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JOY PAUL GUILFORD

1897—1987

A Biographical Memoir by

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Biographical Memoir

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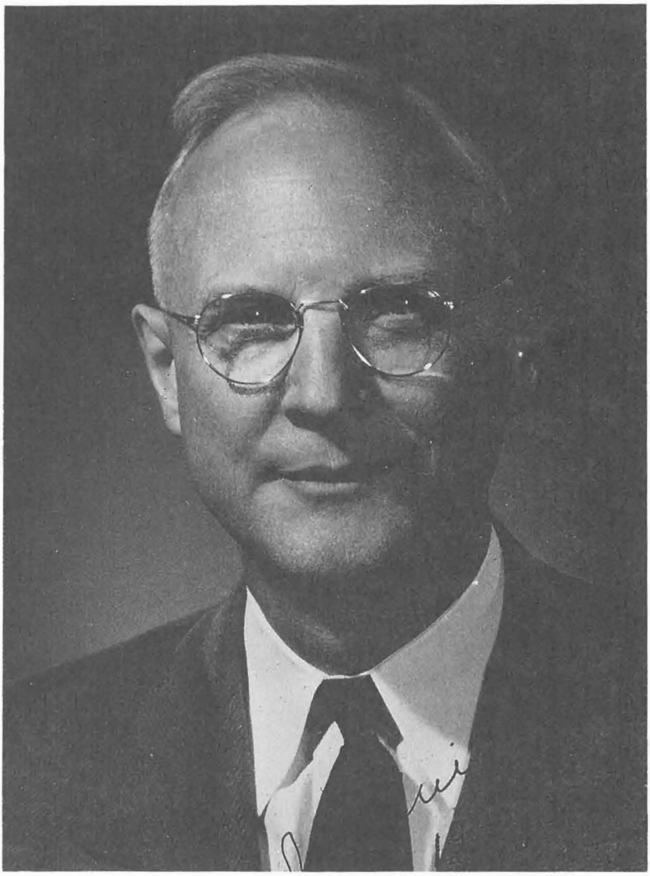

J. P. Guilford

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JOY PAUL GUILFORD

March 7, 1897–November 26, 1987

BY ANDREW L. COMREY

J. P. GUILFORD died at the age of ninety in Los Angeles on November 26, 1987, after a long series of debilitating illnesses. He is survived by his wife, Ruth; his daughter, Joan S. McGuire; three grandchildren; and three great-grandchildren. He was born on a farm near Marquette, Nebraska, on March 7, 1897, the son of Edwin and Arvilla Monroe Guilford. In 1914 he was graduated from Aurora High School as valedictorian of his class. After teaching elementary school for two years, he attended the University of Nebraska for a year, entered the Army as a private, and after being discharged returned to complete his B.A. and M.A. at Nebraska. During this period he served as interim director of the Psychology Clinic, where he administered intelligence tests to children. He was impressed with the unevenness of children's abilities in different areas, something he had already noticed while comparing his own and his brother's aptitudes. He became convinced that intelligence was not one monolithic, global attribute but a composite of different abilities. At this point in his training, therefore, he was already showing a strong interest in what was to be the dominant focus of his professional career—individual differences.

In 1924 Guilford entered the psychology Ph.D. program at Cornell University, where he studied with such famous historical figures as E. B. Titchener, Kurt Koffka, Harry Helson, and Karl Dallenbach. When Guilford was awarded the Ph.D. at Cornell in 1927, he had already published five papers. His doctoral thesis showed that variations in reported sensory experience with weak stimuli were due more to the characteristics of the limen itself than to fluctuations in attention, contrary to what was commonly believed at that time.

After short periods of time on the faculties of the universities of Illinois and Kansas, Guilford returned in 1928 to the University of Nebraska as professor of psychology, where he achieved an international reputation as one of America's foremost psychologists. In 1940 he moved to the University of Southern California. Except for a period of leave to serve in the U.S. Army Air Corps during World War II, he remained at USC until his formal retirement in 1962. This event represented little more than a milestone in his career since he continued to be very active in research and writing for twenty-five more years. As a teacher, Guilford trained dozens of graduate students who went on to make numerous contributions of their own to the psychometric literature.

During a productive research career that continued for more than six decades, Guilford published over twenty-five books, thirty tests, and 300 journal articles. Some of the honors and awards bestowed upon him include the following: president, the Psychometric Society (1938); president, the Midwestern Psychological Association (1939); president, the Western Psychological Association (1946); president, APA Division 5, Evaluation and Measurement (1947); president, the American Psychological Association (1949); president, APA Division 10, Aesthetics (1956); Legion of Merit for outstanding military service (1946); honorary degrees from the University of Nebraska (1952) and the University of Southern California (1962); membership in the National Academy of Sciences (1954); the APA Distinguished Scientific Contributions Award (1964); the Richardson Creativity Award (1966); president-for-life, the International Society for Intelligence Education (1978); and the Gold Medal of the American Psychological Foundation (1983).

During the early years of his career, Guilford focused on such classical research topics in experimental psychology as attention, psychophysics, autokinetic phenomena, eye movements, scaling methods, and the phi phenomenon. The crowning achievement of this period, however, was the publication in 1936 of his classic textbook, *Psychometric Methods*, revised in 1954. This book became required reading for practically all psychology graduate students for decades and provided for the first time in one source an encyclopedic but readable exposition of psychophysical methods, scaling procedures, and even factor analysis. After publication of the book, the focus of Guilford's research shifted more and more to the study of personality and ability traits.

L. L. Thurstone's *Vectors of Mind*, published in 1934, and related work on primary mental abilities provided a methodology that Guilford immediately began to apply to the study of personality. At the time, Carl Jung's extraversion-introversion construct was widely believed to represent a single unitary dimension of personality. Guilford and his wife, Ruth, developed thirty-five questionnaire items to measure attributes commonly assumed to represent extraversion-introversion and subjected them to a factor analysis using Thurstone's new method. They demonstrated that extraversion-introversion was not one global trait but a complex composite of several distinct personality attributes.

This influential investigation was quickly followed by many other empirical studies of a similar kind, which led to the identification of thirteen important factors of personality. Three of these were measured in the first published factored personality inventory, the Nebraska Personality Inventory (1934). This line of research culminated in the publication of the well-known Guilford-Zimmerman Temperament Survey (1949) and a scholarly book reviewing the personality literature from the factor analytic point of view, *Personality* (1959).

Guilford's new emphasis on correlational studies prompted him to give increased attention to statistical methods in his research and writing. In addition to developing many new statistical procedures of his own, in 1942 he published *Fundamental Statistics in Psychology and Education*, a popular textbook that was revised many times thereafter and is still in print today.

The arrival of World War II presented Guilford with a unique opportunity to apply his factor analytic methodology to the study of mental abilities. He had always believed that there are many important and relatively independent mental abilities. So, when he was asked to participate in the U.S. Army Air Corps World War II research effort to develop psychological tests for the selection of pilots, bombardiers, and navigators, he had a philosophy and a methodology ready to apply to the task at hand.

From 1942 through 1945 he directed a factor analytically oriented test development effort that dwarfed anything of the kind hitherto undertaken. He revolutionized job classification methods by factor analyzing performance criteria along with the tests themselves to provide more information about the aptitudes necessary for successful job performance. By the end of World War II, Guilford and his collaborators had identified and measured some twenty-five important mental ability factors. They used the psychological tests developed in this research effort as selection devices to reduce the failure rate in pilot training to one-third of what it had been at the start of the war. This epic work, described in his book *Printed Classification Tests* (1947), set the standard for all subsequent selection programs both in and out of the military.

In 1945, Guilford returned to teaching and research at the University of Southern California, where he continued with his investigations into the mental abilities that make up intelligence. Guilford was particularly aware of the absence of creativity measures in conventional intelligence tests. His 1950 APA presidential address emphasized the need for more research into the nature of creativity. Over the next twenty years he carried out numerous large empirical investigations that continued to expand the number of confirmed mental abilities. Many of these were related to creativity. Two major books on intelligence emerged from this period, *The Nature of Human Intelligence* (1967) and *The Analysis of Intelligence* (1971) (with Ralph Hoepfner).

By the early 1950s Guilford began to feel the need to develop a system for classifying the many mental abilities that had been and were continuing to be discovered. The first version of his now-famous Structure of Intellect (SOI) model was presented in 1955 to an international conference on factor analysis in Paris. From its first formulation, the SOI model became the main focus of Guilford's research and writing. He used the model to suggest where new abilities might be discovered, much as the periodic table had been used earlier to locate new chemical elements. The number of possible abilities represented by the model has increased over the years, and in the latest version (described below) there are 180.

As the SOI model developed, Guilford became more and more interested in applying it to improve education.

Despite the widespread popularity of the IQ, Guilford never believed in the Spearman g-factor theory of intelligence, which implied that the IQ is based on a single monolithic ability trait. Furthermore, anticipating much recent controversy about the IQ concept, he doubted the immutability of mental ability. He believed that human abilities are differentiated into increasingly complex systems as a function of more and more education. He believed that children can be trained to be smarter; "Intelligence education is intelligent education" became his motto. His ideas in this area have been implemented in recent years, particularly in Japan, through the efforts of the International Society for Intelligence Education. This society and its affiliated schools rest on the foundation of Guilford's SOI model. In these schools students are trained, from an early age, to upgrade their SOI abilities in thinking, creativity, and many other areas through weekly exercises. In recognition of Guilford's enormous contributions to education, the International Society for Intelligence Education, headquartered in Tokyo, published in 1988 *An Odyssey of the SOI Model*, edited by A. Chiba. This volume contains Guilford's autobiography, several of his papers on the SOI model, tributes to Guilford by his daughter and others, many of his letters, a vita, and Guilford's bibliography as edited by his wife.

In his final version of the SOI, "Some Changes in the Structure-of-Intellect Model" (*Educational and Psychological Measurement*, 1988, vol. 48, pp. 1–4), Guilford described intelligence as being a systematic collection of a large number of abilities for processing different kinds of information in various ways. There are six kinds of operations (cognition, memory recording, memory retention, convergent production, divergent production, and evaluation); five kinds of contents (visual, auditory, symbolic, semantic, and behavioral); and six kinds of products (units, classes, relations, systems, transformations, and implications). The SOI model resembles a cube with contents, products, and operations each occupying one side. Each ability is defined by a conjunction of the three categories, occupying one cell in the three-dimensional figure. Many of these abilities are acknowledged to be correlated with each other. This 6 × 5 × 6 figure yields a total of 180 possible unique abilities, over 100 of which have been empirically verified.

It is not easy to single out one achievement as Guilford's most important contribution. His outstanding books on psychometric methods, statistics, personality, and intelligence; his personality and ability tests; his U.S. Air Corps personnel selection work; his discovery of new mental abilities; and his SOI model have all been extremely influential. What may be most enduring, however, is his influence on our way of thinking about intelligence. When Guilford began his career, intelligence was the IQ, a monolithic global trait that was regarded as largely innate and immutable. Now, in large measure as a result of his research, intelligence has been shown to be incredibly complex. There may be as many as 180 separate abilities that can be individually developed through "intelligence education." The hereditary limitations placed on human intelligence are seen now to be far less restrictive than previously assumed. Guilford's conception of intelligence, if adequately heeded, will have a profound impact in the future on public perceptions about individual potential and upon the education of children.

A list of Guilford's accomplishments, impressive as they are, conveys very little about the man himself. What was he like? The following description of "J. P." is based on input from many different sources—family, friends, colleagues, students, acquaintances, and the writer's own personal contacts with him.

Words that come quickly to mind to describe J. P. Guilford the man are integrity, honor, dedication, devotion, kindness, fairness, patience, generosity, loyalty, dependability, and emotional stability. He worked with a great many people and had many work under his supervision. I have known many of these people personally, and I have never heard one word of criticism about the way J. P. treated them. He was always scrupulously honest and fair about giving credit where credit was due. Those who knew him could not imagine that he would ever do anything unethical, dishonest, or unfair, and, as far as I know, he never did. Others may have achieved national and international recognition by questionable means—politics, connivance, connections, maneuvering, exploitation, outright dishonesty, and so on—but in J.P.'s case every bit of it was earned fairly and squarely through inspiration, hard work, and honest achievement.

Many others have achieved fame and distinction in their work but at the cost of making a shambles of their personal life. Guilford, in contrast, was a devoted family man who loved, and in return enjoyed the lifelong love and devotion of, his one and only wife, their only daughter, and her three children. J. P. gave his wife a great deal of credit for what he was able to accomplish since she took on many responsibilities that otherwise might have distracted him from his career. In writing about her father in *An Odyssey of the SOI Model,* Joan S. Guilford paints a glowing portrait of the "daddy" she idolized who was always available to her, concerned about her welfare and happiness, helped her, and made her feel loved and respected. Few fathers could expect to receive such an appreciative tribute from their offspring, especially those fathers whose days had been so filled with work and heavy responsibilities.

This tribute from a family member is mirrored, if in a less dramatic way, by innumerable examples of a caring concern that Guilford showed toward all those with whom he was in close contact. He was never too busy to listen to someone's problem, to help out a student who was having difficulty, or to write a carefully composed letter of recommendation for someone who was trying to get a job or promotion. To mention only a couple of incidents, J. P. once wrote a sizeable personal check to a volunteer research associate to enable that person to represent himself as a paid member of Guilford's staff while making a trip around the country to contact important figures in the field. In another case a student relates how Dr. Guilford used a gentle, guiding question to rescue him from an embarrassing moment during his final orals when he was having difficulty with some equations.

Although he liked people and enjoyed being with them, Guilford was not gregarious or especially adept socially. He was very quiet and at times almost invisible, so much so that he was known by some of his U.S. Army subordinates as the "gray ghost." He would have liked to have been "one of the boys," but, although he had a few good friends, a basic shyness made it difficult for him to develop an easy cameraderie with others. The friends he had were usually professional colleagues who shared his interests and values. Raymond B. Cattell, in a personal communication, wrote, "Nevertheless, we soon became trusted friends, as he stood up like a rock for basic research amidst an endless flurry of fashionable nothings."

There was usually a somewhat awkward formality between Guilford and those around him, which neither wanted nor quite knew how to dispel. Few felt comfortable addressing him by anything other than "Doctor Guilford" or "Professor Guilford," even after decades of association. This formality was certainly not out of any fear of a negative reaction on his part. He was always most reluctant to criticize any student or subordinate, however much they might have deserved it, and was always very considerate and kind if he had to suggest any modification of others' behavior. I never saw him in an angry mood, and I never heard of him raising his voice to anyone. His disposition was always one of quiet friendliness and emotional calm. His daughter said about him that he evoked a kind of fear in her, "not because of any expectation of being punished or rejected, but rather from the possibility of disappointing an idol." I suspect that many others shared a similar feeling.

Although he was somewhat introverted, Guilford surprised people from time to time with his dry wit. After his final oral examination, one doctoral student thanked Dr. Guilford for the opportunity to have worked with him and for letting him make his own way and make his own mistakes. Dr. Guilford replied, "I didn't realize I let you make any mistakes."

In university circles, famous professors are sometimes prone to spend too much time bragging about their own accomplishments while tending to avoid activities that do not contribute to their own personal aggrandizement. Although he was very proud of his many accomplishments and honors, and justly so, Guilford never bragged about them. He usually spent most of his time with others listening to them rather than telling about himself. Furthermore, he earned a solid reputation for good citizenship among his colleagues by carrying more than his share of the work in making the university run. He dealt with other faculty members as equals and never acted like a prima donna who expected special treatment because of his star status. Nor did he try to influence or control the research and teaching of younger faculty members. One colleague recalls with gratitude that when he was a struggling young faculty member Dr. Guilford did not try to control or influence him but rather let him find his own way in both teaching and research. Another colleague confirms Guilford's tolerance for the teaching preferences of younger faculty members. Guilford was also a responsible public citizen who faithfully attended town hall meetings.

Despite all these wonderful qualities, so rarely found in one man, Guilford was not perfect. He appeared to be very modest and self-effacing but underneath that exterior lay a great deal of pride in himself and his achievements and an enormous confidence that in scholarly and scientific matters the way he looked at things was the correct way. Although he would rarely say openly that someone else was wrong, one got the impression that Guilford seldom entertained the notion that he himself might be wrong. He preferred to have around him people who accepted his own scholarly and scientific views. He was not one who loved to participate in the give and take of a public debate between those of divergent views. He marched to his own drummer, and once he made up his mind on a subject he felt little if any need to modify his views on the basis of what others who disagreed with him might think. Of course, this would not be an inaccurate description of many people who have achieved great success. This personality trait is noteworthy in Guilford's case only because it is somewhat out of keeping with the many sterling qualities that made him appear to be almost above human frailty.

In summary, then, Guilford will be remembered as an outstanding person as well as a gifted and productive scholar and scientist. To have made such an impact on the field of psychology while being such a revered teacher, father, husband, friend, colleague, and supervisor stamps him as a truly remarkable man. Few mortals have achieved so much in such an admirable way.

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