James McKeen Cattell

(1860-1944)
Psychologist, Publisher, and Editor

Influences

- Student of: Galton, Wundt, Hall
- Influenced by:
- Students:
- Influenced: E. L. Thorndike, H. L. Hollingworth, P. Cattell, Wissler
- Time Period: The Great Schools

Education

- Lafayette, BA in 1880 & MA in 1883.
- Studied in Europe with Wundt in Leipzig and Lotze at Gottingen 1880.
- Johns Hopkins University, 1882-1883
- Leipzig as Wundt's assistant, Ph.D. in 1886

Career

- Researcher and Lecturer in Experimental Psychology, St. John's College, Cambridge
- Lecturer in Psychology, Bryn Mawr, 1887
- Professor of Psychology, University of Pennsylvania, 1888
- Department Head of Psychology, Anthropology, and Philosophy, Columbia University, 1891-1905
- President of the American Psychological Association, 1895
- Presider, Ninth International Congress of Psychology, New Haven, Connecticut, 1929

Major Contributions

James McKeen Cattell is an important figure in psychology and the study of human intelligence for several reasons. While at Leipzig, working under Wundt, he was the first American to publish a dissertation, *Psychometric Investigation*. After his return from Europe, perhaps no other person contributed more to the strengthening of American psychology in the late 1890s and early 1900s. He was involved with the formation of many major publications, including co-founder and co-editor of *The Psychological Review* (1894-1903), editor and publisher of the *Journal of Science* (1894-1944), founder of the Psychological Corporation (1921), and founder of the Science Press (1923), among many others. He was similarly involved with major professional organizations, including the American Psychological Association, the American Association of University Professors, and the American Association for the Advancement of Science.

One of Cattell's goals was to have psychology viewed as a science on par with the

physical and life sciences. As he noted in his presidential address to the American Psychological Association,

> In the struggle for existence that obtains among the sciences psychology is continually gaining ground.... The academic growth of psychology in American during the past few years is almost without precedent.... Psychology is a required subject in the undergraduate curriculum ..., and among university courses psychology now rivals the other leading sciences in the number of students attracted and in the amount of original work accomplished. (1896, p. 1)

In that address, Cattell provides additional evidence of the growth of psychology as a science, including a favorable comparison of the major academic journals (e.g., all three general science journals at the time published psychological studies, and the field boasted two specialty journals compared to three for mathematics, two for chemistry, geology, and botany, and one for physics), the historical basis of psychology ("we may take pride in the beginnings of psychology whose foundations were more securely laid by Aristotle than those of any other science" [pp. 2-3]), and the strength of psychology in other countries.

Cattell believed that the continued growth of psychology was dependent on the field's acceptance of quantitative methods similar to those used in other sciences. This belief was somewhat controversial: Although psychological laboratories were flourishing in the United States, the philosophical underpinnings of psychology led some to question the validity and, indeed, the necessity of psychological measurements. But Cattell felt that experimental approaches to psychology, especially those involving "psycho-physical" measurement, were critical to the rise and continued success of academic psychology:

> I venture to maintain that the introduction of experimentand measurement into psychology has added directly and indirectly new subject-matter and methods, has set a higher standard of accuracy and objectivity, has made some part of the subject an applied science with useful applications, and enlarged the field and improved the methods of teaching psychology. In conclusion, I wish to urge that experiement in psychology has made its relations with the other sicence more intimate and productive of common good. (pp. 13-14)

Cattell's approach to psychophysical measurement (often referred to as anthropometric testing) was influenced by his brief work with Francis Galton in England before Cattell returned to the United States from his European studies. Cattell describes his laboratory's measurement work in his 1890 article in *Mind* (which includes an appendix by Galton) and his 1896 article with Livingston Farrand (Sternberg [1990] includes a brief summary of the 1890 article). Although it is widely believed that Cattell's goal was to measure intelligence or a similar construct with these tests, his goals appear to have been related for the most part to his goal of strengthening psychology's scientific credentials:

> We do not at present wish to draw any definite conclusions from the results of the tests so far made. It is of some scientific interest to know that students entering college have heads on the average 19.3 cm long, ...

> that they have an average reaction-time of 0.174 sec., that they can remember seven numerals heard once, and so on with other records and measurements. These are mere facts, but they are quantitative facts and the basis of science. Our own future work and that of others must proceed in two directions.... [a] To what extent are the several traits of body, of the senses and of mind interdependent? ... What can we learn from the tests of elementary traits regarding the higher intellectual and emotional life? [b] On the other hand we must use our measurements to study the development of the individual and of the race, to disentangle the complex factos of heredity and environment. (Cattell & Farrand, 1896, p. 648)

As Cattell's thinking about these psychophysical measures developed, he appears to have viewed the data as evidence of a unitary intellect. This view was somewhat controversial, especially in light of the dissertation research of Clark Wissler, one of Cattell's laboratory assistants. Wissler found little evidence of general intellectual ability, since the correlations of the various psychphysical tests with each other and with external criteria (e.g., grades) were low. Controversy exists about both the quality of Wissler's research and both Wissler's and Cattell's reactions to it, but Wissler's work is often considered, in the words of Sternberg (1990), the "coup de grace" for anthropometric testing (p. 72).

Cattell's use of statistical methods and quantification of data helped in the development of American psychology as an experimental science. He was one of the first psychologists in America to stress the importance of quantification, ranking, and ratings. An outgrowth of this work, his experimentation with psychophysical testing, was influential in the popularization of mental testing within the psychological laboratory. However, anthropometric testing in general became controversial with the publication of Wissler's work (see the related Hot Topic).

Publications

- Cattell, J. M. (1890). Mental tests and measurements. *Mind, 15*, 373-380.
- Measurements of the accuracy of recollection. Science (1895).
- Statistics of American psychologists. American Journal of Psychology (1903).
- The conceptions and methods of psychology. Popular Science Monthly (1904).
- The school and the family. Popular Science Monthly (1909).
- Psychology in America. Science (1929).
- Baldwin, J. M., Cattell, J. M., & Jastrow, J. (1898). Physical and mental tests. *Psychological Review, 5*, 172-179.
- Cattell, J. M. (1896). Address of the president before the American Psychological Association, 1895. *Psychological Review, 3 (2)*, 1-15 (in PDF format; large file size: 3.4 MB. Will open in new window).
- Cattell, J. M. (1896). Physical and mental measurements of the students of Columbia University. *Psychological Review, 3 (6)*, 618-648 (in PDF format; large file size: 5.6 MB. Will open in new window).

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Cattell, J. M. (1896). Address of the president before the American Psychological Association, 1895. *The Psychological Review, 3*(2), 1-15.

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Sternberg, R. J. (1990). *Metaphors of mind: Conceptions of the nature of intelligence*. New York: Cambridge University Press.

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