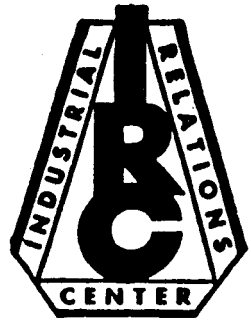

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A Definition of Work Adjustment

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This Bulletin is dedicated to Professor Donald G. Paterson who retires from the University of Minnesota faculty in June of this year. After his early career of important achievements at the Ohio State University, in the U. S. Army, and in the Scott Company, Professor Paterson came to the University of Minnesota in 1921 with the intention of devoting himself to the development of applied psychology. His impact has been tremendous.

Among his many accomplishments are: a personal publication rate of one publication every two months over his career to date as a psychologist; service as secretary of the American Psychological Association for six years; founding and actively participating in the Minnesota Employment Stabilization Research Institute; and actively working as a founder and active member of the Industrial Relations Center.

Most important, Professor Paterson has served as the major adviser to more than 90 Ph.D. students and approximately 200 Masters degree students. The authors of the present Bulletin owe their training and interest in applied psychology to Professor Paterson. We are happy to report that he will continue to serve the IRC in an advisory capacity.

T.B.S. R.V.D.
G.W.E. L.H.L.

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Overview

The development of a research framework within which rehabilitation outcomes can be studied meaningfully requires a comprehensive definition of work adjustment. The following major conclusions from the literature provide a conceptual basis for studying rehabilitation, occupational, and counseling outcomes.

1. Work adjustment is inferred from two primary sets of indicators: "satisfaction" and "satisfactoriness." "Satisfaction" includes overall job satisfaction and satisfaction with various aspects of the individual's work environment (his supervisor, his co-workers, the company or institution for which he works, his working conditions, his hours of work, his pay, and the type of work in which he is engaged). It includes the satisfaction of his needs and the fulfillment of his aspirations and expectations. It includes the congruence of his vocational interests with the interests of most "successful" people working in his occupation. "Satisfactoriness" is indicated by his productivity and efficiency, and by the way he is regarded by his supervisor, co-workers, and the company or institution for which he works. It is negatively indicated by his absences and tardiness, by the accidents that he has, and by his ability to stay on the job for a satisfactory period of time. It is also indicated by the congruence of his abilities and skills with those demanded by the job.

2. The individual should be the basic unit in the study of work adjustment. While group comparisons are enlightening, differences among individuals and differences within the individual may be more significant. These possibilities emphasize the need for studies of individuals.

3. Work adjustment occurs over a period of time. Actually, the working years of an individual constitute the period during which work adjustment takes place. "Satisfaction" and "satisfactoriness" may differ in the same individual for different periods of time. There may be cycles of satisfaction and dissatisfaction, and cycles of satisfactoriness and unsatisfactoriness in the work history of the individual. Changes in satisfaction and satisfactoriness may be the more significant aspects of work adjustment. Consideration of the requirement of reliability in measurement also argues for long-term study of individuals.

4. Work adjustment patterns may differ for different occupations. The set of criteria that is relevant may differ from occupation to

occupation. Even if the set of relevant criteria were the same, the pattern of interrelationships among the criteria may differ from occupation to occupation.

5. The study of interrelationships among criteria is probably the most neglected aspect of research in this field. The potential rewards of such study are very attractive when it is considered that it might be possible to determine a minimum number of criterion variables that would account for most of the variability in work adjustment. It is quite obvious that rehabilitation, occupational and counseling research would be greatly facilitated by such a development.

6. Work adjustment is likely to be affected by such factors as the individual's age, sex, education, training, personality, and adjustment outside the work situation. The same degrees of satisfaction and/or satisfactoriness conceivably may reflect different degrees of work adjustment for different ages or sexes, or levels of educational attainment, etc. Consideration of these correlates is necessary to an adequate understanding of work adjustment.

A Definition of Work Adjustment

I. Introduction

Bulletin I of the *Minnesota Studies in Vocational Rehabilitation* presented an annotated bibliography of evaluation studies in vocational rehabilitation. This bibliography brought to light the paucity of research on evaluation or outcome criteria, not only in vocational rehabilitation, but even in the field of counseling. Since many (if not most) research problems in vocational rehabilitation involve evaluation criteria, it became apparent to the research staff of the Vocational Rehabilitation Research Laboratory in the Industrial Relations Center that progress in vocational rehabilitation research could be made more rapidly after intensive study of the criterion problem. Consequently, this problem was designated the core research problem for the laboratory.

To set the stage for research planning, past research involving the use of evaluation criteria was reviewed. It included literature on criteria used in vocational rehabilitation and in several fields of applied psychology (counseling, industrial, personnel, occupational and vocational psychology). The review also included literature on the more commonly used economic and sociological criteria.

From this review the concept of "work adjustment" was developed to designate the general area encompassing evaluation criteria. This concept seems to be particularly relevant to the evaluation of vocational rehabilitation outcomes. For example, the effectiveness of vocational rehabilitation counseling techniques might be assessed by the subsequent "work adjustment" of counselees.

The appropriateness of "work adjustment" as a concept integrating the various evaluation criteria is strongly suggested by the research literature. Studies of job satisfaction show there are many workers who are dissatisfied for different reasons. Studies of vocational choice show there are those who would prefer working at jobs different from the ones they have. Attitude studies and studies of industrial conflict frequently point toward various areas of low morale among workers. Counseling interviews and exit-interviews have uncovered a variety of adjustment difficulties that concern workers. Studies of productivity and efficiency reveal wide differences in job performance. Job mobility studies show a diversity of work history patterns. Work and the worker do not always "fit."

A DEFINITION OF WORK ADJUSTMENT

"Work adjustment" conveys a broader meaning than the adjustment of an individual to his specific job tasks. It is the adjustment of the individual to his world of work. It includes the adjustment of the individual to the variety of environmental factors that surround him in his work, his adjustment to changes in these factors over periods of time, and his adjustment to his own characteristics. Thus, the adjustment of the individual to his employer, his supervisor, his co-workers, as well as to the demands of the job itself, his adjustment to changing job market conditions, and his adjustment to his own aptitudes, interests, and temperament are all encompassed in the concept of work adjustment.

However, arriving at some conceptual notions regarding work adjustment is only a preliminary step in the research process. It is necessary to define the concept more rigorously if it is to aid substantially in the planning of research. It is necessary to define the concept in operational terms, that is, in terms of the specific variables, instruments, and procedures that actually can be used in research.

This bulletin reviews the different variables that have been used to indicate various facets of work adjustment. The instruments used to measure these variables are evaluated, and their correlates are examined. Then a research-oriented definition of "work adjustment" is developed in terms of variables, instruments, and procedures.

The bulletin is organized around the literature—psychological, sociological, and economic—which appears to be pertinent to the definition of the concept of work adjustment described above. Part II reviews the literature on job satisfaction. Part III discusses studies on morale and employee attitudes. Part IV presents related literature on the topic of worker motivation. The literature on behavioral criteria is the subject of Part V. Part VI discusses vocational fitness as an indicator of work adjustment. Finally, what has been learned from the literature is summarized in Part VII, and a research definition of work adjustment is advanced.

II. The Literature on Job Satisfaction

The development of a definition of work adjustment might profit by a suggestion from Heron (1954c). Heron speaks of two complementary aspects of occupational adjustment: satisfaction and satisfactoriness. The former views adjustment from the individual's (i.e., the worker's) vantage point; the latter looks at adjustment "from the outside," that is, from the employer's viewpoint or from an expert's point of view.

Important indicators of work adjustment, therefore, might be found in the literature on job satisfaction.

One problem is readily apparent from even a cursory survey of the literature on job satisfaction. Hoppock, in *Job Satisfaction* (1935), reviews 32 studies done prior to 1933 and remarks that although there was much opinion about job satisfaction, there were not too many "factual" studies. Some twenty years later, Stagner, Flebbs, and Wood comment: "The number of studies dealing with job satisfaction has become so large that the newcomer to the field may well be appalled" (1952, p. 293). Current reviews (e.g., Robinson, 1956; 1957; 1959) are convincing testimony to the extraordinary volume of job satisfaction literature.

Another problem that confronts the reviewer of job satisfaction research is the increasing tendency in recent years toward ambiguity in defining "job satisfaction" and the use of this term interchangeably with "morale" and "employee attitudes." Some writers carefully distinguish between job satisfaction and morale, usually on the basis of reference to the work group. For example, Blum (1956) differentiates these terms, defining "job satisfaction" as referring to over-all attitudes about (a) the job, (b) factors related to the job, and (c) life-in-general, and "industrial morale" as a "by-product of a group," a "feeling of group solidarity; need for a goal; observable progress toward that goal; and individual participation in meaningful tasks necessary to achieving the goal" (1956, pp. 125-126). Strong (1958) also states a preference for using "job satisfaction" in reference to the individual, and "morale" when talking of the group. He refers to job satisfaction and morale as "two attitudes toward one's job."

Katzell (1958), on the other hand, regards job satisfaction as a necessary and integral part of morale. He advises that measures of

job satisfaction be designed to get information relevant to the hypothetical construct "morale" rather than being a "catch-all of questions about this or that" (1958, p. 74).

In striving toward a definition of work adjustment that includes job satisfaction, it might be enlightening to begin with an examination of the various ways by which job satisfaction is measured.

The measurement of job satisfaction—Brayfield and Crockett assert, ". . . we have found it necessary to assume that the measuring operations define the variables involved" (1955, p. 397). Blum expresses this opinion: "Reviewing the many studies in the area almost leads one to the conclusion that job satisfaction is anything that an author measures when he thinks he is measuring job satisfaction" (1956, p. 124). It would seem, from these comments, that any satisfactory definition of job satisfaction would depend on an analysis of the measures used and their correlates.

Studies reviewed by Hoppock (1935) used several types of measures to get at job satisfaction. Some of the pre-Hoppock investigators used lists of attitude statements to get a total attitude score. Others used observation, checklists of likes and dislikes, interest measures, interviews, and self-ratings of satisfaction about certain areas or jobs.

What are job satisfaction measures supposed to investigate? Hoppock (1935) states that measures can be (a) about the job as a whole, or (b) about different aspects of the job. With the first alternative, the individual makes a global decision based on the factors he considers relevant. While these factors may actually differ and/or vary in importance with different individuals, Hoppock believes that the individual's over-all feeling may be more meaningful than some system of weighting the various factors. He feels that the weighting of different job aspects in a predetermined manner does not reflect the significance of these aspects to the individual. Hoppock also feels that "the mere summation of satisfaction with various aspects of the job is not equivalent to satisfaction with the job as a whole" (1935, p. 274). He points out that job satisfaction, while depending on many aspects of the job, could be thought of as one variable.

Hoppock mentions two methodological problems: (a) developing a technique of measurement independent of the worker's willingness to tell the truth, and (b) obtaining a sample representative of all occupations and ages. He states that no earlier study (prior to 1933) overcame these problems, and he himself did not solve the first

problem. (The first problem may have no solution aside from taking those steps that would appear to yield maximum cooperation with the investigators.)

From his own observations, Hoppock concludes: "When the individual is better off than his neighbor, he is satisfied and when he is worse off, he is dissatisfied" (1935, p. 10). Hoppock also feels that most individuals end up in a job area that at least partially agrees with them, although he admits that satisfaction at the time of his study—1933—undoubtedly depended to a large extent on simply having a job.

Hoppock's job satisfaction blank (1935) has four 7-choice items asking how the individual liked his job, how much of the time he felt satisfied with his job, how he felt about changing his job, and how he felt he compared with other people in relation to satisfaction with their jobs. One question compares satisfaction with one's job with the things he does in his spare time. Another asks about his choice of "all the jobs in the world." Two questions ask about changing jobs. The last question is: "Are your feelings today a true sample of the way you usually feel about your job?" The corrected reliability reported for this scale was .83, only .04 lower than that of Hoppock's earlier, 100-item questionnaire.

Post-Hoppock measures of job satisfaction are not much different from the earlier types. It is questionable whether any of them improve on the Hoppock blank for getting the information wanted. For example, in spite of its more sophisticated development, the Brayfield-Rothe scale of 18 Likert-type items correlated .92 with the Hoppock scale for a group of employed persons in a personnel psychology class (Brayfield and Rothe, 1951).

The underlying rationale of the Brayfield-Rothe blank differs somewhat from Hoppock's reasoning. The expressed approach of Brayfield and Rothe centers on the assumption that job satisfaction can be inferred from a "quantification of the expression of feeling" toward work (1951, p. 307). They state a preference for an index of "over-all" job satisfaction rather than sub-indices of specific aspects of the job situation. (In this respect, they are in agreement with Hoppock.) Brayfield and Rothe's items reflect this preference for an "over-all" index, as in, for example: "My job is like a hobby to me," and "Each day of work seems like it will never end."

Other requirements for a job satisfaction scale, according to Brayfield and Rothe, include: (a) applicability to a wide variety of jobs, (b) sensitivity to variations in attitudes, (c) ability to evoke

cooperation from both management and workers, (d) reliability, and (e) validity. (Blum [1956] notes that reliability and validity, essential qualities of any measuring instruments, are often overlooked in job satisfaction measures.)

Other job satisfaction instruments include the Kerr Tear Ballot, Johnson's questionnaire, and Morse's job satisfaction indices. The Kerr Tear Ballot (Kerr, 1948) has ten 5-point items that are answered, anonymously, by making a tear at one of the five points. These items cover such areas as attitudes toward supervision, working conditions, co-workers, income, security, and the company in general. For example, two of the items are: "Do you have confidence in the *good sense of the management?*" and "What effect is your experience with the company having upon your personal happiness?" Kerr reports corrected split-half reliabilities of .65 to .82 with a median of .75. Most studies using this instrument compare Tear Ballot scores to such behavioral criteria as turnover and job tenure, frequently resulting in significant correlations.

Johnson (1955) developed a 99-item questionnaire on job satisfaction covering several work-related factors and primarily designed for use with teachers. He refers to the instrument as an "adjustment questionnaire" designed for "complete coverage of the factors and conditions influencing adjustment to work life" (1955, p. 29). Validity is inferred from the construction of the instrument, that is, from "a logical analysis" of existing scale items and job satisfaction literature, from ratings by ten judges, and from work characteristics rated important by teachers. Johnson reports a test-retest reliability of .90 and a correlation of .64 with self-estimates of job satisfaction for a group of 98 teachers.

Morse (1953) reports the use of four 4-item satisfaction indices derived from items used in a structured interview situation. Each item correlated highly with the other three items in its group. Morse states: "This method of developing measures makes the assumption that the items chosen for one index are all measuring the psychological variable which was originally defined" (1953, p. 14). Morse was interested in judging organizational effectiveness using employee satisfaction as a criterion. Although she had positive results, she points to the lack of "operational independence" in her technique of measuring need-satisfaction and selecting conditions contributing to need-satisfaction from interviews with the same people.

The problem of over-all job satisfaction vs. satisfaction with different aspects of the job deserves some additional consideration.

Factor analytic studies might throw some light on this problem.[1] For instance, Schreiber, Smith, and Harrell (1952) factor-analyzed data on five areas of job satisfaction and ended up with a two-factor classification: (a) job satisfaction and (b) knowledge of employee benefits. "Job satisfaction" included items from many areas, but had a concentration of items related to supervision.

Twery, Schmid, and Wrigley (1958), using a job satisfaction inventory with Air Force personnel, compared three methods of factor analysis that resulted in these five factors in common: (a) general attitude toward the job, (b) satisfaction with the supervisor, (c) satisfaction with the higher echelon, (d) satisfaction with living conditions, and (e) satisfaction with co-workers. In addition, the investigators found a tendency for a monotony-variety factor to emerge.

Bullock expresses job satisfaction as an attitude resulting from a "balancing and summation of many specific likes and dislikes experienced in connection with the job" (1952, p. 7). An evaluation of the job and the company by the worker is the job satisfaction attitude. Thus, according to Bullock, the worker may dislike the major portion of his work but have a favorable attitude toward the job when he feels he is attaining desired goals.

The studies cited suggest that for purposes of studying work adjustment it might be advantageous to have (a) a measure of over-all job satisfaction (such as Hoppock's scale) and (b) measures of satisfaction with the different aspects of the job.

Several other problems are involved in the measurement of job satisfaction besides those indicated above. Rosen and Rosen (1955) question the assumption frequently made by investigators that job satisfaction items about the same subject are equivalent even though these items may be worded differently. They worded items in three different ways, designed to investigate "standards, perception, and evaluation." The varied wordings stressed, respectively, (a) what ought to be done, (b) what was seen as being done, and (c) feelings about what was seen as being done. Their rationale was that ". . . satisfaction and dissatisfaction are related to the extent to which desires are perceived as being met" (1955, p. 305). From their study of union members they concluded that it is not advisable to treat answers to different-type questions as equivalent.

Strong (1958) questions the use of indirect items in job satisfaction measures. He suggests that the individual be asked whether or

1. For other factor analytic studies of employee attitudes see pp. 24-25, 26-27.

not he is satisfied with whatever factors are relevant to the situation being investigated. Weitz and Nuckols (1953) compared direct and indirect items in measuring job satisfaction and concluded that there was no advantage in using indirect items because direct items did as well or better in predicting job tenure. Also, direct items were less affected by the "halo" effect.

The most difficult problem, however, remains the problem of validation. Brayfield and Crockett comment: "Usually employee attitude indices are assumed to have some form of face validity; empirical validation is seldom attempted. The reader is expected to assume that the questionnaires measure what they are intended to measure" (1955, p. 411). Strong (1955, 1958) mentions the problem of establishing criterion groups for interest measures on the basis of "satisfaction," and notes that this problem persists for the empirical validation of job satisfaction measures.

Many studies separate the satisfied from the dissatisfied on the basis of scores on job satisfaction measures. In such cases job satisfaction is the independent variable, and the assumption is that the measurement taken actually means job satisfaction. For example, Stagner, Rich, and Britton (1941) classified the highly satisfied and the highly dissatisfied on the basis of an orally-administered 34-item questionnaire with the answers recorded on a 5-point scale from an "emphatic yes" to "emphatic no." These groups were then compared on such variables as estimated age, number of dependents, and length of service. Older workers and those with three or more dependents were more satisfied. Length of service did not follow the age trend.

Other studies use job satisfaction as the dependent variable. For example, Bullock (1952) separated various groups and compared them on job satisfaction scores. These groups include: (a) employees vs. ex-employees; (b) those rated satisfied on the basis of personnel records vs. those rated dissatisfied, and (c) those who recently received a pay raise or promotion and those who recommended the company to their friends vs. those who were looking for another job. Statistically significant differences in job satisfaction scores (on a modified Hoppock questionnaire) were obtained between groups. The differences were uniformly in favor of those groups hypothesized to be the more satisfied.

Factors and correlates of job satisfaction—Bullock's study is noteworthy as being one of the few attempts at the validation of a job satisfaction measure. Because of the paucity of validation stud-

ies in job satisfaction research, the significance of job satisfaction as an indicator of work adjustment might be understood best through a study of the factors and correlates of job satisfaction. Even in this respect, unfortunately, the voluminous literature on job satisfaction seems to be of limited assistance. A current complaint is that even recent studies, though based on facts, contribute little other than relationships between one or at most a few variables and job satisfaction. Strong (1958) states that most job satisfaction studies utilize inadequate measures in the first place, then pay little or no attention to the relationships between the factors studied. He cautions, "We need to develop adequate measures of each factor and determine the relationship to an adequate criterion before attempting a summary of all factors" (1958, p. 451). Katzell, having asserted that job satisfaction is a relevant part of morale, states: *"The measurement of morale is, then, a manifold.* We must endeavor to measure each of the several variables and attributes that are comprised in our conceptual network, and to ascertain their inter-relations" (1958, p. 73). Brayfield and Crockett comment: "Only infrequently are discussions of the correlates of employee attitudes found and these are almost never substantiated by empirical evidence" (1955, p. 396).

What are the factors of job satisfaction that appear in investigations and reviews of this topic? The factor analytic studies by Schreiber, Smith, and Harrell (1952) and by Twery, Schmid, and Wrigley (1958) have been mentioned. Hoppock (1935), from his study of satisfied and dissatisfied teachers, decided there were six major factors in job satisfaction: (a) manner of response of the individual to unpleasant situations; (b) adjustment of the individual to others both on and off the job; (c) status of the individual compared to status of others in his socio-economic group; (d) nature of the work in relation to the abilities, interests, and training of the individual; (e) desire of the individual for economic and social security; and, (f) loyalty of the individual as a worker to interests beyond his own. Factor (b) includes adjustment to co-workers and factor (f) includes attitudes toward management and the company, two aspects of the work situation mentioned frequently in other studies.

Morse (1953) states that job satisfaction depends on (a) job content, (b) identification with the company, (c) financial and job status, and (d) pride-in-group performance.

Worthy (1950a; 1950b) reports a study for Sears Roebuck, com-

paring groups of employees in different geographical areas. Using a tailor-made questionnaire, these factors were investigated: company in general, the local organization, local management, immediate supervision, co-workers, and working conditions. The questionnaire was supplemented by interviews. Worthy comments: ". . . studies indicate the existence of a highly complex set of interdependent factors which combine in subtle and obscure ways to produce a particular level of employee satisfaction or dissatisfaction" (1950a, p. 65). For example, he notes that when jobs were organized into small units (i.e., "over-specialization"), the job itself lost importance as a factor in satisfaction, and pay increased in importance.

Grove and Kerr (1951) ran intercorrelations on ten aspects of job satisfaction and concluded that "wages" and "liking for work associates" seemed to be the major components of the worker's job satisfaction.

The importance of the job itself in determining job satisfaction may be inferred from the findings and comments of many writers. Kristy (1952) considers satisfaction with the physical demands of the job in relation to the rewards as one component of job satisfaction. Hoppock and Super (1950) point out that there are irritations and disadvantages with any job that the worker must feel are worth enduring, and men feel better about their job when they choose it because of inherent interest in the work itself. The *Fortune* Survey (Roper, 1947c) found that feelings of being over-worked, added to other sources of dissatisfaction, led to over-all job dissatisfaction. Morse (1953) refers to "intrinsic job satisfaction," i.e., satisfaction with the work itself. Heron (1954c) also used "intrinsic liking for the work itself" as one "positive element" of his satisfaction criterion.

A related study by M. Hammond (1954) asked college freshmen what they rated important for success and satisfaction later in life. A 90-item questionnaire was developed from the answers given. The questionnaire was factor analyzed, resulting in the following five group factors: (a) financial success, (b) personal-social success, (c) technical satisfaction, (d) social-contact satisfaction, and (e) social-service satisfaction.

Another type of study is that which has the individual doing his own ranking of factors, or asks the worker questions concerning what he likes about his work situation, what satisfies and dissatisfies him, what he expects from the work environment, or why he is

leaving his present job. These studies also result in lists of factors regarded by the worker as important in his job environment.

Jurgensen (1947; 1948), using a ten-factor questionnaire, had job applicants rank these factors in order of their importance. With approximately 4,000 applicants, the factors were ranked in the following order for the men: (a) job security, (b) opportunity for advancement, (c) type of work, (d) pride in company, (e & f, tie) pay and co-workers, (g) supervisor, (h) hours, (i) working conditions, (j) benefits. Women differed from men in that they ranked type of work first, followed by security and advancement. Jurgensen also tabled rankings by age, educational level, and occupational subgroups.

Blum and Russ (1942) and Blum (1956) report other studies of expressed importance of job factors. Men stated preferences in the following order: (a) advancement, (b) security, (c) salary, (d) supervision, and (e) hours. Women had similar preferences except for a change in rank between supervision and salary, ranking the former as more important. Advancement was also relatively more important to large firm employees than to small firm employees. Desire for advancement was related to educational level in the expected direction.

Stagner, Flebbs, and Wood (1952) studied job satisfaction in railroad employees and found that these workers ranked "general qualities of supervision" as one important factor in job satisfaction, while "rating of present supervisor" was ranked as a factor of less importance. Other important factors were union-management relations, handling of grievances, and general working conditions.

Krugman (1955) found that satisfied scientific personnel credited "team work" with playing a major role in their satisfaction. Working conditions and personal satisfaction were also important, and Krugman concluded that scientists have the same attitudes toward the working situation as other types of workers.

The General Motors "My Job Contest" reported by Evans and Laseau (1950), used another method for investigating job factors considered important by the workers. Themes of the relatively unstructured "stories" on "My Job and Why I Like It" were tabulated and the most frequently mentioned (these were mentioned by at least 30% of the participants) were: (a) income, (b) interesting and important job, (c) pride in company, (d) fellow-workers, (e) immediate boss, (f) management, (g) working conditions, (h) se-

curity, (i) chance to get ahead, (j) benefit plans, and (k) safety and medical facilities.

Exit interview studies and those asking "why did you leave your last job" also list factors connected with reported sources of dissatisfaction. Smith and Kerr (1953) did a topical analysis of exit interviews from 48 companies and tabulated the sources of dissatisfaction. "Pay grievances" were mentioned twice as frequently as any other complaints. After pay, and in order, came "transportation, promotion, working conditions, poor health, job security, co-workers, housing, the job, supervision, confidence in management, interest in employee welfare, freedom of communication with higher levels, recreation, and method of wage payment" (1953, pp. 344-345).

Palmer, Purpus, and Stockford (1944) question whether exit interviews obtain honest and reliable answers to why workers quit. Furthermore, to Palmer, *et al.*, most analyses of reasons get at "apparent reasons" or symptoms and not the "real reasons" or causes of voluntary job termination. They believe it is necessary to interview the worker *after* he has left the job, not while he is leaving. They interviewed 421 ex-aircraft industry employees two to four weeks after quitting, grouping their reasons as either "occupational" or "personal." Occupational reasons, in order of frequency of mention and representing 48% of all reasons were: *"placement, desire to take another job, general dissatisfaction, wages, shift, excessively heavy work, supervision,* and *working conditions"* (1944, p. 114). The personal reasons (the remaining 52%) were: *"health, child care, transportation,* and *home responsibilities"* (1944, p. 114). Reasons for leaving were primarily occupational for men, primarily personal for women.

Reynolds and Shister (1949) investigated job satisfaction by asking workers why they left their previous job, and for what reasons they were satisfied or dissatisfied with their present job. Essentially the same reasons were given for leaving the last job and for current dissatisfaction. The five factors of primary importance to satisfaction were: (a) physical characteristics of the job; (b) closeness of supervision; (c) adequacy of wages; (d) treatment by the company; and (e) intrinsic interest in the work. Job security was generally important to satisfaction, and wages were given more often as a source of dissatisfaction. Interest in the work included being allowed to use one's skills.

The studies reviewed above emphasize the importance of including measures of satisfaction with various job factors as indicators of

work adjustment. The important job factors seem to be the following: (a) pay, (b) co-workers, (c) supervision, (d) type of work (job demands or intrinsic job satisfaction), (e) working conditions, (f) identification with company, (g) over-all job satisfaction, (h) security, (i) management, and (j) opportunity for advancement.

Studies on the correlates of job satisfaction indicate the desirability of including these variables in the study of work adjustment. As noted earlier, Jurgensen (1947) and Blum and Russ (1942) found some differences between men and women in their job factor preferences. Herzberg, Mausner, Peterson, and Capwell (1957) report that of 14 studies they reviewed, six showed women more satisfied with their jobs than men, three showed men more satisfied, and five showed no sex differences in job satisfaction. Brayfield, *et al.*, (1957) found a difference between men and women in the relationship of general satisfaction level to job satisfaction. Strong (1958) goes as far as to question the practice of using the same measuring tool to determine satisfaction of both men and women since the requirements for satisfaction may differ with the sexes.

Age is another correlate that must be considered. Super (1939) found satisfaction in the 20 to 24 age group, dissatisfaction between 25 and 34, satisfaction from 35 to 44, then another decrease in satisfaction with ages from 40 to 54. Heron (1954c) found no such cyclical changes in satisfaction with age, although he did find a slight and significant correlation between job satisfaction and age. Herzberg, *et al.*, (1957) conclude from their review of the literature, that age trends in satisfaction persist even with length of service held constant.

Education has been mentioned as another correlate. Jurgensen (1947) reports that changes in job factor preferences were affected more by educational level than by age. Changes with age were not linear.

Vollmar and Kinney (1955) investigated the relationship of age and education to job satisfaction. They found that more dissatisfaction was expressed in higher educational level groups. The younger the worker, regardless of educational level, the more the expressed dissatisfaction. Vollmar and Kinney concluded that education was probably more important than age in job satisfaction because of the expectations of the workers. Those with college education expected more from work than those with high school and grammar school educations.

Schreiber, Smith, and Harrell (1952) found that education was

related to the feeling of ability to advance; freedom in doing one's job was related to freedom in expressing dissatisfaction; and satisfaction with tools and equipment was related to lack of grievances. They also found that quality of supervision was related to job satisfaction.

In their review of job attitude research, Herzberg, *et al.*, (1957) summarize research on characteristics of dissatisfied workers. The major characteristics reviewed include age, sex, education, intelligence, personality and adjustment, occupation, length of service, income and position, marital status and number of dependents, work history, geographic location, physical disability, social class, and ethnic group.

Super (1939) investigated the relationship of occupational level to job satisfaction. He classified jobs into six levels from professional at the top to unskilled at the bottom. The relationship was not quite linear. For example, the higher level blue collar workers scored higher in "satisfaction" than did low-level white collar workers. Several studies since Super's also have shown increased satisfaction with higher prestige jobs (Centers, 1948; Roper, 1947a; Strong, 1955).

Centers' (1948) study on the "motivational aspects of occupational stratification" was based on the hypothesis that the individual's satisfactions, desires, aspirations, and goals are conditioned or determined by his present role and level of achievement. He found that the frequency of job dissatisfaction differed for groups of workers at different occupational levels. In addition, stated causes of satisfaction or dissatisfaction and what the workers desired in their jobs were found to vary with occupational level.

Since the pay continuum correlates highly with the prestige continuum over the entire range, pay, too, has been found related to job satisfaction. Stagner, Rich, and Britton (1941), for example, found attitude toward pay to be the most important factor in distinguishing highly satisfied and highly dissatisfied defense workers. Although several writers begrudge the importance of economic factors, stressing that the old idea of "the economic man" is erroneous, the pay factor appears consistently in most lists of job satisfaction factors. Some of the complexity involved with the pay factor is illustrated in the *Fortune* Survey (Roper, 1947a) that found differences in the relative importance of income and security for employees at different occupational levels.

Using liberal arts graduates for subjects, Inlow (1951) found satisfaction related to the type of occupation, pay, job tenure, and

job status. These correlates are not different from those investigated in other studies but, as with occupational level studies, the population being investigated can lead to differences in the relative importance of correlates.

Weitz and Nuckols (1955) investigated job satisfaction among life insurance company employees. They noted that training, supervision, and insecurity of new workers were related to dissatisfaction.

Van Zelst (1951), using a job satisfaction questionnaire and a fellow-employee-rating sheet on a sample of construction workers, found that job satisfaction and worker popularity correlated .82. The popular worker expressed much greater satisfaction than did the disliked worker.

McNaughton (1956) investigated the change of attitudes with time after quitting the job. The longer the period of time since quitting a job, the less interest in returning to that job. Also, the reasons for quitting change from "enticements" of other jobs to dissatisfactions with the old job as the period of time since quitting lengthens.

Is job satisfaction related to general satisfaction? Weitz (1952) proposes that job satisfaction be interpreted in light of a general satisfaction index. He hypothesizes that the worker with a high general dissatisfaction score is less likely to quit his job than one with low general dissatisfaction even though both have a large number of specific job dissatisfactions. He developed a Test of General Satisfaction and found that scores on this test correlated .39 with job satisfaction scores in the study reported.

Brayfield, Wells, and Strate (1957) studied the "interrelationships among measures of job satisfaction and general satisfaction." Using the Brayfield-Rothe job satisfaction inventory, the SRA Employee Inventory, the Rundquist-Sletto Morale Scale and the Weitz Test of General Satisfaction, they found a significant relation between job and general satisfaction for male workers, but not for female workers. With males, the Brayfield-Rothe scale correlated .32 with the General Satisfaction Test and .40 with the SRA inventory. With females, the respective correlations were .23 and .20. They interpreted this to mean that because work is important to men, job satisfaction can play a major role in general satisfaction. Since work is not the center of life for women, however, there is no relationship between job and general satisfaction. Brayfield, *et al.*, concluded that general satisfaction does not necessarily determine job satisfaction although job satisfaction may determine general satisfaction.

Woods (1944) surmised that a general satisfaction factor gov-

erned the elevation of the total profile of subscale scores on his job satisfaction scale, whereas the importance of various job factors underlay the relative positions of the subscale scores.

From the preceding review, the following observations relevant to a definition of work adjustment might be made:

1. The results of job satisfaction research sufficiently justify the inclusion of job satisfaction measures among the major indicators of work adjustment.

2. Two types of job satisfaction measures seem desirable: a measure of over-all job satisfaction, and a measure of satisfaction with specific job-related factors. The literature suggests a difference in results and conclusions from the use of these two types of measures. The need for more studies into the interrelationships among over-all job satisfaction and satisfaction with specific job-related factors is worth noting. It would seem advantageous to include both types of measures as indicators of work adjustment.

3. The job-related factors most frequently mentioned as significant to job satisfaction are pay, co-workers, supervision, type of work, working conditions, identification with the company, security, management, and opportunity for advancement. Job satisfaction measures designed to reflect satisfaction with specific job-related factors should include at least these factors.

4. The requirements of good measurement, such as reliability and validity, have often been overlooked by job satisfaction researchers. Methodological problems, such as item wording, also should be studied thoroughly. With respect to the choice between direct and indirect items, the evidence seems to favor the direct approach.

5. Several correlates of job satisfaction add to the meaning of work adjustment, and measures of these correlates might be considered as indicators of work adjustment. These include: (a) wage progression, (b) advancement within the company, (c) steadiness of employment, (d) turnover, (e) worker popularity, (f) grievances, and (g) the utilization of one's abilities.

6. Other correlates studied seem to be important to the understanding of job satisfaction and therefore of work adjustment. Some of these correlates are age, sex, education, occupation and occupational level, personality, general adjustment, and general satisfaction.

III. The Literature on Morale and Employee Attitudes

Another source of criteria and correlates for work adjustment is the literature on industrial morale and employee attitudes. This is indicated by the following comments on morale:

In a symposium on morale, Guion states: "Morale is the extent to which an individual's needs are satisfied and the extent to which the individual perceives that satisfaction as stemming from his total job situation" (1958, p. 627). Morale defined this way, Guion continues, has these five attributes: (a) it comprises many factors; (b) it is basically an attribute of the individual; (c) it exists in relation to the job; (d) it is a function of motivational forces; and (e) it applies to any employee at any level or in any job classification. According to Stagner (1958), in the same symposium, morale depends on the individual's perception of having his own motives satisfied through cooperation with the group. Katzell, also in this symposium, describes morale as "a condition of congruent motivation among members of a group, resulting in relatively high levels of energy expenditure toward common goals having positive valence" (1958, p. 73).

Since the publication of findings from the widely discussed Hawthorne experiments (Roethlisberger & Dickson, 1939), research on morale and employee attitudes has proliferated to extreme proportions. Research in this area has often overlapped with research on job satisfaction, probably because job satisfaction was presumed by many researchers to be one of the determinants or components of morale. The resulting confusion in terminology has already been noted in the preceding section.

It would seem from the many terminological discussions that the simplest distinction is, as Brayfield and Crockett (1955) note, that studies on morale deal with groups, while job satisfaction studies deal with individuals. Both morale and job satisfaction deal with employee attitudes.

This part of the bulletin reviews pertinent studies on morale and studies on employee attitudes which were not explicitly specified as studies of job satisfaction. Because of existing terminological difficulties, consideration of the ways by which morale and employee attitudes are measured seems to require initial attention.

The measurement of morale and employee attitudes—Measures of morale and employee attitudes may be classified in several ways.

For example, Kornhauser (1944) lists three types of employee attitude measures: (a) free answer interviews—guided and unguided, (b) formal interviews with simple choice responses (oral attitude questionnaires), and (c) printed questionnaires based on check lists, dichotomous choice, or scaled choices. Blum (1956) lists six types of morale measures: (a) impressionistic method, (b) guided interview, (c) unguided interview, (d) questionnaire, (e) attitude scale, and (f) indirect measures. Katzell (1958) lists four types of measures for variables comprising the morale concept: (a) measures of job satisfaction, (b) audit of the work situation, (c) job situation questionnaires, and (d) behavioral or performance measures.

With respect to actual research usage, interviews, questionnaires, and observation were methods adopted by early investigators of employee attitudes. Richards (1930) reports a study using the interview, a "method of free conversation," to uncover attitudes of industrial employees. He concludes: "It is possible to secure by this interview method a knowledge of what is on the worker's mind and an ability to predict his reaction to specific plant conditions" (1930, p. 289). Kornhauser and Sharp (1932) describe the use of both interviews and questionnaires in their study of employee attitudes. They give these reasons for the usefulness of a questionnaire: it can reach many individuals in a short time, and it secures specific and comparable results that can be handled statistically. Hersey (1932) reports the use of on-the-job observations and a "common sense interpretation of feeling tone" to determine the "emotional state" of workers.

More recent studies based on interview records are those by Marriott (1953), Marriott and Dennerly (1955a; 1955b), Wedell and Smith (1951), and Carey, Berg, and Van Dusen (1951). Marriott (1953) argues that because objective attitude measures are still not adequate for industrial surveys, and indirect methods have dubious value, use of the interview is the only alternative. According to him, the interview provides a good picture of morale because workers are quite articulate about their views toward work. However, he stresses, when using the interview, there is need for good sampling, adequate statistical safeguards, and the adequate establishment of relationships with both workers and supervisors.

Marriott reports having discussed these eight main topics in his attitude interviews: work tasks, hours, shift, wages, pay system, management policies, supervision, and co-workers. Between-interviewer consistency ranged from .59 to .77. Marriott could not find

any evidence of interviewer bias after testing for several possible sources of bias. For example, he found no differences in results for initial interviewees and for later interviewees.

Marriott and Dennerly (1955a; 1955b) compared three types of questions in the interview: yes-no questions, self-assessment questions (with responses chosen from a 1-to-5 scale), and open-end questions. Analysis indicated that interview data were consistent regardless of the type of question used. Marriott and Dennerly also analyzed the data on inter-interviewer differences and concluded that most of these differences could be explained on the basis of interviewee sample differences.

Wedell and Smith (1951) compared self-ratings, ratings by the interviewer, and ratings by a third party based on interview records. Third-party ratings and self-ratings were in fairly close agreement, but interviewer ratings tended to overestimate self-ratings. Interviewers did not give consistent ratings, and well-trained interviewers were less consistent than interviewers with less training in estimating self-ratings.

Carey, Berg, and Van Dusen (1951), using the written records of trained interviewers, gave specific instructions to four groups of independent judges for rating job satisfaction from these records. Comparing the four mean ratings, they found no differences among the four groups.

It would seem from the studies cited that the interview is a useful research tool in the study of employee attitudes, and therefore, of work adjustment. However, results obtained by interview may differ from results obtained by other methods. Not enough is known as yet about these possible differences to enable the researcher to decide between alternative methods.

Hull and Kolstad (1942) used questionnaires consisting of items relating both to general morale and to specific factors (such as pay, hours, working conditions, and supervision). According to them, "... there is no acceptable external criterion of morale against which the items can be validated" (1942, p. 352). Therefore, they related specific factors to general morale and to personal characteristics of the individual.

Webb and Hollander (1956) studied naval aviation cadets who had lived together in groups of 25 for four months of preflight training. They compared three types of morale measures: self-estimates, peer-group estimates, and a questionnaire. Self-estimates and peer-group estimates of morale were made with reference to the indi-

vidual's group and were based on "interest in and enthusiasm for naval aviation." The questionnaire consisted of 12 differentiating items from a previously developed 20-item morale questionnaire. Using a criterion of "pass" vs. voluntary withdrawal after five months of flight training, they found that peer- and self-estimates correlated highly with the criterion (.90 and .83 respectively), whereas questionnaire scores correlated only .30 with the criterion.

Rapid development of mental test theory and techniques in recent years has led to increasing utilization of attitude scale methodology in the measurement of morale and employee attitudes. Three examples of the attitude scale approach are the SRA Employee Inventory, (University of Chicago Industrial Relations Center, 1951); the IRC Employee Attitude Scale (Fox, Albers, and Hellweg, 1954; Yoder, Heneman, and Cheit, 1951); and the Woods Scale (Woods, 1944). The SRA Employee Inventory, developed at the Industrial Relations Center of the University of Chicago, consists of 78 three-response items grouped into 15 scales of from two to seven items each. These scales are: job demands, working conditions, pay, employee benefits, friendliness and cooperation of fellow employees, supervisor-employee interpersonal relations, confidence in management, technical competence of supervision, effectiveness of administration, adequacy of communication, security of job and work relations, status and recognition, identification with the company, opportunity for growth and advancement, and reactions to the inventory. No norms are directly available, although scores are given in percentiles. Presumably, these percentiles are based on "more than 200,000 workers in scores of business organizations [who] have been given the Employee Inventory." [2] No reliability or validity data are available, either.

The Employee Attitude Scale, developed by the Industrial Relations Center, University of Minnesota, has seven subscales of from 5 to 15 items each, a total of 54 Likert-type items, and two open-end questions. The subscales are: general morale, communications, co-workers, hours and pay, supervision, type of work, and working conditions. Reliability for the total scale is .93 (Fox, *et al.*, 1954). Subscale and item norms are available for supervisory and non-supervisory groups and for sub-groups based on sex, age, education, seniority, union membership, shift, and method of compensation (salaried vs. non-salaried). No validation studies have been reported.

The Woods Scale (Woods, 1944) has 17 subscales: job instructions,

2. Sci. Res. Assoc. *A report on the SRA Employee Inventory.* Authors: (no date), p. 2.

assuming responsibility, suggestions, supervision, knowledge of management plans, work meaning, employee co-relations (A), employee co-relations (B), employee-public relations job attitude, in-service training, career opportunity, compensation, work environment, work recognition, promotion, and outside factors and interests. These subscales have from 4 to 10 items each, the total scale consisting of 97 items. Each item has a Thurstone-type scale value, determined by the ratings of 68 supervisors. The Woods Scale has some shortcomings, prominent among which are: (a) the fact that scale values are based on supervisor judgments, not those of employees; (b) many items in a subscale have similar scale values; and (c) items generally have extreme scale values, with neutral opinions not being represented adequately.

Other methods used in morale measurement include projective techniques. Haire and Gottsdanker (1951) measured morale using interviews with open-end questions and two projective techniques: story completion and the Thematic Apperception Test. They found that the relative importance of factors depended on the way the interviewee was questioned and what he happened to be thinking about when he responded.

Friesen (1952) used another projective technique, the incomplete sentence, to measure employee attitudes. Although significant correlations with employment stability and peer acceptance were obtained, it was not known whether or not the method would improve on more direct methods.

Burwen, Campbell, and Kidd (1956) used a sentence completion test to study attitudes of Air Force cadets about their superiors and subordinates. The correlation of sentence completion test scores with scores on a direct attitude scale measure was only .32. If this finding is confirmed by other investigators, it might mean that direct and indirect techniques measure different areas of attitudes.

The error-choice method, an indirect technique of attitude measurement, has also been used (K. R. Hammond, 1948). In this technique, the alternative answers err in opposite directions from the facts, and it is assumed that favoring one answer reflects a different attitude from that indicated by choosing the other alternative. Despite its logical appeal, the error-choice method has some limitations (Weschler, 1950): (a) items must be kept up-to-date and remain disguised; (b) the intensity of attitudes cannot be judged adequately; (c) the direction of scoring is arbitrarily predetermined; (d) the forced-choice format does not provide for a "neutral" choice; and

(e) the scoring key has to be developed on a population with known attitudes. Weschler thought, however, that the error-choice method might be effective in uncovering extreme attitudes.

Krech and Crutchfield (1948) assert that the measurement of attitudes is "necessarily indirect," but that there are degrees of indirectness. In a situation where any change of attitude is to be measured after the "experimental treatment," indirect measures are essential. When indirect, the measure does not tend to affect the attitude itself, whereas an explicit question about the object of the attitude could affect the attitude. (Cf. Discussion on direct vs. indirect measurement in the previous chapter, pp. 9-10.)

Other problems occur in the measurement of morale and employee attitudes besides the question of which method of measurement to use. Several of these problems are noted below.

Brayfield and Crockett (1955) differentiate studies in which a single index of attitudes is used from those using multiple indices. They accept the value of identifying components of morale, but raise the problem of the uses of subscales. Rather than advocate equal weighting for subscales by adding subscale scores to get a total morale index, Brayfield and Crockett propose: "The possibility remains that a more fruitful method of analysis would be to consider the subscales independently or as configurations rather than to combine them additively" (1955, p. 414).

Another problem mentioned by Brayfield and Crockett (1955) involves the relationship of undimensionality of subscales to their reliability. Reliability of measuring instruments is increased by adding items, although there is a point beyond which reliability is no longer increased substantially by additional items. However, in measuring attitudes, the addition of items may change the dimension being measured, with the result that increased reliability leads to increased dimensional ambiguity. Krech and Crutchfield (1948) also stress the idea that a reliable scale is not necessarily unidimensional.

Reports on the use of different factor analytic methods indicate difficulties in the use of even these advanced techniques. A series of three articles in the 1954 *Personnel Psychology* journal illustrates the lack of agreement on the factors underlying one attitude scale which results from the use of different factor analytic techniques. Baehr used the SRA Employee Inventory with two groups in an attempt to determine ". . . what the employee regards as the essential components of the work situation" (1954, p. 319). The first group of workers (junior executives, private secretaries, and stenographers)

was a higher status group than the second group of factory workers and routine clerical workers. Baehr found four factors common to these two groups: (a) satisfaction with immediate supervisor, (b) job satisfaction, (c) integration in the organization (primarily identification with the company), and (d) friendliness and cooperation of fellow employees. Three factors specific to the higher status group and four factors specific to the lower status group were also identified.

Ash (1954) used the SRA inventory as one of a battery of instruments given to employees of a steel company. He factor analyzed the data on the SRA inventory, the Brayfield-Rothe Job Satisfaction Scale and the Thurstone Temperament Scale, deriving seven factors. Although there was some overlap with Baehr's findings, the agreement was far from complete.

In the third article, Wherry (1954) criticized the oblique method of factor analysis used by Baehr and Ash, believing that a general factor should have been found. Using an "orthogonal re-analysis" on the three populations investigated by Baehr and Ash, Wherry derived "a large unnamed general factor and four group factors," common to the three groups. The group factors were: (a) working conditions and environment, related to status, (b) financial reward, (c) supervision, and (d) effective management and administration.

A later study with the SRA inventory was reported by Dabas (1958). He found (a) an unnamed generalized factor, (b) five subgeneral factors: over-all opinions of working conditions, general satisfaction with financial rewards for effort, over-all confidence in management, over-all opinion about immediate supervisor, and over-all satisfaction with self-development; and (c) seven group factors: work load (Baehr's "job satisfaction" factor), environmental setting, fringe benefits, general satisfaction with fellow workers, belief in justice and interest of management, belief in organizing ability, and general satisfaction with personnel actions.

These findings are not very encouraging for the investigator in search of "pure" factors. Different factor analytic methods applied to the same data can yield substantially different results. Factor analyses on different populations can yield different results. Obviously, there is a practical limit to the refinement of attitude measures by the factor analytic approach.

Other studies investigate more limited, but important, methodological problems. Dunnette and Heneman (1956) studied the influence of the scale administrator on employee attitude responses. Us-

ing the IRC Employee Attitude Scale, they compared results for an attitude survey given by a neutral administrator with a survey administered by the company personnel manager. There were fewer favorable responses and fewer inhibited answers to open-end items from the group surveyed by the neutral administrator.

A study reported by Kirchner and Uphoff (1955) on the effect of grouping scale items on a union attitude measurement scale found that results were not affected by the order of presentation of items. It did not matter whether the items were grouped by topics or presented in random order.

Dunnette, Uphoff, and Aylward (1956) note that when the attitude item involves specific knowledge, the "undecided" response can mean (a) truly undecided, or (b) do not know enough to answer the question. These writers advocate using an "I don't know" response for this type of item.

Baehr (1953) compared SRA inventory results for six groups, each group scored by a different scoring procedure. Simplified scoring procedures (e.g., 3-point scale with items grouped by categories) yielded results comparable to those with the use of more complicated procedures (e.g., weighted 5-point scale with randomized items). Correlations between groups (each group compared with every other group) ranged from .94 to .99.

On the whole, the evidence shows that attitude scaling techniques and the interview method seem to be the two most promising approaches to attitude measurement to date. Each method may measure areas not tapped by the other. However, the attitude scale approach is the more practicable for collecting data on large groups of people. Moreover, it has the added advantage of being a more standardized (i.e., uniform) data collecting method.

Factors and correlates of morale and employee attitudes—Several factor-analytic studies of employee attitudes have appeared in the recent literature. The following are illustrative:

Roach (1958), using items as the unit of analysis, found twelve factors resulting from a modified centroid factor analysis. In addition to a general or "halo" factor, and a sub-general factor of general attitude toward supervision, there were ten group factors: (a) pride in company, (b) intrinsic job satisfaction, (c) satisfaction with setting up and enforcing job standards, (d) satisfaction with supervisory consideration, (e) work load and pressure, (f) feeling that management is interested in the individual worker, (g) salary administra-

tion, (h) communications, (i) development and progress, and (j) co-workers.

Wherry (1958) reports a study using subtests as the unit of analysis, which resulted in a general factor and these five factors: (a) working conditions, (b) financial reward, (c) supervision, (d) management, and (e) personal development.

Gordon (1955) defining industrial morale in terms of feelings of need-satisfaction, factor analyzed both morale and need-satisfaction scores of industrial employees. The factors he derived were: (a) general satisfaction, (b) recognition of status, (c) self-respect, and (d) an undefined factor.

Ganguli (1956) did a factor analysis on the results of a morale survey and found two of three factors related to supervision. These two factors were satisfaction with the technical and organizational aspects of supervision, and the satisfaction derived by the workers from the supervisor as a person. The third factor was satisfaction derived from the benefits of employment and over-all confidence and satisfaction with the organization.

Herzberg, *et al.*, (1957), after an extensive review of the literature, decided that ten major job factors were related to job attitudes. These job factors were: intrinsic aspects of the job, supervision, working conditions, wages, opportunity for advancement, security, company and management, social aspects of the job, communications, and benefits.

From his review of the literature, Maier concludes that the most important factors derived from morale studies were "mutual sacrifice, participation in group activity, the experience of progress toward a goal, tolerance and freedom within the group, and confidence in leaders" (1955, p. 121).

The studies cited above and studies mentioned earlier (Fox, *et al.*, 1954; Baehr, 1954; Ash, 1954; Wherry, 1954; and Dabas, 1958) indicate that certain factors (or aspects) of the work situation do tend to appear consistently in the listings. These factors (in order of frequency of mention) are: supervision, wages (financial reward), working conditions, co-workers, identification with company, advancement and promotion (self-development or self-improvement), communication, management and administration, job demands (type of work), and over-all job satisfaction.

What correlates have been found for morale and employee attitudes that might be important to work adjustment? Hull and Kolstad (1942), in a wide-ranging investigation of 43,962 workers, re-

ported several significant relationships between morale and other factors, such as the skill level of the worker, job tenure, and age. They described morale as a function of the worker's general attitude toward various job factors, including type of supervision, amount of responsibility, and the amount of recognition and respect the worker felt he received. Type of work and wage level were not found related to morale in the Hull and Kolstad study, although these two variables are often significant. In an earlier study of department store employees, Kolstad (1938) found job tenure related to his measure of morale.

Child's survey (1941) differentiates studies on the morale of groups from studies on individual morale. In these studies, group morale was found related to financial incentives, relationships with superiors and co-workers, opportunity to remedy frustration or at least express annoyance, events in the worker's outside life, and individual personality, abilities, and skills. Individual morale was found related to occupational level and income, economic security, conformity, living conditions, enjoyment of leisure-time activities, intelligence, and possibly age.

Bernberg (1952) reports a relationship between morale scores and performance indicators when groups were compared, but not when individuals were compared. Performance indicators used were absences, tardiness, short-time absences, trips to the medical unit, merit rating, and a composite performance indicator score.

Since morale, for most investigators, refers to the work group, two factors that gain in significance are supervision and co-workers. Likert and Seashore (1954) maintain that worker motivation and morale is a function of the type of supervision, human relations on the job, and the job itself (including skill demands and variety of activity). From a review of studies of supervisory relations, they conclude that supervisors who saw their job in human-relations terms and did not stress production, efficiency, and rule enforcement, led higher morale groups than did supervisors concentrating on production. Productivity was also higher in these high morale groups.

Another study involving supervision and production is reported by Nagle (1954). In an office situation, a high relationship was found between attitudes toward the supervisor and productivity rate of the department. Supervisors who rated well with the employees were seen as more sensitive to the employees' attitudes. At-

titudes toward the supervisor were related also to attitudes toward the company and plant management.

Johnson (1954) reports that high morale of employees is related to both their being better acquainted with the supervisor and their being able to predict the supervisor's behavior.

Hollander and Bair (1954) investigated attitudes toward authority figures in a naval aviation training school. They found that successful and unsuccessful cadets differed in their attitudes toward their instructors. Successful cadets stressed interpersonal aspects, while unsuccessful cadets stressed the competency of the instructor as a teacher.

Foa (1957), studying Israeli sailors, related supervisory attitudes to worker expectations. Permissive officers were found to satisfy both authoritarian-expecting and permissive-expecting crew members. Authoritarian officers gave more satisfaction to the authoritarian-expecting crew members.

Browne and Nietzel's (1952) study of supervision and morale was concerned with the morale of female supervisors in relation to self-estimates of their responsibility, authority, and delegation of authority. Morale scores tended to correlate positively with supervisory level and negatively with the supervisors' estimates of their responsibility, authority, and delegation of authority. The closer one's self-estimates were to superior- and peer-judgments, the higher the morale score tended to be.

The significance of co-workers in determining morale is indicated in many studies. For example, Bernberg (1952, 1953) reports investigations on the "socio-psychological factors in industrial morale," stressing the importance of group interaction factors. These factors include: (a) the satisfaction derived from working together, (b) effects of group effort on production, and (c) the intimacy of workers both in and out of the work environment.

Haire and Gottsdanker (1951), judging from the frequency with which reasons are given for liking and disliking jobs, emphasize the importance of "associates" for liking the present job.

Ohmann (1955) expresses the opinion that the industrial group has become the most important motivational factor for the modern industrial worker. According to him, because the job has become the center of the individual's life, it is through the job and the individual's dependency on the work group that the individual experiences satisfaction.

Mayo and Lombard (1944) investigated labor turnover in aircraft

plants during World War II. They observed that where "work teams" were formed there was less absenteeism. The satisfaction of the workers depended to a great extent on the spontaneous formation of these "teams" that were capable of performing some management functions such as setting production goals and carrying out disciplinary measures.

What might be learned from the preceding review that contributes to a definition of work adjustment?

1. Measures of morale and employee attitudes are important indicators of work adjustment. Morale, defined as a group phenomenon, may be measured through the use of employee attitude measures. The complexities of employee attitude measurement, however, are quite apparent from the foregoing review. It appears that attitude measurement has not as yet attained an acceptable level of technology. The problem of unidimensionality vs. reliability has not been satisfactorily resolved. Different factor-analytic procedures produce differing results. Findings on one population do not agree with findings on another. Attitude scores are influenced by extraneous factors such as the person who administers the scale. As in job satisfaction, validation remains the major problem. Perhaps the best a researcher can do is to choose a scale of sufficient reliability which seems to cover the major attitudinal areas.

2. Certain major attitudinal areas have appeared consistently in the studies reviewed. These are: supervision, wages (financial reward), working conditions, co-workers, identification with company, advancement and promotion (self-development or self-improvement), communication, management and administration, job demands (type of work), and over-all job satisfaction. It is interesting to note that the same attitudinal areas (or factors) that appear in listings for morale and employee attitude studies also show up in listings for job satisfaction studies (see page 18).

3. Furthermore, the correlates of morale and employee attitudes, at least those that have been studied, are similar to the correlates of job satisfaction. These include possible indicators of work adjustment (such as tenure, wage progression, evaluations by superiors and co-workers, productivity and efficiency indicators, and turnover), and personal correlates such as age, sex, education, and occupation.

4. Attitudes, i.e., individual satisfaction or group morale, can be understood best in terms of their relationship to behavioral crite-

ria, such as productivity, turnover, tenure, absenteeism, accident rates and safety record, and incidence of disciplinary problems and grievances. A definition of work adjustment that does not include these behavioral criteria would be incomplete, to say the least.

5. It is worth repeating that one major deficiency of past research has been the failure to study relationships among total attitude measures, subscales, and correlates. The need for such study is of particular importance to any study of work adjustment.

6. It is rather surprising that, despite the great amount of effort spent (and being spent) on attitude research, very few attempts have been made to investigate changes in attitudes. As indicators of work adjustment, changes in attitudes are perhaps as significant or even more significant than attitude readings at one particular point in time. Thus, for example, an individual may be dissatisfied with his co-workers initially, but subsequent readings may show a steady increase in satisfaction. These changes would indicate "good" adjustment, whereas the initial reading would indicate "poor" adjustment. Whether one uses a job satisfaction index, a measure of morale, or an employee attitude scale, there is a definite need for the longitudinal type of study.

IV. Related Literature on Worker Motivation

Viteles advises: "To increase productivity, heighten job satisfaction, and raise the level of employee morale, it is necessary to arouse the intelligent interests of the employee" (1953, p. 14). Nowhere is the problem of arousing the worker's interests more acute than on jobs requiring repetitive operations.

Can a repetitious task be interesting? Much has been written about the deleterious effects of repetitive work necessitated by the industrial age and automation. Most industrial psychologists, however, have been more guarded in their comments on repetitive jobs. Munsterberg (1913) asserts that psychologists do not have to endorse the belief that division of labor necessarily causes "mental starvation" for laborers. He suggests that novelty is quickly lost on most jobs, even for operators of complicated machines, and the important factor becomes the worker's interest in production. Munsterberg gives examples of workers doing routine tasks who were interested in their jobs, and workers with seemingly varied tasks who complained of monotony.

Wyatt (1929) states that boredom depends on the personal characteristics of the individual (intelligence, ability to concentrate on the work, and temperament) and on the type of job. He maintains that boredom does not occur if the mind is kept actively engaged, if not on the work, then on something else. Wyatt points out that boredom can also result from a feeling of lack of completion of the product such as that experienced in assembly-line production. No empirical evidence, however, is given in support of these statements.

Thompson (1930) assumed that monotony was attitudinal, therefore a characteristic of the worker and not of the job. He used pooled ratings to judge "susceptibility to monotony" and related these ratings to (a) intelligence test data, (b) emotional history records, (c) production records on uniform and varied tasks in an experimental setting. "Susceptibility to monotony," Thompson found, could be calculated from the ratio of productivity on uniform tasks to productivity on varied tasks, and was related more to emotional instability than to intelligence.

P. C. Smith (1955) used a questionnaire to investigate the susceptibility of female workers to monotony. She found that "either feelings of monotony color all of the attitudes of the workers toward their families, personal lives and work, or these feeling are a reflection of a general dissatisfaction (1955, p. 327). Younger workers and

"daydreamers" tended to be more susceptible to monotony whereas differences in educational level produced little, if any, differences in susceptibility. Smith agrees that monotony is not merely a function of the work itself but is related primarily to individual factors. In an earlier study, P. C. Smith (1953) found that feelings of boredom did not show an appreciable relationship to daily work output curves.

Walker and Marriott (1951) used interviews to study attitudes toward factory work in British heavy industry. They concluded that the most common source of interest in the job was the variety of job tasks. Conversely, there was evidence that workers on more mechanized jobs were less satisfied than others. However, they found large differences among individuals in their feelings of monotony for some types of work. Dissatisfaction was often expressed in terms of lack of skill for the job. On the other hand, some workers were more satisfied with simple tasks and not having responsibility. Walker and Marriott concluded that monotony resulted from the individual's perception of differences between his estimate of his skills and the skill demands of his job.

Other studies point to the nature of the work tasks as an important factor in determining the interest of a worker in his job. For example, Walker and Guest (1952) found that interest in the work itself varied directly with the number of operations performed, and indifference varied inversely with the number of operations. Likert and Seashore (1954) concluded from their review of several (Michigan) studies that there seemed to be more job satisfaction when there were high skill demands, a variety of activity, and the opportunity to make decisions. However, they also pointed out that many individuals did like routine work.

The evidence, then, indicates that measures of boredom and monotony may be significantly related to the nature of the work tasks as well as to individual factors. An attitude scale used as an indicator of work adjustment should provide for items that measure boredom and monotony.

Thus far in this review of the literature, "work adjustment" has been indicated by "low" or "high" scores, or by changes in these scores from "high" to "low" and *vice versa*. This is true of job satisfaction and employee attitudes. Another type of work adjustment indicator might be in terms of discrepancies, as, for example, between needs and satisfaction, between aspiration and achievement.

Super (1951) reviews the usual criteria of vocational success, then suggests that success be re-defined in terms of "adjustment." He notes that discrepancies between needs and their satisfaction on the job would increase in importance were "adjustment" the criterion.

Ross and Zander (1957) attempted to determine the strength of five needs related to the work situation and to measure the extent to which each need was met by the employment situation. These five needs were: affiliation, achievement, autonomy, recognition, and fair evaluation. Ross and Zander report that the degree to which these needs were satisfied at the place of employment had a significant direct relationship to the worker's continuing to work for that company.

Ross and Zander used pairs of questions in their study, one in each pair indicating the strength of the need and the other measuring the satisfaction of the need. Respondents rated each question on a 10-point scale. The degree of failure to satisfy the need was obtained by subtracting the amount of satisfaction from the strength of the need. No data on reliability were given, however, and validity of the questionnaire was assumed ("face valid").

Schaffer writes: "For any individual in any given situation the amount of tension or dissatisfaction generated is determined by (a) the strength of his needs or drives, and (b) the extent to which he can perceive and utilize opportunities in the situation for the satisfaction of those needs" (1953, p. 2). In a study designed to investigate the relationships between needs and satisfaction, he developed an elaborate questionnaire to measure: (a) the strength of each of 12 needs; (b) the degree to which each need was being satisfied on the job; and (c) over-all job satisfaction. The 12 needs, derived from Murray's (1938) list of needs, were: recognition and approbation, affection and interpersonal relationships, mastery and achievement, dominance, social welfare, self-expression, socio-economic status, moral value scheme, dependence, creativity and challenge, economic security, and independence.

The strength of each need was measured by 11 items from three different sections of the questionnaire. "In designing these items," states Schaffer, "maximum subtlety was a prime consideration" (1953, p. 5). Need satisfaction was measured in a more direct manner (e.g., "I feel that my job is a secure one"), using 5-point Likert-type items. Over-all job satisfaction was measured by items from the Hoppock blank.

Unfortunately, Schaffer's need-strength scale was not sufficiently reliable. Coefficients of concordance, indicating the consistency with which need-strength was measured by different sections of the questionnaire, fell below .55 for the majority of subjects. Only the social welfare need subscale had acceptable reliability (.92). Two other subscales, economic security and independence, had reliabilities in the low .80's. The other subscales ranged from .73 to .44.

Several of Schaffer's findings suggest the possible significance of need-satisfaction measures as indicators of work adjustment. For example: (a) No simple relationship between need-strength and need-satisfaction was found. Correlations between rankings of needs by relative strength and by relative satisfaction for 35 persons ranged from .71 to —.45, with a median of .08. It would be interesting in the study of work adjustment, to compare individuals whose need-satisfactions are in line with their need-strengths with individuals whose needs and satisfactions are discrepant; (b) Over-all job satisfaction was only slightly related to mean need satisfaction ($r = .44$). However, satisfaction of the first two and the first three most important needs (those having the highest strength) correlated .58 and .57 respectively with over-all job satisfaction. These findings indicate that need-satisfaction measures might tap areas of variability in work adjustment not accounted for by over-all job satisfaction measures. The measurement of needs and need satisfaction, however, still remains a problem.

Discussion of need-satisfaction generally brings up the subject of motivation. H. C. Smith, in his *Psychology of industrial behavior* (1955), titles one chapter "Why Men Work: Need Satisfaction." Smith states: "The major human task of industry . . . is to develop greater opportunities for satisfying needs at work" (1955, p. 71). He believes that the more fully work satisfies the needs of the workers, the harder they will work. Anne Roe's *Psychology of occupations* (1956) stresses the importance of the occupation to the worker and adopts Maslow's need hierarchy to suggest an occupational classification based primarily on level of responsibility and type of work. She comments: "In our society there is no single situation which is potentially so capable of giving some satisfaction at all levels of basic needs as is the occupation" (1956, p. 31). Viteles, in his well-known text, *Motivation and morale in industry,* (1953) also discusses need-satisfaction theories in his review of worker motives.

Stagner comments: "No single specific kind of satisfaction can be cited as the key to understanding employees' desires" (1950, p.

10). In another article, Stagner (1958) expresses the opinion that individual goals or motives do not seem to follow the usual psychological classifications. He suggests that the goals of individual workers differ because these goals often depend on the group of which the worker is a member and because each individual has a different perception of his chances for success.

Maier, in *Psychology in industry,* (1955) covers basic psychological theories on needs and motives and applies them to the industrial situation. Other writers, such as E. K. Strong (1958), begrudge the failure of researchers to come to grips with worker motivation. But they have also been cautious about stressing motivation *per se.* Ghiselli and Brown (1955) devote a page to "overemphasis of the importance of motivation." They conclude with this statement: "The point being made is not that motivation is unimportant but rather that other factors may be equally important or even more important than motivation in determining the worker's performance" (1955, p. 415).

Strong (1958) believes that the measurement of needs must be undertaken with reference to specific goals, and that these goals and their attainment vary in complexity. There can be satisfaction-dissatisfaction cycles in the attainment of any specific goal, according to Strong, and therefore measures of satisfaction at any one time can be misleading. Strong suggests that the difference between one's desires and expectations, and his satisfactions and dissatisfactions regarding any one goal is probably more meaningful than sheer satisfaction or dissatisfaction at any given moment.

Gardner and Moore state: ". . . we can describe the well-adjusted person as one who finds some balance between the satisfactions he is seeking, between his demands and expectations, and the satisfactions which the job provides" (1950, p. 252).

It would seem, from the several studies and comments cited, that the interpretation of satisfaction indicators of work adjustment would benefit greatly from some measure of needs. Unfortunately, the measurement of needs remains a difficult problem. Recently developed measures, such as the Edwards Personal Preference Schedule, appear to be promising approaches to the measurement of individual needs and their probable relationships to other work adjustment measures.

The discrepancy between level of aspiration and level of achievement is another possible indicator of work adjustment. Super (1939), for example, found that level of aspiration was an important factor

in dissatisfaction. The greater the discrepancy between aspirations and perceived achievement, the greater the dissatisfaction. That aspirations of high school and college students regarding careers are often unrealistic has been a matter of common knowledge and much concern to vocational counselors. The prevalence of unrealistic aspirations in the general population is indicated by an American Institute of Public Opinion Poll in 1938 (Cantril, 1951). Asked "If you had your choice of occupation, what kind of work would you like to do?" 27% of those interviewed chose professional and managerial occupations, whereas the 1940 census showed only 16% of the total employed population in these occupations.

Studies on income aspirations are also enlightening. Thomsen (1943) found that the income aspirations of college students were unrealistic in relation to the salaries in the occupations the students expected to enter. Centers and Cantril (1946) investigated the extent to which members of various income groups were content with what they were earning and with the income to which they aspired. Their sample included over 1200 persons and was a cross-section of the national population 18 years old and older. Over one-half of the sample expressed dissatisfaction with their present income and desired a large increase. Generally, however, the higher the income, the greater the probability of being satisfied. Among the dissatisfied, the higher the income, the smaller the proportion of current income desired as an increase. Centers and Cantril concluded that income is generally a more reliable index of satisfaction than either the occupation of the individual or his educational level, except for occupations yielding personal independence (which seem to produce satisfaction at all income levels).

On the other hand, Ganguli (1957) reports a study done in India in which he found that, to a certain extent, the more the worker made, the more the worker desired. The income level aspired to was a function of age, length of service, the amount the worker was currently receiving, and his education.

Stubbins investigated level of aspiration with this idea: "Because of its tremendous emotional significance to the individual, vocational satisfaction ranks very high in the hierarchy of goods" (1950, p. 331). Vocational choice was viewed as a "social prestige need." Stubbins found that level of aspiration correlated .13 with the prestige level of subject's usual occupation (using the Deeg-Paterson [1947] occupational prestige scale), and .52 with level of feasible vocational objectives (as agreed upon by the subject and the counselor).

Interest measurement is still another area in which the idea of discrepancy as an indicator of work adjustment might be applied. Strong (1958) points out that interests indicate the direction of desires and expectations. The following studies illustrate the relevance of interest measurement to work adjustment.

Sarbin and Anderson (1942) selected vocational guidance counselees who expressed dissatisfaction with their occupational field or job, or their future prospects on their job. Using the Strong Vocational Interest Blank, they found that 82% of the men who expressed one of these dissatisfactions lacked a primary pattern of interest in the occupational group which included their job. No data on a control group were given, however.

Gadel and Kriedt (1952) report a study of IBM operators in which the relationship between interest and job satisfaction was investigated. Job satisfaction and IBM interest scores (both on tailor-made instruments) correlated .68 on the validation group and .44 on cross-validation. In the same study, they reported no significant relationships between aptitude and interest, and between aptitude and job satisfaction.

Another use of measured interests in the study of "satisfactory vocational adjustment" was reported by England and Paterson (1958). Air Force officers in two occupations, personnel and comptroller-accountant, were rated "like" or "unlike" the civilian criterion groups of the Strong Vocational Interest Blank on the basis of scores on selected keys of the SVIB. Comparing these groups on preferences for Air Force duty and future civilian duty, significantly more of the "like" group preferred the field of their present occupation.

Lipsett and Wilson (1954) asked: "Do 'suitable' interests and mental ability lead to job satisfaction?" Job satisfaction was measured by a self-rating on a five-point scale. Interests were measured by the Kuder Preference Record. Mental ability was expressed in percentile scores. (Different tests were used for different individuals in obtaining mental ability data.) The findings: (a) those with "suitable" interests reported satisfaction much more frequently than dissatisfaction; (b) those with "unsuitable" interests were more often indifferent or dissatisfied; (c) however, there was no statistically significant difference between "suitable" and "unsuitable" mental ability groups in the proportions of satisfied and dissatisfied.

In contrast to the above studies, DiMichael (1949) found very little relationship between the measured interests (Kuder) of vo-

cational counselors and their work satisfaction. Expected relationships between social service aspects of the job and social service interests were not found. Satisfaction with clerical aspects of the job had little relationship to clerical interests.

Kates (1950) also found no significant relationship between job satisfaction (on a Hoppock-type blank) and the measured interests of policemen (on the policeman key of the SVIB). However, there was a significant relationship between job satisfaction and the occupational level key.

While the evidence on the relationship of interest discrepancy and job satisfaction is not clear cut, it would seem that interest discrepancy may be an important correlate, if not an indicator, of work adjustment. The availability of adequate measures of vocational interests makes it feasible to include interest measurement in the study of work adjustment.

The studies reviewed in this section suggest the desirability of including motivational measures as indicators of work adjustment. Feelings of boredom and monotony are important work-related outcomes, especially for persons engaged in repetitive work. An attitude scale used as an indicator of work adjustment should provide for items that measure boredom and monotony.

Measures of needs, satisfactions, and discrepancies between needs and satisfactions, give promise of being important indicators of work adjustment. The measurement of needs, however, is fraught with problems. Recently developed measures may hold the answer to some of these problems.

Work adjustment may be indicated also by the discrepancy between the individual's aspirations and expectations, and his experiences. Presumably, the worker who does not expect much might be better adjusted even under unfavorable circumstances than the worker who expects otherwise. However, from a research standpoint, the problem lies in the measurement of aspirations and expectations. Like need measurement, the measurement of aspirations and expectations should be explored in the study of work adjustment.

The discrepancy between an individual's vocational interests and those "suitable" for his occupation provides another motivational indicator of work adjustment. Unlike need measurement and the measurement of aspirations and expectations, adequate measures of vocational interests are available, making it practicable to include interest discrepancy among the set of work adjustment indicators.

V. The Literature on Behavioral Criteria

It will be noted, in the preceding sections, that discussions of satisfaction frequently lead to a consideration of "the criterion problem." The criterion sought is almost always some measure of behavior such as productivity, tenure, turnover, absenteeism, and accident or safety record. Wallace and Weitz (1955), for example, stress the need for performance criteria in studies of job attitudes, adopting an extremely critical attitude toward studies not using such criteria.

The relationship between satisfaction and behavioral criteria seems to have eluded the efforts of most researchers in this area. From their review of research on employee attitudes and employee performance, Brayfield and Crockett conclude: "In summary, it appears that there is little evidence in the available literature that employee attitudes of the type usually measured in morale surveys bear any simple—or, for that matter, appreciable—relationship to performance on the job" (1955, p. 408).

The explanation for such negative findings seems to lie, at least partially, in the complex nature of these behavioral criteria. The meaning of each of these criteria differs with the situation in which it is used, and the complex interrelationships among them add to the problem of criterion choice and adequacy. For example, Brown and Ghiselli (1953) note a U-shaped relationship between measures of specific aptitudes and turnover, leading Heron (1954a) to suggest that the only safe procedure is to examine the slope of regression in each case. Brayfield and Crockett state: "The selection of criteria involves a choice among a number of possible measurements all of which may be affected by situational factors over which the investigator has little if any control" (1955, p. 410).

Difficulties in the use of productivity as a criterion, to take one example, may be inferred from the following investigations by Rothe and Heron:

Rothe (1946a; 1946b; 1947, 1951) undertook a series of studies on the output rates of production workers who handled units that could be counted. These workers included butter wrappers, machine operators, and chocolate dippers. He found that the short-term output of butter wrappers was highly unreliable, whereas for chocolate dippers, the weekly rates correlated .85. Consistency correlations for three two-week periods for the machine operators were only

.57, .68, and .72. Rothe concluded that reliable indices can result only from long-term repeated measurements, each measurement being at least a week's productivity.

Heron (1952b) measured productivity from factory records, using average production over a 67-week period, a much longer period than most investigators use. In spite of this, he noted that artificial limits due to "social, familial and economic pressures" could affect the validity of this criterion.

In another article, Heron (1952a) suggests that productivity criteria should satisfy these conditions: (1) actual and definable units, (2) counting done by the individual, (3) equal opportunity to produce, (4) equipment and abilities organized for different jobs, (5) no arbitrary limit on quantity of production, (6) recorded over long periods of time, (7) production free from interferences and shortages, (8) no changes in techniques during the period, and (9) no changes in the relative importance of the units produced for the end product concerned. He reports that an independent index of productivity, based on the above requisites, correlated .92 with an earnings index in a "piece-rate" situation. Under such conditions, earnings could also be considered a valid criterion. However, productivity is affected by so many external factors that Heron states: ". . . it seems obvious that this productivity criterion may show little relation to even a wide and shrewdly-chosen collection of psychological measures of individual differences" (1952a, p. 81).

Hardin (1951) reviews the problems connected with the "measurement of physical output at the job level." He stresses the need for an adequate definition of the variable to be measured, suggesting that consideration of the following questions may improve the definition: (a) What kinds of goods represent the same type of output? (b) How long should the time period be for which the flow measure is desired? (c) Should "output" include only the number of items completed during the defined period?

Hardin discusses the differences between, and problems connected with, direct and indirect methods of measurement. In the direct method, one counts, weighs, or measures the actual physical output. In the indirect method, one measures some other variable from which output can be accurately inferred. The direct method, he notes, is not necessarily the more valid.

Indirect measurement is used when direct measurement is highly impractical or extremely expensive, according to Hardin. There are three concepts of validity for the indirect method: (a) the relation

between actual indirect measurements and the ultimate criterion (actual output); (b) the relation between actual indirect measurement and "true" measures of the variable being directly observed; and (c) the relation between "true" indirect measures and the ultimate criterion (actual output).

The first type of validity would be sufficient if the relationship between indirect measures and the ultimate criterion were high. The latter two types of validity would be useful in improving validity of the first type because they enable the investigator to identify and correct for two major sources of error.

Hardin also discusses problems in the sampling of time periods and employees. For example, for some operations variations over time might be of a random nature; therefore, short time samples would be adequate. For other operations, there may be cyclical and/or seasonal variations, requiring longer time periods for adequate measurement.

Ghiselli and Brown (1955) note that age, sex, and the time interval during which proficiency is measured are other factors, besides experience, affecting measures of proficiency. For a valid criterion, they advocate avoiding the measurement of minor job aspects or those which were not part of the actual work situation at all. "If the measure of proficiency is to represent the job, it is of prime importance that . . . [only those] factors important in determining worker success be included" (1955, p. 61).

Bellows (1954) lists these seven characteristics of a good criterion: (a) reliable, (b) realistic and representative, (c) related to other criteria, (d) acceptable to the job analyst, (e) acceptable to management, (f) evaluated for constancy from one situation to another, and (g) predictable. He notes that the validity of a criterion is reduced, sometimes to the point of insignificance, when there is previous knowledge of predictor data, when production has artificial limitations, when working conditions for those being compared are not similar, and when experience on the job is not equivalent.

Brayfield and Crockett (1955) criticize the research they reviewed because all too often no reliability data were given for the criterion, nor was the relevance of the chosen criterion discussed. Another weakness of some studies was the use of self-report data where more objective data could be used.

Bellows (1954) differentiates between objective and subjective criteria. Objective criteria include such measures as number of units produced and number of errors. Subjective criteria, such as ratings

of the performance of others, may be less dependable and less acceptable for research purposes than objective criteria, but are probably more appropriate in certain situations. Ghiselli and Brown (1955) agree that either index of job proficiency, objective or subjective, is acceptable when used in the proper place. However, they admonish, measuring job proficiency without a definite purpose in mind is useless.

Some studies use total group production rather than individual productivity as a criterion. The Survey Research Center at Michigan (1948) reports a comparison of high and low producing sections in clerical work. Group productivity was measured by computing the personnel costs for a given amount of work for each group.

Lawshe and Nagel (1953) compared 14 office groups. No equivalent objective criteria were available for all these departments, thus paired-comparison ratings by six executives were used for a productivity index.

With regard to group vs. individual comparisons, Brayfield and Crockett comment: "... a relationship which exists at the individual level between satisfaction and productivity may be obscured when the individuals are lumped together" (1955, p. 415). The opposite may also be true, that is, group differences may be obscured by correlations on individuals. Heron (1954a) points out that an insignificant correlation does not necessarily mean there is no predictive value to the findings, since critical cut-off points may exist in any particular instance.

Turnover, length of tenure, absenteeism, and number of disciplinary problems are other behavioral criteria which have been used in several studies. Kerr's studies on his Tear Ballot usually refer to turnover as a criterion. In one article, for example, Kerr (1948) uses the "avoidable separation rate" as the criterion of job satisfaction. Webb and Hollander (1956) and Hollander and Bair (1954) used voluntary withdrawal from naval aviation cadet training as the criterion of motivation and morale. Jay and Copes (1957) related "seniority and criterion measures of job proficiency." Metzner and Mann (1953) related absenteeism to satisfaction with the work situation among blue-collar and both high-level and low-level white collar employees. Tydlaska and Mengel (1953) rated the attitudes of Air Force personnel by using such behavioral criteria as disciplinary problems and AWOL records. It would seem that these behavioral criteria, (turnover, absenteeism, number of disciplinary

problems, tenure) and related indicators (such as accidents and illnesses) are relevant to the definition of work adjustment.

Problems in the use of these criteria are exemplified in an article by Vander Noot, Kunde, and Heneman (1958) on the comparability of absence rates. They found: (a) only about 20% of a nation-wide sample of 620 manufacturing firms kept records on absence rates for their employees, (b) there was substantial variation in the computation of such rates, 17 different formulas being used in the computations. These problems, i.e., availability and comparability, point up the difficulties of relying on company records as a source of data on these criteria. A comment by Hardin is appropriate: "The difficulty of obtaining sufficient data therefore makes it advisable for the researcher whenever possible to collect his own data. . . ." (1951, p. 10).

Several studies have reported the use of multiple criteria. For example, Heron (1954c) defined "satisfactoriness" of garage employees by five indicators: gross earnings; "shorts" on cash handed in for tickets sold; number of periods of absences irrespective of cause or duration; divisional disciplinary actions; and number of times late for duty. Bernberg (1952) used absences, tardiness, short-time absences, trips to the medical unit, and ratings as criteria of morale. He also used a total morale indicator based on these criteria. Wherry (1958) refers to a study using overtime, turnover, and absences.

Severin (1952) studied the relationships among several measures of performance, based on a review of the literature. He presents tables on the ranges and medians of correlations reported for various combinations of criteria and for different populations. For example, he finds that median correlation for training grades and on-the-job ratings by superiors is .11, .22 for training grades and various on-the-job performance measures, and .70 for ratings of associates and ratings by subordinates. Average of these median correlations between criteria is .28. Severin concludes: "This finding emphasizes the danger is substituting an 'easy-to-obtain' measure of performance for a 'hard to get' measure without knowing their degree of equivalence" (1952, p. 93).

An ambitious attempt at the use of multiple criteria is reported by Merrihue and Katzell (1955). In a study conducted at the General Electric Company, 33 indicators of employee behavior were defined, measured, and correlated to evolve an "employee relations index" (ERI). These indicators were selected to (a) reflect behavior that was optional on the part of employees, (b) imply accordance or variance

with company objectives, (c) apply to, and be comparable for, employees in a variety of work situations, (d) correlate with other indicators of behavior in reflecting company objectives, and (e) be practical to obtain and use. Data on these 33 variables were obtained from more than 600 work groups in 40 plants over a 13-week period. Factor analysis of the data revealed 8 measures to be indicative of a general factor. These eight measures, combined statistically to form ERI were: (1) number of periods of absence, (2) number of separations, (3) number of initial visits to the dispensary for occupational reasons, (4) number of suggestions submitted, (5) number of suspensions for disciplinary reasons, (6) number of grievances, (7) number of work stoppages, and (8) participation in the insurance plan.

A comparison of ERI's was made on a sample of 17 General Electric plants for which "profitability figures" were available. The plants with the higher ERI's tended to be those with high profitability. The average ERI of four work groups with high efficiency ratings was 100; three groups with low ratings averaged 87. Other evidences of validity for ERI were obtained from other plants. Plants with high ERI's had these characteristics: (a) most or all of the hourly employees were of the same sex; (b) plant employment level was not expanding; and (c) a large percentage of the hourly employees worked in teams requiring coordination on work tasks. Work groups with high ERI's were composed of fewer employees, older employees, and employees with greater average length of service. ERI findings held up against such criteria as scrappage records, quality of output, and management judgments made prior to the ERI study.

Criterion reliability as a major problem in the use of multiple criteria is illustrated in a study by Rush (1953). He used three sets of criteria in a study of salesmen: (a) supervisor ratings on several performance characteristics, e.g., sales demonstration, "closing" ability, learning ability, enthusiasm, and planning for work; (b) sales records, including such data as average monthly volume, per cent of quota achieved, and net sales (corrected for returns); and (c) grades at a sales training school. Odd-even reliabilities obtained for 13 different criteria ranged from .92 for planning of work and .87 for sales school grades, to .47 for average monthly volume. Other reliabilities were in the high .60's and .70's. It is quite obvious that the utility of multiple criteria in combination would be seriously limited by such unsatisfactory reliabilities.

One aspect of the use of multiple criteria that deserves some attention is the procedure for combining criteria. Ghiselli and Brown (1955) discuss six methods for combining criteria: (a) by equal weighting of all components, (b) by weighting on the basis of judgments of experts, (c) by weighting according to the reliability of the criterion measures, (d) by weighting on the assumption of an underlying variable of job success, (e) by the method of multiple cutoffs, and (f) by weighting on the basis of cost accounting (on the assumption that each worker's contribution to the organization can be expressed in dollars and cents). Ghiselli and Brown point out that equal weighting of all the criterion components ignores differences in importance of various job aspects, and arbitrary weighting is meaningless. They note that experts seldom agree on appropriate weights, that reliable measures are not necessarily the important ones, and that criteria supposedly underlying a single variable often show no relationship to one another. The multiple cutoff method is appropriate when each job aspect measured is a critical one, and for certain jobs, this is probably the most meaningful method. The cost accounting approach to combining criteria may appear to be meaningful and pertinent, but (a) it is expensive, (b) it has subjective and arbitrary features, and (c) there are too many job aspects that are not measurable in dollars and cents. In a later article, Ghiselli (1956) states that there is currently no satisfactory method for combining multidimensional criteria.

Sluckin (1956a; 1956b) points out that criteria can be weighted with reference to predictors or with reference to some other criteria regarded as "ultimate." However, Sluckin believes, "the only logically acceptable way of combining criterion measures is to combine them into a composite criterion without reference to any other measures" (1956a, p. 25). When intercorrelations among criteria are very low, combining them is useless. Under such conditions, the most appropriate approach, according to Sluckin, would be to undertake separate predictions of each criterion independently.

Sluckin notes that the worker's satisfaction with his work and the worker's satisfactoriness to the employer are different aspects of success. Combined criterion measures of each aspect should be found. If the satisfaction and satisfactoriness measures yield a zero correlation, then for that occupation there is no such thing as overall occupational success.

Another aspect of the multiple criterion approach that should be considered is the relevance of the criteria to the occupation and

the individual. Ghiselli (1956) believes that different workers on the same job may have to be evaluated in terms of different criteria since workers perform differently in a qualitative way as well as quantitatively. Stott (1936) also maintains that the best combination of criteria would be specific to the type of occupation, but should include "success" and "happiness." She believes that productivity criteria are not applicable to higher level occupations, and that the only usable criterion for these occupations is personal satisfaction with the work, modified by signs of lack of success. Viteles (1936) believes that each factor in vocational success has different weights for each individual in determining individual success or failure.

Another set of behavioral criteria might be drawn from the literature on labor mobility. "Mobility," Parnes states, "can be studied with reference to the goals of workers and their opportunities to attain them. That is, the series of job changes made by workers during their lives can be examined with a view to determining the extent to which such changes constitute a ladder of self-improvement. Whether mobility performs this function has important implications with respect to the psychological satisfactions or frustrations present in an industrial system" (1954, p. 2).

Work adjustment includes the adjustment of the individual to labor market conditions. Employment and unemployment are indicative of work adjustment. Job shifts, job level progression, progression in wages are other indicators of work adjustment. Methods of job finding and decisions regarding choice among alternative job opportunities provide clues toward understanding the worker's adjustment to the labor market. The relevance of these variables to work adjustment are illustrated by the studies which follow.

One of several projects conducted by the Employment Stabilization Research Institute (ESRI) of the University of Minnesota was a comparison of employed and unemployed individuals during the depression of the 1930's (Paterson & Darley, 1936). Length of time at usual occupation and length of time at last job were found inversely related to unemployment. Unemployment was attributed by the individual to economic factors more often than to personal factors. However, personal factors were regarded as a cause for unemployment more often by those unemployed early in the depression than by those unemployed late in the depression. Insofar as there was readjustment, the unemployed tended toward jobs similar to their modal occupations. The early depression unemployed did

more poorly on vocational tests than did the late depression unemployed. Generally, the late depression unemployed and the employed groups were similar in vocational characteristics.

Palmer (1954) reports that mobility (in terms of job or employer shifts) is characteristic of about a fourth of the labor force. Men are more mobile than women, and mobile workers are younger than immobile workers. When employment is at a high level, voluntary job changes tend to reflect an improvement in economic position and in knowledge and skills of workers. While accidental circumstances frequently influence the individual's early work history, a purposeful pattern gradually emerges. Upward movement between related occupations or types of work, however, is much less common than stable patterns.

Palmer also observes that a substantial number of workers change employers and/or industry without corresponding changes in level of skill or occupation, primarily because they either lack special skills or are handicapped in some way to hold better jobs. Laborers and semi-skilled operatives frequently stay in one type of work primarily because they are not qualified for anything else. On the other hand, there are occasional "success" stories, as in the case of an individual who, without much formal education, started out as a $5 a week clerk in 1905 and was an $85,000 corporation executive in 1951.

Myers and Schultz (1951) report, among other findings, that the job-hunting process for most workers is random, with little effort being made at a systematic search for alternative job opportunities. In many cases, even "blind alley" jobs are taken. Part of the explanation for this finding seems to be that most individuals rely, for the most part, on the "grapevine" (acquaintances and relatives) as their source of information on available jobs.

In most labor mobility studies, the major data-collecting instrument has been the work history questionnaire. Other major sources of work history information, according to Parnes (1954), have been employers' personnel records and social insurance records. The use of work history questionnaires (in which data are obtained directly from the worker) is more advantageous to the researcher than the use of other information sources because it permits direct investigation of motivational factors in labor market behavior, and is also more feasible.

While work history questionnaires have been used extensively, very few studies have been undertaken on their validity and relia-

bility. Myers and Maclaurin (1943) compared work histories obtained from workers with their employers' personnel records and found that about 10% of the interviewed workers failed to report at least two jobs. However, jobs held for six months or longer were rarely not reported.

On the other hand, Keating, Paterson, and Stone (1950) obtained a correlation of .98 between duration of jobs as reported by workers and personnel records. Correlations between reported wages and personnel records for jobs held within the past year was .90 for men and .93 for women.

Heneman, Fox, and Yoder (1950) compared job dates as reported by workers and personnel records. They found 70% agreement for the month in which the job began for jobs held in the preceding year, and 68% agreement for jobs held in the preceding five years. Correlations above .80 were obtained (between worker reports and personnel records) for wage rates, weekly earnings, and monthly earnings for jobs held in the preceding year as well as jobs held in the preceding five years.

The validity of work history data for physically handicapped interviewees was investigated in a study reported in the present series (Dawis, Hakes, England, & Lofquist, 1958). Agreement of interview data with employers' records ranged from 68% (for length of employment) to 88% (for job duties). Agreement for wages was 72%. No difference in validity was found between work history information obtained from physically handicapped persons and that obtained from adult relatives of the handicapped.

The definition of work adjustment develops further with the addition of behavioral criteria to the set of possible work adjustment indicators already mentioned. Behavioral criteria, such as productivity, efficiency ratings, turnover, absenteeism, job level progression and employment history, contribute an external (objective) perspective to the over-all view of work adjustment. It is to be assumed that the satisfactory worker is adjusted, while the unsatisfactory worker is not.

The complex interrelationships among behavioral criteria have been noted. This condition complicates the task of defining satisfactoriness for the individual. The possibility of independence among different criteria may produce contradictory evaluations of satisfactoriness for the same individual at the same time.

Problems in the use of multiple criteria have also been discussed.

Failure to attain a sufficient reliability level may rule out the use of criteria that are otherwise significant and relevant. Considerations of relevance and conceptual importance may argue against the use of criteria of demonstrated reliability. These problems may occur for some occupations but not for others, for some groups of individuals and not for others. The specific case can only be determined by empirical investigation.

Data on behavioral criteria may be obtained from firms. However, questions of availability and comparability may hinder rather than facilitate the investigation. It is probably more advantageous for the researcher to develop his own instruments and collect his own data.

It is apparent that more methodological studies on work history data-collecting instruments are needed. The findings reported above indicate, however, that valid data can be obtained even on such presumably delicate questions as earnings. Since work history questionnaires have not been standardized to any appreciable extent, it behooves the researcher to determine the validity and reliability of his work history questionnaire. Regardless of these methodological considerations, however, it would seem highly desirable to include work history variables among the defining set of work adjustment indicators.

VI. The Literature on Vocational Fitness

One traditional concept that is relevant to work adjustment is that of vocational fitness. If the worker has the requisite characteristics and skills for the job he holds (i.e., if he is "vocationally fit"), the likelihood of over-all adjustment should be increased. By this criterion, the researcher can estimate the individual's adjustment on his present job as well as the pattern of adjustment in the individual's work history.

The evaluation of an individual's vocational fitness involves: (a) the determination of his aptitudes, abilities, interests, temperament, and other vocational characteristics ("man analysis"); (b) the determination of the aptitudes, abilities, and other vocational characteristics required by the job ("job analysis"); and (c) comparison of the two.

No area of psychological measurement has received as much attention in recent years as the measurement of aptitudes, abilities, and other vocational characteristics. Books, such as those by Super (1949), Buros (1959) and Anastasi (1954) attest to this fact. The treatment of "job analysis" also has been the subject of much attention and extensive treatment in the literature, and for that reason, a review of this literature is not included in this bulletin. However, the relationship of "job analysis" to "man analysis" requires some comment.

Super (1949, Ch. 3) notes that although job analysis provides a list of aptitudes and traits that seem important to the job, there are "two serious limitations" to the construction of trait measures based on the findings of job analysis. These limitations are (1) the subjectivity of the evidence for rating a factor as important, and (2) the possibility that a trait considered important to one job may not differentiate that job from other jobs. In addition, identifying the trait is no guarantee that the trait is measurable by any known method.

The Employment Stabilization Research Institute's "differential occupational ability patterns" (Dvorak, 1935) is an approach that surmounts the limitations of job analysis noted by Super. It involves the development of test profiles (occupational ability patterns) based on successful groups of workers. The underlying assumptions of these patterns were listed by Paterson (1934) as: (a) the theory of unique traits, (b) adequate measures of these traits, and (c) differential occupational significance of these traits.

An investigation of the occupational ability patterns for "successful" workers may lead to the factors important in vocational fitness. In the ESRI's studies, "success" of workers was based on a "survival of the fittest" concept with regard to continued employment during the depression. Since it might be assumed that generally the "fittest" workers "survive," the determination of factors important in vocational fitness might be achieved through ". . . an intensive study of workers in specific occupations who manage to hold their jobs throughout a period of economic stress" (Paterson & Darley, 1936, p. 41).

Dvorak's (1935) occupational ability patterns were formed by plotting average scores for various work groups. The idea was to evaluate some essential traits, not necessarily all characteristics, basic to success in the specific occupations investigated. Successful worker groups were compared to standard samples of workers ("general population" samples). The results were distinctive profiles for such groups as clerical workers, retail sales clerks, and auto mechanics. Dvorak reports such findings as: 90.4% of the male clerical workers were above the median (of the standard sample) on educational ability, and 98.2% scored above the median on a clerical aptitude test; 76.9% of garage mechanics scored above the median on the mechanical assembly test, and 82.1% were over the median on the spatial relations test.

The ESRI investigators asked these questions: (a) Are these patterns the result of experience in the occupation? and (b) Are the patterns representative of the individual workers in the group, not just the "average worker"? With respect to the first question, they found that the early depression unemployed (a less successful group) made poorer pattern scores than the late depression unemployed (a more successful group) even when experience was approximately the same. The conclusion was that occupational ability patterns were not the result of experience.

The second question was investigated through a study comparing individual profiles with two master profiles for retail saleswomen and female clerical workers. Saleswomen were correctly identified from their profiles by expert vocational psychologists 90% of the time, and clerical workers were identified 94% of the time. In addition, "Workers who do the same type of work in different organizations or industries show occupational ability patterns that are closely similar not only in their general form but also in the actual numerical value of test scores" (Paterson & Darley, 1936, p. 48). Pat-

terns remained the same within occupational groups, even with varying levels of efficiency, but numerical scores decreased with lesser efficiency.

One outgrowth of the Minnesota studies was the Minnesota Occupational Rating Scales (MORS) (Paterson, Gerken & Hahn, 1953) the prototype of recent work on worker trait requirements by the U. S. Employment Service (U. S. Dept. of Labor, 1956). The MORS consists of ratings for 432 occupations on minimum requirements for each of seven abilities or aptitudes: academic ability, mechanical ability, social intelligence, clerical ability, musical talent, artistic ability, and physical agility. If the occupation is judged to utilize one of these aptitudes to a great extent, the rating is "A." If the aptitude is negligible for that occupation, the rating is "D." Ratings of "B" and "C" represent appropriate levels on the continuum. For example, on academic ability, a high school teacher rates at level "A," an auto mechanic at level "C." On mechanical ability, a civil engineer rates an "A," a lawyer rates a "D." For social intelligence, a minister rates "A," a foreman rates "B," a hotel clerk rates "C," and a mathematician rates "D." Across the seven aptitudes, a ticket agent is rated C, D, C, B, D, D, C, and a banker is rated A, D, B, A, D, D, D. The rationale is to utilize these ratings along with vocational counseling information on the individual so that "job analysis" and "man analysis" are considered in the same terms.

For all except musical and artistic ability, an "A" rating is intended to include the top decile of the general population. A "B" rating includes the 76 to 90 percentile. A "C" rating includes the 26 to 75 percentile and a "D" the bottom 25 per cent. For musical and artistic ability, "A" includes the 97 to 100 percentile, "B" the 91 to 96 percentile, "C" the 26 to 90 percentile, and "D" the bottom 25 per cent.

The MORS manual also lists the 432 occupations by kinds and levels of ability. For example, all those rated "A" in academic ability are listed together, then those rated "B," etc. A third listing covers groups of occupational ability patterns that can be considered similar. From 432 occupations there were 214 patterns, 137 of which were unique, and 77 patterns included from 2 to 18 occupations each. The authors comment: "The patterns must be interpreted to mean that the estimated underlying *abilities* for these occupations are similar and that if interests and motivation permit and opportunities are present, an individual having a given pattern could be equally successful in any of the occupations in the group. This is the real mean-

ing of 'occupational ability families'" (Paterson, *et al.*, 1953, pp. 63-64).

Estimates of worker trait requirements for 4,000 jobs prepared by the U. S. Department of Labor (1956) is a promise of things to come in the realm of categorizing jobs in terms of interests and temperaments along with skill requirements. Research resulting in the publication of worker trait requirements (WTR) was conducted by the U. S. Employment Service. A sampling of jobs from the *Dictionary of occupational titles* was made and these jobs were then rated on the following components: aptitudes, interests, temperaments, work performed, physical capacities, working conditions, training time, and industry. Where occupational ability profiles were available from studies using the General Aptitude Test Battery (U. S. Dept. of Labor, 1952) these were also given. In other cases GATB ratings were given. On any of the 4,000 jobs listed, the WTR can be used to compare worker characteristics with the job requirements in evaluating one aspect of the work adjustment of an individual.

Fine and Heinz (1958) describe the new coding system for occupational classification. One part of the three-part code "classifies what workers do and reflects worker traits." In earlier articles Fine (1955, 1957) explains the three hierarchies of worker functions pertaining to "Things, Data, and People," and relates these functions to the "transfer of skills," i.e., moving workers with certain skills from one job to another. Fine and Heinz state: ". . . it was found generally true that jobs having common worker function patterns had, within reasonable ranges, common patterns of Aptitudes, Interests, Temperaments, General Educational Development, and to a lesser extent Specific Vocational Preparation. Physical Capacities and Working Conditions were not grouped by this approach" (1958, p. 185).

The effect of physical disability on the vocational characteristics of the individual deserves some special comment. Welford states: "The nature and extent of the limits on actual action resulting from any disability depend on the demands of the task the subject is trying to do and upon the extent of his other capacities. Often the capacity impaired will not normally be used to the full . . ." (1958, pp. 4-5). In other words, capacity may decline, yet the individual may perform as expected. Welford also notes that the exact changes involved are difficult to evaluate because the individual may overcome at least a part of the deficiency by changing his methods. This

change in method depends on how much of the skill required by the task is under the worker's control.

According to Welford, with complex tasks there are these four results of a physical disability: (a) some things that could be done cannot be done because no change of method is possible; (b) some things are done less well than before because changes in methods are limited, although increased effort may yield the level of prior performance; (c) performance of some tasks is not affected; and (d) there can be over-compensation and improved performance. Welford maintains: "Measuring physical deficiencies as such will thus not enable us to make any very accurate prediction of achievement at a complex task, and the degree of degeneration will be a poor indicator of inefficiency" (1958, p. 6).

The approaches to the comparison of "man analysis" and "job analysis" measures discussed above indicate the workability of the vocational fitness concept. In conjunction with other indicators of work adjustment such as satisfaction and satisfactoriness measures, the determination of vocational fitness provides an added dimension to the definition of work adjustment. It might be noted that the study of work adjustment in terms of several indicators promises larger understanding and more satisfying answers, in contrast to many "piecemeal" studies in applied psychology in which a predictor (a measure of some vocational characteristic such as aptitudes or interests) is correlated with a criterion (usually a measure of satisfactoriness, sometimes measures of satisfaction).

In the case of the physically handicapped, the complex interaction of experience and disability results in varying degrees of change in the individual's skill repertoire. These changes are difficult to evaluate because a change in work methods may be used to overcome part of the skill deficiency resulting from disablement. It may be necessary, in the assessment of vocational skills retained after disablement, to study in detail the methods used by physically handicapped individuals to reach total achievement. The relationship of physical disability to work adjustment promises to be one of the knottiest problems in this whole area of investigation.

VII. Summary and Conclusion

What has been learned from this review of the literature relative to a definition of work adjustment?

First, we will assume that work adjustment can be defined in terms of outcomes. One such outcome is job satisfaction. There is over-all job satisfaction as well as satisfaction with specific aspects of the work environment. The summation of satisfaction with various aspects of the job is not necessarily equivalent to satisfaction with the job as a whole. A measure of over-all job satisfaction permits the worker to evaluate each job aspect in terms of its relative importance to him. However, measures of over-all job satisfaction do not identify which particular job aspects are important to the individual.

Hoppock's job satisfaction scale seems the most promising measure of over-all job satisfaction. Other measures do not show significant improvement over Hoppock's measurement of over-all job satisfaction. Progress to date in the development of scales identifying various components of job satisfaction indicates that this type of measurement should also be used in assessing work adjustment.

Job satisfaction measures have several correlates which may indicate work adjustment. Among these are wage progression, progression within the company, steadiness of employment, turnover, worker popularity, and utilization of one's abilities. In addition, other job satisfaction correlates such as age, sex, education, vocational training, occupation, personality, general adjustment, and general satisfaction, may be important to an understanding of work adjustment.

The literature on morale and employee attitudes supports the necessity of considering satisfaction with various aspects of the work environment. Two job aspects in particular have been shown by morale studies to be important. These are supervision and the individual's relationship with his co-workers. These two aspects of the work environment seem to operate to modify the individual's goals and influence his motivation.

Results of studies on the correlates of morale and employee attitudes tend to parallel the findings of job satisfaction research. The two areas of investigation overlap a great deal. One definitional difference is that job satisfaction measures seem to have most relevance to the individual while morale measures refer primarily to the group. Employee attitudes contribute to both and should be included in the study of work adjustment.

SUMMARY AND CONCLUSION

The literature on worker motivation underscores the necessity of including motivational concepts in the definition of work adjustment. Satisfaction is related to needs, but the available literature has not clearly defined this relationship. The literature also indicates that existing measures of needs might well be used in the study of work adjustment.

Motivational concepts relevant to work adjustment also include level of aspiration and types of expectations. As in the case of needs, the measurement of these variables is difficult. However, the discrepancy between aspirations or expectations and satisfaction promises to be an important indicator of work adjustment, and the researcher should attempt the measurement of these variables.

The complementary aspect of satisfaction in work adjustment is the satisfactoriness of the worker. Satisfactoriness is indicated by behavioral criteria such as productivity, efficiency, turnover, length of tenure, absenteeism, and disciplinary problems. The literature indicates that the measurements of these criteria now available tend to fluctuate over time. Reliance on such measures taken at one point in time may be misleading. These fluctuations also indicate that interrelationships between behavioral criteria and other work adjustment indicators may differ from one period of time to the next. These considerations emphasize the advisability of a longitudinal approach to work adjustment.

The literature suggests that the indicators and patterns of work adjustment may be specific to an occupation, and that there may be more than one work adjustment pattern within an occupation. Despite these difficulties, the definition of work adjustment should include behavioral criteria.

Labor mobility studies indicate that work history patterns provide additional indication of work adjustment. Job-level progression, wage progression, job finding activity, and job choice are examples of the work adjustment indicators obtainable from individual work histories.

Finally, the literature on individual fitness as it relates to job requirements suggests the desirability of including the concept of vocational fitness in the definition of work adjustment. Tests and rating scales are available for estimating the vocational fitness of individuals for specific jobs. Used in conjunction with the individual's work history, vocational fitness indicators would allow useful predictions of expected work adjustment.

In conclusion, the following considerations relative to a research definition of work adjustment might be noted:

1. Work adjustment is inferred from two primary sets of indicators which, for convenience, will be referred to as "satisfaction" and "satisfactoriness." "Satisfaction" includes over-all job satisfaction and satisfaction with various aspects of the individual's work environment (his supervisor, his co-workers, the company or institution for which he works, his working conditions, his hours of work, his pay, and the type of work in which he is engaged.) It includes the satisfaction of his needs and the fulfillment of his aspirations and expectations. It includes the congruence of his vocational interests with the interests of most "successful" people working in his occupation. "Satisfactoriness" is indicated by his productivity and efficiency, and by the way he is regarded by his supervisor, co-workers, and the company or institution for which he works. It is negatively indicated by his absences and tardiness, by the accidents that he has, and by his inability to stay on the job for a satisfactory period of time. It is also indicated by the congruence of his abilities and skills with those demanded by the job.

2. The individual should be the basic unit in the study of work adjustment. While group comparisons are enlightening, differences among individuals and differences within the individual may be more significant. These possibilities emphasize the need for studies of individuals.

3. Work adjustment occurs over a period of time. Actually, the working years of an individual constitute the period during which work adjustment takes place. "Satisfaction" and "satisfactoriness" may differ in the same individual for different periods of time. There may be cycles of satisfaction and dissatisfaction, and cycles of satisfactoriness and unsatisfactoriness in the work history of an individual. Changes in satisfaction and satisfactoriness may be the more significant aspects of work adjustment. Consideration of the requirement of reliability in measurement also argues for long-term study of individuals.

4. Work adjustment patterns may differ for different occupations. The set of criteria that is relevant may differ from occupation to occupation. Even if the set of relevant criteria were the same, the pattern of interrelationships among the criteria may differ from occupation to occupation.

5. The study of interrelationships among criteria is probably the most neglected aspect of research in this field. The potential re-

wards of such study are very attractive when it is considered that it might be possible to determine a minimum number of criterion variables that would account for most of the variability in work adjustment. It is quite obvious that rehabilitation, occupational and counseling research would be greatly facilitated by such a development.

6. Work adjustment is likely to be affected by such factors as the individual's age, sex, education, training, personality, and adjustment outside the work situation. The same degrees of satisfaction and/or satisfactoriness conceivably may reflect different degrees of work adjustment for different ages or sexes, or levels of educational attainment, etc. Consideration of these correlates is necessary to an adequate understanding of work adjustment.

7. The following instruments seem desirable in studying work adjustment as it has been conceptualized in the preceding paragraphs:

a. an over-all job satisfaction measure, such as the Hoppock Job Satisfaction Blank;
b. an attitude scale with subscales measuring different job aspects, such as the Employee Attitude Scale of the Industrial Relations Center, University of Minnesota;
c. a measure of needs, such as the Edwards Personal Preference Schedule;
d. a measure of level of aspiration, such as that used by Stubbins;
e. an aptitude test battery, such as the General Aptitude Test Battery;
f. an interest inventory, such as the Strong Vocational Interest Blank or the Minnesota Vocational Interest Inventory;
g. measures of productivity and/or efficiency (which probably are best developed to "tailor-fit" the job or occupation);
h. standardized measures for absenteeism, accidents, turnover, disciplinary problems, and grievances (based on the terminology used by the U. S. Department of Labor);
i. a work history questionnaire that includes a listing of jobs held since the individual started to work full-time, description of these jobs, their duration, wage rates, reasons for leaving, methods of job-finding, and periods of unemployment;
j. an individual job follow-up schedule;
k. a criterion of vocational fitness against which vocational characteristics (such as aptitudes and interests) may be com-

pared. The USES's estimates of worker trait requirements including the occupational aptitude patterns or the Revised Minnesota Occupational Rating Scales are useful tools of this type.

8. The choice of correlates for study will vary with the hypotheses being investigated. However, personal data such as age, sex, education, and vocational training, represent the minimal requirement. Other suggested measures include personality instruments, measures of personal adjustment, indicators of general satisfaction, family history information, and health history.

9. In vocational rehabilitation research (which is the primary focus of this bulletin series), detailed description and history of the individual's disability and rehabilitation experiences is fundamental to the study of work adjustment for the handicapped.

10. As a final comment, the authors have declined to elaborate a "theory" of work adjustment. They believe that valid theoretical formulations are best developed on the basis of sound empirical study.

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