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LEDYARD R TUCKER (1910-2004)

Ledyard R Tucker died Monday, August 16, 2004 at the age of 93 in his home in Savoy, Illinois. Tucker was widely regarded as the most prominent protégé of L. L. Thurstone, who was the central figure in the development of psychology as a quantitative science, and the first president of the Psychometric Society when the society was founded in 1935. Tucker, in his own right, became one of the most revered and respected developers of quantitative methods for psychological research in the 20th century. He made major foundational contributions to the development of statistical methods in the areas of factor analysis, testing, and scaling which are still relevant today. He was president of the Psychometric Society a half-century ago.

Tucker was born on September 19, 1910, to Sarah and Reese Tucker in Glenwood Springs, Colorado. (His parents gave him the middle name "R" and countless times in his life Tuck had to correct copy editors, authors, and others who believed that the "R" must be an initial and thus insisted on inserting a period after it.) He excelled in his coursework involving mathematics and science at the Garfield County High School, from which he graduated in 1928. He attended the University of Colorado from 1928 to 1933 and graduated with a degree in electrical engineering in the midst of the Depression. Tucker drifted from Colorado to Texas to Chicago looking for work. He was fortunate to obtain a federal Works Progress Administration position as a research assistant to Professor L. L. Thurstone at the University of Chicago. He started working there in January 1934. Thurstone immediately recognized Tucker's analytical and spatial talents and encouraged him to pursue further education, which Tucker did, first in economics and then in psychology. While at Chicago, Tucker came into close contact with several of the founding members of the Psychometric Society. He continued to work as Thurstone's research associate and as an instructor at the University of Chicago, completing his Ph.D. in 1946.

In 1944, Tucker left Chicago to take a position as Head of Statistical Analysis with the College Entrance Examination Board. In 1947, when the Educational Testing Service (ETS) was founded, Tucker became the first Director of Statistical Analysis. In 1952, he switched to the Research Department, where he stayed until 1960. He was also a lecturer in psychology at Princeton University from 1948 until 1960. Tucker moved to academia full-time in 1960 when he joined the University of Illinois, where he held appointments as Professor of Psychology and Professor of Educational Psychology. In 1962, he was appointed Professor in the University of Illinois Center for Advanced Study, a prestigious appointment. He retired from the university in 1979 remaining on the faculty as a Professor Emeritus until his death. He continued to consult into his eighties. In 2000, Tucker established a deferred gift for use by the Department of Psychology and the Center for Advanced Study of the University of Illinois.

During his Illinois years Tuck held regular meetings of his "Working Group on Factor Analysis," funded by the Office of Naval Research. Among the regular participants were Paul Horst, Henry Kaiser, Harry Harman, Charles Wrigley, Rolf Bargmann, Karl Jöreskog, Bill Meredith, and Michael Browne, with occasional participation by others including Ray Cattell and John Tukey. Tuck was the constant core of these memorable sessions that demonstrated a remarkable synergy. This group contributed greatly to advancements in factor analysis and related methods during that era.

Many awards and honors were bestowed on Tucker in recognition of more than 50 years of groundbreaking contributions to the field of psychometric methods. Among these were the ETS Distinguished Service to Measurement Award (1981); the American Psychological Association's

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(APA) Distinguished Scientific Contribution Award (1987), which is the highest honor awarded by APA; the Saul B. Sells Award for Distinguished Contributions to Multivariate Experimental Psychology from the Society of Multivariate Experimental Psychology (1991); and the Lifetime Achievement Award from Division 5 of APA (1997). Tucker also served as president of the Psychometric Society (1955) and of Division 5 of APA (1962).

Measurement, representation, and analysis of individual differences were at the heart of Tucker's perspective on psychology. He was fascinated with the variety of individuals; the average person was a myth that he avoided thinking about. He engaged in the quantitative study of the variety of individuals. In the area of measurement Tucker made foundational contributions to the field that eventually became known as item response theory, being one of the first to define and work with item characteristic curves. His contributions to factor analysis include early work on correlated factors, oblique rotation, and the measurement of congruence between different factor solutions. In later work he developed powerful methods such as interbattery and three-mode factor analysis. His seminal breakthrough on the use of factor analytic methods to analyze repeated measures data laid the foundation for modern latent growth curve models. In the area of scaling, his early demonstrations that different types of individuals had different kinds of preferences, along with related methodological advances for analysis of individual differences in multidimensional scaling, had an enormous impact on marketing research and product development over the last half-century. He linked scaling and factor analysis models in the form of three-mode multidimensional scaling. Tucker's contributions span the field of psychometrics and serve as cornerstones for much ongoing work.

As the original Director of Statistical Analysis at Educational Testing Service, Tucker put into place statistical practices in testing that have served as the foundation for applied testing to this day. He was a pioneer in the development and use of score equating to that ensures that individuals are not disadvantaged by the particular test form they happen to take, a process that separates testing from other less equitable forms of assessment.

Tuck conducted his work and trained his students with the highest scientific and professional standards. He earned lasting loyalty, deep respect, and sincere affection from his many students and colleagues. Those who maintained contact with Tuck in his 90s were graced by the same keen intellect, clarity of thought, kindness, and decency that Tuck displayed throughout his life.[1]

From humble beginnings, he parlayed his superb mathematical and spatial skills into a degree in electrical engineering. Our profession was fortunate that Tucker had the misfortune of graduating in the midst of the depression and that the WPA existed for him to find a position with L. L. Thurstone just one year before the Psychometric Society was founded. Tucker fulfilled the expectations associated with being a promising protégé of Thurstone. He accomplished much and earned much respect, not only as a scholar but also as a true gentleman. Tuck may have been the last of the small elite collection of scholars associated with the founding of a society dedicated to the development of psychology as a quantitative rational science.

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[1]For an interview with Tuck that was conducted while he was 93, see Dorans, N. J. (2004), *A conversation with Ledyard R Tucker*. Princeton, NJ: Educational Testing Service. http://ets.org/research/dload/tucker.pdf

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