



# Why Intelligence Rocks

**P**erhaps no concept in psychology has been investigated as comprehensively—or controversially—as human intelligence. This attention is long-standing: Theories of intelligence predate the formal establishment of psychology as a science by millennia. Although perhaps more commonly associated with philosophy, the ideas of Aristotle, Socrates, and Plato all contribute to the foundation of our understanding of the nature of human intelligence. Their ideas on topics as diverse as the origin of ability, the mind–body relationship, and general inquiry methods continued to inspire thinkers centuries later and influenced those who shaped modern psychology and intelligence theory. Philosophers, psychologists, and educators have spent much of the past 2 centuries building on the foundations of the ancient thinkers, and a variety of theories and conceptions of intelligence have resulted.

Intelligence has also been among the most controversial constructs in all of the social sciences. After all, the answer to a question as fundamental as “What is intelligence?” has tremendous implications for how one views people. Is intelligence a “thing” or a collection of things? Are racial and socioeconomic differences in measured intelligence evidence of nature or nurture effects? Is intelligence organic or immutable? How different people answer these questions tells us a lot about how they view others, how they approach learning and problem solving, and how they view themselves. The purpose of this book is to provide a widely accessible introduction to the topic of human intelligence, with a careful presentation of the wide range of potential answers to these questions.

---

## ORGANIZATION OF THE BOOK

In the following chapters, we present a number of important topics. The difficulty we faced in putting this material together is that there is simply so much to discuss. A truly exhaustive approach would fill thousands of pages, which isn’t appropriate for a general introduction such as this. In addition, it would be dreadfully boring, and we promised ourselves we would not write that type of book! We have selected material that we personally find to be the most interesting, but keep in mind that this book is not intended to cover every important topic and relate every interesting story.<sup>1</sup>

We start our adventures in this chapter with an overview of our approach to the topic, and in Chapter 2 we review some definitions of intelligence. Then we explore the origins of the psychological study of intelligence by examining the fascinating legacy of Francis Galton’s work. In Chapter 4 we examine the impact of education and other attempts to develop intelligence

by reviewing the work of Henry Goddard and looking at his complicated reputation.

The next section of the book focuses more closely on recent developments in research regarding intelligence. We first delve into the debate over whether intelligence is unitary or multifaceted; this chapter includes a brief overview of recent research on how people's beliefs about intelligence impact their behaviors, a body of research that has significant implications for education. Then we examine issues of nature and nurture in the development of intelligence, primarily by presenting the curious phenomenon of the Flynn effect. This section concludes with an examination of the relationships between intelligence and related constructs such as creativity and giftedness.

We close the book with some thoughts about where we believe the study of intelligence will be heading over the next few decades. A list of recommended resources is included at the end of the book. One subject this book does not focus on is testing, at least not the mechanics and broader theoretical issues related to assessment. Those topics have been covered in great depth (and handled quite well) elsewhere, most notably in the work of A. Kaufman (2009).

---

## WHY A HISTORICAL APPROACH?

You'll find that each chapter is approached largely from a historical perspective. This is the perspective from which we first approached this topic. Intelligence has been covered from other perspectives in several books over the past 20 years, many of which are outstanding and are listed in the Recommended Resources section. But we find the historical approach to be quite interesting and straightforward, and a perspective that is not terribly common in books on intelligence.

For that reason, we designed our website—Human Intelligence: Historical Influences, Current Controversies, and Teaching Resources ([www.intelltheory.com](http://www.intelltheory.com))—with a strong historical theme when we put it together in the 1990s. The site was built on the framework of a complex diagram representing all the relationships and intellectual influences of the many people who have studied intelligence. We chose not to reproduce that diagram in this book, in part because it provides too much detail for our purposes here, but also because the graphic simply works better in a virtual environment.

As we began populating the site with material, the chart was overlaid with six distinct time periods, which were intended as guides and not rigid barriers. For example, several scholars worked across two or more time periods, such as John Carroll; his career falls predominantly within the Contemporary Explorations period, yet he is most often remembered for his seminal work in 1993, during the Current Efforts time period. As we view them, the six “ages of intelligence” are the following.

## Historical Foundations

The nature of the human intellect has fascinated scholars for centuries. Indeed, the origins of modern intelligence theory can be traced at least as far back as Plato and Aristotle, centuries before the start of the Common Era. For example, Aristotle foreshadowed debates about whether intelligence is one thing or many things when he distinguished between intellectual excellence and moral excellence, and with his division of mental activities into three categories: understanding, action, and production (Tigner & Tigner, 2000). And Plato, Aristotle’s teacher, entered the nature versus nurture debate when he asked, “Can you tell me, Socrates, whether excellence can be taught? Or can it not be taught, but acquired through practice? Or can it neither be acquired

through practice nor learned, but is something which men possess by nature or in some other way?" (Plato, trans. 1985, p. 35). This largely, but not exclusively, philosophical approach to the study of human intellectual capacity continued for roughly 2 millennia, involving the work of Hume, Kant, Adam Smith, and many others.

## **Modern Foundations**

During the 1800s, psychology began to emerge as a discipline separate from philosophy, mathematics, and biology. In addition, significant advances were made in the study of intelligence. Building on the strong historical foundations mentioned above, philosophers and psychologists made significant contributions to our understanding of intelligence. Two major figures from this time, holding very different views of the development of intelligence, are the psychologist Francis Galton, building on the work of his half-cousin Charles Darwin, and the philosopher John Stuart Mill.

## **The Great Schools**

The late 1800s saw the growth of psychology as a distinct scientific field, and the formation of major schools of psychology in Europe and, later, in the United States hastened the development of the psychological sciences. The study of intelligence as a major focal point of psychology proceeded along a similar path. In particular, the influences of Wilhelm Wundt, James McKeen Cattell, G. S. Hall, and Hermann Ebbinghaus were considerable. The most notable development of this time period is the refinement of the work of Galton and other earlier researchers, particularly James McKeen Cattell, in Germany, England, and later the United States.

## The Great Schools' Influence

As the students of the Great Schools began to study intelligence (and form their own programs throughout the developed world), theoretical and empirical investigations of intelligence blossomed. Within this context, a great deal of seminal work on intelligence was conducted, including the work of Alfred Binet, Lewis Terman, Charles Spearman, Henry Goddard, Robert Mearns Yerkes, and the U.S. Army testing team during the First World War.

## Contemporary Explorations

The influence of the Great Schools and the Army testing program was still being felt several years later. The period between the end of the First World War and the late 1960s is best known for the development of intelligence testing, a time when the combination of modern statistics and advances in testing helped to make standardized testing of intelligence and achievement a way of life in most Western countries. In addition, several important theoretical and empirical advances were made by L. L. Thurstone, David Wechsler, J. P. Guilford, John Horn, and Raymond Cattell, among others. A defining characteristic of these research programs is the reliance on psychometrics and statistical methodology for studying intelligence. This stands in contrast to later efforts, which are more diverse in their theoretical and methodological approaches. Although *g*-centric theories dominated this period, multiple intelligence theories begin to appear in the work of Thurstone and Guilford.

## Current Efforts

Over the past 30 to 40 years, several important contributions have been made in the development of intelligence theory. Current trends in intelligence theory and research involve the

formation of more complex multiple intelligence theories and a de-emphasis on the use of standardized testing to measure intelligence. The emergence of reliable genetic and neurological research methodologies is creating a new area of study in which environmental, biological, and psychological facets of intelligence are studied simultaneously. Much of the 1980s was marked by the analysis of Gardner's and Sternberg's work with multiple intelligences, and over the past 2 decades a diverse set of theoretical approaches have been proposed, studied, and refined, including PASS theory and emotional intelligence. A flurry of controversy in the mid-1990s provided evidence that reports of the death of psychometric, unitary approaches to intelligences have been greatly exaggerated.

Although the identification of these time periods has met its stated objective (i.e., facilitating an understanding of dominant themes in the study of intelligence), you should be aware that a seventh period is emerging, and we explore this work and its implications in the book's final chapter. Recent technological advances have encouraged explorations into the relationship between brain function and specific types of cognitive functioning. We anticipate that the Current Efforts period will eventually be relabeled Tensions and Reconceptualizations, with the new, seventh era to be referred to as Current Efforts, having a heavy neurological emphasis. The future of intelligence research looks exciting, and we can't wait to see what will happen next!

---

## TAKEAWAYS

- Perhaps no idea or concept in psychology has been investigated as comprehensively—or controversially—as human intelligence.

- The development of the study of intelligence parallels the development of psychology as a scientific field.
- Taking a historical approach to this topic can help us understand many developments in the field that, taken out of their temporal context, appear disconnected and often unfathomable.

---

## NOTE

1. For example, we find Guilford's work with his Structure of Intellect (SOI) model to be fascinating, as it represents a very different approach to theories of intelligence. Guilford studied and modified his model throughout his career, right up until he passed away, so the SOI model also serves as a compelling case study about how theories are developed, tested, and revised over time. But the SOI model, in our estimation, is not a major player among intelligence theories these days, and other theories have been more influential over the past century. If we ever write *Intelligence 201*, Guilford is sure to be prominently featured in it. But for now, his work (and the work of other interesting people such as Godfrey Thomson) is excluded so that we can focus on the most compelling work and stories. Similarly, we originally intended to devote an entire chapter to the major longitudinal studies that involve intelligence, but that would send us too far into the weeds. Rather, we refer to these studies throughout the book and encourage interested readers to consult the excellent summaries of these studies that are already available (e.g., Deary, Whalley, & Starr, 2009; Lubinski & Benbow, 2006; Schaie, 2005; Shurkin, 1992).