

INDUSTRIAL PSYCHOLOGY IN AUTOBIOGRAPHY

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An autobiography of an industrial psychologist should, presumably, throw some light on how and why he got that way. It is not easy for an octogenarian to recall all the pertinent facts, but any inadequacies in this story are not due to unwillingness to cooperate in relating it.

On September 9, 1891, I became the first-born of six children of my parents. They were fairly prosperous farmers in north central Indiana, but my earliest memories, with some empathy, are of the worry and the pressure for frugality because my parents were paying for a farm during a depression when corn was only a few cents a bushel and eggs were eight cents a dozen. My parents never required me to work hard, but I was expected to help on the farm as I grew older. Horses never attracted me and I once heard my father say he did not like horses as much as other animals. He preferred to work with tools and machinery, and they fascinated me. I especially enjoyed being with my father when he was working in his carpenter shop or the adjoining blacksmith shop where he repaired, sharpened, and even constructed tools and machinery when the weather was too bad for working outdoors. He made the tools for constructing our first telephone line.

At age six I started walking a mile and a half to a one-room school. I did rather well in school, except in my second year when the teacher forced me to write with my right hand instead of my left hand as I did naturally. Later I went back to my left hand, but handwriting has always been tedious and tiresome for me. My father of Scotch-Irish and German descent was born in a log cabin, and had to leave school and go to work after completing six grades. My mother of English, French, and German descent, including Revolutionary War soldiers, had completed elementary school and short term normal school before teaching in elementary school. Both parents were interested in better education for their children, and when I was twelve years old we moved to Kokomo, Indiana, where there were good schools. My father became a full-time carpenter and builder, which he had begun part-time before we left the farm. I did the usual work of boys such as mowing lawns and delivering papers. During a summer after I was in high school I worked in a factory where I heated steel rods in a forge and cut them into lengths to be made into chisels. For ten hours I was paid seventy-five cents, seven and a half cents an hour. We started at ten minutes to seven so that in six days we gained an hour and could quit at five instead of six o'clock on Saturday afternoon.

Immediately after graduation from high school I met the state minimum requirements for teaching by attending ten weeks in a normal school. I taught a one-room country school the following winter. I earned enough money to help me enter Indiana University in September 1911. It was difficult for me to choose a major subject. I enjoyed science in high school, especially physics, but in my senior year the principal taught a course in psychology, using Ledd's Primer of Psychology, which created a new

interest. It was not possible then at Indiana University to major in psychology, which was only a part of philosophy, so I majored in philosophy, with minors in physics and sociology. The textbook in the elementary psychology course was James' Psychology: Briefer Course. We had a year of laboratory in psychology, using Titchener's Manuals under the direction of Melvin Haggerty. After the 1912 Christmas vacation Dr. Haggerty came back from psychology meetings and said all the talk was about Watson's new behavior psychology.

Dr. E. H. Lindley, head of the department of philosophy, had broad interests, and under him I had courses in abnormal psychology, social psychology, psychology of religion, and a seminar in Freudian psychology. There was nothing offered in applied psychology, statistics, or testing. After graduation in 1914 the first paper I had published was one in 1915 in the magazine *Motor Print* which offered prizes for articles on the topic "Psychology in the Government of Motoring." One of the problems I dealt with in the paper was the proper habit formation to avoid the danger of depressing the accelerator when the brake was needed. I proposed a different design of the accelerator. The problem has never been completely solved.

I taught physics, history, and German in a small high school for two years. After school ended in the spring of 1916 I returned to Indiana University for a Masters degree, and was a graduate assistant in psychology for the academic year of 1916-1917. Having always been interested in tools and machinery and thinking I might go into vocational education I wrote a thesis in that field, but also did more study in psychology. Having made a good record with election to Phi Beta Kappa and to Phi Delta Kappa, honorary education society, my professors obtained for me a graduate scholarship at Teachers College, Columbia University, where I went in September, 1917, to work for a Ph.D., probably under Thorndike. I had completed one semester when a letter from Robert Yerkee invited me to enlist in military psychology. After training at Camp Greenleaf I was on duty at Walter Reed Hospital until November, 1918, and then at an army hospital near Prescott, Arizona, until September 1919.

Having worked in factories four summers and having read Nunnally on psychology in industry I was hoping I could find some way to use psychology in industry, and I thought I had seen instances where it could be applied. I learned about the Division of Applied Psychology at Carnegie Institute of Technology, and applied for one of its fellowships in the Bureau of Personnel Research. Being granted on I got a discharge from the army so I could enter Carnegie Tech. in September 1919. The Bureau of Personnel Research had a real applied research atmosphere. We were registered for an advanced course in statistics under L. L. Thurstone and for a seminar in personnel research under Clarence Yoakum. In the seminar we discussed what we might do first, and it was suggested by some of us that we first survey the literature then available, and each prepare a report or chapter on a particular phase that would be part of a combined report or book that could be mimeographed so that each of us would have a complete copy. I think we did a fairly good job with what information was available, and I prized my copy for several years until it became obsolete. About the time when we began to feel that we were really getting something in this Division of

Applied Psychology we were encouraged by Drs. Bingham and Yoakum to attend the American Psychological Association meeting in Chicago, which was then held during the Christmas holidays. I felt a thrill when I was being introduced to an eminent psychologist there, but felt dashed down when this man, after learning where I was studying, said, "Well, now that the war is over, psychologists ought to be getting back to the real science of psychology." I realized somewhat painfully that applied psychology was not yet generally accepted. As late as 1923 Dr. Bingham felt it necessary to publish an article entitled, "On the Possibility of an Applied Psychology."

The Bureau of Personnel Research was supported by fees or grants from thirty member businesses or industries. Among them was the Westinghouse Electric and Manufacturing Company to which I was assigned to do personnel research. The company each year employed about three hundred engineers who had just been graduated. The company personnel problem was the differentiation of these apprentice engineers for training as salesman, designers, or executives of production. Analysis of grades in technical schools yielded little help in assigning the engineers to a particular type of work. Remembering Thorndike's suggestion that there might be different kinds of intelligence, I prepared two parts of an intelligence test, one part emphasizing social information and intelligence, and one part emphasizing technical information and ability. Although all engineers had completed much the same kind of engineering curriculum in college, I thought that the men who did relatively better in the social part than they did in the technical part would be better sales engineers, whereas those who did relatively better in the technical part than the social part would become better design engineers. This proved to be true. Although Dr. Thurstone did not supervise me in my research, in fact I worked very much independently of anyone, I remember that in my final doctoral oral examination Dr. Thurstone quizzed me intensely on the idea of different kinds of intelligence. Later he proposed that primary mental abilities and I have wondered whether he was already thinking of them when he quizzed me.

The Westinghouse management thought that not only ability but interest on the part of an engineer was important in selecting the type of work, such as design engineering or sales engineering, in which he should specialize. The apprentice engineers themselves, however, often did not know the particular kind of work they preferred. Following the suggestions that interest was important I prepared an interest questionnaire. Believing that interest in a particular occupation would not be limited to a narrow field of work but be in a general area or constellation of activities it seemed to me possible that by asking a person about a variety of activities the general area of interest might be revealed. The questionnaire proved valid in separating design engineers from sales engineers. It was found that design engineers would prefer occupations like architect, machinist, etc., whereas sales engineers would prefer being a purchasing agent, stockbroker, etc. The report of this research with Westinghouse engineers was accepted for my doctorate dissertation. Under the title of "Personnel Selection of Graduate Engineers" it was published as Psychological Monograph Vol. 30, No. 6, Whole No. 138, Year 1921.

Dr. E. K. Strong, who was in a different bureau for training life insurance salesman, became intrigued by the interest questionnaire and found it worked well for selecting life insurance salesmen. Dr. Strong told me later that he thought the interest test was the most promising technique devised in the Bureau of Personnel Research, and he scolded me for not developing it further as he did. However, I had gone to the Pennsylvania State College where I had a heavy load of teaching courses new to me and I had no time for research during the next few years. Two conditions had been shaping my career. The Westinghouse Company had invited me to join their staff after I finished my study at Carnegie Tech., but in the summer of 1920 a depression was coming on and then I was told by Westinghouse that they would be dropping men rather than adding them so if I could get some other position I better accept it. Fortunately for me at that time returning veterans were increasing the enrollment at Penn State and the Department of Education and Psychology needed an additional teacher, so I was appointed assistant professor of psychology in September 1920.

Two years after leaving Carnegie Tech. and the research at Westinghouse I was able to follow-up 76 of the engineers who had taken the tests I devised but had been placed without the aid of the tests. The validity of the tests became more evident that longer the men had been at their work and thus the more accurate the criterion of success became. Several of the men had been released or had left the company, and the data indicated that those who left were more likely to be among those who were shown by the tests to be misplaced. Two men had their assignments changed from what they had been at first, and in both cases the change was from disagreement to agreement with the tests, although the change was not because of the tests.

A short time after going to Penn State the dean of the school of engineering learned of my interest in applied psychology and work at Westinghouse, and he requested that two semesters of psychology, including applied psychology, be available to freshmen engineers. I offered basic psychology the first semester followed by a new course in industrial psychology in the second semester. No suitable textbook for the second course was available, so I mimeographed material from various sources, which was later expanded with the aid of George W. Hartmann and published as *Readings in Industrial Psychology* in 1931.

While on sabbatical leave in 1928-29 I was a research associate with the Personnel Research Federation under W. V. Bingham. He had obtained a grant from the Social Science Research Council for me to study the interview. I checked the validity of interviews in obtaining information from workers on strike from the textile mills in New Bedford, Massachusetts, and also from workers in a paper mill. Seven other interviewers worked under my supervision. The statements obtained by the interviews were checked for accuracy by facts on record and by the results of a secret ballot in the labor union. It was found that from statements in regard to the date of the beginning of the strike, the number of men on strike, and other objective facts for which we had records there was very little valid information obtained by interviews. However, the responses of the strikers in regard to their attitudes and feelings about the strike agreed very closely with the results of the secret ballot in the union. A review of the literature

seemed to indicate a need for a book on how to interview, which I wrote and Dr. Bingham edited. It was first published in 1931, and again in three later revised editions, the last in 1959. It was translated into Spanish and Arabic editions, indicating a surprising demand for it.

Through the Penn State Engineering Extension Service I was asked to offer a course in industrial psychology to a group of foreman training at the New Kensington plant of the U. S. Aluminum Company in the winter of 1931-32. This course was repeated for another group there two years later. Many other industrial companies in Pennsylvania requested similar supervisory training programs. My work as chairman of the department at Penn State, beginning in 1928, would not permit me to give much extension service, but the demand grew so at one time we had four full-time psychologists working in the field of supervisory training.

Desiring to know about Gestalt psychology I combined a summer session of six weeks in 1929 at the University of Berlin with a tour of Europe with my wife. While at Berlin I became acquainted with Hans Rupp who was in charge of psychotechnology there. He was just getting acquainted with Thorndike's measurements and their statistical treatment, for his approach to test construction was largely theoretical. I learned later after War II from a German professor visiting at Penn State that Hans Rupp became the chief psychologist (voluntary or involuntary?) for Hitler, and was of course ostracized after the war. I was given his address in Austria and I wrote to him. I received a rather pathetic letter (in German) from him stating that he had lost his son, son-in-law, and wife in the war, and he was teaching music for a livelihood. He lamented that he could not get books on psychology, so I mailed him two books plus a program of the APA meeting which at that time contained abstracts of the papers to be read.

A large eastern oil company (Exxon) wanted a survey of their employees by program of testing. I undertook this partly to give practical experience to some graduate students. The company emphasized their policy of promoting their supervisory staff and leaders from within, even from the lowest ranks. An analysis of the test results revealed that the older employees had a higher average on the tests than the younger employees. This was contrary to the usual finding that younger generations more recently from the test experience in the schools usually excelled older employees. I warned that their present incoming employees were apparently not of a caliber equal to former employees, which would question the soundness of the policy of promotion from within the staff unless there was a better selection of new employees. I recommended further study of personnel practices and the employment of a full-time psychologist, which the company did, selecting E. R. Henry.

In 1940 the United States Office of Education assigned to The Pennsylvania State College General Extension Services the responsibility for providing Engineer Defense Training classes for approximately 10,000 enrollees. In planning the program money was provided for research which was placed under my direction. Batteries of tests were administered to the members of these classes in introductory engineering

subjects, partly to learn about the students and partly to give them guidance. Among the findings were two general conclusions. (1) There were thousands of men, most of them young and without benefit of college, who had the ability of college men and had an eagerness to benefit from these engineering defense training courses. (2) In general, these enrollees, with little guidance and no use of tests, tend to get into types of work and training for which they are best fitted according to aptitude and interest test results.

After World War I the growing interest in applied psychology by many mostly younger psychologists and the reluctance of those in control of the American Psychological Association to give them recognition led to the organization of the American Association for Applied Psychology. This new organization at its Evanston meeting in 1941 established a "Committee on Professional Training in Clinical (Applied) Psychology," of which I was appointed general chairman. The committee was continued at the New York meeting in 1942 with instructions "to expand its study to include all fields of applications of Psychology." One of the sub-committees appointed was for business and industry and was composed of H. E. Burr, H. P. Longstaff, S. Shellow, E. K. Strong, and M. A. Bills, chairman. A report was published later which probably helped to encourage and guide development of training in applied psychology.

The American Psychological Association and the American Association for Applied Psychology merged in 1945 with an organization structure providing for divisions in special fields, including Division 14, named Industrial Psychology. Although I had nothing to do with this reorganization, I was surprised to be elected the first president of Division 14. Assuming that it was incumbent on me to give a presidential address at the first regular meeting of the division in 1946, I choose as my topic a report based on a study just completed, entitled "The Work, Training, and Status of Supervisors as Reported by Supervisors in Industry." The study was based on 642 questionnaires, which were validated by 231 personnel interviewers of foremen and other supervisors in the varied industries of Pennsylvania. From the study it seemed evident that better education and understanding in human relations was the primary need for improving the work of supervisors, and that education must include and begin at top management. The supervisors, including foremen, believed they were essentially a part of management, but they felt they had not been given the recognition and security that should go with the responsibilities they must assume.

Just before and during World War II I had to spread my energy rather widely and I fear too thinly. I prepared several civil service examinations for the State of Pennsylvania in addition to a test for the selection and guidance of students at The Pennsylvania State College. During the war four of the psychology faculty, Robert Bernreuter, C. Ray Carpenter, William Lepley, and Kinsley Smith went into the military service, and I carried a heavier load because replacements were impossible to find. Not wanting the Psychological Clinic, which Dr. Bernreuter had developed for the practical training of graduate students, to be discontinued I took on the direction of it myself. There being no clinical psychologist or psychiatrist within ninety miles of the college, the clinic was overloaded, especially as a result of the stresses of the war period. Working long days seven days a week I sought to speed up the psychotherapeutic process for

some cases by the use of hypnosis, and I found it helpful, especially when dealing with phobias. Since hypnotherapy was not generally accepted then, it was with some trepidation that I presented a paper at the A. P. A. meeting in 1946 on "Hypnotherapy in Rapid Reconditioning." I predicted that hypnosis would come into greater interest and use. Later I felt reassured when I learned that hypnotherapy had been used at the Menninger Clinic in much the same way and for similar reasons.

In 1950 the Koppers Company, a national corporation based in Pittsburgh, requested me to make a survey of the attitudes of their employees. This was undertaken by a questionnaire answered anonymously by 1,128 supervisors, 1,810 other salaried employees, and 217 hourly paid employees. There were differences in morale among different divisions, where there were spotty problems, but in general there was a great respect for management and policies of the company. There was a complaint and request for better inter-communication and for training that would provide opportunity for promotion.

Possibly because I had been general chairman of the Committee on Professional Training in Applied Psychology in 1941-43, I was appointed a member of the APA Education and Training Board in 1951. In 1952 I was made Executive Officer of that board. I retired from Penn State where I had been a professor and head of the department since 1928. At my request the department had been separated from education and made a Department of Psychology. I moved to the Washington D. C. office of A. P. A. in September 1952. The next year I was appointed also Executive Secretary of the Committee on Scientific and Professional Ethics and Conduct. The work with the Education and Training Board and with the Board of Directors of A. P. A., including the personal relations with the many fine leaders in the A. P. A., and in the many graduate departments of universities I visited in evaluation visits was a very satisfying experience. Two large conferences were arranged for, the one in school psychology which met at Thayer Hotel in West Point n 1954, and one on graduate education in psychology at Miami Beach in 1958.

After seven years in the A. P. A. Central Office, which included much traveling to universities, I felt I wanted to teach again and try living in Florida, so I resigned in 1959. I enjoyed teaching industrial psychology at the University of Miami from 1959-1962. Largely because the heat of Florida affected the health of my wife I retired a third time and moved back to State College in 1962, where my wife died in 1967. In 1969 I married Dr. Winona Morgan who had been head of the Department of Child Development and Family Relations at Penn State. Former colleagues at Penn State honored me in 1972 by naming the new six-story psychology building the Bruce W. Moore Building. I have been fully rewarded for any contributions I have made.