

TRUMAN LEE KELLEY

https://doi.org/10.1007/BF02289767 Published online by Cambridge University Press

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Truman Lee Kelley was born in Whitehall, Muskegon County, Michigan on May 25, 1884. He attended the University of Illinois where he received the A.B. Degree in 1909, and the A.M. in 1911. His early training was in mathematics and following his graduation from the University of Illinois in 1909, he became an instructor in mathematics at the Georgia Institute of Technology. He returned to the University of Illinois as an assistant in psychology to complete his Master's degree.

Dr. Kelley taught mathematics at Fresno (California) High School and Junior College and was a consulting psychologist at the Culver Military Academy prior to receiving his Ph.D. from Columbia University in 1914. His doctoral dissertation, titled *Educational Guidance*, foreshadowed the pattern of interests which directed his professional activities throughout his career. In this study he illustrated the use of the relatively new procedures of multiple correlation and regression coefficients as instruments for the type of educational guidance which has come into extensive use only in the last decade.

After obtaining his doctoral degree he was an instructor in educational psychology at the University of Texas and Teachers College, Columbia University until 1920, when he joined the faculty of Stanford University. During this period he also served as a psychological consultant to the Committee on Classification of Personnel, United States Army, and to the Surgeon General's Office in World War I. The years at Stanford University from 1920 to 1931 were very productive for Dr. Kelley. In 1923 the Stanford achievement Test Battery, of which he was a joint author, was first published. In 1924 the publication of his book, *Statistical Method*, marked an important milestone in the application of rigorous statistical methodology to problems in psychology, education, and other social science fields. In this book, as in all of his professional writings, Professor Kelley showed a passion for basic understanding and precise presentation.

In 1927 a book which soon became a classic in the educational field was published. This was Dr. Kelley's *Interpretation of Educational Measurements*. The following year, in 1928, *Crossroads in the Mind of Man* presented the evolution of his thinking on the problems of educational guidance between 1914 and 1928. This book extended Charles Spearman's tetrad tests to include a pentad function. It also proposed a substitution of a theory of intellect involving a number of dimensions in place of Spearman's theory of general intelligence which was very popular at the time. This publication represented an important landmark in aptitude testing and in many ways marked the beginning of a new phase in statistical analysis which has come to be known as "factor analysis."

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In 1929 a series of Professor Kelley's lectures was published under the title, *Scientific Method.* The later phase of his career, during the period he was professor of education at the Harvard Graduate School of Education from 1931 to his retirement in 1950, was devoted primarily to more intensive studies of factor analysis, educational measurement, and statistical theory. In 1934 *Tests and Measurements in the Social Sciences* was published with Professor Kelley as a co-author. His solution of the principal components problem in factor analysis was published in his book *Essential Traits of Mental Life* in 1935. In 1938 *The Kelley's Statistical Tables* were first published. These very useful and widely known tables were revised and extended in the new edition which appeared in 1948.

Dr. Kelley's last major publication, *Fundamentals of Statistics,* was published in 1947. This book again clearly demonstrated Professor Kelley's quality of insight and insistence on thoroughness of treatment of basic issues.

During World War II Professor Kelley served as a consultant to the Secretary of War. He also directed a project on the development of an Activity Preference Test for the National Defense Research Committee.

Both before and after his retirement Professor Kelley was active in a wide variety of professional organizations. He was president of the Psychometric Society in 1938–39 and also served as a vice-president of the American Statistical Association. He was president of the Educational Research Corporation from 1946 to 1948. In 1946 he was one of the founders of the American Institute for Research and served as a member of its Board of Directors for more than ten years, including a three-year term as Chairman of the Board.

While at the University of Illinois, Professor Kelley was a co-founder of the national honorary education society, Kappa Delta Pi.

During his long and productive carrer Dr. Kelley found time for both mental and physical types of recreation. Many faculty members and students remember his enthusiastic participation in volley ball, tennis, and golf. He was an excellent chess player and during most of his career, an avid bridge player. In 1956 he earned the title of Life Master and was named a life member of the American Contract Bridge League.

Professor Kelley made many important contributions to both statistical and psychometrical theory and practice. His early efforts in statistics were focused on multiple correlation methods. His iterative method and his facilitating tables for computing partial correlation coefficients and regression equations were important aids to statisticians in all fields in the early 1920's. Another important contribution at a somewhat later stage was his development of epsilon, an unbiased correlation ratio measure. His measures of dispersion based on percentile ranges have become standard methods where this type of coefficient is applicable.

His wisdom and insight in dealing with statistics are well illustrated

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by the following quotation from the first chapter, "The Dignity of Data and the Background of Statistics," in his book, *Fundamentals of Statistics*, published in 1947. ". . . applied statistics does not rest upon pure logic, . . . but it is because it does not that it concerns itself with phenomena, not noumena, and that it is adaptable to all the problems of life in their partly repetitive aspects, which are their chief aspects. All the fine-spun deductions of mathematical statistics are by some amount wide of the mark when applied to real phenomena. Logically this must be so. They are astray by an amount which judgment alone bears witness to. How wide and what of it are questions that are very difficult of quantitative answer. As these difficulties are analyzed they regularly run back to the question of the soundness of some judgment of sameness or of relevance."

In psychometrics his main contributions have been in the area of factor analysis where he was one of the first Americans to advance the basic work of Spearman. He was a major contributor to the concepts of "true scores" and reliability coefficients and demonstrated the essential importance of these for interpreting test scores and other semi-reliable measures.

In test development his work on development of item weights and item validities provided rational procedures to substitute for the many empirical methods which had evolved. Similarly, his concept of "ridge route" norms provided a simple stable solution to an important practical problem. His basic point of view with respect to psychometrics was stated in the introductory chapter in *Crossroads in the Mind of Man*, published in 1928:

"Thus, in the field of psychology, if a designation of some trait or capacity, as a category of mental life, is to be given serious consideration, it must be such as to reveal itself as a measurable difference in conduct, that is, as a measurable difference in the same individual at different times, or in different individuals at the same time. . . . This demand that a concept be subjected to objective measurement before it is worthy of serious consideration as an independent category of mental life, though sweeping, is not too sweeping, if we . . . (include all) . . . objective measurements . . . (which) . . . are definable and verifiable."

American Institute for Research *John C. Flanagan*

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