

SECTION ONE

MAJOR THEORIES OF
CAREER DEVELOPMENT,
CHOICE, AND ADJUSTMENT

COPYRIGHTED MATERIAL

CHAPTER 1

The Minnesota Theory of Work Adjustment

René V. Dawis

THE THEORY OF Work Adjustment (TWA; Dawis & Lofquist, 1984) grew out of the University of Minnesota's Work Adjustment Project, a 20-year federally funded research program to study how vocational rehabilitation clients adjusted to work. This research, conducted in the 1960s and 1970s, is reported in 30 bulletins of the *Minnesota Studies in Vocational Rehabilitation* series (Industrial Relations Center, University of Minnesota—Minneapolis) and in several journal articles, book chapters, and books. Since the mid-1970s, the Work Adjustment Project has continued as the Vocational Psychology Research Program of the Department of Psychology, University of Minnesota.

When it started, the Work Adjustment Project attempted a wide-ranging, broad-gauged approach to its research problem (Scott, Dawis, England, & Lofquist, 1960). It collected data on a large number of individuals and on a large number of variables, such as job satisfaction, work attitudes, job performance ratings, work histories, education and training experiences, aptitudes, needs, interests, and personality traits. It quickly became apparent that such a large mass of data could be analyzed in endless ways and that a theoretical framework was needed to narrow down and provide focus for data analysis. TWA was developed for this purpose (Dawis, England, & Lofquist, 1964). Furthermore, TWA was found useful in providing direction for subsequent research. In turn, the ensuing research led to revisions and additions to TWA (Dawis & Lofquist, 1984; Dawis, Lofquist, & Weiss, 1968; Lofquist & Dawis, 1969). For more on the history of TWA, see Dawis (1996, pp. 75–80). As this history shows, many individuals, including some whose names are not mentioned here, contributed to the development of TWA.

THEORETICAL FOUNDATIONS

The Theory of Work Adjustment belongs to a class of theories known as P-E theories (Dawis, 2000), which are about the person (P) in an environment (E) and the

fit between, and the interaction of, P and E. There are a variety of Es (physical, school, work, family, home, social, or even one other person); hence, it behooves P-E theorists at the outset to identify and define the E to which they refer. As its name indicates, TWA is about the work environment.

There are P variables and E variables, and these are often used to account for behavior or behavioral outcomes. However, the basic proposition of P-E theories is that the explanation for behavior or behavioral outcomes lies not so much with the P or the E variables, but rather, with the P-E combination. Even if P and E variables contribute to the explanation, it is a particular P-E combination that will best explain the particular behavior or behavioral outcome.

P-E theories use two constructions to denote the P-E combination: fit and interaction. *Fit* refers to the degree to which P characteristics correspond to E characteristics assessed across commensurate (parallel or matching) dimensions. For example, different workers (P) have different sets of skills, and different jobs (E) require different sets of skills. Fit means that some workers have the set of skills that a job requires but other workers do not, or some jobs require the set of skills that a worker has but other jobs do not.

Interaction refers to P's and E's *action on* and *reaction to* each other in a mutual give and take. Workers and work environments are not static, unchanging entities, but rather, they can and do change. For example, dissatisfied workers will "do something" to change dissatisfying work situations, such as complain to management or work even harder to "prove" to management that they deserve better treatment. Management might respond to complaints negatively by laying off workers or respond positively by increasing worker pay. TWA is both a P-E fit theory and a P-E interaction theory.

The Theory of Work Adjustment grew out of the individual differences tradition in psychology (Dawis, 1992). The psychology of individual differences is about human variability, how people differ from one another, as contrasted with general psychology, which is about how people behave on average. Human variability affords a way to describe human individuality. Such individuality may result in different consequences for different people in the same situation. In studying this phenomenon, the psychology of individual differences focuses on variables that are stable over time, the class of variables known as *traits* (as contrasted with *states*, the class of variables that fluctuate over time). TWA adopted the trait concept in its description of P. Furthermore, research on TWA has used the methods of the psychology of individual differences that emphasize quantification (especially the psychometric measurement of stable individual differences) and statistical analysis to account for variance (individual differences), especially through the use of correlational methods (Tinsley & Brown, 2000).

When TWA was first published in 1964, it was presented as a series of nine formal propositions that captured the substance of the research conducted to that date, but it also provided direction for future research. Subsequent research suggested new propositions for TWA. Eight were added in 1984. The list of 17 TWA propositions is shown in Table 1.1, which is presented on pages 20–21 of this chapter.

The Theory of Work Adjustment started out as a P-E fit theory. As TWA was revised and expanded, it developed into an interaction theory—a process model that included the fit (or predictive) model. Before the two models are described, the basic concepts on which TWA is premised are first presented and discussed.

BASIC CONCEPTS

As a psychological theory, TWA's focus is on *P* and *P*'s behavior. However, *P* does not exist or behave in a vacuum; rather, *P* always exists and behaves in an *E*. Any theory about *P* has to be a theory about *P*-in-an-*E*.

The theory of work adjustment begins with the assumptions that (1) as a living organism, *P* has requirements that have to be met, many or even most of them through *E*; (2) *P* has capabilities that enable it to meet these requirements; and (3) much of *P*'s behavior in interacting with *E* is about meeting these requirements.

Among the most important of *P*'s requirements are *needs*: biological needs that have to do with *P*'s survival and psychological needs that have to do with *P*'s well-being. Needs are presumed to develop from the genetic material inherited by *P*, conditioned by the many *Es* to which *P* is exposed, until some state of relative stability is reached, typically in adulthood.

Many of *P*'s needs in adulthood can be met at work. In TWA, the *E* of concern is the work environment, which in our contemporary world is effectively the work organization. TWA, then, is about *P* as worker and employee, and *E* as work environment and work organization.

As an operating principle, TWA conceptualizes *P* and *E* as parallel and complementary. Thus, TWA assumes that *E* (in parallel with *P*) also has requirements that have to be met and capabilities that enable it to meet its requirements. Complementarily, some of *E*'s requirements can be met by *P* in the same way that some of *P*'s requirements can be met by *E*. Thus, in work, *P* and *E* come together because each has some requirements that the other can meet.

Fulfillment of their requirements results in *satisfaction* for *P* and *E*. To differentiate *E*'s satisfaction from *P*'s satisfaction, TWA terms *E*'s satisfaction with *P* as the *satisfactoriness* of *P*, reserving the term *satisfaction* to denote *P*'s satisfaction with *E*. The two constructs, satisfaction and satisfactoriness, imply and extend to their negatives, *dissatisfaction* and *unsatisfactoriness*. Thus, at the dichotomous level, there are four possible states in which *P* can be: satisfied and satisfactory, satisfied but unsatisfactory, dissatisfied but satisfactory, or dissatisfied and unsatisfactory. TWA expects the first state to be conducive to behavior that maintains the *P*-*E* interaction (*maintenance behavior*) and the other three states to result eventually in behavior to change the situation (*adjustment behavior*). At the extreme, the *P*-*E* interaction may be terminated (*P* either quits or is fired). But as long as *P* is tolerably satisfied and satisfactory, *P* remains in, and is retained by, *E*. The length of time *P* stays in *E* is termed *tenure* in TWA. These three outcomes—the satisfaction, satisfactoriness, and tenure of *P* in a given work *E*—are the basic indicators of work adjustment, according to TWA.

As mentioned, *P* has capabilities, some of which can be used to satisfy *E*'s requirements (or some of them). *P*'s capabilities that matter most to *E* are *P*'s *skills*. Work skills are drawn from basic human skills: cognitive, affective, motor, physical, and sensory-perceptual. Like needs, basic skills are presumed to originate from *P*'s inherited genetic material and are shaped through learning (experience and training) via exposure to a variety of *Es*. Though basic skills may reach relative stability (typically in adulthood), *P* continues to acquire new skills (such as work skills) developed from basic skills all through life.

At work, E's requirements of P are about getting the work done and maintaining or improving the organization. One way to describe E's requirements is to express them in terms of E's *skill requirements* for P, the set of skills P has to have to get the work done and to maintain or improve the organization.

E, likewise, has capabilities, some of which enable it to satisfy P's needs (or some of them). The ones that matter most to P are E's reinforcement capabilities, that is, E's ability to deliver *reinforcers* (borrowing a construct from behavioral psychology) to satisfy P's needs. Some examples of E's work reinforcers are pay, prestige, and working conditions. One way to describe P's needs is in terms of the reinforcers that P requires of E. That is, needs may be viewed as *reinforcer requirements*.

Thus, TWA uses two constructs to describe P: needs (reinforcer requirements) and skills (response capabilities). Two complementary constructs are used to describe E: reinforcers (reinforcement capabilities) and skill requirements (response requirements). That is, the P and E constructs are parallel and complementary.

The central construct in TWA is *P-E correspondence*. P-E correspondence has two meanings in TWA. The first is *fit* between P and E as ascertained across commensurate variables. This is the meaning used in TWA's predictive model, where P's satisfaction and satisfactoriness are each predicted from a P-E correspondence variable. In each case, the P-E correspondence variable reflects the degree to which each meets the requirements of the other.

The second meaning of P-E correspondence is that of *coresponsiveness*, the mutual responding of P to E and E to P, that is, the interaction of P and E. This is the meaning used in TWA's process model.

THEORY OF WORK ADJUSTMENT'S PREDICTIVE MODEL

In TWA's predictive model, P's satisfaction and satisfactoriness are the dependent variables that are predicted from two P-E correspondence variables:

1. The correspondence of E's reinforcers to P's needs (reinforcer requirements) predicts P's satisfaction.
2. The correspondence of P's skills to E's skill requirements predicts P's satisfactoriness.

In turn, P's satisfaction and satisfactoriness (actual or predicted) predict P's tenure in E.

Factor analysis can be used to summarize the large number of needs and skills in a fewer number of factors or reference dimensions. These factors yield scores that have proven to be more stable and more reliable than the need and skill scores and thus are more useful in prediction. Furthermore, factors can be used to estimate needs and skills that P does not have but could potentially acquire, and such estimated scores would be useful in counseling to help clients forecast the types of work that they might do in the future in which they would be most satisfied and satisfactory. These factors are designated in TWA by the terms *values* (for need factors) and *abilities* (for skill factors). That is, in TWA, values are defined as reference dimensions underlying needs, and abilities are reference dimensions underlying skills. Inasmuch as P-E correspondence requires commensurate variables on the E side, parallel reference dimensions underlying E's

reinforcers and skill requirements are termed *reinforcer factors* and *ability requirements*, respectively. These four new constructs—values, abilities, reinforcer factors, and ability requirements—were incorporated into the TWA predictive model. Thus, the new P-E correspondence variables are:

1. The correspondence of E's reinforcer factors to P's values.
2. The correspondence of P's abilities to E's ability requirements.

Figure 1.1 diagrams the basic TWA predictive model.

Figure 1.1 shows P Satisfaction as being predicted (solid line with arrow) from E-Reinforcers-to-P-Values Correspondence (*Reinforcer Factors* is shortened to *Reinforcers* for convenience in drawing the figure). P Satisfactoriness is predicted from P-Abilities-to-E-Requirements Correspondence (*Ability Requirements* is shortened to *Requirements*). P Satisfaction and P Satisfactoriness are shown to predict P Tenure through the unobserved (dashed boxes) decision variables of *Remain/Quit* for P and *Retain/Fire* for E.

IMPROVING PREDICTION

Prediction can be improved by the use of moderator variables. Moderator variables are variables that affect (moderate) the correlation between two variables. To improve the prediction of satisfaction and satisfactoriness from P-E correspondence variables, TWA proposes that each moderate the prediction of the other. That is, P Satisfactoriness moderates the correlation between E-Reinforcers-to-P-Values Correspondence and P Satisfaction. This predictive correlation will be higher for satisfactory workers and lower for unsatisfactory workers (or for more satisfactory versus less satisfactory workers, respectively). In like manner, P Satisfaction moderates the correlation between P-Abilities-to-E-Requirements Correspondence and P Satisfactoriness. This predictive correlation will be higher for satisfied (or more satisfied) workers and lower for dissatisfied (or less satisfied) workers.

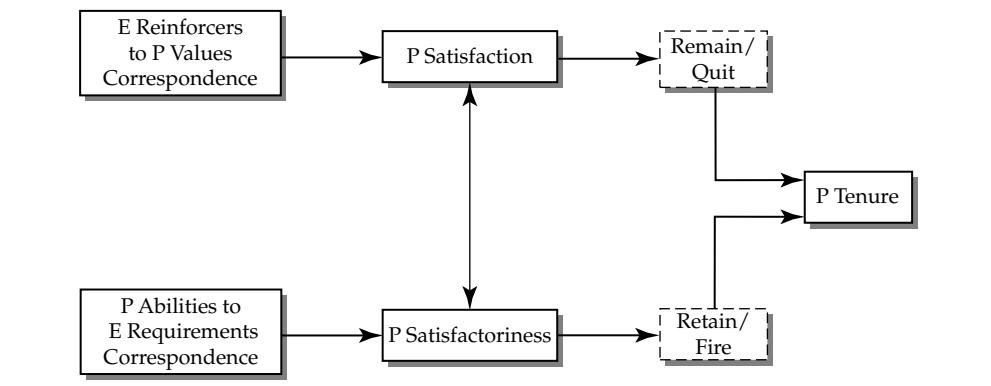


Figure 1.1 The Basic TWA Predictive Model.

The theory of work adjustment further proposes that style correspondence moderates the prediction of satisfaction and satisfactoriness. *Personality style* (P Style) in TWA consists of four variables that describe how P typically responds:

1. *Celerity*, or quickness of response.
2. *Pace*, or intensity of response.
3. *Rhythm*, or pattern of response.
4. *Endurance*, or persistence (length of time) of response.

Parallel variables describe *environment style* (E Style). TWA proposes that P-Style-to-E-Style Correspondence moderates the prediction of P Satisfaction and P Satisfactoriness from their respective P-E correspondence variables. The prediction of P Satisfaction and P Satisfactoriness will be higher for workers with better style correspondence and lower for workers with poorer style correspondence.

Finally, other factors (such as interests and personality traits) that are not included in TWA's P-E correspondence variables can have a bearing on P's satisfaction, satisfactoriness, and tenure. Figure 1.2 shows the expanded TWA predictive model with the moderator variable relationships (shown in broken lines) and "other factors."

Although other factors can also influence work adjustment outcomes (i.e., satisfaction, satisfactoriness, and tenure), research on TWA's predictive model has consistently shown that the P-E correspondence variables are able to forecast work adjustment outcomes with sufficient precision as to be theoretically and practically useful. The TWA predictive model can be used to help people identify and choose among work possibilities that will likely bring them satisfaction, satisfactoriness, and tenure in the future. The predictive model, however, provides no account of the work adjustment process—how P and E achieve correspondence when it is lacking or regain it when it is lost.

THEORY OF WORK ADJUSTMENT'S PROCESS MODEL

The TWA process model was developed to explain how P-E correspondence is achieved, maintained, and reacheived, if necessary. Although TWA provides for both maintenance behavior and adjustment behavior, the focus here is on the

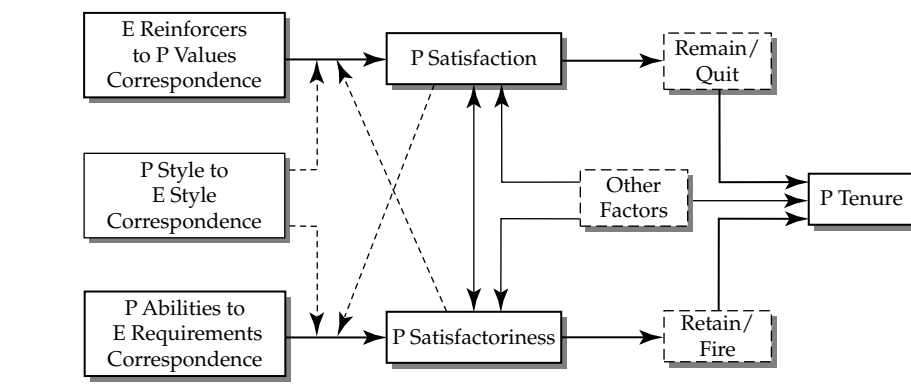


Figure 1.2 The Expanded TWA Predictive Model.

latter because of its implications for working with people who might seek counseling (those who are successfully maintaining correspondence with their environments are unlikely to be seeking counseling). More extended discussion of TWA's process model is provided in Dawis (1996) and Dawis and Lofquist (1984).

The new construct TWA introduces in its process model is *adjustment style*. Adjustment style consists of four variables: flexibility, activeness, reactivity, and perseverance. Each variable is defined as the process model is being described. In the following discussion, the focus is on P, although a parallel process can be described for E, as well.

The Theory of Work Adjustment's process model describes adjustment as a cycle. The cycle starts when P becomes dissatisfied and initiates adjustment behavior. Recall that dissatisfaction results when P perceives discordance between E's reinforcers and P's needs and values. Different Ps can tolerate different degrees of discordance and dissatisfaction before they initiate adjustment behavior. The degree of discordance tolerated before becoming dissatisfied enough to engage in adjustment behavior defines P's *flexibility*. High levels of flexibility mean P does not easily become dissatisfied; conversely, low flexibility means P is easily dissatisfied.

Once adjustment behavior is initiated, P has two modes of adjustment available. First, P could adjust by acting on E to reduce discordance and, thus, dissatisfaction. P could try to change E's reinforcers or E's skill requirements or both. Thus, for example, P could demand a raise if compensation needs are not being adequately met. This adjustment mode is termed *activeness* in TWA. Second, P could adjust by acting on self rather than E to reduce discordance. P would try to change P's own needs or skills or both. For example, P could use skills better or acquire new skills to do a better job to convince E to improve P's compensation. This adjustment mode is termed *reactiveness* in TWA. These two adjustment modes are seen as uncorrelated; that is, P could be in any of four combinations of dichotomized activeness and reactivity (high-high, high-low, low-high, low-low).

Finally, people will work only so long at trying to reduce discordance and dissatisfaction before giving up and leaving E (quitting their job). How long P will attempt to adjust before quitting reflects P's *perseverance*. Like flexibility, perseverance differs in levels among different Ps. Less persevering Ps will give up trying to adjust more readily than will more persevering Ps. Thus, the adjustment cycle ends with P becoming either satisfied again or so dissatisfied as to leave E.

Over time, P's adjustment style choices may tend to become more stable. When this happens, we may speak of flexibility, activeness, reactivity, and perseverance as traits, that is, as typical behavior tendencies. The more pronounced such behavior tendencies are, the more significant they become in counseling people who are trying to adjust in work (trying to achieve or reach correspondence with E).

Figure 1.3 is a diagram of TWA's process model. It shows work adjustment as a cycle, with P's adjustment being initiated by dissatisfaction (P Satisfaction: No). It also shows a similar process occurring for E. Thus, P and E could both be in Maintenance Behavior, both in Adjustment Behavior, or one in Maintenance and the other in Adjustment. Figure 1.3 shows graphically why, to be successful, any counseling of P for work adjustment has to take account of E as well.

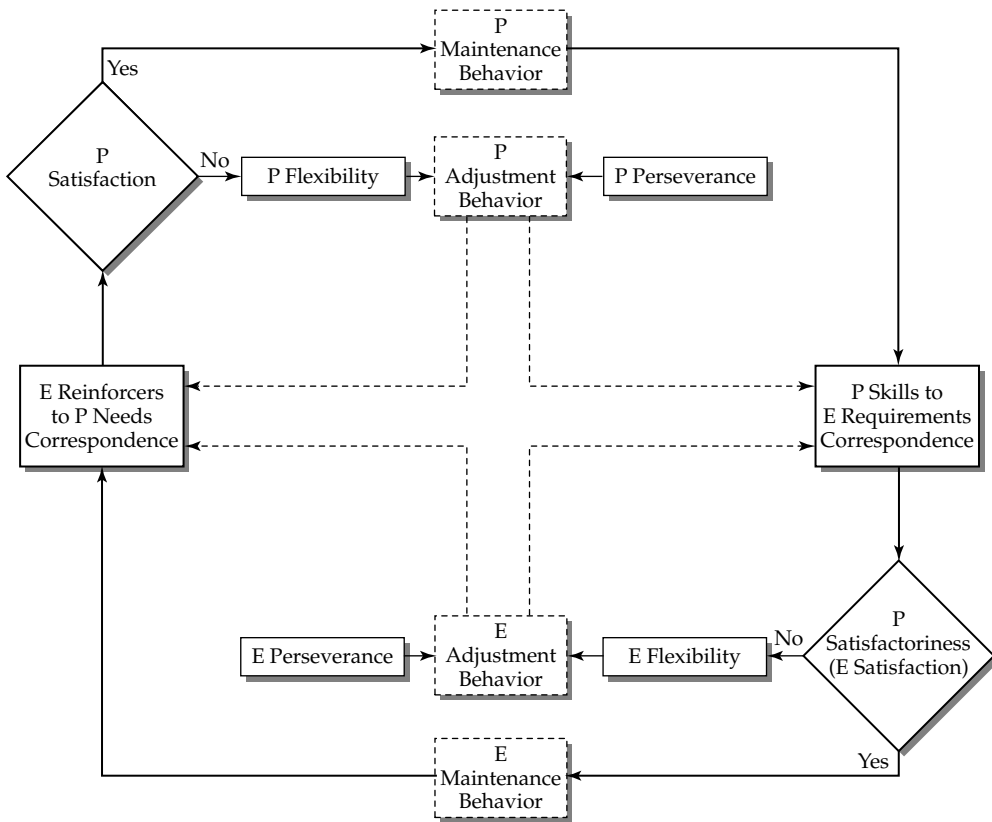


Figure 1.3 The TWA Process Model.

THEORY OF WORK ADJUSTMENT VARIABLES AND THEIR MEASUREMENT

In this section, the TWA variables are defined in more detail, and conventional psychometric ways of measuring them are discussed. However, TWA variables can be measured in other ways (see Other Instruments and Other Methods section) if the psychometric measures described are not available.

SATISFACTION

In TWA, satisfaction is treated as a state variable, defined as an affective response to the cognitive evaluation of P-E correspondence (perception of how well E's reinforcers correspond to P's values and needs). A positive affective response is satisfaction; a negative one is dissatisfaction.

Satisfaction, so defined, is a variable with many different referents. Work satisfaction has at least three: job satisfaction, occupational satisfaction, and career satisfaction. TWA research has been concerned mainly with job satisfaction, that is, satisfaction with the reinforcers found on the job. However, TWA research has on occasion examined satisfaction with occupational and career reinforcers.

Satisfaction-dissatisfaction is typically measured via questionnaires to elicit respondents' descriptions of their affective responses. Job satisfaction measures are of two types: global and facet. Global measures elicit respondents' overall satisfaction with the job, taking all facets into account. Facet measures elicit respondents' satisfactions for a variety of work facets (such as pay, working conditions, and ability utilization). Facet measures typically report facet scores as well as total scores (sum of facet or item scores), whereas global measures report a single score representing the level of overall satisfaction (see also Fritzsche & Parrish, Chapter 8, this volume).

For its research, the Work Adjustment Project developed a facet measure of work satisfaction, the Minnesota Satisfaction Questionnaire (MSQ; Weiss, Dawis, England, & Lofquist, 1967), with scales yielding scores for 20 facets, two factor-based scores (Intrinsic and Extrinsic Satisfaction), and a total score (General Satisfaction) summed across all items. The 20 MSQ facets are ability utilization, achievement, activity, advancement, authority, company policies and practices, compensation, coworkers, creativity, independence, moral values, recognition, responsibility, security, social service, social status, supervision—human relations, supervision—technical, variety, and working conditions. These 20 facets do not by any means exhaust the domain of work reinforcers, but substantive research on TWA had to begin somewhere, and the 20 facets appeared to be a good place to start. They continue to be empirically and practically useful.

NEEDS AND VALUES

Inasmuch as TWA hypothesizes that satisfaction is a function of need/value-reinforcer correspondence, a 20-need Minnesota Importance Questionnaire (MIQ; Gay, Weiss, Hendel, Dawis, & Lofquist, 1971) was developed to parallel the MSQ. The same 20 work facets were used in the two instruments, the difference being the question asked of the respondents: "How satisfied are you with this facet?" (MSQ) versus, "How important is this facet to you?" (MIQ).

Several factor analyses of the 20 MIQ need scales showed that a six-factor structure was the best representation. The six factors were termed *values* because response to the MIQ involved a judgment of "importance" (Lofquist & Dawis, 1978). These six MIQ values are achievement, altruism, autonomy, comfort, safety, and status. Each is scored from component need scales, which is why the MIQ is described as "a measure of needs and values" (Rounds, Henly, Dawis, Lofquist, & Weiss, 1981). Values in TWA are considered trait variables, even more so than needs. Rounds and Armstrong (Chapter 13, this volume) describe the MIQ and its uses more completely.

REINFORCERS AND REINFORCER FACTORS

These E variables were theoretically required to enable the construction of a P-E correspondence variable as the predictor for satisfaction. To simplify matters, a commensurate approach to correspondence was adopted; it was assumed that each need could be paired with a commensurable reinforcer. The Minnesota Job Description Questionnaire (MJDQ; Borgen, Weiss, Tinsley, Dawis, & Lofquist, 1968) was developed to measure the same 20 reinforcers (work facets) used in the MSQ and MIQ. This time, the instrument question was, in effect, "How much is this facet descriptive of the job?"

The MJDQ was also used to generate Occupational Reinforcer Patterns (ORPs; Stewart et al., 1986). Each ORP consists of a profile of scores, one score for each reinforcer, descriptive of an occupation's reinforcers as rated by either incumbents or supervisors.

The data for a subset of 109 ORPs, selected to approximate the occupational distribution of the employed labor force, were subjected to factor analysis (Shubsachs, Rounds, Dawis, & Lofquist, 1978). The three factors that emerged represented combinations of scales that were parallels of the six MIQ values: achievement-autonomy-status, safety-comfort, and altruism. These were identified as a self-reinforcement factor, an environmental reinforcement factor, and a social reinforcement factor, respectively. Thus, the MJDQ, the MIQ, and the MSQ provided a set of commensurate instruments for reinforcers, needs/values, and satisfaction, all referring to the same 20 work facets. This research also led to the development of the Minnesota Occupational Classification System (MOCS; now in its third edition as MOCS III; Dawis, Dohm, Lofquist, Chartrand, & Due, 1987), which classifies a large number of occupations by the degree to which self, environmental, and social needs and values are reinforced (see Gore & Hitch, Chapter 16, this volume).

SATISFACTORINESS

In TWA, satisfactoriness is actually a satisfaction variable—E's satisfaction with P as worker and employee, and with P's performance in carrying out work duties and P's behavior as a member of the work organization. The Minnesota Satisfactoriness Scales (MSS; Gibson, Weiss, Dawis, & Lofquist, 1970) is a rating instrument that is to be completed by P's employer or employer representative, usually the work supervisor. It consists of 28 items organized into four factor-based scales: Performance, Conformance, Personal Adjustment, and Dependability. A fifth score, General Satisfactoriness, is the sum of all item scores. As a *satisfaction* variable, satisfactoriness is considered a state variable.

SKILLS AND ABILITIES

Skills are repeatable behavior sequences performed in response to prescribed tasks. Skills vary on a number of dimensions: content of the task, difficulty of the task, time needed to do the task (speed), and effort expended on the task, among others. Workers can be categorized by the sets of work skills they possess. (For an extended treatment of skills and abilities, see Lubinski & Dawis, 1992.)

Basic skills consist of a few groups: sensory and perceptual skills, cognitive and affective skills, and motor and physical skills. Higher order skills involve different combinations of basic skills. So-called *ability tests* are tests of higher order skills. When such tests are factor analyzed, a hierarchical factor structure is commonly found (Carroll, 1993). At the top is a general factor, Spearman's *g* or general ability. Next are group factors that typically refer to content (e.g., verbal ability, numerical ability, spatial ability). Below these are specific ability factors (e.g., reading comprehension, vocabulary, knowledge of grammar), each of which may be measured by several skill tests.

Because it was well constructed and available, the General Aptitude Test Battery (GATB; U.S. Department of Labor, 1970; see also Ryan Krane & Tirre, Chapter 14, this volume) was used in TWA research as the measure of skills and abilities. The

GATB consists of 12 skill tests that measure nine ability factors derived from factor-analytic studies of about 100 skill tests. Before the GATB, specific batteries of selected skill tests had to be developed for each occupation for use in the Department of Labor's selection and placement programs. This led inevitably to the accumulation of many skill tests, whereas the GATB, with only 12 tests, could be used for the same purpose for all occupations. It was from this GATB experience that TWA derived the idea of defining *abilities* as "reference dimensions" (factors) in the description (measurement) of skills.

The Vocational Psychology Research Program (Department of Psychology, University of Minnesota) has developed the Minnesota Ability Test Battery (MATB) as a parallel (psychometrically equivalent) form of the GATB (Dawis & Weiss, 1994).

SKILL AND ABILITY REQUIREMENTS

Jobs are typically defined in terms of the work tasks that need to be performed. Because task performance requires skills, jobs can also be described in terms of the skills required to perform the job. To determine skill requirements, the Department of Labor used the *empirical method*, which entailed administering several skill tests to a group of workers in a specific occupation and using the test scores to predict the workers' performance ratings. The skills that predicted performance ratings were taken as uniquely descriptive of the job. TWA adopted this idea of using *skill requirements* to describe occupations (i.e., the E in P-E).

The U.S. Department of Labor used the GATB, in lieu of skill tests, to ascertain the three or four aptitudes (ability dimensions) that characterized each occupation and called the set an Occupational Aptitude Pattern (OAP; U.S. Department of Labor, 1970, Section II). OAPs were determined for hundreds of occupations. TWA research used the OAPs as the data for the theory-required measurements of ability requirements. By using OAPs as ability requirements, a given individual's "aptitude" (predicted satisfactoriness) can be ascertained for any of the hundreds of occupations for which there are OAPs. Furthermore, the OAP data were incorporated into the MOCS system, enabling the classification of hundreds of occupations in terms of both ability requirements and reinforcer systems (see Gore & Hitch, Chapter 16, this volume).

CORRESPONDENCE

Correspondence as *fit* is assessed through commensurate P-E measurement, such as the MIQ and ORPs or the GATB and OAPs. With such commensurate measures, need/value-reinforcer correspondence and skill/ability-requirement correspondence can be quantified for use as predictors of satisfaction and satisfactoriness, respectively.

But even with commensurate measurement, the assessment of correspondence was found not to be straightforward. Rounds, Dawis, and Lofquist (1987) developed 19 different indexes of correspondence that took account of elevation, shape, and scatter (the three independent components of a profile) as well as directionality, zero-point, and importance weighting. Using these 19 indexes, they found a wide range of results for the same data in predicting satisfaction from need-reinforcer correspondence, with the best results overall being obtained with simple correlation as the correspondence index. This simple index is thus used most often in our research on TWA's predictive model.

TENURE

Tenure can be defined simply as length of stay on the job. But even such a simple definition can hide a lot of problems. How are leaves of absence counted? Sabbaticals? Part-time employment? What if the job tasks change? When does it become a new job? What about a transfer to the same kind of job but in a different company? This brings up the question of the different kinds of tenure: position tenure, job tenure, occupational tenure, and company or organizational tenure. Such considerations show that there is no simple or single way to define tenure. It is left for the research investigator to define tenure operationally in each study. In TWA research, the incumbent is asked to give job title, dates of employment, and hours per week, and these data are used to calculate "number of full-time weeks employed" as the measure of tenure (Dawis & Lofquist, 1984, p. 208).

STYLE VARIABLES

Style variables are the newest additions to TWA. They were conceptualized to fill in the gaps left in TWA's account of the work adjustment process. Style variables are construed as traits, defined as stable behavioral tendencies resulting from behavioral experiences over a considerable length of time. Most of the style variables are also construed as time-indexed variables, requiring reference to time in their definition. Thus, for personality style, *celerity* is how quickly P typically responds, *pace* is how much energy P typically expends per unit time, *rhythm* refers to the typical pattern of pace over time, and *endurance* is how long P can typically maintain response.

With respect to adjustment style, *flexibility* refers to how long P typically tolerates discordance and dissatisfaction before initiating adjustment behavior, and *perseverance* is how long P typically persists in adjustment behavior. The adjustment modes are not time indexed, although adjustment occurs over time: *activeness* being P's typical tendency to adjust by effecting change in E, versus effecting change in P (self)—*reactiveness*. Parallel comments pertain to E style variables, as well.

Measures of style variables of adequate psychometric quality (reliability, validity) are not yet available. For the most part, judgment (rating) scales have been used in TWA research (Dawis & Lofquist, 1984, p. 216). Two novel approaches to measurement have been tried with promising results, one using signal detection theory to measure flexibility (Cheung, 1975), and another using items from well-known personality instruments to measure flexibility, activeness, and reactiveness (Lawson, 1991). However, without proven measures of style variables, the style propositions of TWA have not been tested as rigorously as the propositions of the basic predictive model have been.

OTHER FACTORS

Causation in human behavior is both multiple and overlapping: For any dependent variable, there almost always are many *sources of variation* (causes), and these frequently are correlated. Thus, it is not surprising to find other variables besides TWA variables that can predict satisfaction, satisfactoriness, and tenure. One of these is *vocational interests*, one of the oldest, best measured, and most researched variables in vocational psychology. Interests are a robust predictor of satisfaction

and tenure, as attested to by an extensive literature. And interests correlate lowly with needs, values, skills, and abilities (Dawis, 1991). Thus, although TWA does not mention it, interests are an important variable to include in any research about work and careers.

Another important one of these “other” variables is *personality* (shorthand for personality traits measured by questionnaires and inventories). Like interests, there is an extensive literature on measured personality traits. Like interests, measured personality traits are well-known correlates of behavioral outcomes, such as satisfaction, satisfactoriness, and tenure. Like interests, personality traits should be included in research about work and careers. For example, conscientiousness, openness to experience, and emotional stability (neuroticism) have been shown to predict adult occupational level and income (Judge, Higgins, Thoresen, & Barrick, 1999).

The theory of work adjustment considers interests and personality traits as higher order, more complex, variables that can be derived from the more fundamental TWA variables of structure and style. This belief has not been tested, but it has been shown that interests and personality traits correlate only modestly (0.20s to 0.30s) with values and abilities (Dawis, 1991).

Yet another set of “other factors” is that of family factors. This includes complex variables such as family culture, family expectations, and family socioeconomic status. Family *culture* is a loose amalgam of variables including family structure (e.g., nuclear versus extended, two- versus one-parent, number of children, decision-making structure, bonding, closeness). Family expectations are by-products of family culture. Family financial status is always an important factor. These family factors find their way directly or indirectly into the causal chain of career development and work adjustment.

A final set of “other factors” is the labor market. Demand and supply of jobs in P’s particular occupation is important to consider. Availability of training opportunities, cost of such, *frictional* factors such as discrimination—all of these and many others may be hypothesized to affect the causal chain of career development and work adjustment in important ways and in particular situations.

There may be other factors to consider. Some, or even many, of them may be correlated with TWA variables or may moderate their predictive value. As we found out when we first began our research, one can go on and on postulating independent variables that may have significant effects, but that can easily dissipate one’s research efforts—which, in the first place, is where theory comes in—to narrow and limit the focus of research. And that is what TWA did for us.

OTHER INSTRUMENTS AND OTHER METHODS

Much of TWA research has employed the MIQ, MSQ, MSS, MJDQ, and ORPs—instruments developed for TWA. One misconception in the field is that research on TWA can be done only with these instruments. This kind of misconception is held about other theories as well, which is unfortunate because a theory is only about constructs and their interrelations and not about the measures for the constructs. Different investigators can use different instruments for the same constructs and even use different analyses to probe for the presence of the same relations. In fact, support for a theory is more robust when it comes from the use of other instruments and other methodologies and analytic approaches.

Insofar as TWA is concerned, there are many other good instruments available to measure its basic constructs: satisfaction, satisfactoriness, needs, values, skills, abilities. Only the style variables do not have adequate instruments because of their novelty, but, in time, this lack may be addressed.

Theory of Work Adjustment variables may also be assessed by methods other than the use of psychometric instruments. When psychometric instruments are unavailable or cannot be used, counselors can still implement TWA by using other methods of assessment. For example, the method of estimation or judgment by rating or ranking (used with style variables as described previously) may be used to assess needs, values, skills, abilities, and other TWA variables. Ways to ensure validity and reliability of ratings and rankings are described in the literature (e.g., Guilford, 1954).

The method of inference may also be used in conjunction with the corollaries of the TWA Propositions (see Table 1.1 on pages 20–21). For example, Corollary IIA says that if you know the reinforcers of P's previous job and you know P's satisfaction with that job, you may infer P's values—without benefit of direct measurement. Corollary IIB says that if you know P's values and P's satisfaction in a job, you may infer what the reinforcers in that job might be.

RESEARCH ON THE THEORY OF WORK ADJUSTMENT

Chapter limits prevent the presentation of TWA research in detail (for more complete coverage, see Dawis & Lofquist, 1984, pp. 69–94, and Dawis, 1996, pp. 98–102). The research is summarized here.

Support is strong for the first three propositions of TWA (see Table 1.1), which are about the roles of satisfaction and satisfactoriness in work adjustment and the prediction of satisfaction and satisfactoriness. This support comes not just from TWA research but, more convincingly, from the research of many other investigators using instruments other than those developed for TWA research. For example, every validity study of ability tests as predictors of rated performance in any occupation is support for Proposition III, which states that satisfactoriness is predictable from ability-requirement correspondence.

Support for the tenure propositions (VI, VII, and VIII) is also strong and comes from both TWA and other research. The relation of satisfaction to tenure is particularly strong, backed by an extensive literature.

The remaining propositions, especially the style propositions (X–XVII), have not been studied to any great extent. A few studies show some support for the moderator relation propositions (IV and V). Aspects of the style propositions have been studied, with mixed results, the main problem being that of measuring the variables. There is some reason to believe that the measurement of these style variables as traits might lie in personality measurement (i.e., the measurement of personality traits via questionnaires and inventories).

APPLICATIONS OF THE THEORY OF WORK ADJUSTMENT

Theories have a heuristic use; therefore, it helps if the theory is framed in such a way that makes it easy to remember and recall. In this regard, TWA has a

mnemonic advantage in the binary symmetry of its constructs: person and environment, correspondence and satisfaction, requirement and capability, response and reinforcement, satisfaction and satisfactoriness, needs and skills, values and abilities, structure and style, maintenance and adjustment, celerity and endurance, pace and rhythm, flexibility and perseverance, activeness and reactivity, tenure and termination. Moreover, these paired constructs are organized by just two principles: (1) Correspondence makes for satisfaction, and (2) dissatisfaction drives adjustment behavior.

The theory of work adjustment can be used heuristically to organize facts, aid conceptualization, and suggest approaches to intervention. With the TWA constructs as basic conceptual tools, we can tackle a variety of problems, as illustrated in the following discussions about career development, career choice, and career counseling.

DEVELOPMENTAL INTERVENTIONS

Education literally means “bringing out.” What is to be “brought out?” From the earliest times, schools have focused on bringing out capabilities, on developing skills and abilities. Only tangentially have requirements been touched on. TWA maintains that a focus on requirements is just as important as that on capabilities. Children have to learn about their needs and values much more explicitly, to the same extent that they learn about their skills and abilities. Learning is acquisition. Hence, TWA proposes that needs and values have to be acquired in the same way that skills and abilities are acquired. And in such learning, we must attend to individual differences, with proper respect for the child and the child’s family.

If teachers are to facilitate self-knowledge in children, they first have to be expert at assessing needs, values, skills, and abilities on the fly, that is, on the basis of ordinary information available in the everyday classroom. Standardized instruments can help and are likely to be used by counselors, but everyday observations can be useful and are much less intrusive if teachers are skilled in using them in assessment. Next, teachers and counselors have to know how to teach each child how to assess self, which in turn depends on knowing the child’s response capabilities and reinforcement requirements.

But learning about needs, skills, values, and abilities can be problematic and even traumatic to the child who compares self with other children. A possible antidote is to teach children early about individual differences and all its implications and about TWA’s message that besides individual differences there are environmental differences and that the optimal environment is different for each child—which might help children become more cognizant and respectful of their own and others’ individualities.

In addition to having appropriate skills, teachers and counselors should be aware of their own needs and values, that is, their own reinforcement requirements. They should know how to assess their correspondences with various Es, which in the school setting includes each of their pupils and their parents. Such knowledge might help them understand their differential effectiveness with different children.

One matter TWA addresses explicitly is environments. Each E has distinctive features with respect to skill requirements and reinforcement capabilities. At the start, the child has only a few “salient Es” (Lofquist & Dawis, 1991), but these

grow in number as the child grows. Each of the child's Es is constrained to begin with, but enlarges over time. Teachers and counselors have to find out for each child what these salient Es are, how far their boundaries extend, and what their distinctive features are (skill requirements, reinforcement capabilities). This is information that teachers and counselors can use to advantage in helping each child learn how to cope with various salient Es.

Coping with Es means adjustment, which means learning about self and Es in the adjustment-behavior mode. Children must learn not only about their needs/values and skills/abilities but also their adjustment styles. In learning about Es, they must learn, too, not only about skill requirements and reinforcement capabilities but also about environment adjustment styles. Acquiring such knowledge does not need to be all-encompassing all at once. Skillful teachers and counselors can use specific instances to teach about even just one variable at a time, about the variable's features for the P and E involved in the particular instance.

If the preceding prescriptions are pursued, three benchmarks can be used to chart progress along the way: the child's satisfaction, satisfactoriness, and tenure. It is important to ascertain whether a child is happy or unhappy in the school environment. This assessment should be as important as the customary assessment of the child's satisfactoriness—meeting the requirements of school, family, and society. Tenure, staying in a situation or fleeing from it, is the third important indicator prescribed by TWA. In interpreting tenure data, the child's satisfaction and satisfactoriness status should be considered.

In TWA's view, human development is the unfolding of requirements (needs, values), capabilities (skills, abilities), and style. This unfolding depends on the degree of P-E correspondence experienced with every E that P encounters. In turn, the Es that P encounters depend to a significant extent on *opportunity* or lack thereof. Opportunity means access to Es that promote development (i.e., high P-E correspondence). Development, in turn, opens more doors to more Es that promote more development—the virtuous circle. Conversely, lack of opportunity retards development, which perversely shrinks further opportunity, which further retards development—the vicious circle. These are logical outcomes that flow from the TWA process model.

CHOOSING A CAREER

Choosing a career wisely is the first step toward adjustment in work. TWA's prescription is obviously to choose a career wherein an individual can be satisfied and satisfactory. TWA's predictors—reinforcer-value and ability-requirement correspondences—can be used to narrow the world of work to a manageable number of occupations to consider. Then, "other factors" (see previous section) can be used to narrow the list even further. In choosing from among the finalist occupations, an individual must be aware of the trade-off nature of choice, the need to balance between advantages and disadvantages, and finally to decide on the basis of what is most important to the person. Thus, knowledge of an individual's needs, values, skills, abilities, and style characteristics can help in reaching wise decisions, but it also requires knowledge of occupations in complementary terms: reinforcers, skill and ability requirements, and style characteristics.

Theory of Work Adjustment research, as mentioned previously, has developed a taxonomy of occupations to aid in career choice, the Minnesota Occupational Classification System (MOCS). The current edition, MOCS III (Dawis et al., 1987), is organized around two axes, reinforcers and requirements, with three categories of reinforcers (self, social, environmental) and three categories of ability requirements (perceptual, cognitive, motor). Using three levels for each category (high, average, not significant) yields 729 (27×27) possible patterns, termed *taxons*, which can be used to help clients identify occupational possibilities that reinforce their particular patterns of needs and values and make use of their particular patterns of skills and abilities (see Gore & Hitch, Chapter 16, this volume).

IMPLEMENTING CAREER CHOICE

There are three steps to implementing a career choice:

1. Preparing for the career.
2. Finding a starting position.
3. Working up the career ladder.

The theory of work adjustment can be useful in all three steps.

In conventional career preparation, attention is focused on the skills required and on skill acquisition. This may be the most important part of career preparation, but TWA also directs attention to the reinforcers the individual is to encounter in the occupation, which requires preparing for them, also. For example, for first-time wage earners, receiving compensation on a regular basis is a new experience, and some workers may not know how to handle this experience wisely. Working in a team or working under close supervision are examples of other reinforcement conditions that might need attending to in career preparation.

The theory of work adjustment does not have anything to say about finding a starting position or about job finding in general, but it does apply when a person faces a decision about accepting a job offer or choosing from among job offers. Then, TWA can suggest a list of things to consider when reaching a decision. For example, money may not be everything when viewed in the light of a person's total reinforcer requirements. Another use of TWA constructs is considering potential career paths in the work organization when deciding about a first position.

In working up the career ladder, people usually focus on what the succeeding reinforcer structures are bound to be and, presumably, are motivated by these anticipations. TWA reminds them also to consider the skill and ability requirements and the style characteristics and to prepare for these. For example, professional people who move into managerial positions often fail to prepare for the skill requirements (e.g., people skills, decision-making skills) and style requirements (e.g., fast pace, erratic rhythm, high flexibility) of the new managerial positions. Again, TWA can suggest a list of things to attend to as the person climbs the career ladder.

WORK OR CAREER DISSATISFACTION

When experiencing work or career dissatisfaction, people often get carried away by the affect involved and may fail to see things rationally. TWA does provide a way to

see things rationally, to get a comprehensive grasp of the situation, and to generate possible approaches to solving the problem. TWA tells the dissatisfied worker to examine both antecedents and consequences, specifically, the antecedent of P-E correspondence and the consequence of P and E behavior. TWA also points to the basic approaches to adjustment open to P: activeness, by getting E to change E's reinforcements and/or skill requirements, and reactiveness, by changing P's need hierarchy and/or skill repertoire.

Although TWA does not mention it explicitly, one problem that has to be resolved when there is dissatisfaction is the question of perception versus reality. TWA's conception of satisfaction makes it clear that perception plays a role in satisfaction/dissatisfaction. Thus, it is important for the dissatisfied worker to test reality in as many ways as possible. One of the better ways to do this is to seek work or career counseling by a competent career counselor, preferably—in TWA's view—one versed in TWA.

A FINAL APPLICATION: FROM THEORY OF WORK ADJUSTMENT TO PERSON-ENVIRONMENT CORRESPONDENCE

The Theory of Work Adjustment refers to one environment encountered by P, but obviously, P encounters many other environments. TWA constructs and relations can be generalized to apply to any environment and has been termed *person-environment correspondence* (PEC) theory. Expositions of PEC theory are given in Lofquist and Dawis (1991) and Dawis (2002), and we recommend these to students interested in helping clients achieve greater satisfaction and satisfactoriness in their family, interpersonal, intimate relations, and other important nonwork environments.

Table 1.1
Formal Propositions of the Theory of Work Adjustment (TWA)

P = Person in an environment (E). The following are restatements of the 17 propositions of TWA presented in Dawis and Lofquist (1984). The revisions are of two kinds: (1) The propositions are renumbered to give priority of place to satisfaction. Thus, for example, Proposition II in the 1984 propositions was about satisfactoriness and Proposition III about satisfaction; here it is reversed; and (2) the variable names are those used in Figures 1.1, 1.2, and 1.3. For example, *satisfaction* in the 1984 propositions is now *P Satisfaction* and *satisfactoriness* is now *P Satisfactoriness*. Otherwise, the content and substance remain the same in this version as they were in the 1984 set.

Proposition I. Work adjustment at any time is indicated by the concurrent levels of P Satisfaction and P Satisfactoriness.

Proposition II. P Satisfaction is predicted from E Reinforcers to P Values Correspondence, provided that there is P Abilities to E Ability Requirements Correspondence.

Corollary IIA. Knowledge of E Reinforcers and P Satisfaction permits the inference of P Values.

Corollary IIB. Knowledge of P Values and P Satisfaction permits the inference of E Reinforcers.

Table 1.1 (Continued)

Proposition III. P Satisfactoriness is predicted from P Abilities to E Ability Requirements Correspondence, provided that there is E Reinforcers to P Values Correspondence.

Corollary IIIA. Knowledge of P Abilities and P Satisfactoriness permits the inference of E Ability Requirements.

Corollary IIIB. Knowledge of E Ability Requirements and P Satisfactoriness permits the inference of P Abilities.

Proposition IV. P Satisfactoriness moderates the prediction of P Satisfaction from E Reinforcers to P Values Correspondence.

Proposition V. P Satisfaction moderates the prediction of P Satisfactoriness from P Abilities to E Ability Requirements Correspondence.

Proposition VI. The probability that P will quit E is inversely related to P Satisfaction.

Proposition VII. The probability that E will fire P is inversely related to P Satisfactoriness.

Proposition VIII. P Tenure is predicted from P Satisfaction and P Satisfactoriness.

Given Propositions II, III, and VIII:

Corollary VIIIA. P Tenure is predicted from E Reinforcers to P Values Correspondence and P Abilities to E Ability Requirements Correspondence.

Corollary VIIIB. P Tenure is predicted from P-E Correspondence.

Proposition IX. P-E Correspondence increases as a function of P Tenure.

Proposition X. P Style to E Style Correspondence moderates the prediction of P Satisfaction and P Satisfactoriness from P Values/Abilities to E Reinforcers/Requirements Correspondence.

Proposition XI. P Flexibility moderates the prediction of P Satisfaction from E Reinforcers to P Values Correspondence.

Proposition XII. E Flexibility moderates the prediction of P Satisfactoriness from P Abilities to E Ability Requirements Correspondence.

Proposition XIII. The probability that P Adjustment Behavior will occur is inversely related to P Satisfaction.

Corollary XIII A. Knowledge of this probability associated with P Satisfaction permits the determination of the P Flexibility threshold.

Proposition XIV. The probability that E Adjustment Behavior will occur is inversely related to P Satisfactoriness.

Corollary XIVA. Knowledge of this probability associated with P Satisfactoriness permits the determination of the E Flexibility threshold.

Proposition XV. The probability that P will quit E is inversely related to P Perseverance.

Corollary XVA. Knowledge of this probability associated with P's quitting E permits the determination of the P Perseverance threshold.

Proposition XVI. The probability that E will fire P is inversely related to E Perseverance.

Corollary XVIA. Knowledge of this probability associated with E's firing P permits the determination of the E Perseverance threshold.

Given Propositions VIII, XV, and XVI:

Proposition XVII. P Tenure is predicted jointly from P Satisfaction, P Satisfactoriness, P Perseverance, and E Perseverance.

REFERENCES

- Borgen, F. H., Weiss, D. J., Tinsley, H. E. A., Dawis, R. V., & Lofquist, L. H. (1968). The measurement of occupational reinforcer patterns. *Minnesota Studies in Vocational Rehabilitation* (No. XXV), 1–89. Minneapolis: University of Minnesota, Industrial Relations Center.
- Carroll, J. B. (1993). *Human cognitive abilities: A survey of factor-analytic studies*. New York: Cambridge University Press.
- Cheung, F. M. (1975). *A threshold model of flexibility as a personality style dimension in work adjustment*. Unpublished doctoral dissertation, University of Minnesota, Minneapolis.
- Dawis, R. V. (1991). Vocational interests, values, and preferences. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (2nd ed., Vol. 2, pp. 833–871). Palo Alto, CA: Consulting Psychologists Press.
- Dawis, R. V. (1992). The individual differences tradition in counseling psychology. *Journal of Counseling Psychology*, 39, 7–19.
- Dawis, R. V. (1996). The theory of work adjustment and person-environment-correspondence counseling. In D. Brown, L. Brooks, & Associates (Eds.), *Career choice and development* (3rd ed., pp. 75–120). San Francisco: Jossey-Bass.
- Dawis, R. V. (2000). The person-environment tradition in counseling psychology. In W. E. Martin Jr. & J. L. Swartz-Kulstad (Eds.), *Person-environment psychology and mental health* (pp. 91–111). Mahwah, NJ: Erlbaum.
- Dawis, R. V. (2002). Person-environment-correspondence theory. In D. Brown & Associates. *Career choice and development* (4th ed., pp. 427–464). San Francisco: Jossey-Bass.
- Dawis, R. V., Dohm, T. E., Lofquist, L. H., Chartrand, J. M., & Due, A. M. (1987). *Minnesota Occupational Classification System III: A psychological taxonomy of work*. Minneapolis: University of Minnesota, Department of Psychology, Vocational Psychology Research.
- Dawis, R. V., England, G. W., & Lofquist, L. H. (1964). A theory of work adjustment. *Minnesota Studies in Vocational Rehabilitation* (No. XV), 1–27. Minneapolis: University of Minnesota, Industrial Relations Center.
- Dawis, R. V., & Lofquist, L. H. (1984). *A psychological theory of work adjustment*. Minneapolis: University of Minnesota Press.
- Dawis, R. V., Lofquist, L. H., & Weiss, D. J. (1968). A theory of work adjustment (revision). *Minnesota Studies in Vocational Rehabilitation* (No. XXIII), 1–14. Minneapolis: University of Minnesota, Industrial Relations Center.
- Dawis, R. V., & Weiss, D. J. (1994). *Minnesota Ability Test Battery: Technical manual*. Minneapolis: University of Minnesota, Department of Psychology, Vocational Psychology Research.
- Gay, E. G., Weiss, D. J., Hendel, D. D., Dawis, R. V., & Lofquist, L. H. (1971). Manual for the Minnesota Importance Questionnaire. *Minnesota Studies in Vocational Rehabilitation* (No. XXVIII), 1–83. Minneapolis: University of Minnesota, Industrial Relations Center.
- Gibson, D. L., Weiss, D. J., Dawis, R. V., & Lofquist, L. H. (1970). Manual for the Minnesota Satisfactoriness Scales. *Minnesota Studies in Vocational Rehabilitation* (No. XVII), 1–51. Minneapolis: University of Minnesota, Industrial Relations Center.
- Guilford, J. P. (1954). *Psychometric methods*. New York: McGraw-Hill.
- Judge, T. A., Higgins, C. A., Thoresen, C. J., & Barrick, M. R. (1999). The Big Five personality traits, general mental ability, and career success across the life span: *Personnel Psychology*, 52, 621–652.
- Lawson, L. (1991). *The measurement of flexibility, activeness, and reactivity using an iterative scale construction method*. Unpublished doctoral dissertation, University of Minnesota, Minneapolis.
- Lofquist, L. H., & Dawis, R. V. (1969). *Adjustment to work*. New York: Appleton-Century-Crofts.
- Lofquist, L. H., & Dawis, R. V. (1978). Values as second-order needs in the theory of work adjustment. *Journal of Vocational Behavior*, 12, 12–19.
- Lofquist, L. H., & Dawis, R. V. (1991). *Essentials of person-environment-correspondence counseling*. Minneapolis: University of Minnesota Press.
- Lubinski, D., & Dawis, R. V. (1992). Aptitudes, skills, and proficiencies. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (2nd ed., Vol. 3, pp. 1–59). Palo Alto, CA: Consulting Psychologists Press.

- Rounds, J. B., Dawis, R. V., & Lofquist, L. H. (1987). Measurement of person-environment fit and prediction of satisfaction in the theory of work adjustment. *Journal of Vocational Behavior*, 31, 297–318.
- Rounds, J. B., Henly, G. A., Dawis, R. V., Lofquist, L. H., & Weiss, D. J. (1981). *Manual for the Minnesota Importance Questionnaire: A measure of vocational needs and values*. Minneapolis: University of Minnesota, Department of Psychology.
- Scott, T. B., Dawis, R. V., England, G. W., & Lofquist, L. H. (1960). A definition of work adjustment. *Minnesota Studies in Vocational Rehabilitation* (No. X), 1–75. Minneapolis: University of Minnesota, Industrial Relations Center.
- Shubsachs, A. P. W., Rounds, J. B., Jr., Dawis, R. V., & Lofquist, L. H. (1978). Perception of work reinforcer systems: Factor structure. *Journal of Vocational Behavior*, 13, 54–62.
- Stewart, E. S., Greenstein, S. M., Holt, N. C., Henly, G. A., Engdahl, B. E., Dawis, R. V., et al. (1986). *Occupational reinforcer patterns*. Minneapolis: University of Minnesota, Department of Psychology, Vocational Psychology Research.
- Tinsley, H. E. A., & Brown, S. D. (Eds.). (2000). *Handbook of applied multivariate statistics and mathematical modeling*. San Diego, CA: Academic Press.
- U.S. Department of Labor. (1970). *Manual for the USES General Aptitude Test Battery*. Washington, DC: U.S. Government Printing Office.
- Weiss, D. J., Dawis, R. V., England, G. W., & Lofquist, L. H. (1967). Manual for the Minnesota Satisfaction Questionnaire. *Minnesota Studies in Vocational Rehabilitation* (No. XXII), 1–119. Minneapolis: University of Minnesota, Industrial Relations Center.