge about mind-brain functioning. You can put his specific, helpful reporting to work to boost your mental prowess and overall health. *BooksInShort* recommends this excellent book to readers who want to know how their thinking works, and to learn how to improve and protect their brainpower.

Take-Aways

- Cognitive science studies how the brain functions.
- Researchers in this area have achieved remarkable findings in recent years.
- You can apply some of these findings to increase your brainpower and promote your health. Your brain has a nearly limitless capacity for learning.
- What you eat, and how and when, directly affects your ability to think clearly and creatively. To think and feel better, start each day with a nourishing breakfast.
- You need short breaks throughout the day to make the most of your mental acuity.
- Sleep is a phased activity in which people wake up briefly, over and over. This periodic wakefulness does not mean that people do not get adequate sleep.
- To improve your sleep, avoid unhealthy snacks and alcohol before bed. Milk and light carbohydrates, such as fruit, promote drowsiness.
- To motivate people, be “more consultant, less boss.”
- People’s emotional reactions depend on their cognitive evaluation of events.
- Most people who remain mentally active and live healthy, satisfying lives, find that their cognitive ability does not diminish notably, even in old age.

Summary

Mind-Brain Research

Cognitive science is an interdisciplinary study of how the brain works. Cognitive scientists’ amazing research on mind-brain functioning has resulted in practical applications that you can implement to help improve your mental functioning, acuity, brainpower and overall health.

“This book is...centered on the what and the why: what brain research suggests we could do for personal improvement and why we should do it.”

Humans begin life with about 23 billion brain cells (neurons). How these cells attach to each other is pivotally important. Individually, they “reach out” to connect with

each other in “neural networks.” Learning creates new networks, so continue to learn throughout your lifetime to optimize your brainpower.

“When your body seems to be saying ‘Enough!’ (enough stimulation...enough isolation...enough focused attention...and so on), give it a break and engage in an opposite activity for a while.”

Other valuable recommendations derived from the latest mind-brain research findings include:

- **“Breast-feeding”** – Infants who are breast-fed register three to five IQ points higher, on average, than infants who bottle-feed. Further, the degree of IQ gain is directly proportional to the number of months that mothers breastfeed their infants, though babies gain no discernable improvement after nine months. Mother’s milk supplies babies with DHA (docosahexaenoic acid) and AA (arachidonic acid), substances that promote neural growth. Note: Some scientists believe that these infants have higher IQs due to the superior bonding with the mother that takes place during nursing.
- **“The heritability of intelligence”** – For intelligence, genes count most (48%), followed by prenatal care (20%). “Environmental effects and chance” account for the rest. Five factors can affect a child’s IQ by 23 to 25 points; 1) vitamins and minerals; 2) “birth weight”; 3) “ascorbic acid levels”; 4) nutrition (as indicated by “head growth”); and 5) the “mother’s talking patterns.” Parents should provide children with the richest possible environment, based on the kids’ intrinsic personalities, to promote their intelligence.
- **“Recognizing giftedness”** – Typical signs of a gifted child include strong attention span, hyperalertness to physical sensations, marked curiosity, early reading ability, love of numbers, comfortableness with older children and introversion.
- **“The biology of the creative personality”** – Creativity is, in part, a factor of the level of certain chemicals in the brain, such as dopamine, the “curiosity” chemical. Avoid high-glycemic carbohydrates and fats in your diet, since they work against the creative impulse. Meditation and exercise can spur creative episodes.
- **“Epstein on...creativity”** – Psychologist Robert Epstein believes that “everyone can be creative.” The more you prepare for it, the more creative you will become. Keep a pad or a small tape recorder on hand to capture ideas when they occur. Challenge your mind. Read, study and learn throughout your life.
- **“The prepuberty neuronal explosion”** – The brain matures around the age of 25. Young people are more emotional and take greater risks due to their “raging hormones” and the slow development of the brain’s decision-making sector. Help your children achieve better self-control with encouragement, praise, “discipline and structure.” Impose “logical consequences” for their actions. Saying “because I told you so” will get you nowhere.
- **“Romance: the neurochemistry of consuming adoration”** – Love connects to the actions of powerful brain chemicals (dopamine, norepinephrine, testosterone). Therefore, addiction and being in love are similar; evaluate your love interest with this in mind.
- **“The effects of marital discord”** – Boys in fatherless homes often accumulate too much of the stress hormone cortisol in their systems. This hurts their lifelong health. Girls and boys who grow up motherless show even higher cortisol levels.
- **“Self-destructive behavior: alcohol, pregnancy, drugs”** – The earlier kids begin to drink, the more likely they are to become alcoholics. Alcohol abuse damages their brains, which can actually shrink. To help your kids avoid substance abuse, eat dinner with them regularly. Promote extracurricular activities. Kids with family ties and meaningful activities are less likely to turn to drugs, alcohol and risky behavior.
- **“Depression”** – Depression, which is common among adults, can also affect children. However, “environmental and behavioral modification” can help depressed children. Cognitive-behavioral therapy or interpersonal therapy are the preferred treatments for unipolar depression, in which a person has just one “depressive phase.” Research studies have indicated that psychotherapy can achieve the same favorable results as pharmacotherapy.
- **“The math-verbal controversy”** – The educational system’s emphasis on “oral and verbal methods” creates a distinct bias for female learners. In such settings, female “talkers” excel over male “doers.” Both genders perform poorly on timed math tests, which should be avoided unless speed is an essential criteria. Women do better on verbal tests during the “second half of their menstrual cycles” and should schedule math tests during the first half. Males often do better on math tests in the morning and verbal tests in the afternoon.
- **“Breakfast”** – Children who eat breakfast do better in school than those who do not. This applies to adult mental acuity as well. Therefore, eat a regular breakfast which is low in fats and sugar.
- **“Appetite control”** – If you cannot control your appetite, ask your doctor to prescribe a drug that limits the production of galanin, a neuropeptide. Drugs that increase the protein hormone “leptin” and the pentapeptide “enterostatin” are also useful. To control your appetite, exercise and cut fats and sugars from your diet. If you have fats, save them for the evenings. If you eat dinner early, reduce carbs and eat more protein. If you eat late, avoid protein foods because they inhibit sleep.
- **“Metabolism”** – To increase your metabolism, eat less and exercise. People who sleep well are less likely to be obese. For weight control, “walk, don’t ride” and “stand, don’t sit.” Eat smaller portions and don’t snack.
- **“Vitamins and mineral deficiencies”** – Take vitamins at meal times, but take minerals between meals. Avoid “coffee, tea or caffeinated sodas” when you take vitamins; they inhibit absorption, as do cigarettes, alcohol, medications, aspirin and heavy-fiber diets. Overcooking your foods also interferes with vitamin absorption.
- **“Mood: the role of carbohydrates, proteins, fats and sugars”** – How you sequence carbohydrates and proteins affects your mental performance and mind-body function. Have a snack right before you want a boost, like before making a speech. For breakfast, eat complex carbs and protein (e.g., cereal and skim milk). Have complex carbs (“cereals, grains, vegetables and fruit”) for morning and afternoon snacks. Eat protein followed by complex carbs for lunch. At dinner, combine complex carbs, fats and as little protein as possible. In the evening, snack on complex carbs and fats. Complex carbs, the core of a healthy diet, promote a sense of satiety.
- **“Omega-3 fatty acids”** – Found in “fish, flaxseed, canola oil, nuts and avocados,” omega-3s greatly benefit your health. Eat fish daily, in whatever form works for you. Make olive oil your main fat, followed by canola oil.
- **“Altering moods and cravings”** – To reduce cravings, take 10-minute walks. Also use brief walks to break up “prolonged sedentary periods.” If that isn’t practical, periodically do something physical, like stretching or isometric exercises. A few minutes of meditation also helps. Exercise routinely; it will elevate your mood.
- **“Peak physical performance”** – To cut back on anxiety and enhance your stamina, consume carbohydrates. Caffeine will improve your alertness. Choline (“in egg yolks, liver and soybeans”) improves clarity of thought.
- **“Brain nutrient drugs”** – When you need maximum mental prowess, have “400 mg of ginseng,” a memory booster, with “360 mg of ginkgo” to help reaction time. Generally, however, “nondietary sources of brain nutrients ‘cannot substitute for a diet rich in fruits and vegetables’.”
- **“The sleep cycle”** – Humans go through five distinct phases of sleep and wake up temporarily between these cycles. This is normal. These very brief episodes of wakefulness do not affect how restful your sleep is. Adults average 7.5 hours of sleep nightly. Before electric lights, they got nine hours routinely. With no “light

cues,” most people will sleep 10 hours nightly on average.

- **“The circadian rhythm”** – Generally, the human body clock is based on a 25-hour circadian rhythm (not 24). The word “circadian” derives from the Latin *circa*, which means “about a day.” Sunrise “sets off” the body’s clock. Staying up late at night to complete a project is more efficient in terms of your circadian rhythm than getting up early to work on it. If you work a night shift, use earplugs and eyeshades when you go to bed to reduce sensory stimulation.
- **“Sleep and diet”** – To improve your sleep, shun bedtime snacks with “additives or artificial sweeteners”; they will keep you awake. Instead, have a “milk product or light carb” just before bed. Avoid alcohol for an hour before you want to sleep.
- **“Naps”** – To recharge during the day, take a brief 15- to 30-minute nap, not entering a full sleep state. Lie down, shut your eyes and relax. The best time to nap is “12 hours after the midpoint” of your previous night’s sleep – 2:30 p.m. if you slept from 11 p.m. to 6 a.m. Two or three 20-minute naps daily may be best for your health.
- **“Memory”** – This is “learning that sticks” and it varies by age. Eight-year-old children remember, on average, one “bit of information” out of every 100 they receive. By middle age, most people have amassed one billion bits of information. People can remember a lot of data: the equivalent of 10 million 1,000-page books. To memorize and learn efficiently, take a break after an hour of studying. Take a short walk. Try isometrics. Do something unrelated to learning and go back to work. You will memorize best right after getting up, just before bed and at the day’s midpoint.
- **“Three strategies for remembering”** – To convert information in your short-term memory to long-term memory, you must purposely want to memorize it. That is the “intend” phrase. Exposure to the information is not enough. You must mentally organize the information in some manner. That’s the “file” phase. To do so, create visual reminders of the information, like sticky notes and a flow chart. Then go over the information again and again (the “rehearse” phase). For example, highlight important sections of a book, and then review the highlights.
- **“Speed-reading”** – Speed-reading is a con; it’s nothing more than skimming written material. People who use variations of this technique, which often involves reading the first and last sentences in a paragraph, do not adequately comprehend the material. The normal pace for reading is 200 to 300 words a minute. Slow down to fewer than 200 words for a more comprehensive understanding of new information.
- **“Writer’s block”** – Unable to get the words on paper? In this case, list and sequence all the information you want to include. Making this kind of outline or “mind-map” can quickly get you focused. Make sure that you don’t cover “how” and “what” simultaneously.
- **“Empowerment”** – Parents do not always know what will best motivate their children. Just ask the kids. The same rule applies for managers. People often make incorrect assumptions about what other people care about or want. To motivate people, “be more consultant, less boss.”
- **“The Pygmalion effect”** – In Greek myth, Pygmalion was a sculptor who fell in love with the ivory statue he created of a beautiful woman. He showered it with such devotion that it came to life and married him – a “self-fulfilling prophecy.” Your expectations color your performance and what you can achieve. Think negatively and you are more likely to fail. Think positively to get closer to attaining your goals.
- **“Time out!”** – Take five- to 10-minute breaks for every one to two hours that you work. If a project involves challenging analysis or other “higher mental functions,” space it out among more mundane tasks. Otherwise, your “new learning” will push out the “old learning.”
- **“The effect of light”** – If you don’t get enough light, you can easily become depressed. Choose full-spectrum lightbulbs. Standard lighting concentrates in the orange-violet-red spectrum, not the more crucial blue-green spectrum you need to avoid fatigue and eyestrain.
- **“The appraisal filter: what triggers emotions”** – How people react emotionally depends on how they cognitively evaluate what happens to them and around them. This appraisal process occurs in a flash. Do you know what sets you off? Write the “words, phrases, actions or situations” that make you angry. Develop a plan to change your typical responses to these hot buttons.
- **“Aging”** – Many people assume that aging retards brain functioning. That is largely incorrect, but some factors do have a negative effect, including “extended grief...alcohol, absence of a stimulating partner, unfavorable living environment, inflexible personality style,” depression and malnutrition. To maintain your brainpower into old age, take good care of yourself.

About the Author

Pierce J. Howard, adjunct professor of psychology at the University of North Carolina at Charlotte, is the research director at the Center for Applied Cognitive Studies, a research firm that provides programs based on cognitive science. He also is an expert on organizational development.
