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## Thurstone, Louis Leon

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# **Thurstone, Louis Leon**

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# Thurstone, Louis Leon

**Born:** May 29, 1887, in Chicago.

**Died:** September 19, 1955, near Rapid City, Michigan.

Born in 1887 in Chicago to Swedish immigrants, Louis Leon Thunström began school in Berwyn, IL, moved with his parents to Centerville, MS, to Stockholm, Sweden, and back to Jamestown, NY – all before turning 14. Refusing to return to the United States without his books, Leon personally carried his three favorites onboard ship, among them Euclid. At 18, his name appeared in print for the first time in a *Scientific American* letter, suggesting how to manage the tension between Niagara Fall’s tourists and its energy output. Shortly thereafter, to ease assimilation, his parents changed the spelling of the family name to Thurstone. After high school, Thurstone entered Cornell and studied engineering. As one of his undergraduate projects, Thurstone built – and later patented – a motion picture camera and projector that eliminated flicker. Those designs attracted the attention of Thomas Edison, who invited Thurstone to spend the summer following his 1912 master of engineering degree as an assistant in Edison’s lab.

Thurstone became an engineering instructor at the University of Minnesota in the fall of 1912. While teaching, Thurstone pursued an interest in learning and enrolled in undergraduate experimental psychology courses. His interest and the inspired instruction he received prompted him to seek graduate study in psychology. In 1914 at age 27, he entered the University of Chicago. In 1915 and 1916, Thurstone accepted a graduate assistantship in applied psychology from Walter Bingham at the Carnegie Institute of Technology. In 1917, Thurstone received a Ph.D. from the University of Chicago, apparently without being in residence for at least two years. His dissertation, published in 1919, examined the learning curve equation. Thurstone joined the Carnegie faculty and advanced from assistant to full professor and to department chair. Between 1919 and 1923, Thurstone created psychometric instruments assessing aptitude, clerical skill, ingenuity, and intelligence.

Carnegie closed its applied psychology program in 1923, and Thurstone moved to Washington, D.C., to work for the Institute for Government Research, a

foundation trying to improve civil service examinations. The American Council on Education (ACE) was located in the same Dupont Circle building as the foundation’s office. Thurstone engaged the ACE’s staff in conversation centering on creating college admission examinations, and in 1924, the ACE began to financially support Thurstone in that endeavor. The tests Thurstone developed in this initiative during the following years included linguistic and quantitative subscores and evolved into the Scholastic Aptitude Test, or SAT. The year 1924 also saw Thurstone’s marriage to Thelma Gwinn and his accepting an offer to join the University of Chicago faculty.

Measurement theory drew Thurstone’s attention during the early years at Chicago, 1924 through 1928. In contrast to psychophysical scales that related stimulation to experience, Thurstone developed theory and techniques for scaling psychological dimensions without physical referents, deriving accounts using dispersion as a unit of psychological measure [5]. Beginning in the late 1920s, this work grew into procedures that explored the structure of **latent variables** underlying the response patterns he found using his scaled instruments. Thurstone’s influential concept of ‘simple structure’ (see **History of Factor Analysis: A Statistical Perspective**) guided the use of factor analysis in describing psychologically meaningful constructs. The development of multiple **factor analysis** is among his most widely known achievements. Notably, he reinterpreted ‘g’ in **Spearman’s** theory of general intelligence as a special case of a multidimensional factor structure [3, 4].

In the coming years, Leon and Thelma employed factor analytic techniques to improve college entrance exams and to measure primary mental abilities. Their work bore much fruit, including providing the University of Chicago with the country’s first credit by examination. Colleagues also recognized Thurstone’s accomplishments. He was elected president of the American Psychological Association in 1932, elected charter president of the Psychometric Society in 1936, and elected to the National Academy of Sciences (NAS) in 1938. Shortly after the NAS election, Ernest Hilgard reports being a dinner guest in Thurstone’s home and remembers Thurstone express surprise that as the son of immigrants, he (Thurstone) could successfully follow such a circuitous route to academic success.

During much of the twentieth century, Thurstone was a leading figure in psychometric and psychophysical theory and practice and in the investigation of attitudes, intelligence, skills, and values. His commitment to the scientific process is perhaps best seen in the weekly Wednesday evening seminars he conducted in his home – chalkboard and all – over the course of 30 years, often hosting 30 people at a time, conversing primarily over work in progress. After retiring from Chicago in 1952, he accepted a position at the University of North Carolina-Chapel Hill, where he established the L. L. Thurstone Psychometrics Laboratory. The home he and Thelma built near the campus included a seminar room with a built-in chalkboard where the seminar tradition continued unabated. On leave from Chapel Hill in the spring of 1954, Thurstone returned to Sweden as a visiting professor at the University of Stockholm, lecturing there and at other universities in northern Europe. This would be his last trip to the continent. In September 1955, Thurstone died at his summer home on Elk Lake in Michigan’s upper peninsula (see [1], [2], [6] for more details of his life and work).

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