Autobiography
of
Edwin A. Fleishman

I was born in New York on March 10, 1927. My family moved to Baltimore when I was 2 years old, and it was there that I attended primary and secondary school. I received a scholarship to Loyola College in Baltimore, where I majored in chemistry and received my BS degree with honors at the age of 18.

I enlisted in the U. S. Navy in 1945, entering a special program in electronics that permitted me to defer my induction until my degree requirements were completed. It was during my senior year in college and during my service in the Navy that my interests began to shift to psychology. I spent much of my free time locating and reading books in my newly discovered field.

With the end of World War II, I became a demobilization counselor and interviewed Navy personnel as they began their transition into civilian life. I was discharged from the Navy just in time to enter graduate school in the Department of Psychology at the University of Maryland. I was accepted at Maryland on the basis of my high academic grades and quantitative scientific background, even though I could not show a single bona fide course in psychology. I credit John Gamewell Jenkins, then chair at Maryland, with giving me this chance.

At Maryland, I took undergraduate psychology courses to fill in the prerequisites for the advanced graduate courses I was taking. I supported myself with the job as a lab instructor in the chemistry department and with the stipend provided by the G. I. Bill.

The psychology department at Maryland reflected Jenkins strong emphasis on the linkage of experimental psychology, quantitative methods, and applied research. Ray Hackman, my thesis advisor, and Fillmore Sanford, who befriended me and with whom I coauthored my first journal article, were especially influential. I received my MA from Maryland in 1949. My thesis was on the development of experimental methods for observing the formation of consumer preferences.

Prior to leaving Maryland, I married Pauline Utman, who was getting her BA in psychology there. We met at an evening lecture given by Walter Van Dyke Bingham. We now have two

In 1949, I worked for several months at the Army Personnel Research Office in the Pentagon (forerunner of the current Army Research Institute) developing achievement tests for various occupational specialties. Many quantitative methodological developments, published regularly in Psychometrika in the 1940s and 1950s, came out of this research program. Some of the people there at the time included E. K. Taylor, C. I. Mosier, H. E. Brogden, B. J. Winer, and John Carroll, among others. Taylor and Kuder were just founding the journal Personnel Psychology, and J. G. Uhlaner was organizing an experimental laboratory to study factors affecting night vision. The exposure to a large-scale applied research program firmly rooted in experimental and quantitative psychology helped reinforce my view of the integrated nature of basic and applied psychology.

Also during that year, I was able to persuade a Baltimore brewery to finance a study in which the methodology developed in my thesis was applied to the experimental evaluation of beer preferences. This resulted in my first article in the Journal of Applied Psychology.

In September 1949, I moved to Ohio State University, where I received a Ph.D. in 1951. My dissertation advisor was Harold E. Burtt, the long-time department chair there and author of some of the first textbooks in applied psychology. Burtt had been a student of Mhnsterberg at Harvard, who in turn had been a student of Wundt. I like the idea that my psychological roots can be traced back to Wundt!

This was a golden age at Ohio State, which was strong in most of the major areas of psychology (e.g., Wherry and Toops in quantitative, Pressey, English, McCandless, and Horrocks in educational and developmental; Robinson, Fletcher, and Emily Stogdill in guidance and counseling; Rotter and George Kelley in clinical; Wickens, Renshaw, and Myers in experimental/physiological; Burtt and Shartle in industrial; Fitts in human factors; and Donald Campbell in social.) Wherry, in particular, was influential in the development of my quantitative skills.

I feel especially indebted to Ralph Stogdill, who offered me a position as research assistant at the Personnel Research Board. This was a key event in my career, for it brought me into the Ohio State Leadership Studies, a pioneering interdisciplinary program organized and directed by Carroll L. Shartle.

The Personnel Research Board was an exciting place with a sense of imminent discovery and a great deal of participation and sharing among staff on the different leadership projects. Particularly influential was John Hemphill, whose original dimensionalization and measurement of leader behavior were especially appealing to me. One of my first technical reports (for the Office of Naval Research; ONR), coauthored with Don Campbell and Ralph Stogdill, was on the differences between industrial and military leadership patterns.

In 1950, I was awarded the International Harvester Research Fellowship, under which I carried out my now classic studies of how leadership climates at the top levels of organizations affect leader behavior and attitudes at lower level and how such climates interact with the effectiveness of leadership training. I developed measures of the constructs of consideration and structure and, conceptualizing management training as attempts at social change, was able to show how experimental and survey methods can be combined and carried out in complex organizations, in longitudinal and cross-sectional designs.

Subsequent studies over many years with a number of colleagues have related the dimensions of consideration and structure to a variety of criteria in many different types of organization. I have also identified situational variables that moderate these relations and optimize a variety of criteria of group and organizational effectiveness.

I remember my first APA convention in 1950 at Penn State, the last APA meeting held on a college campus. My wife and I got there as passengers in Cal Shartles Packard. Shartle was president of Division 14 that year and was one of the most respected industrial psychologists of this period; he was warm in his relations with others, had high standards for conducting research and accepting evidence, and was extremely sophisticated in the bureaucratic arts of launching programs he believed in. The opportunities to observe his leadership style close up must have been influential in my later career.

I left Ohio State for a position at the Human Resources Research Center (later called Air Force Personnel Training and Research Center) of the U. S. Air Force in San Antonio, Texas. Despite a variety of academic officers, I felt this particular setting offered more opportunities for state-of-the-art research and practical impact, even though the content area was a considerable departure from leadership research. The position was chief of the Skills Analysis and Apparatus Test Development Branch in the Perceptual-Motor Research Laboratory.

Arthur W. Melton was technical director of the Center and was forming laboratories and programs in a variety of basic and applied research areas. Robert M. GagnJ was director of the laboratory, which included such recent Ph.D.s as Jack Adams, Malcolm Arnoult, Fred Attneave, Ed and Ina Bilodeau, Clyde Noble, and Ward Edwards. Elsewhere in the Center, I interacted with such colleagues as Lloyd Humphreys, Charles W. Bray, Robert French, and John Lanzetta, among others. Rarely has there been such a blending of young talent and large resources in psychology. It was an exhilarating and productive period.

It was here that I developed a program of research linking correlational and experimental methods. In a series of interlocking studies, perceptual-motor performance was examined as a domain of human abilities. Display-control characteristics and other task variables were systematically varied, and intercorrelations among performances were examined. Sources of common variance were identified through factor analysis and other multivariate techniques. The resulting taxonomy of perceptual-motor abilities still stands as a framework for describing individual differences in perceptual-motor performance. This work also established the measures most diagnostic of the ability categories identified.

I showed how individual differences in abilities could be exploited to gain insights into the processes involved in the learning of more complex skills. Especially illuminating were my studies showing the changes in the patterns of abilities that contribute at different stages of learning.

During this period 1951-1956, I took on increasing administrative responsibility and helped in long-range planning of the program of the laboratory, subsequently named the Skill Components Research Laboratory; in 1956, I became its technical director.

In 1956, the Air Force gave me the opportunity to take a six-week tour of psychological research centers in Europe. During this trip, I met with some of the leading psychologists in Europe (e.g. Bartlett, Poulton, Broadbent, and Eysenck in England; Fraisse and Oleron in France; de Groot and Fokkema in the Netherlands; and Ekman and Henricksen in Sweden). In addition, I became familiar with individuals and programs in the psychological research units of the defense forces of these countries. During my visit to England, I met Lee Cronbach, who was the ONR liaison officer in London that year and who helped to coordinate my visits in England. Cronbach was then formulating his notions about the two scientific disciplines of psychology and found that my work was already making headway in combining these disciplines. This visit to Europe was to be the first of many with psychologists abroad and helped kindle my subsequent interests in encouraging communication among psychologists around the world.

I moved to Yale University in January 1957, where I held appointments in the Department of Industrial Administration and the Department of Psychology. I also founded the Human Skills Research Laboratory there.

I made the transition to academia easily and enjoyed the perquisites of the Yale environment-its residential colleges, the intellectual exchanges with distinguished colleagues in many fields, and the famous visitors. I recall fondly the dinners at Pierson College, of which I was a fellow, where on different occasions I sat across the table from Robert Oppenheimer, George Kennon, Alan Waterman, and Robert Moses.

At Yale I taught graduate and undergraduate courses in psychological measurement, organizational psychology, and human performance. I enjoyed working with my students, published several articles with them (e.g., Gaylord Ellison and Simon Rich), and served on dissertation committees (two notable examples were those for Earl B. Hunt and Joanne Williams).

With Don Taylor, Chris Argyris, and E. Whyte Bakke, I was part of the behavioral science group in the Department of Industrial Administration. I enjoyed my relationships in the psychology department, which included such familiar names as Neal Miller, Hovland, Dollard, Doob, Janis, May, Child, Buxton, and Sarason.

At Yale I returned to my interests in organizational psychology and, with students and colleagues, carried out a number of research studies on leader-subordinate relationships, attitudinal factors in productivity, selection and training, and the prediction of human performance, in industrial, military, educational, and hospital settings. I also spend considerable time consulting for industry and government.

I was able to continue my work on human performance through grants obtained from the National Science Foundation and the Office of Naval Research. I feel that my most important studies during this period were those (with Simon Rich) showing the role of spatial and kinesthetic abilities at early and advanced levels of perceptual-motor learning and those (with James Parker) identifying factors affecting the retention and relearning of complex skills at different retention intervals of up to two years duration.

This was a period of growing national interest in physical fitness. President Kennedy had established his Committee on Physical Fitness, headed by Stan Musial. I obtained ONR support to extend existing physical tests and many new ones, I helped bring order into this field of measurement by identifying what physical fitness tests measure and specifying the measures diagnostic of each physical ability identified. National norms and developmental curves were developed for the basic recommended battery. All of this eventually culminated in my book The Structure and Measurement of Physical Fitness (with a foreword by Stan Musial).

In 1959, I collaborated with my former colleague Robert GagnJ, then at Princeton, in coauthoring an introductory psychology text aptly titled Psychology and Human Performance, which had a loyal following for many years. The book stressed the integral nature of basic and applied psychology. In 1961, I completed the first of three editions of my industrial psychology text Studies in Personnel and Industrial Psychology.

In 1960, I was one of eight psychologists invited by the American Psychological Association to visit the Soviet Union to learn about psychological developments there. The group included Urie Bronfenbrenner, Carl Pfaffmann, Harold Schlossberg, Neal Miller, Yvonne Brackbill, James Archer, and Gardner Murphy. I was the first to go, arriving a few weeks after our U-2 reconnaissance aircraft was shot down over Russia! After being taken to see the U-2 close up (a mind-boggling experience at the time), I resumed my tour of psychological laboratories in Moscow, Leningrad, and Tblisi, encountering a warm and friendly reception wherever I went. I met with some of the leaders in Soviet psychology, including Luria, Leontiev, Smirnov, Oshanin, and Boris Lomov, then a young psychologist in Leningrad and subsequently director of the Institute of Psychology in the Soviet Academy of Science. (My friendship with Lomov has continued over the years.) I also visited schools and industries. The APA group reported their observations in the book Some Views of Soviet Psychology. My chapter dealt with industrial and educational psychology.

In 1962, I was the recipient of a Guggenheim Fellowship and a Senior Faculty Fellowship from Yale. I spent the year in Israel as a visiting professor in the Department of Management and Industrial Institute of Technology (Technion). I recall this as a wonderful year for me and my family, as both personally and professionally rewarding. In one memorable incident while driving in the Negev, we came upon David Ben Gurion walking with his staff. We had a brief conversation, and Ben Gurion wanted to know, specifically, what psychology had to do with management and industrial engineering!

From 1963 to 1975, I was with the American Institutes fro Research in the Behavioral Sciences ((AIR), where I was senior vice-president and director of the Washington office. I had resigned my tenured position at Yale in order to join John Flanagan, Robert Gagne, and others in building an organization that would address socially significant problems. In Washington, I began with a handful of relatively junior staff, and over the years developed an organization containing multiple institutes and programs with 130 staff members. The research carried out there included laboratory and field research and spanned the areas of human performance, educational technology, organizational effectiveness, and international programs in developing countries.

At AIR, I was able to integrate and extend many of my research interests. I feel one of my major contributions was the initiation and development of a program dealing with taxonomic issues in psychology, particularly in the area of human performance. This program examined alternate ways of describing tasks, developed provisional taxonomic systems, and evaluated their utility for a number of basic and applied purposes.

A second major contribution was the development of laboratory tasks, representative of general performance categories and employing then in studies of the effects of drugs, noise, and other independent variables. Both of these lines of work were aimed at the enhancement of generalizations about human task performance. A third major contribution was the exploration of possible individual differences in kinesthetic sensitivity, the development of a laboratory to measure different aspects of kinesthetic sensitivity, the identification of dimensions of kinesthetic sensitivity, and the specification of diagnostic measures.

In 1975, I resigned from AIR and from 1975-1976 was a visiting professor in the School of Administration of the University of California, Irvine, where my colleagues Lyman Porter was Dean. During this period, I became interested in categories that people use to describe human tasks and the relevance of these to predictions and generalizations about human performance. Also, during that year, I was asked by the

National Academy of Sciences to represent the United States in Moscow to develop the first joint program in the behavioral sciences with the Soviet Academy of Sciences (others in the group included D. Luce, W. Estes, L. Festinger, D.A. Riggs, D. Campbell, M. Cole, R. Atkinson, R. Thompson, J. Lacey, B. Lacey, and D. Green).

In 1976, I returned to Washington as founding President of the Advanced Research Resources Organization (ARRO). ARRO engaged in research and evaluation in various areas of human performance, organizational effectiveness, and manpower resources. At ARRO, my associates and I extended and applied much of my previous work. The taxonomic concepts I developed earlier, for example, were translated into methods of task analysis, and physical performance measures that predict performance in physically demanding tasks have been developed. Other projects involved the department of an index of physical effort and the validation of this index against physiological and ergonomic measures of performance. My colleagues and I later extended my taxonomic work to the area of team dimensions.

In 1986, George Mason University offered me a position, as Distinguished University Professor of Psychology, at a time when I wanted to return to academia for the rest of my career. I was a faculty member in the Psychology Department until the end of 1996, when I began my emeritus status. During this time, I was involved with getting the Ph.D program approved (originally Psy.D). I founded and was the first director of the Center for Behavioral and Cognitive Studies that lead to some cooperative efforts among faculty and some sizable research funding and programmatic efforts. I was pleased that in 1991 GMU presented the Center with its first annual Award of Excellence. I am currently Distinguished University Professor Emeritus at George Mason University and Chairman of Management Research Institute, Inc.

I am the author of more than 250 journal articles and research reports. In addition to the textbooks already mentioned, my book Current Developments in the Study of Leadership (with J.G. Hunt) was published in 1973. Some other books included Taxonomies of Human Performance: The Description of Human Tasks (with M. Quaintance); Handbook of Human Abilities: Definitions, Measurements, and Job Task Requirements (with M. Reilly); Studies in Personnel and Industrial Psychology: The Structure and Measurement of Physical Fitness; and Psychology and Human Performance (with R. Gagne). I co-edited series of three volumes on Human Performance and Productivity was published in 1981. I authored the 1969 Annual Review of Psychology chapter on Human Abilities and was a contributing author to the books Learning and Individual Differences, the Acquisitions of Skill, Training and Research Education, The Psychomotor Domain: Movement Behavior, and Drugs and Behavior.

I am the author of the following sections in several encyclopedias: "Aptitude Testing" in the International Encyclopedia of the Social Sciences; "Motor Ability and Skill Learning" in The Encyclopedia of Education; and "Motor Abilities" in the Encyclopedia of Educational Research. The International Encyclopedia of Psychiatry, Psychology, Psychoanalysis & Neurology includes my chapters entitled "Motor Abilities," "Tasks and Task Taxonomies," and "The Prediction of Skill Learning."

From 1971 to 1976 I was editor of the Journal of Applied Psychology, a role I feel was one of the most demanding but satisfying experiences of my career. I have also served on the editorial boards of Personnel Psychology, Organizational Behavior and Human Performance, Contemporary Psychology, Human Performance, International Journal of Cognitive Ergonomics, Applied Psychology: An International Review, Leadership Quarterly, and the Journal of Motor Behavior.

Throughout my career I have been active in professional matters related to psychology. Within the American Psychological Association, I have served on the Policy and Planning Board, the Council of Editors, the Committee on International Relations, and the Membership Committee; I have also been chair of APA 's Committee on Psychological Tests. I have served on the Advisory Panel on Psychology and Social Sciences in the Office of the Secretary of Defense and have served as a member of the Behavioral Sciences Advisory Panel for the U.S. Army Surgeon General's Office, and for 10 years was a consultant for the U.S. State Department. I have also been a consultant to the U.S. Equal Employment Opportunity Commission, the Department of Justice, The President's Council on Physical Fitness, and other government agencies and industrial organizations.

My contributions have been recognized by my colleagues. I was elected president of three APA Divisions: Division 14, Industrial and Organizational Psychology (1973-1974); Division 21, Engineering Psychology and Ergonomics (1977-1978); and Division 5, Evaluation, Measurement, and Statistics (1978-1979). In 1974, I received the Franklin V. Taylor Award from APA's Division 21 for "outstanding contributions to the field of engineering psychology." In 1980, I received APA's Distinguished Scientific Award for Applications of Psychology. I received the Society for Industrial and Organizational Psychology, Inc. (SlOP) (also known as APA Division 14) Distinguished Professional Practice Award in 1983, and the James McKeen Cattell Award from the American Psychological Society in 1993. In 1998, I received SlOP's first annual F. Scott Myers Award "for the outstanding example of research having impact on the workplace." I was the 1998/1999 recipient for APA's Award for Distinguished Contributions to the International Advancement of Psychology in recognition of my "sustained and enduring contributions to international cooperation and advancement of knowledge in psychology." I also received an honorary Doctor of Science degree from the University of Edinburgh in 1982.

I was elected president of the International Association of Applied Psychology in 1974, an office I held for eight years. In 1978, I presided over the International Congress of Applied Psychology held in Munich. My presidential address to this body, since published, was entitled "The New Applied Psychology: An International Perspective." I worked with the organizers of the International Congress of Applied Psychology in Edinburgh, Jerusalem, Kyoto, and Madrid over the past 25 years. A highlight that stands out is my 1981 invitation by the Chinese Psychological Society to represent the U.S. in their 60th Anniversary Congress in Beijing - the first time Westerners had been invited. In 1985, I was invited by the Society for Progress in Science of Japan to spend a month lecturing there. In 1993, I was Elizabeth Mao Visiting Scholar on an invitation from the University of Hong Kong. I was very moved by George Mason University's establishment of the annual Edwin A. Fleishman Dissertation Award for the doctoral student whose dissertation is judged the best in the area of applied experimental psychology.

Although I am officially on Emeritus status, I don't really consider myself "retired." I have more flexibility in how I allocate my time. I am still heavily involved with the International Association of Applied Psychology. I continue to serve on the editorial boards of several journals and am still the Editor of the Erlbaum Series in Applied Psychology. I am still active in research and consulting. In the last few years, I was one of the principals in the development of the O*NET which is the new occupational classification system developed to replace the Dictionary of Occupational Titles. A lot of it is based on my abilities taxonomy and measurement system. In 1999, APA published a book on this project, "An Occupational Classification System for the 21st Century: The Development of O'Net," on which I am coauthor. I am also a consultant to the Social Security Administration on revising their disability. System to include

functional assessments of capability linked to job requirements. I look forward to the new challenges that lie ahead.